EDUCATIONAL DIGITAL STORYTELLING AND NARRATIVE PERSUASION: THE CHRISTOPHER COLUMBUS MYTH AND CHALLENGING NATIONAL IDENTITY

A dissertation submitted

by

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to

FIELDING GRADUATE UNIVERSITY

in partial fulfillment of the
requirements for the degree of

DOCTOR OF PHILOSOPHY IN PSYCHOLOGY

With an Emphasis in
Media Psychology

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Educational Digital Storytelling and Narrative Persuasion:
The Christopher Columbus Myth and Challenging National Identity

by

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Abstract

The narrative of Christopher Columbus symbolizes core values that are a part of America's national identity. However, the brave adventurism of the Columbus tale only tells part of the story. Historians have brought to light records about Columbus that include violence and enslavement of the Taíno people, the principal inhabitants of the Caribbean Islands long before Europeans arrived. One means to present a complete version of the Columbus story is through educational digital storytelling (DST). DST for education is a communication strategy where people create media that tells a story from a personal perspective to promote new beliefs and behaviors. Viewers who become mentally and emotionally invested can experience narrative engagement which can change beliefs to align with those of the story. However, not all individuals are equally responsive, and individual differences can influence the likelihood of experiencing engagement with a narrative. Openness to experience is a personality trait identified by the Big Five Inventory that describes a person's propensity to imagination, curiosity, and creativity. People who are more able to visualize and imagine may be likely to experience narrative engagement to a greater degree. Those curious about new ideas may also be more receptive to a more accurate portrayal of a previously accepted historical myth. Therefore, this study investigated the relationship of a digital story retelling the Columbus tale with persuasive learning outcomes through narrative engagement moderated by openness to experience. It found that educational DST following a narrative format was more effective at

narrative persuasion than the same information presented as a non-narrative, standard lecture, but only through narrative engagement conditioned by openness to experience. With that understanding, teachers and other content developers can create educational material that engages an audience by encouraging openness to promote learning.

Keywords: openness to experience, narrative persuasion, narrative transportation, character identification, narrative engagement, digital storytelling

Acknowledgements

I would like to thank my friend Mark Edem who first encouraged me to go to college a decade ago. After 2 years working on my associate degree, off I went to Fort Lewis College (2015) in Durango, Colorado for my bachelor's where I studied under an amazing group of professors. I would like to say thank you to Sandy Gilpin in the freshman math program who taught me that statistics was not so scary after all. And thank you to Dr. Majel Boxer and Dr. Kay Holmes (Native American and Indigenous Studies). Dr. Boxer always made me feel welcome and a part of the program. Dr. Holmes mentored me through and inspired me to pursue digital storytelling. And thank you to Dr. Sue Kraus (Psychology) who taught me how to apply statistical methods in psychological research and encouraged me to pursue grad school.

I did and made it to Fielding where I had a strong group of teachers and supporters. I would like to thank Dr. Lindsay Cahn (Accessibility Office) for helping me with special accommodations so that I could stay in school. Thank you also to Dr. Karen Shackleford for your encouragement and helping me develop my writing skills. To my dissertation committee, Dr. Regina Tuma, you were always there when I needed extra support. And Dr. Emily Moyer-Gusé, it was an honor to have you on my committee. Your insights were invaluable. Thank you both.

And to my committee Chair, Dr. Pamela Rutledge, you were my dissertation savior. Thank you for not only your insights and ideas, but your availability, our weekly drop-ins, and helping me push through the challenges. I am eternally grateful.

Dedication

This dissertation is dedicated to my wife Patsy and our furry family, Molly and Lizzie. Over the past 7½ years, Molly has reminded me that there was more to life than school. She made sure that I had plenty of play breaks. Lizzie, on the other hand, was my constant study companion. She has always been by my side during my study time and throughout the dissertation process. Patsy, thank you my love. You were always, always there for me. I deeply appreciate your physical help and emotional support whether those countless trips over the mountains to the doctor, being my test audience, or just your belief in me. I am excited for our next chapter together.

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CHAPTER ONE: INTRODUCTION

Like any good story, history has its great heroes; the history of the United States is no exception. These legends symbolize the core values that are the foundation of America. One such narrative is that of Christopher Columbus. *The American Preceptor*, an early textbook, introduced Columbus as a man who “performed exploits, which should astonish mankind” and whose name was “stamped with immortality” (Bingham, 1810, p. 39). Since then, many Americans have been brought up with the tale of Christopher Columbus as the brave adventurer who “sailed the ocean blue” and discovered America. As foretold, his immortality has indeed been cemented in the names of cities, universities, and monuments. A federal holiday was established in 1937 in his honor and has been traditionally recognized each year on the second Monday of October by presidential decree. However, modern historians have called into question the image of Columbus that has been promoted for centuries (see Bigelow, 1998; Stannard, 2006; Zinn, 2015).

In this quantitative study, I proposed examining the relationship between an educational digital story and persuasive outcomes through narrative engagement as moderated by the personality trait of openness to experience. To do so, I used a self-produced educational video story to present a more complete picture of the history of Christopher Columbus from a personal perspective. Online participants watched either this experimental narrative or a non-narrative lecture version that presented the same historical facts. They then submitted Likert-scale responses that measured presentation-consistent beliefs, narrative engagement, and openness to experience.

The digital story used narrative-based education to teach that while it could be argued that Columbus exhibited great courage in his undertakings westward across uncharted seas, there

is more to be known. According to time-period journals, letters, and interviews, the traditional view of Columbus is incomplete. Historical documents show that the exploits of Columbus, his crewmen, and soldiers often included violence and subjugation (see Columbus, 1492-1493/1893; de las Casas, 1552/2007).

In addition, to say that Columbus discovered America is a misnomer. Columbus and his crew of 90 landed in what is now known as the Bahamas on October 12, 1492. He never set foot in North America. Furthermore, from a universal perspective, Columbus did not discover anything. The Caribbean Islands had been discovered well before Columbus landed (see Columbus, 1492-1493/1893; Tinker & Freeland, 2008). Native groups from Central and South America began exploring the Caribbean over 5,000 years before European arrival. Ancestors of those who became the Taíno People soon migrated to Jamaica, Hispaniola (home of modern-day Haiti and the Dominican Republic), Puerto Rico, and multiple other islands where they established a new culture.

As more historical details have come to the forefront – led by teachers, historians, and Taíno descendants – some U.S. citizens have called for action. At least 40 Columbus monuments in the United States have been removed by local governments (Youjin et al., 2021). In addition, the long-standing annual declaration of Columbus Day was for the first time replaced by an official national recognition of Indigenous Peoples' Day by President Joe Biden on October 12, 2021 (The White House, 2021). Liberty, justice, equal opportunity, and individualism are the center of the American story. That story is its national identity. Columbus has long been held as an exemplar of those values and identity. However, these recent events may indicate the beginnings of a shift in the American psyche. The American identity, at least for some, may be changing.

According to narrative identity theory, one's identity consists of a series of interrelated events organized in story form (Habermas & Bluck, 2000; McAdams, 1988, 1993, 2001). This life narrative defines one's persona utilizing a specific format, that of the story, including "plot, character, setting, scene, and theme" (McAdams, 1988, p. 18). Life stories may include facts, but they are also a series of constructs created by interpretations and theoretical explanations (McAdams, 1988). A person uses story to make causal connections between life events. Past is linked to the present and present to the future to give both purpose and meaning. Narrative identity consists of both personal and collective stories. Collective stories form a collective memory that includes shared history, culture, and ideology. The myth of Christopher Columbus is one such collective memory.

As autobiographical memories are an aspect of a person's story and identity, histories are an aspect of a nation's story and identity. In *Notes on the State of Virginia*, Thomas Jefferson wrote about the importance of learning history. Jefferson (1781/2012) stated that "History, by apprising them (students) of the past, will enable them to judge of the future; it will avail them of the experience of other times and other nations; it will qualify them as judges of the actions and designs of men" (p. 169). However, the United States has constructed a history and a national persona that is often founded in myth (Dunbar-Ortiz, 2014; Loewen, 2008; Zinn, 2015). Without an accurate knowledge of the national past, learning from the "experience of other times" is limited. Without knowing yesterday's truth, there can be no true understanding today "of the actions and designs of men."

A person who lacks self-knowledge, who is oblivious to their own character, history, and content of mind, is more likely to act against their own best interests (Morin & Racy, 2021; see also Wilson, 2002). Prospection describes the way a person foresees their future including

mental simulation, prediction of future outcomes, intention or goal setting, and planning (Morin & Racy, 2021). Prospection is rooted in episodic memory, the way in which one remembers the past (McDonald et al., 2015; Morin & Racy, 2021), an aspect of self-knowledge. If that memory is flawed or inaccurate, predictions and thus decisions about the future may not be optimal. Self-knowledge is therefore an essential aspect of making sound choices and of well-being.

The same holds for collectives. Groups are comprised of individuals, each with their own degree of accurate memories and self-knowledge. The self is also more than a person's individual characteristics (Brewer & Gardner, 1996; Gardner & Garr-Schultz, 2018; McAdams, 2001). The narrative that is one's life story, one's individual identity, incorporates levels of collective identity such as relationships, family, and shared history. Therefore, "One cannot clearly understand the self without understanding the individual groups to which we belong" (Gardner & Garr-Schultz, 2018, p. 138). Having clearly defined and integrated collective identities is essential to personal identity and self-knowledge (Gardner & Garr-Schultz, 2018; Usborne & Taylor, 2012). As with an individual, if a group has flawed self-knowledge, group decisions and actions are less likely to serve their best interests. A collective self-awareness of thoughts, beliefs, feelings, and actions; past and present, can lead to not only individual but communal transformation.

One path to self-knowledge, though often not easy, is objective self-observation including seeing oneself through the perspective of others (Wilson, 2002; Wilson & Dunn, 2004). One can infer their subconscious state by reflecting on their own behaviors. Awareness is the beginning of self-knowledge (Wilson & Brekke, 1994; Wilson & Dunn, 2004). A candid look at the past is essential to that awareness. Through questionnaires and interviews with 179 high school students, Duraisingh (2012) found that 40% could clearly explain how their personal

life stories were linked to historically significant narratives. For example, they could tie their own or family life story to a larger group historical narrative. Those who made connections with history exhibited an analytical knowledge of the past and had a moral response to the past.

However, bringing awareness that challenges an internalized myth, an inaccurate historical account that is part of one's identity, can trigger defense mechanisms. One reason a person or group can lack self-knowledge is an intrinsic motivation to keep unpleasant thoughts and feelings away from consciousness (Wilson & Dunn, 2004). Defense mechanisms are adaptive responses designed to maintain a sense of stability and continuity, and to relieve anxiety. One such mechanism is denial, a refusal to accept the obvious facts of given circumstances or to reject interpretations and consequences of an event that are perceived as a threat (Baumeister et al., 1998; Hofmann et al., 2012). Defense mechanisms have been defined as narrative strategies (Cramer, 2015; McAdams, 1998). They are used to tailor one’s life story and how it is told to both internal and external audiences. Defenses can limit self-knowledge, but if recognized, they can enhance it.

One strategy to communicate the historical facts about Christopher Columbus and other American myths while evading defense mechanisms and therefore raising collective self-knowledge is through storytelling. Stories helped establish such myths in the first place. Narratives can be more persuasive than facts alone, and less challenging to beliefs and identity (Green & Brock, 2000; Moyer-Gusé, 2008; Moyer-Gusé & Nabi, 2010; Slater & Rouner, 2002). Digital storytelling (DST) is one way to produce persuasive stories. Digital stories are self-produced video narratives told from a personal perspective using new media devices such as smartphones, tablets, and laptops (Ohler, 2013).

However, stories do not affect everyone in the same way. Individual differences in personality, upbringing, culture, and more can influence the effectiveness of a narrative argument. One personality trait that may regulate the degree to which a person is influenced by a story is openness to experience (see McCrae, 1987; McCrae & Costa, 1987; Whitbourne, 1986). The trait of openness to experience is related to identity flexibility which is one's ability and willingness to develop and adjust their identity over time (Whitbourne, 1986). Openness is also associated with creativity (Ivcevic & Brackett, 2015; McCrae, 1987; Tan et al., 2019). Creativity suggests an ability and willingness to detach from the known and venture into the unknown. Narrative transportation and character identification involve mentally and emotionally separating from reality and immersing oneself in a story and the lives of its characters. The term narrative engagement amalgamates transportation and identification into one concept (Busselle & Bilandzic, 2009; Hamby et al., 2018). There has been extensive research on the effect of narrative towards persuasive outcomes through transportation (e.g. Green & Brock, 2000, 2002), identification (e.g. Cohen, 2001; Slater & Rouner, 2002), and narrative engagement (e.g., Busselle & Bilandzic, 2009). However, there has been little if any research on the relationship of openness to experience in these equations and none in the context of digital storytelling. Therefore, for my dissertation, I proposed the following research question: How does an educational digital story affect audience beliefs through narrative engagement as conditioned by the personality trait openness to experience? With this information, teachers, historians, and others can tailor educational presentations about sensitive sociohistorical issues in a way that engages audiences and supports learning.

CHAPTER TWO: LITERATURE REVIEW

This literature review is in four focal areas to support the use of narrative persuasion in digital storytelling (DST) and deliver an educational message about potentially sensitive sociohistorical issues. The first segment introduces narrative persuasion theory, the roots of storytelling, and why stories can be persuasive. It also describes the basic structure of a narrative story arc and looks at the mechanisms of narrative persuasion. The second segment reviews literature about personality traits, emphasizing openness to experience and its potential relationship to narrative engagement and persuasion. The third portion of this literature review describes how DST can be an effective means to deliver persuasive educational stories. It includes a discussion of the audio and visual elements of DST and the intersection of entertainment-education and DST. The fourth section states the need to investigate openness to experience in narrative persuasion research and includes the hypotheses.

Narrative Persuasion

Narrative persuasion is the use of story to convey arguments that influence belief change. Persuasive storytelling can be effective due to a combination of factors and mechanisms. For example, people naturally think in story form. Therefore story-based arguments are a natural road into the human mind and are less likely to encounter resistance than non-narrative arguments (Beach et al., 2016; Haven, 2007). In addition, information received that is already formatted as story is less likely to be changed to fit existing stories in the mind (Haven, 2007). Because of a person's proclivity to think in story form, narrative arguments are also easier for the mind to process (Bullock et al., 2021). Mechanisms that affect narrative persuasion include narrative transportation, getting lost in the world of a story (Appel & Richter, 2010; Green & Brock, 2000, 2002) and character identification, cognitively and emotionally taking on the

perspective and experience of a story protagonist (Cohen, 2001; Moyer-Gusé, 2008; Slater & Rouner, 2002).

Roots of Storytelling

Stories have a distinct form in comparison to non-narrative communication such as lectures, research papers, and technical manuals. Narratives are composed of a sequence of events known as the plot (Isbouts & Ohler, 2013). The plot follows a pattern of beginning, middle, and end. Stories have a central character, or protagonist, who must overcome a challenge or series of challenges and undergoes personal transformation in the process. While both narratives and non-narratives may have intellectual appeal, narratives are designed to be emotionally captivating as well. Some messages may have both narrative and non-narrative elements.

Stories have existed since the earliest days of humankind as evidenced by the action-packed adventures of a hunt or battle depicted on cave walls. Isbouts and Ohler (2013) state that some stories garnered a strong resonance within larger communities such as a clan or village. These collective stories became myths that gave sense and meaning to life which helped to build cultures and nations.

Through evolution, humans have developed a propensity to think in narrative form. They have become imbued with "the narrative urge" (Beach et al., 2016, p. 35) which is a natural drive to impose order on experience through story. Psychologists who have studied narrative thought suggest that it is used to explain the past, link it to the present, and from that, anticipate the future (Beach et al., 2016; McAdams, 2001; Oatley, 2021). Early homo sapiens who learned to think in story form were more likely to survive and reproduce (Beach et al., 2016; Oatley, 2021). They were better able to predict what might happen and adapt accordingly. The storied connections of

past, present, and future also give meaning to life which further fuels the narrative urge and shapes the narrative form of life. Sigmund Freud recognized this natural means of thought and expression in people's lives: "it still strikes me myself as strange that the case histories I write should read like short stories... I must console myself with the reflection that the nature of the subject is evidently responsible for this, rather than any preference of my own" (Freud, 1893-1895/1955, p. 160).

Individual and group identity is developed through story structure (McAdams, 1993, 2001). Since a person's mind naturally arranges life in story form, narrative persuasion, or story-based argument is a natural route into that mind (Beach et al., 2016; Haven, 2007). Narrative persuasion can be a potent means of affecting personal and societal change (de Graaf et al., 2012). Used effectively, it can alter beliefs and inspire action. Not all people, however, are swayed by stories. Affecting persuasive outcomes is a highly complex and nuanced area of study (Moyer-Gusé, 2015; Nabi & Green, 2015). Scholars have sometimes found puzzling or conflicting results while studying the dynamics underlying narrative persuasion (see Lien & Chen, 2013; Moyer-Gusé & Nabi, 2010; Schreiner et al., 2018).

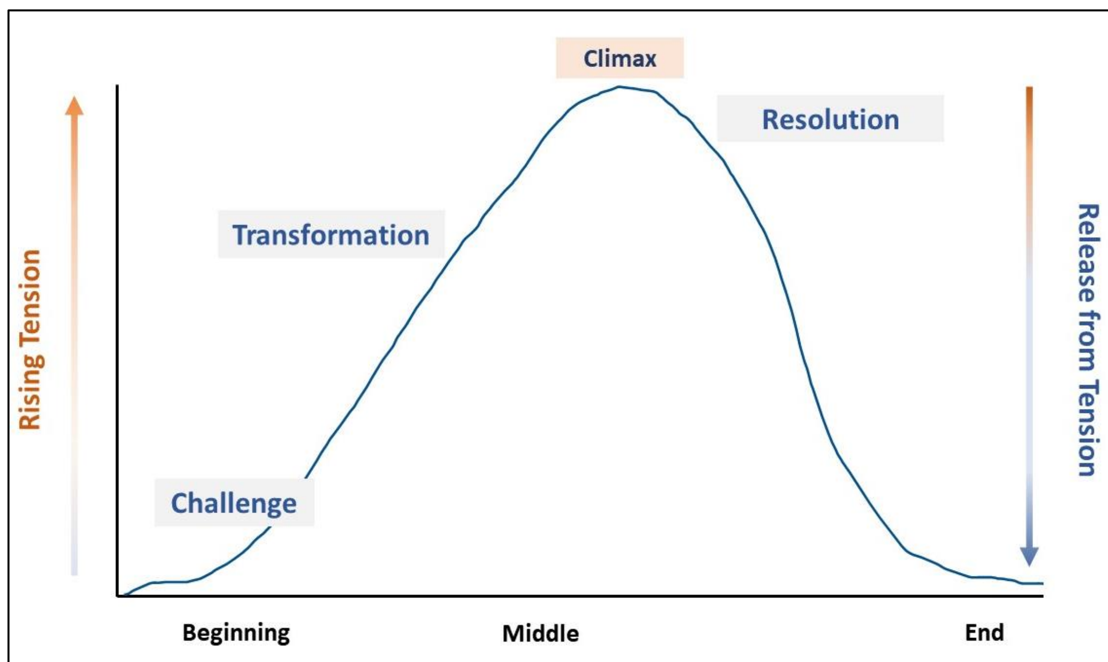
Why Stories Can Persuade

Narrative persuasion can be effective because it conveys an argument the way a mind naturally thinks (Beach et al., 2016; Haven, 2007). The persuasive information is embedded within a specific structure in a way that can impact beliefs, attitudes, and behaviors (Appel & Richter, 2010; de Graaf et al., 2012; Dill-Shackleford et al., 2016). That structure often follows the hero's journey and consists of three primary phases that make up the story arc (Figure 1); (Campbell, 1949/2004; Lichaw, 2016; Ohler, 2013). The first phase of the arc is an initiating question or challenge to the protagonist that creates tension (Ohler, 2013). In the second phase,

the character responds to the challenge through a transformation as tension continues to build while transitioning to hope and possibility. Thirdly, their change through trial leads to resolution, answering the question or solving the problem, which brings tension relief. It is the emotional flow, the affective shift of tension rise and release in the story arc, that engages the audience (Alam & So, 2020; Nabi & Green, 2015) and triggers strong neural rewards (see Haven, 2007).

Figure 1

The Story Arc Structure



When focused on a story, people are less likely to perceive attempts at persuasion (Moyer-Gusé, 2008; Moyer-Gusé & Nabi, 2010). In a study with 367 undergrad students, Moyer-Gusé and Nabi (2010) demonstrated that persuasive information presented through an entertaining narrative was more likely to overcome audience reactance (defense) by reducing impressions that the content was intended to persuade. However, if the audience construes a message to be overly moralistic or that there is an overt attempt at persuasion, they are likely to disengage from the story and reject its message (Moyer-Gusé, 2008).

People construct a personal life-story that connects and explains life events (McAdams, 1988, 1993, 2001). Non-narrative information received by the mind is converted into story form to be overlayed on a person's existing narrative (Haven, 2007). In this process, "Each mind will fill in with its own version of goal, motives, values, beliefs, attitudes, cause-and-effect relationships, etc. That is, each mind will create and remember its own meaning" (Haven, 2007, chapt. 4, section Mad about What's Missing, para. 13). Information that is already in story form does not need to be modified and is more likely to be accepted as intended and, "then it will pass through the conscious mind with few, if any, internal alterations, additions, and restructurings" (Haven, 2007, chapt. 4, para. 6).

Narrative arguments are also easier for the mind to process than non-narratives (Bullock et al., 2021) allowing fluent message analysis. Bullock et al. claim that when the mind requires less effort to process information, it can evaluate the material more quickly. The message also becomes associated with positive feelings. This positive affect creates momentum that promotes even higher levels of message processing. When processing is easier and accompanied by positive feelings, a persuasive effect is more likely. Bullock et al. (2021) hypothesized that processing fluency would mediate the effect of message format (narrative or non-narrative) on persuasive outcomes. They conducted a study with 554 undergraduate students who listened to either a narrative or non-narrative version of an audio message concerning the health risks of consuming high levels of caffeine. The non-narrative version eliminated plot and character elements from the story version. The researchers measured strength of agreement with the concept presented about the dangers of consuming too much caffeine. Results supported the researcher's claims that a narrative message was easier to process and participants were more likely to be persuaded by a narrative than non-narrative.

Narrative Transportation

The influence of the story arc occurs through various mechanisms. One of these mechanisms is narrative transportation (Appel & Richter, 2010; Green & Brock, 2000, 2002). Transportation is the mental and emotional journey of disconnecting from the real world (Dill-Shackleford & Vinney, 2020) and joining with that of a story as “parts of the world of origin become inaccessible” (Green & Brock, 2000, p. 702). To the degree that a person immerses themselves in a story’s world, that story can change their real-life beliefs (Green & Brock, 2000).

Appel and Richter (2010) hypothesized that higher levels of narrative transportation would predict an increased degree of persuasive effect. They further hypothesized that narratives with high emotional content such as the portrayal of strong feelings or enactment of pivotal events in a protagonist’s life increase the effect of transportation on persuasion. In an online study with 133 adults, participants read a story with either high or low emotional content promoting organ donation. In the high emotion condition, the protagonist had registered to become an organ donor shortly before being killed in an auto accident. Participants were accessed for transportation and their beliefs about organ donation. Those who scored higher in transportation were more likely to report beliefs consistent with those promoted in the story. However, this was true only for those in the high-emotion condition and not the low-emotion condition.

The emotional flow, the rising tension and release, of the story arc, contributes to experiencing transportation (Alam & So, 2020; Nabi & Green, 2015). As demonstrated by Appel and Richter (2010), transportation is most effective at producing story-consistent beliefs under conditions of high emotional content such as the portrayal of a critical life event or emotional expression. These greater levels of transportation are most likely to occur when stories induce

internal imagery (Green & Brock, 2002). Therefore, stories that have higher levels of emotional content and foster higher levels of internal imagery are more likely to produce more significant experiences of transportation. This imagery is a mental representation of a concept presented in the story as it is applied by the story receiver and mapped onto their own life story (Haven, 2007). These internal representations can then influence belief.

The experience of narrative transportation and its resulting influence through internalized imagery, however, varies from person to person and story to story (Green & Brock, 2002). These formative scholars in transportation research postulate, “Propensity for transportation by exposure to a given narrative account is affected by attributes of the recipient. Among these moderating attributes is imagery skill” (Green & Brock, 2002, p. 327). Green and Brock also state that a story’s adherence to a narrative structure is essential to evoking high levels of transportation and affective imagery. The influence on beliefs is therefore dependent on the narrative craftsmanship of the author as well as attributes of the receiver. The author’s use of story form and the story receiver’s ability to visually apply the story to their own life are key elements of transportation and the impact on beliefs.

Character Identification

Closely related to the concept of transportation is the idea of character identification. While transported into the story world, a story receiver can detach from their own narrative identity and assume that of the protagonist (Cohen, 2001; Moyer-Gusé, 2008; Slater & Rouner, 2002). Identification is different from similarity which is based on surface characteristics such as race, gender, or age. Identification is an empathetic response and not a homophilic one (Slater & Rouner, 2002; Stephenson, 2003). With empathy, a person feels the same emotions they detect in another (Preston & de Waal, 2002; Wang & Wang, 2015). Therefore, through identification, an

audience member thinks and feels what they perceive that the protagonist thinks and feels. The more a person identifies with a protagonist, the more likely they are to be transported into the story (van Laer et al., 2014).

Identification occurs when an audience member takes on the perspective and experience of a story character as if the story's events were happening to them (Cohen, 2001; Moyer-Gusé, 2008; Slater & Rouner, 2002). The audience yields their sense of self and becomes the character, transcending the boundary between self and other. Through identification "the audience member ceases to be aware of his or her social role as an audience member and temporarily (but usually repeatedly) adopts the perspective of the character with whom he or she identifies" (Cohen, 2001, p. 251). This perspective-taking leads to experience-taking as the audience becomes fully engaged in the character's life. They adopt "the character's thoughts, emotions, goals, traits, and actions and experiencing the narrative as though they were that character" (Kaufman & Libby, 2012, p. 2).

As with transportation, identification can affect the persuasive influence of a narrative. De Graaf et al. (2012) explored the causal role of character identification in narrative persuasion in a study using 120 first-year students at a Dutch university. Participants read one of two versions of a story about a job interview for a computer programmer position, each from the perspective of a different character. One was the job applicant, a young man in a wheelchair. The other was the interviewer, a member of the job selection committee. Participants answered questions that measured their opinions related to issues about disabled persons and the job market. The questionnaire also accessed participants' identification with both characters. Those who read the applicant-perspective version identified more with the applicant. Those who read the interviewer-perspective version identified more with the interviewer. Identification with a

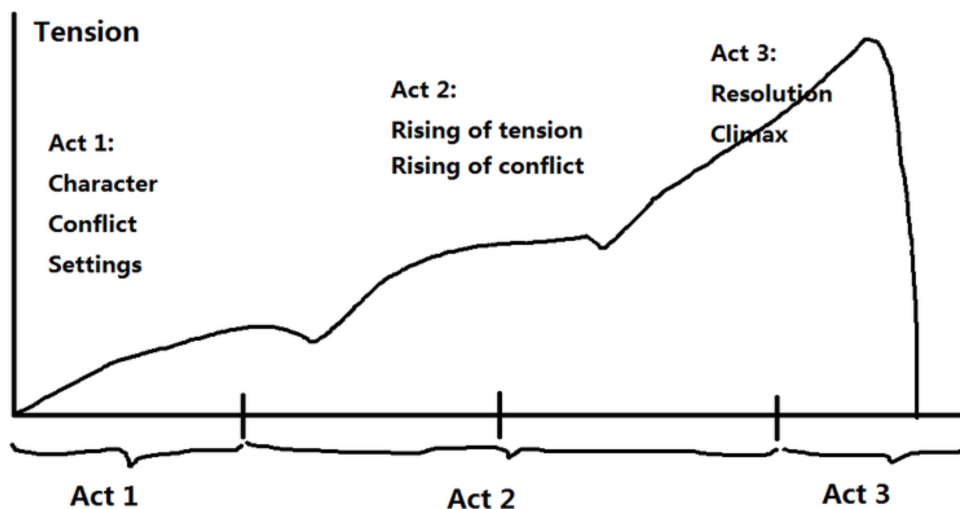
character predicted attitudes consistent with that character's perspective. This finding suggests that identification was a mechanism of persuasion, and that perspective played a role.

Synthesis

Both narrative transportation and character identification signal an emotional investment by audience members. The emotional content itself and the emotional flow stimulate transportation and identification and therefore support narrative persuasion (Alam & So, 2020; Nabi & Green, 2015). Those emotional shifts are inherent in a story arc. While some stories have a single narrative arc, in many there are multiple arcs, multiple instances of rising tension and emotional release, only to have the emotional sequence repeated again and again as the plot builds to a final crescendo (Ohler, 2013). The longer the story, the more arcs may be present (Figure 2).

Figure 2

Tension of the Three Act Structure (3 acts, 3arcs)



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Each arc then builds emotional flow, an affective flux, that encourages transportation and identification. Alam and So (2020) conducted research based on the assertions of Nabi and Green (2015) about the impact of emotional shifts in a narrative, including emotional valence and valence direction. Using a group of 347 university students in the United States, Alam and So (2020) tested their hypotheses that stories with an emotional shift would result in higher levels of both transportation and identification than those without an emotional shift. In addition, transportation and identification would result in more story-consistent beliefs, attitudes, and behavioral intentions. The researchers also measured if the direction of emotional valence (negative to positive shift or positive to negative) influenced transportation or identification. Participants were randomly assigned to read one of four versions of a narrative about the risks of consuming alcohol mixed with energy drinks (AmED). The four conditions were a) no emotional shift – positive valence only, b) no emotional shift – negative valence only, c) emotional shift – negative to positive, and d) emotional shift – positive to negative.

The study illuminated the role of emotional flow, the affective fluctuations, in narrative persuasion. The first two hypotheses were supported (Alam & So, 2020). Participants in the emotional shift conditions registered higher levels of both transportation and identification. Hypotheses 3 and 4 were partially supported. Both transportation and identification were associated with greater levels of story-consistent beliefs and behavioral intentions, with partial effects on story-related attitudes. The researchers also found that the valence change orientation (negative-positive or positive-negative) of emotional shifts did not predict transportation or identification. While transportation and identification were related to emotional fluctuation, the direction of that flow was not significant.

Narrative Engagement

The concept of narrative engagement as introduced by Busselle and Bilandzic (2009) combines and simplifies the ideas of narrative transportation and character identification. Narrative engagement incorporates four aspects of absorption in a story and connection with its characters. These four factors are "narrative understanding, attentional focus, emotional engagement, and narrative presence" (Busselle & Bilandzic, 2009, p. 321). Narrative presence is an audience member's sense that they have left the real world and instead have become a part of the story world, an idea similar to transportation. Emotional engagement includes the idea of feeling for and with the protagonists.

Busselle and Bilandzic (2009) conducted three studies with different groups of college students (N = 443, 223, 179) to access correlations between the original transportation and identification scales compared to their narrative engagement scale. The studies were similar in that participants watched an assigned television show (studies 1 and 3) or feature-length film (Study 2) and then completed the original transportation scale, identification scale, and narrative engagement scale. Each study in progression was used to further refine the narrative engagement scale until it reached its final 12-item format. Those 12 items were used for final comparisons with the transportation and identification results. The 12-item narrative engagement scale was highly correlated with both transportation (r = 0.73 - 0.86) and identification (r = 0.64 - 0.74).

Openness to Experience

Individual differences in audience members can affect the persuasive influence of a story's message (e.g., Appel & Richter, 2010; Bilandzic et al., 2019; Bilandzic & Busselle, 2008). Personality traits, which differ from person to person, may therefore play a role in narrative engagement and thus persuasive outcomes. One trait, openness to experience, holds special promise in helping to explain why levels of narrative engagement vary from person to

person (see Lilgendahl & McAdams, 2011; Weibel et al., 2010). Understanding this influence may help teachers and other content creators develop educational stories that encourage the expression of openness in audience members.

Individual Differences

Though story-based argument has been shown to impact belief change, stories do not affect all people in the same way. In addition, other forms of persuasion can be equally as effective as narrative (Braddock & Dillard, 2016; Dillard, 1998). Braddock and Dillard performed a meta-analysis of 74 studies that researched the influence of narrative-based arguments on persuasive outcomes. Persuasive outcomes were measured as either audience beliefs, attitudes, behavioral intent, or behaviors aligning with those in the story. Their results indicated a positive relationship between the presentation of information in narrative format and these corollaries. However, their study also suggested unidentified moderators that influenced the effectiveness of persuasive stories. A multiplicity of variables and interactions can impact the influence of a story. For example, a story's quality can impact audience attention and engagement (Rutledge, 2021). The narrative topic can also affect persuasive outcomes (Tukachinsky & Tokunaga, 2016).

Not only can story quality and its topic influence effect, but individual differences in audience members can alter the impact of a story (see Dal Cin, 2005; Tukachinsky & Tokunaga, 2016). These personal variations can have a marked effect on the impact of a persuasive story and "the variety of individual differences is nearly boundless" (Goldberg, 2013, p. 1216). Some of this divergence has been studied in narrative persuasion research. For example, Bilandzic and Busselle (2008) investigated transportability, a person's disposition to be easily transported into narrative worlds. They found that across story genres, transportability predicted transportation,

especially for science fiction and crime thrillers. In another study, Appel and Richter (2010) looked at the relationship between an individual's need for affect, transportation, and the persuasion of narrative arguments. Need for affect is defined as a person's propensity to be drawn to emotional experience. The results showed that need for affect was associated with transportation and thus with persuasive outcomes.

Bilandzic et al. (2019) developed a 12-item self-report measure for narrative engageability, defined as the propensity to become engaged with a story. The scale is comprised of four subscale elements including the propensity for presence, emotional engageability, propensity for suspense/curiosity, and ease at accepting unrealism. In one study, 530 participants recruited through a German commercial respondent panel service completed both the Narrative Engageability Scale and the Transportability Scale. Results showed that engageability and transportability were highly correlated ($r = .99$). In another study with 121 German university students, participants completed the Narrative Engageability items along with Need for Affect. Results showed that narrative engageability was positively correlated with the approach dimension of need for affect.

Two additional studies by Bilandzic et al. (2019) compared Narrative Engageability with Narrative Engagement to further understand the relationship of trait differences with narrative experience. Two groups of German university students (N=339, 151) completed a questionnaire of the narrative engageability items and then watched excerpts from television shows, followed by completing the 12-item Narrative Engagement Scale. Narrative Engageability and Narrative Engagement were significantly correlated in both studies ($R = .40$ and .55 respectively). This suggests that although construct names differ, Transportability, Need for Affect, and Narrative

Engageability all support that individual differences can impact the propensity to be influenced by a story.

A History of Personality Study

Philosophers, and later, psychologists studied concepts of individual character dating back to the 18th century and before. Over time, their ideas evolved into the field of personality psychology culminating in the 1920s into the mid-1930s (Barenbaum & Winter, 2013). Personality psychology is defined as the study of people as distinct and integrated beings and focuses on the study of individual differences. Personality describes the combination of characteristics that make each person unique. This distinctiveness, as suggested by the research on the propensity to experience transformation, can be a factor in determining a person's receptiveness to narrative argument via transportation and identification.

Gordon Allport was a pioneer in defining personality, classifying traits that are its composition, and measuring those traits by rating and testing (see Allport, 1921, 1927). He described personality as the whole of one's psychical life and resultant behavior, and the single most defining aspect of the human being (Allport, 1927). He defined traits as "the elementary constituents of personality" (Allport, 1921, p. 443). They are the definable units of personality (Allport, 1927). There are also hierarchies of traits. The higher-order traits serve to influence and regulate the lower-level tendencies. Personality, though defined as stable, also has the capability to adapt and evolve (Beck & Jackson, 2021; Morin & Racy, 2021).

Allport (1921) initially offered definitions of 94 traits that could be quantified and measured. He expressed that through an understanding of these traits within an individual, there is the hope that "the problems of the mechanisms, motives, and modifications of behavior peculiar to the individual may at length be solved (Allport, 1921, p. 441). A trait is a "tendency

to reaction" (Allport, 1927, p. 285) that is quantifiably unique from others. A trait is defined by its particular response to a particular stimulus. It is identified "not by its cause, but by what it causes; not by its roots, but by its fruits" (Allport, 1927, p. 289). Its condition within an individual can be measured by a scale.

Cattell (1943a, 1943b, 1945) extended Allport's work to establish a greater precision and depth in the definition and measurement of traits. He sought to integrate smaller units of behavior by how those elements were bound together (Cattell, 1943a). Cattell described six categories or what he called "unities," meaning classifications, of traits. For example, Cattell classified certain traits, such as assertiveness and acquisitiveness, as dynamic. Cattell (1943b, 1945) described traits as points or small areas on a sphere, with the sphere representing the entirety of a person's observed behavior. Most of these traits can be identified as common, generally held and expressed in much the same way by many. Common traits are measurable using scales that quantify and standardize an individual's disposition for comparison and contrasting personalities among individuals. Cattell used factor analysis to identify the source traits that contribute to underlying personality differences and could be used to predict how an individual will respond to a particular stimulus (Cattell, 1943a, 1943b, 1945).

The Big Five and Openness

Continuing to build on the work of Allport, Cattell, and others, Fiske (1949) outlined a five-factor model of personality. Fiske conducted a statistical analysis of personality traits involving 128 first-year clinical psychology trainees. Participants were assigned to one of six groups who then spent one week with each other where they roomed, ate, and shared activities together. Each participant was interviewed three times, took part in testing, and provided biographical information. Participants were then evaluated by three psychologists, other group

members, and by self-assessment. Data were then analyzed resulting in the categorization of five common recurrent factors.

These five higher-level traits included (a) social adaptability, (b) emotional control, (c) conformity, and (d) confident self-expression (Fiske, 1949). Fiske labeled the fourth higher-level trait as the inquiring intellect. This trait included characteristics of having broad interests, being independent-minded, and being imaginative. Fiske (1949) described these as "attributes of the active, exploring mind" (p. 337). Cattell (1943b) had earlier correlated imaginativeness with analytical intelligence, independence, and wide interests.

Over time, and with the work of psychologists including McCrae and Costa (1987), these ideas continued to evolve into the Big Five personality traits. The Big Five is a widely accepted model for grouping high-level individual characteristics. Like all personality traits, the Big Five are measured on a continuum (McCrae & Costa, 1987; Michelson, 2014). These five traits are

1. Conscientiousness/impulsivity, the extent to which a person is careful, orderly, and self-disciplined versus disorganized and negligent. It is related to delaying short-term gratification for long-term goals (Michelson, 2014; Weibel et al., 2010).
2. Extraversion/introversion. This dimension refers to a person's outward orientation. Extraverts are more outgoing and sociable, whereas introverts are more solitary and introspective.
3. Agreeableness/antagonism. This trait is the degree to which a person is accommodating, cooperative, and helpful in contrast to being critical and contrary.
4. Neuroticism/emotional stability. This characteristic refers to a person's negative emotionality ranging to a more positive and balanced perspective. Those high on

neuroticism are nervous, insecure, and excitable. Emotionally stable people tend to be calm and relaxed, more secure, and comfortable.

5. Openness to experience translated Fiske's concept of inquiring intellect into the fifth Big Five trait (McCrae & Costa, 1987). Openness is measured on a continuum with conventionality (openness/conventionality). Components of openness include imagination, innovation, curiosity, introspection, and openness to sensory experience (Connelly et al., 2014; George & Zhou, 2001; McCrae, 1987). Those who are more conventional tend to have narrow interests, prefer routine, and are closed-minded.

Openness to experience is also positively associated with identity flexibility (Whitbourne, 1986). Identity flexibility is defined as "the process of deliberate and informed comparison of one's present identity commitments with other possibilities" (Whitbourne, 1986, p. 164). In a study of 57 American adults (ages 24–61), participants were evaluated for both openness and identity flexibility in the context of family and work (Whitbourne, 1986). Openness was found to predict identity flexibility. In a separate study of 59 college students in the United States, Tesch and Cameron (1987) also found that openness to experience had a positive correlation with identity exploration and a negative correlation with identity commitment. Participants who scored higher on openness were more likely to exhibit identity flexibility. A person's openness to experience may therefore hold a key role in questioning the validity of the established American narrative about Christopher Columbus considering the associated challenges to national identity.

Transportation and identification rely on a person's ability and willingness to fantasize and be creative. One facet of the trait of openness is a person's propensity to fantasize (Connelly et al., 2014; McCrae & Costa, 1987; McCrae et al., 2005). Openness has also been linked to creativity. In a longitudinal study by McCrae (1987), results indicated that creativity is related to

openness. Participants were 268 male volunteers in the Baltimore Longitudinal Study of Aging (BLSA) who took part in a series of open-ended divergent thinking tests from 1959 to 1972. Beginning in 1980, many of these same participants responded to personality questionnaires and peer and spouse assessments, including measurements of openness to experience. Results showed a strong positive association between divergent thinking reflecting openness and measures of creativity. Multiple additional studies have also shown that openness to experience positively relates to creativity (Tan et al., 2019). People who exhibit openness are also more eager to seek new experiences, feelings, and excitement (McCrae, 1987; Tan et al., 2019).

Weibel et al. (2010) examined the relationship between the Big Five personality traits and a person’s propensity for immersion in mediated environments. The researchers conducted an online survey with 220 participants who were recruited via email. Personality traits were accessed using the NEO-FFI (Neuroticism, Extraversion, Openness Five-Factor Inventory, German version). Participants were also measured for immersive tendency (including aspects of transportation and identification) in virtual environments such as video games. Results showed that the traits of neuroticism, extraversion, and openness were positively related to immersive tendencies. All three traits were also associated with the subdimension of emotional involvement, with neuroticism having the strongest relationship. The subdimension of absorption, similar to definitions of engagement, is the ability to easily focus and block out distractions. Absorption was shown to be associated with openness to experience. Three of the five higher-level personality traits: neuroticism, extraversion, and openness, were related to how an individual experiences media. Openness, however, was the only trait shown to have a significant association with the degree to which a person becomes absorbed in a mediated environment.

In addition, the trait of openness to experience has been associated with differentiated processing (Lilgendahl & McAdams, 2011). Differentiated processing is the degree that a person perceives life events as causing self-growth. It entails interpreting the past in a way that brings purpose and meaning, positive relationships, or cognitive transformation. In their study with 88 midlife adults, ages 34 – 68, Lilgendahl and McAdams discovered that when considering negative life events, those who were more open to experience were more likely to engage in differentiated processing. None of the other traits in the five-factor model shared this correlation. The researchers argued that this was because openness has been associated with greater complexity within the life story and with greater exploratory processing of narratives. Those who are more open to experience may be more open to deeply engaging with the complex stories of history and interpreting those events in positive, transformative ways.

Within-Person Variability

A new development in personality psychology over the past few decades has been the study of within-person variability (Beck & Jackson, 2021; Fleeson, 2001, 2004; Mischel & Shoda, 1995; Morin & Racy, 2021). Within-person variability defines how the same person will act differently in different circumstances. Personality is both stable and flexible. Behaviors stem from stable traits but are also influenced by internal self-processes such as introspection and self-knowledge (Morin & Racy, 2021), as well as external circumstances (Beck & Jackson, 2021; Fleeson, 2001, 2004). The same person can act very differently in different circumstances and settings. For example, a highly extraverted individual might be very outgoing at a party, but less so at a business conference (Fleeson, 2001). The cognitive-affective system model of personality enhances this idea by looking at the psychological aspects of environmental contexts such as feeling threatened or safe (Beck & Jackson, 2021; Mischel & Shoda, 1995).

Within-person variability further explains the influence of personality on behavior. One's behavior and response to a given situation varies outward from central trait points (Fleeson, 2004). Therefore, Fleeson (2001, 2004) explains, an individual's personality traits are not fixed behaviors but a density distribution or average of behaviors, each centered on a given trait level. Trait measurements can be helpful for predicting one's behavioral tendencies. However, the deviation away from the mean point of that trend precludes absolutes.

Fleeson (2001) proposed "that the average individual routinely and regularly expresses all levels of all traits and that this within-person variability is predictable as individual differences in reactions to situational cues" and that "although single behaviors are less predictable, the mean of the distribution is among the most predictable variables in psychology" (p. 1011). To test these ideas, Fleeson conducted a set of studies. In one, participants were introductory psychology students recruited at a small university in the United States. These 46 students were provided with Palm Pilots to record how they behaved and felt at various times throughout the day, five times per day, for 13 days. To do so, participants responded to questions on the small screen by pressing a number. On the last day, participants completed a version of the Big-Five Inventory Scale as well as the Positive and Negative Affect Scale.

People's behavior tends to stretch nearly across the full spectrum (Beck & Jackson, 2021; Fleeson, 2001, 2004). Results reported by Fleeson (2001) showed that people display all levels of extraversion, conscientiousness, and intellect (openness) and most levels of emotional stability and agreeableness in their daily actions. A given individual's behavior varied as much throughout the day at least as much as it did from person to person. However, these varied behaviors could be plotted as a normal distribution. In other words, individuals showed distinct mean tendencies for each trait domain but also varied in behavior from the mean in a highly

predictable pattern. For extraversion, trait behavior depended on trait-relevant cues such as the number of people present. According to Fleeson (2001), this suggests that the expression of other traits, including openness, may be subject to environmental cues. The level of one's trait expression may indicate a level of sensitivity to those cues. For example, a more introverted person may act more extraverted when fewer people are in the room. Likewise, someone who is on average less open to experience may be more open when they feel that an environment is non-threatening.

Digital Storytelling

The emotional shifting of the story arc is essential to create both transportation and identification, the core elements of narrative engagement (Alam & So, 2020; Nabi & Green, 2015). One means of producing the affective content needed to encourage narrative engagement is digital storytelling (DST). DST employs personal digital technology for individuals and groups to share their stories with self-produced videos (La Rose & Detlor, 2021; Lal et al., 2015; Ohler, 2013). Educational digital stories can be shown in the classroom or distributed online via websites and social media. The concept of DST was developed in the 1990s under the auspices of The Center for Digital Storytelling (now StoryCenter) in Berkeley, California (Lal et al., 2015; University of Houston, n.d.). The definition of DST has been expanded by some since its inception to include storytelling through video games, blogs, podcasts, and other forms of digital media. However, in the context of this paper and adhering to the original designer's intent, DST will refer to personal video productions that include images, text, background music, and voiceover narrative to tell a story from an intimate perspective (La Rose & Detlor, 2021; Ohler, 2013). Digital stories are produced with little to no budget using common new media devices such as smartphones, personal computers, and/or tablets. The original concept of digital stories

was for 2-to 4-minute productions (Ohler, 2013). Some have expanded the idea to include lengthier videos of up to 10 (University of Houston, n.d.) or even 40 minutes (see Iseke, 2011).

Audiovisual Components

In delivering a persuasive message, the medium can make a difference. Shen et al.'s (2015) meta-analysis illustrated the persuasive advantage of narratives over non-narratives. However, the impact was only significant for audiovisual messages and not messages in print. Two definitive elements of a digital story are background music and images. Both have been shown to enhance feeling and story involvement. Audiovisual stories incorporating a musical soundtrack with pictures and graphics help elevate that process. Music and imagery in a digital story can enhance emotion, thus narrative engagement, and therefore persuasive effect (see Bartsch et al., 2014; Phinney, 2016; Yoo & Kim, 2014).

In a study with 123 German university students, Bartsch et al. (2014) explored how emotional music impacted reflective thought for participants watching a film segment. One version of the 6 ½ -minute clip included an emotional music soundtrack. The other version was identical except for having no musical background. Those in the musical treatment group reported a higher level of emotion while watching the film. The increased emotions were also associated with increased cognitive processing as indicated by a thought-listing exercise. Another study with 211 university students in the United States employed two groups that each watched nine short videos (Phinney, 2016). The film clips incorporated either an emotionally engaging musical soundtrack or an emotionally neutral soundtrack. The emotional music increased both transportation and identification.

Images have also been shown to add to the emotional impact of a narrative while illustrating its message. Images act as compact bundles of information that can deliver a holistic

message instantaneously (McCloud, 1994), hence the adage "a picture is worth a thousand words." Pictures "stamp us with the marks and textures of the phenomenal world" (Stafford, 2007, p. 11). Compelling imagery can powerfully augment a spoken narrative without directly pictorializing its words (Rutledge, 2019). Yoo and Kim (2014) conducted research to investigate the use of images and text to evoke mental imagery, which can influence cognitive and affective responses, and in turn, behavioral intentions. The participants were 550 female students at a large American university. The study incorporated online consumer ads for clothing featuring either consumption images and/or text. Consumption pictures show the product in use, typically in a setting designed to activate a sensory response. For example, instead of a picture of a swimsuit on a white background, the swimsuit is worn by a model on a beach. Consumption text describes an environment or situation of use such as "imagine stepping into crystal-clear waters."

Participants were randomly assigned to one of four groups (Yoo & Kim, 2014). Each group was exposed to a different ad design (consumption image backgrounds or plain backgrounds, consumption text or no consumption text). Only those ads with consumption image backgrounds had a significant effect on the elaboration and quality of mental imagery. However, a person's style of message processing had a moderating effect. In the consumption image ad groups, participants who were visual as opposed to verbal processors had significantly higher levels of elaboration, but not quality, of mental imagery. The effect of background pictures on elaboration was therefore only significant for visualizers. Mental imagery was related to positive emotion and positive emotion was related to behavioral intentions. The audiovisual components of DST and its intimate storytelling position DST as a unique persuasive tool.

The Extended-ELM and Entertainment-Education

A highly regarded theory of non-narrative persuasion is the elaboration likelihood model

(ELM) introduced by Petty and Cacioppo (1986). The ELM states that there are two paths through which persuasion can occur (Petty & Cacioppo, 1986; Shahab et al., 2021; Slater & Rouner, 2002; Susmann et al., 2021). First, there is a cognitive central route in which a person carefully thinks through the qualities and merits of an argument. Through this message elaboration or scrutiny, one is persuaded or not in accordance with their evaluation of an argument. The second path is the emotional peripheral route which leads to persuasion through simple cues such as the perceived attractiveness or likability of the presenter, or the number of arguments. So, rather than being persuaded by the merits of an argument, one is persuaded, for example, because the message bearer is charismatic or has a lot to say.

According to the ELM, two conditions must exist to initiate the cognitive route's argument elaboration (Petty & Cacioppo, 1986; Shahab et al., 2021; Susmann et al., 2021). The message recipient must be both motivated and able to process the argument. A person is more likely to feel motivated to evaluate an argument when the topic is personally relevant. In addition, a person is more likely to evaluate an argument when they feel individual responsibility towards associated outcomes. They must also be able to scrutinize an argument by having prior knowledge they can relate it to.

In contrast, Slater and Rouner (2002) proposed an extended elaboration likelihood model (E-ELM). The E-ELM broadens the ELM into applications of narrative persuasion (Moyer-Gusé, 2008; Slater & Rouner, 2002). According to the elaboration likelihood model (ELM) proposed by Petty and Cacioppo (1986), an argument must be personally relevant for that person to be motivated to process and assess its merits. The E-ELM contends that the motivation to elaborate identified under the ELM, which is inspired by the personal relevance of an issue, is generated instead by narrative transportation and character identification. In the E-ELM, the story's

message does not need to be personally relevant for the audience to undertake central route processing. Instead, since the message is relevant within the story world and to the story protagonist, it becomes personally relevant to the engaged audience member. Motivation to engage in cognitive route processing then comes not from the personal importance of an issue, but from deep personal involvement with the story and its characters. Within the E-ELM, transportation and identification predict elaboration likelihood.

The E-ELM helps explain the effectiveness of entertainment-education (E-E), a form of narrative persuasion that could be applied to digital storytelling (DST). E-E refers to educational, persuasive messaging embedded in dramatic content (Dill-Shackleford et al., 2015; Moyer-Gusé, 2008; Slater & Rouner, 2002). In E-E, the story engages the audience allowing the educational or moral argument to be delivered with less resistance. The audience may be aware of the story's persuasive intent, but "the drama must be compelling enough to cause such awareness to fade into the background" (Slater & Rouner, 2002, p. 176). As the audience members become engaged in the emotionality of the drama, they are drawn into the story and the lives of its characters. As they become absorbed in that experience, the audience loses touch with the realities of the real world including the persuasive intent of the message. At the same time, the audience member is more likely to evaluate the merits of the argument both because they are less resistant and because it is important within the story that they have become a part of.

E-E exposure can thus lead to story-consistent beliefs. Dill-Shackleford et al. (2015) investigated the use of live theatre E-E for influencing social attitudes. At an American university campus, 163 participants watched one of two plays. The experimental group saw a play dramatizing physical and psychological abuse in intimate partner violence. The story was designed to dispel misbeliefs and illuminate the central role of coercion and control in abusive

relationships. The control group watched a different play focused on the difficulties in a relationship, but with no abuse. Post-treatment surveys indicated that participants who watched the experimental play were less inclined to believe relationship abuse myths and displayed more knowledge about emotional abuse, reflecting the content of the play.

E-E can produce greater message elaboration. Igartua (2010) hypothesized that viewers of a dramatic fictional film with persuasive content would process a persuasive message to the extent they identified with story characters. In the within-subjects study, 54 Spanish college students watched a feature-length dramatic film. Character identification, cognitive elaboration, and cognitive responses were measured afterward. Results showed that audience identification with the story's main character was associated with higher levels of cognitive elaboration (the ELM's central route processing).

In addition to increased message elaboration, E-E can lead to a reduction in counterarguing. Earlier research has shown that transportation may reduce counterarguing as the viewer's cognitive capabilities are immersed in the story world leaving fewer resources available for rebuttal (Green & Brock, 2000; Moyer-Gusé & Nabi, 2010). Transportation also enhances enjoyment, making counterarguing that would interrupt that experience less likely. Similarly, identification should reduce counterarguing as the viewer takes on the perspective and experience of the protagonist (Moyer-Gusé & Nabi, 2010; Slater & Rouner, 2002). Cognitive resources engaged in processing from the protagonist's point of view are less available for counterarguing.

Moyer-Gusé and Nabi (2010) conducted an experiment that tested the effects of transportation and identification using E-E in persuasion. In their study, 367 U.S. undergraduate students, ages 18 – 25. watched either a dramatic narrative or a non-narrative television show.

Both programs addressed the challenges of unplanned teen pregnancy and raising a baby. The dramatic narrative was conveyed through an episode of a popular fiction weekly TV show. The non-narrative was a news-like production developed as a part of a national teen pregnancy prevention campaign. After watching their assigned television show, students completed measurements that included safe sex intentions, safe sex behavior, transportation, identification, and counterarguing.

The researchers had both expected and unexpected results (Moyer-Gusé & Nabi, 2010). As predicted, their study found that viewer identification with the protagonist led to less counterarguing. The researchers also found a surprising result. Moyer-Gusé and Nabi had predicted that transportation would reduce counterarguing as indicated by earlier work. This was not the case. Instead, viewer immersion in the story world produced a greater degree of counterarguing. However, the researchers suggest that the closed-ended design of their counterarguing measure did not allow participants to indicate exactly what elements of the presentation they were rebutting. Participants may have been counterarguing that the presentation was not realistic, or they may have been arguing against a character's problematic decisions and behaviors. This second possibility is supported by Green (2021) who states "counterarguing can be a sign of engagement: individuals may argue against the claims or actions of villains or negative role models, thus supporting the main message or moral of the narrative" (p. 90).

Another possibility is that transportation alone may not lead to a reduction in counterarguing (Moyer-Gusé & Nabi, 2010). Instead, as supported by both Igartua (2010) and Moyer-Gusé and Nabi, identification may be the essential aspect of decreasing counterarguments. Transportation does not necessarily lead to identification (Moyer-Gusé &

Nabi, 2010). A viewer or reader may be engaged in the story world without taking on the perspective and experience of any of its characters. The additional immersion of identification may be necessary to lower counter-message thinking. Moyer-Gusé and Nabi (2010) suggest further research. Nonetheless, entertainment-education (E-E) has been shown to both increase the cognitive processing of an embedded persuasive message and lessen counter-message thinking (Igartua, 2010; Moyer-Gusé & Nabi, 2010).

Statement of the Problem

Narratives can be a powerful means to deliver persuasive educational messaging such as a more complete telling of the Columbus story (e.g., Igartua, 2010; Moyer-Gusé & Nabi, 2010). According to Beach et al. (2016), humans have evolved to think in story form. The emotional rise and release of the story arc can engage audience members in a narrative and encourage transportation and identification (Alam & So, 2020; Nabi & Green, 2015) and thus narrative engagement (Busselle & Bilandzic, 2009). Through these mechanisms, the audience can take on the beliefs and attitudes of the story world and its characters. Story-based argument has been shown to be an effective strategy for producing persuasive outcomes (e.g., Bullock et al., 2021; de Graaf et al., 2012). Digital storytelling could allow educators and others to present those narratives by sharing personal stories (e.g., La Rose & Detlor, 2021; Polletta et al., 2021).

However, stories do not have the same effect on all people. Individual differences can influence one's proneness towards narrative persuasion (e.g., Appel & Richter, 2010; Bilandzic & Busselle, 2008). There has been extensive research in narrative persuasion theory including studies in individual differences such as need for affect (Appel & Richter, 2010), transportability (Bilandzic & Busselle, 2008), and narrative engageability (Bilandzic et al., 2019). However, there is still much to be learned about the relationship of individual differences, including

personality variations, to narrative engagement and persuasive outcomes. One personality trait that has received little attention in narrative persuasion research is openness to experience. This leads to the research question: How does an educational digital story affect audience beliefs through narrative engagement as conditioned by the personality trait openness to experience?

I postulated that presenting sensitive sociohistorical information such as the account of Christopher Columbus in a digital storytelling (DST) format will lead to more audience members adopting the beliefs conveyed than a non-DST format. Furthermore, I proposed that taking on those beliefs will be mediated by a person's narrative engagement which in turn will be moderated by their level of openness to experience. This study will contribute to the body of knowledge in narrative persuasion theory including understanding the impact of openness to experience on narrative engagement and persuasive outcomes.

However, the expression of personality traits such as openness varies in different situations. Personality psychology's within-person variability theory asserts that a person's expression of personality traits varies under different circumstances (Beck & Jackson, 2021; Fleeson, 2001, 2004; Mischel & Shoda, 1995; Morin & Racy, 2021). The cognitive-affective system model further explains that these circumstances trigger psychological factors that affect trait expression (Beck & Jackson, 2021; Mischel & Shoda, 1995). These concepts suggest that a person could be less open to learning while being lectured about a sensitive issue such as Columbus if they feel their identity is being threatened. That same person could be more open to learning while engaged in a story where they can vicariously be exposed to challenging ideas. In the safe environment of a narrative world, otherwise threatening ideas may not feel like a direct affront. The extent of their openness could manifest from a combination of factors including their average degree of openness (trait), the situation (including presentation method), and

psychological factors (how the presentation method and other variables affected their psychological state: threatened or safe).

For educators, understanding the effect of digital stories on persuasive outcomes through narrative engagement moderated by openness to experience may broaden their appreciation of how individual differences affect learning. Understanding the impact of DST through narrative engagement contingent on openness to experience can help teachers and others produce effective educational presentations about sensitive sociohistorical issues. It can support their development of content tailored to promote a non-threatening learning environment that encourages openness and the exploration of challenging ideas.

Hypotheses

I proposed the following hypotheses:

H_1: Educational information about Christopher Columbus presented in a digital story format predicts greater persuasive outcomes than the same information presented in a non-narrative lecture format.

H_2: The effect of an educational digital story on persuasive outcomes is mediated by narrative engagement.

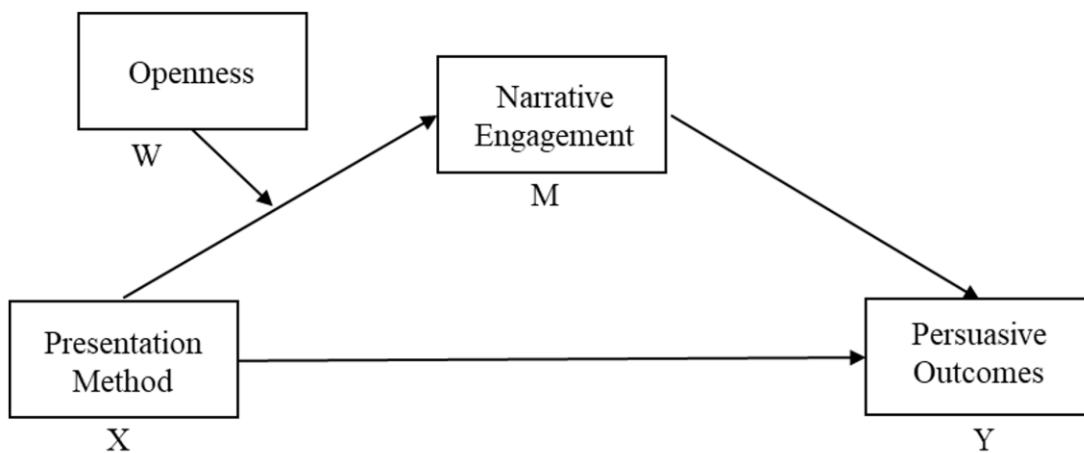
H_3: A person's propensity for narrative engagement is moderated by their openness to experience.

CHAPTER THREE: METHODOLOGY

The purpose of this study was to investigate the direct and indirect relationship of an educational digital story on persuasive educational outcomes in correcting sociohistorical myths such as the tale of Christopher Columbus. I conducted a between-subjects experimental design using a conditional process (moderated mediation) model to examine the effect of a digital story about Christopher Columbus on persuasive educational outcomes through narrative engagement. The model also proposes that the effect of an educational digital story on narrative engagement and persuasive outcomes depends on the degree to which audience members exhibit the personality trait of openness to experience. The research model is based on Hayes (2022) PROCESS model 7, which examines the direct effect of the independent variable (X) on the dependent variable (Y) as well as the indirect effect of X on Y through a mediator (M) as moderated by W (see Figure 3).

Figure 3

Overall Model Using Hayes PROCESS Model 7 - Direct and Indirect Effects



Participants

Participants were adults, ages 18 and older, recruited from within the United States using Prolific (formerly Prolific Academic), an online crowdsourcing platform originally designed for academic research. Hayes (2022) argues that in mediation analysis, there is no consensus on how to determine power to calculate a particular effect size or how much data are needed. He further states that "there is no means of calculating the power of sample size to test model 7" (Hayes, 2022, p. 550). Hayes recommends a realistic approach by collecting the amount of data that resources allow.

However, as a precaution, I conducted a G*Power analysis to determine the total number of recruits needed to detect the direct effect of presentation method on persuasive outcomes. The effect size for this calculation was specified after reviewing effect sizes in similar studies. One study that compared the direct effect of a narrative embedded with facts vs. a non-narrative presentation of facts yielded a medium effect size: $N = 397$, n^2 partial = .072 (Krause & Rucker, 2020). However, other studies using persuasive narratives have shown small effect sizes: $N = 389$, n^2 partial = .056 (Krause & Rucker, 2020) and $N = 132$, n^2 partial = .041, .039 (Igartua & Barrios, 2012).

Using the lowest of these effect sizes, I calculated a conversion of n^2 partial to f as follows: f = sqrt (n^2 partial / 1 - n^2 partial) = sqrt (.039 / .961) = .201. I then conducted an a priori power analysis in G*Power using $\alpha = .05$, $1 - \beta = .80$, and f = .201. Based on these parameters, the desired total sample size for two groups is 198. I then increased the desired sample size of 198 to 250 to allow for a potential rate of 20% incomplete or careless responses that might be discarded.

Measures

Presentation Method

Presentation method was the primary independent variable. Participants were randomly assigned to one of two groups. The digital story group watched a 12-minute video story that presents an educational narrative about Christopher Columbus from a personal perspective. It incorporates digital story elements such as the story arc, images, and background music. These elements are designed to evoke emotional shifts. The control lecture group watched a shorter 7.5-minute video that conveys much of the same historical information regarding Christopher Columbus. However, the lecture was presented as a PowerPoint video. It did not include a personal story and had fewer images. In addition, the lecture did not incorporate other digital story elements such as a story arc and background music designed to evoke emotional shifts. (See Appendix A for both video scripts and YouTube links.)

The two video versions were made specifically for use in this study as I wanted to test effects of an educational digital story (DST), which is by definition self-produced (La Rose & Detlor, 2021; Lal et al., 2015; Ohler, 2013). Other research comparing narrative to non-narrative effects has utilized experimental materials produced for the study as opposed to existing or previously studied media. As with this present study, those materials used manipulated content and structure to form contrasting presentation methods (e.g., Krause & Rucker. 2020; Lien & Chen, 2013).

Narrative Engagement

Transportation and identification can be measured as separate constructs, however, for simplicity and to help minimize participant fatigue, I used the Busselle and Bilandzic (2009) narrative engagement scale which amalgamates both and also reflects narrative comprehension,

an essential factor in educational media messaging. Narrative engagement is a measure of a person's involvement with the story and its characters. Busselle and Bilandzic developed and tested their scale beginning with 40 items from existing measurements, including the original transportation and identification scales. After an initial exploratory analysis, in two confirmatory factor analysis studies, they eliminated items that were not sufficiently distinct. These studies resulted in a final version of 12 line items with four distinct dimensions and validation of the measurement. The scale has been used in multiple narrative persuasion studies since then (e.g., Bilandzic et al., 2019; Sukalla et al., 2016; Tiede & Appel, 2020).

In my study, narrative engagement was analyzed as a potential mediator. The 12 response statements were measured with a 7-point Likert-type scale ranging from 1 = *disagree strongly* to 7 = *agree strongly*. The scale measures four dimensions of narrative engagement with three facets under each. The first of these dimensions, narrative understanding, defines how easily audience members comprehend the story. As an example, "At points, I had a hard time making sense of what was going on in the program" (R, reverse scored; Busselle & Bilandzic, 2009, p. 337). The second dimension of narrative engagement, attentional focus, measures viewer attentiveness or distraction. For example, "I had a hard time keeping my mind on the program" (R; Busselle & Bilandzic, 2009, p. 337). Thirdly, emotional engagement items indicate how strongly participants feel what the characters feel (empathy) and how strongly participants feel for the characters (sympathy). One emotional engagement item reads "The story affected me emotionally" (Busselle & Bilandzic, 2009, p. 337). The fourth measurement aspect of narrative engagement is narrative presence. An example of narrative presence is "During the program, my body was in the room, but my mind was inside the world created by the story" (Busselle & Bilandzic, 2009, p. 337). Each of the three-item subscales can be utilized as an individual

measurement, however I primarily focused on the overall narrative engagement of participants although subscale results will be discussed. In addition, I modified some line items to provide a mixture of reverse and non-reverse scoring within each dimension (e.g., Soto & John, 2017b). (See Appendix C for both the original and modified measurements.)

Openness to Experience

The personality trait of openness to experience was tested for its moderating effect on narrative engagement. It was measured through the Open-Mindedness subscale of the Big Five Inventory-2 Short Form (BFI-2-S; Soto & John, 2017a, pp. 79 - 80). These researchers chose the term open-mindedness instead of openness to experience to clarify that the measured trait refers to an individual's mental life as differentiated from their social life which would apply to the personality trait of extraversion (Soto & John, 2017b). Like other openness tests, Soto and John's open-mindedness subscale measures the elements of intellectual curiosity, aesthetic sensitivity, and creative imagination. For example, "I am someone who is complex, a deep thinker" (Soto & John, 2017a, p. 80). The Soto and John measurement includes six items on a 5-point Likert-type scale ranging from 1 = *disagree strongly* to 5 = *agree strongly*. I modified their original to a 7-point scale to be consistent with other measurements in this study (see Appendix D).

The original Next Big Five Inventory (BFI-2) includes a total of 60 items, 12 per each of the five high-level personality domains of extraversion, agreeableness, conscientiousness, negative emotionality (sometimes referred to as neuroticism), and open-mindedness (Soto & John, 2017b). Each of these domains such as open-mindedness can also be used as a stand-alone measurement. Within the domain of open-mindedness as defined by Soto and John are facets of intellectual curiosity, aesthetic sensitivity, and creative imagination. These five traits align with several other Big Five models such as DeYoung et al. (2007) and McCrae and Costa (1987). The

short form BFI-2-S measures 30 items, 6 each per trait domain (Soto & John, 2017a). It was derived from the BFI-2 through a series of tests. Soto and John (2017a) conducted two virtually identical studies. For one study they recruited a total of 2,000 adults online from five English-speaking nations (United States, Canada, United Kingdom. Australia, and New Zealand). In the other online study, participants were 423 students recruited from introductory psychology courses at a large U.S. university. All participants completed the full Next Big Five Inventory (or Big Five Inventory-2; BFI-2) from Soto and John (2017b).

The BFI-2-S was designated from a subset of items taken from the BFI-2 (Soto & John, 2017a) based on the highest correlation of results from the larger BFI-2. The BFI-2-S retained 93% of the original BFI-2's reliability and external validity, while its shortened format provides crucial benefits in reducing respondent fatigue and careless answering. With the BFI-2-S, Soto and John (2017a) recommend recruiting larger participant samples for sufficient statistical power. From their example, consider a study with an expected zero-order correlation (correlations involving more than two variables) of .20 between a domain-level scale (such as openness) and an external predictor. For 80% power to find this effect size, using the full BFI-2 scale would require about 190 participants. The BFI-2-S scale would require about 220 participants, a 16% increase. Therefore, I considered this additional 16% in my participant recruitment numbers above.

Additional Big Five Personality Traits

Although openness is the primary focus of this study, all five traits in the Big Five Inventory were measured. To lessen participant fatigue, I used the Big Five Inventory-2 Extra Short Form (BFI-2-XS) to measure the remaining four traits: extraversion, agreeableness, conscientiousness, and negative emotionality (see Soto & John, 2017a; see Appendix E). The

BFI-2-XS, like the BFI-2-S, was derived from the larger BFI-2 but measures three facets per domain instead of the six used in the BFI-2-S. The BFI-2-XS retains about 84% of the original BFI-2's reliability and external validity.

Persuasive Outcomes

Persuasive outcomes was the dependent variable. Its score was derived from participant levels of agreement or disagreement with content of the digital story or control PowerPoint lecture that is contrary to traditionally held beliefs about Columbus. Agreement with the educational message is accessed by a 7-item Likert-type rating scale from 1 = *disagree strongly* to 7 = *agree strongly*. Example items are "Christopher Columbus should be recognized as a great hero in American history" (R) and "Christopher Columbus did not discover America" (see Appendix F).

Procedures

Data collection was administered online through Qualtrics XM. Participants were first presented with an informed consent letter. After reading the consent information and indicating agreement, each participant was randomly assigned by Qualtrics to one of two groups. Each group watched one of two versions of my self-produced educational video about Christopher Columbus and the native Caribbean Taíno whom Columbus encountered. One version was a 12-minute digital story (time includes ending credits and references). The other version was a 7.5-minute PowerPoint lecture presentation. The video run time was a concern in maintaining audience attention and interest. However, a part of this study was in evaluating the effectiveness of a non-professional self-produced video using story arc structure to be able to do just that. In similar studies using professional productions, research audiences watched television dramas (*Rescue Me, CSI*, and *ER*) in lengths of approximately 45 minutes (see Busselle & Bilandzic,

2009) and a feature-length film (*Camino*) of 2 hours, 33 minutes (see Igartua & Barrios, 2012).

The digital story version was the story of my personal discoveries regarding the Columbus myth. This includes information from reading translations of period documents such as journals and letters, as well as a trip to New York City where I stayed with my son, met my new granddaughter, went to the Columbus Day parade, and attended a presentation about the Taíno at the Smithsonian National Museum of the American Indian. All video footage and images taken at the museum were used with permission. The second video version has much the same factual information about Columbus and the Taino but was presented in a recorded PowerPoint lecture format without a personal context, story arc form, or background music.

The online study was set up so that participants could not advance until sufficient time had elapsed to watch their entire assigned video. After the proper time had transpired (7.5 or 12 minutes), participants were asked to confirm that they watched the entire video and if they had experienced any technical difficulties such as no sound or the video freezing. They were then asked a short open-ended attention check opinion question about the video and a simple multiple-choice attention check question (see Appendix B). Next, participants completed the 40-item survey (Appendices C – G). Data analysis was conducted using SPSS and the PROCESS macro developed by Andrew F. Hayes (Hayes, 2022). The macro is designed to simplify the procedures for mediation, moderation, and conditional process (mediation/moderation interaction) analysis through the use of one or more of its 92 preset analysis models.

CHAPTER FOUR: RESULTS

To understand the potential for digital storytelling in changing cultural beliefs, the research question for this study was, How does an educational digital story affect audience beliefs through narrative engagement as conditioned by the personality trait openness to experience? To answer this question, I proposed three hypotheses:

H_1: Educational information about Christopher Columbus presented in a digital story format predicts greater persuasive outcomes than the same information presented in a non-narrative lecture format.

H_2: The effect of an educational digital story on persuasive outcomes is mediated by narrative engagement.

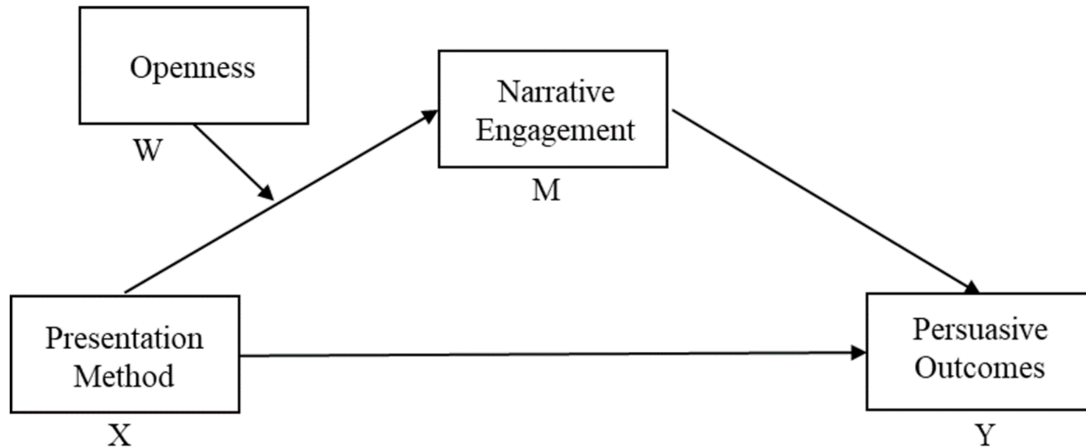
H_3: A person's propensity for narrative engagement is moderated by their openness to experience.

Reporting

Of the 250 participants recruited through Prolific, the final number of respondents for analysis was 246 (N=246). One participant's responses were not recorded due to a technical issue. Results from three other participants were discarded due to failing both attention checks. Participants' gender was 46.3% female, 48.4% male, and 4.9% non-binary, while one chose not to answer. Qualtrics randomizer software randomly assigned participants to one of two presentation method groups. Group 1 watched the non-narrative PowerPoint lecture video (n = 124), and Group 2 watched the narrative, educational digital story (n = 122). Data were analyzed

using SPSS and the Hayes PROCESS macro model 7 of moderated mediation (see Figure 4 below).

Figure 4
Overall Model Using Hayes PROCESS Model 7 - Direct and Indirect Effects




```
Model  : 7
    Y  : Persuasive Outcomes (DV, pers_out)
    X  : Presentation Method (IV, pres_meth)
    M  : Narrative Engagement (Mediator, nar_eng)
    W  : Openness to Experience (Moderator, opn_exp)

Sample
Size:  246
```

The result of that analysis was as follows:

Submodel 1: Testing the Direct Effect of Presentation Method on Persuasive Outcomes

Table 1
Direct Effect of X on Y

Effect	se	t	p	LLCI	ULCI
.086	.118	.727	.468	-.147	.318

In this first submodel, there was a slight, but not significant, linear relationship between presentation method and persuasive outcomes. Therefore, presentation method alone was not a

significant predictor of persuasive outcomes ($b_1 = .086$, s.e. = .118, $p > .05$). There was no direct effect (see Figures 5 and 6 below).

Figure 5
Direct Effect of X on Y

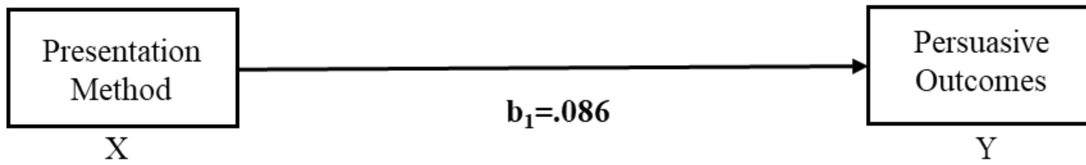
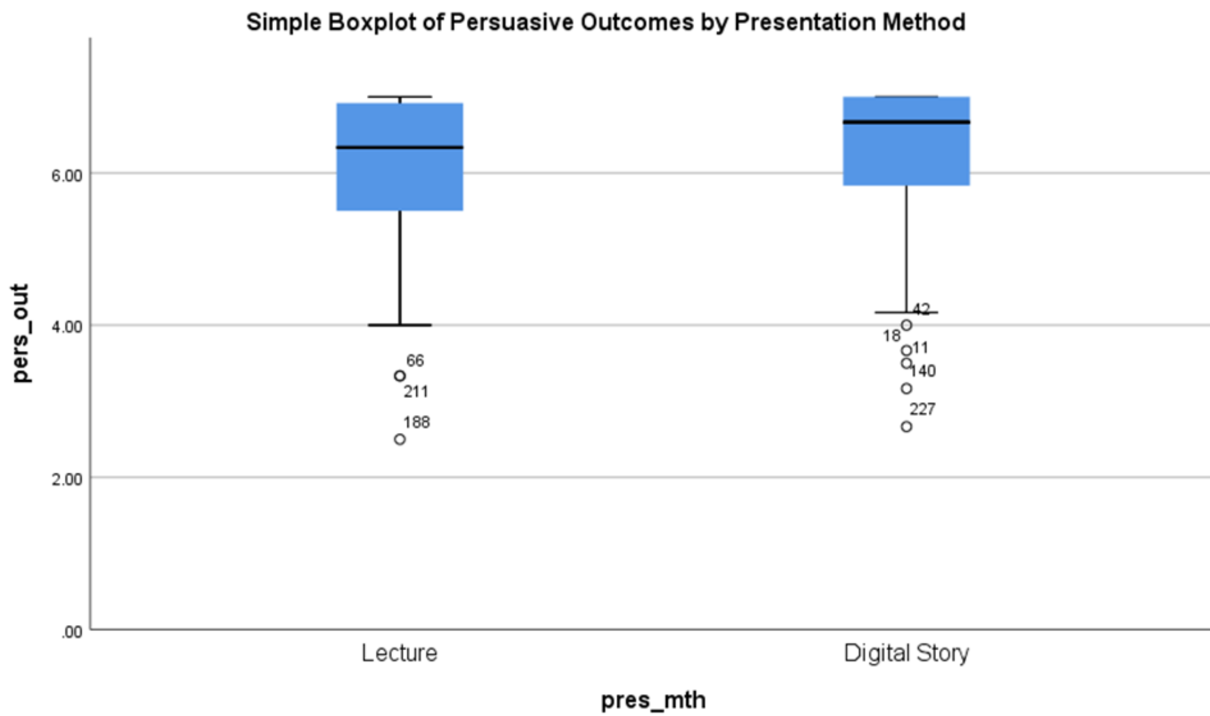


Figure 6
Boxplot Showing Slight Linear Relationship



Submodel 2: Testing the Effects of Presentation Method and Narrative Engagement on Persuasive Outcomes

Table 2
Effects of X and M on Y

Outcome Variable: per_out

Model Summary

R	R-sq	MSE	F	df1	df2	p
.242	.058	.829	7.534	2.000	243.000	.001

Model

	coeff	se	t	p	LLCI	ULCI
constant	5.099	.305	16.711	.000	4.498	5.700
pres_meth	.086	.118	.727	.468	-.147	.318
nar_eng	.219	.060	3.624	.000	.100	.338

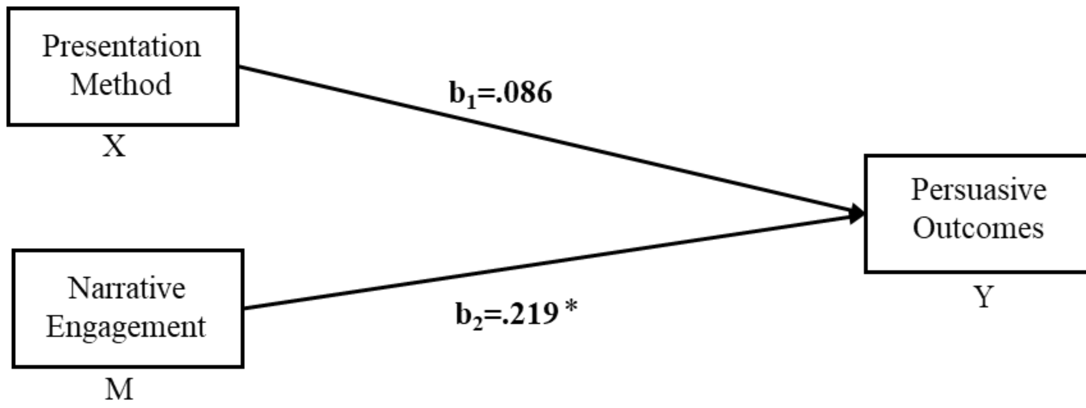
Test of X by M interaction:

F	df1	df2	p
.494	1.000	242.000	.483

In this second submodel, presentation method and narrative engagement combined were significant positive predictors of persuasive outcomes, $F(2,243) = 7.53$, $p = .001$. Although presentation method alone was not a significant predictor of persuasive outcomes ($b_1 = .086$ s.e. $= .118$, $p > .05$), the addition of narrative engagement to the model was significant ($b_2 =. 219$, s.e. $= .060$, $p < .001$; see Figure 7 below). There was no significant interaction effect between the presentation method and narrative engagement, $F(1,242) =.494$, $p > .05$ (see Figure 8 below).

Figure 7

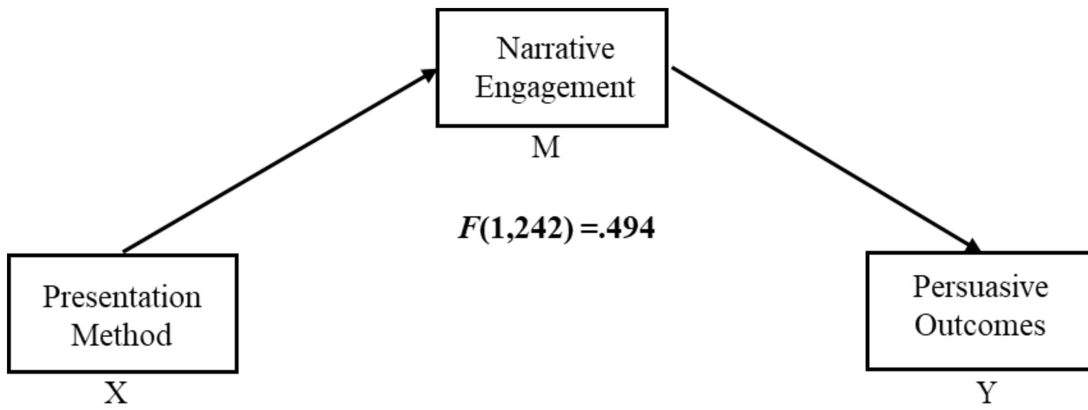
Effect of X on Y and Effect of M on Y



* = p < .001

Figure 8

Interaction Effect of X and M on Y



Submodel 3: Testing the Moderating Effect of Openness to Experience

Table 3
Moderating Effects of Openness to Experience

Outcome Variable: nar_eng

Model Summary

R	R-sq	MSE	F	df1	df2	p
.297	.088	.883	7.777	3.000	242.000	.000

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.961	.060	82.774	.000	4.843	5.079
pres_meth	.357	.120	2.980	.003	.121	.593
opn_exp	.185	.059	3.147	.002	.069	.300
Int_1	.232	.117	1.975	.049	.001	.463

Product terms key:
Int_1: pres_mth (X) opn_exp (W)

Test of highest order unconditional interaction:

	R2-chng	F	df1	df2	p
X*W	.015	3.900	1.000	242.000	.049

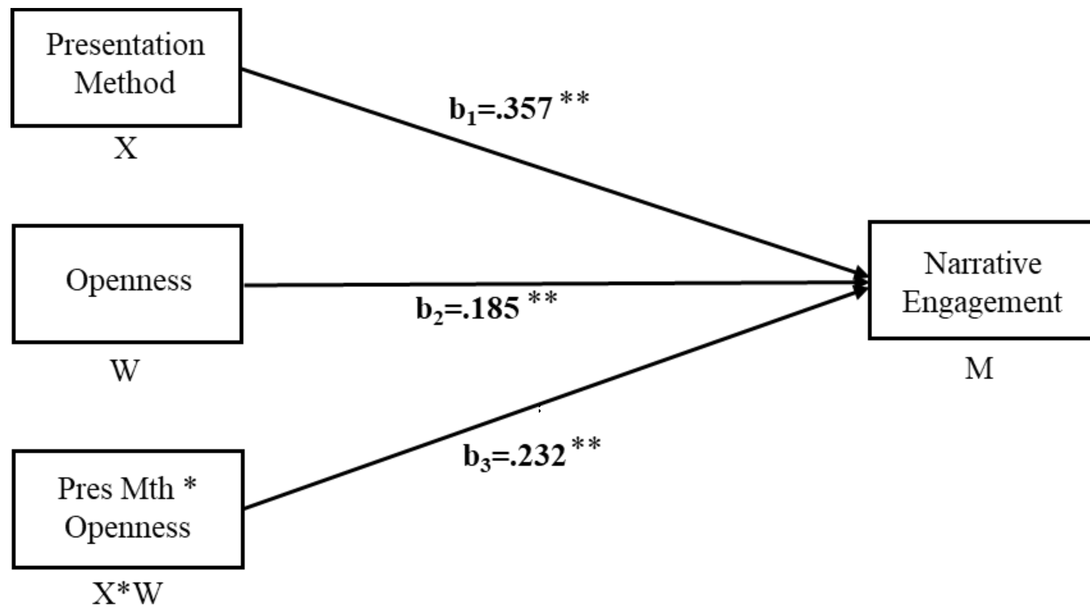
Focal predict: pres_mth (X)
Mod var: opn_exp (W)

Conditional effects of the focal predictor at values of the moderator:

opn_exp	Effect	se	t	p	LLCI	ULCI
-1.027	.119	.170	.701	.484	-.216	.454
.000	.357	.120	2.980	.003	.121	.593
1.027	.595	.170	3.505	.001	.261	.929

In submodel 3, presentation method was a positive and significant predictor of narrative engagement for cases falling at the mean of openness to experience ($b_1 = .357$, s.e. = .120, $p < .05$). Openness to experience was a positive and significant predictor of narrative engagement ($b_2 = .185$, s.e. = .059, $p < .05$; see Figure 9 below). The interaction of presentation method and openness to experience on narrative engagement was also significant, $b_3 = .232$, s.e. = .117, $F(1,242) = 3.900$, $p < .05$ (see Figure 10 below).

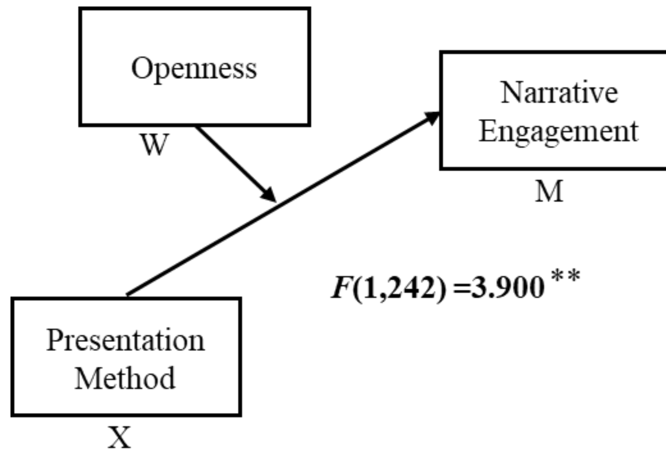
Figure 9
Moderating Effects



** = p < .05

Figure 10

*Moderating Effects X*W Interaction*



** = p < .05

Full Model: Testing the Conditional Effect of Presentation Method on Persuasive Outcomes through Moderated Mediation

Table 4

Direct and Indirect Effects of X on Y

Direct Effect of X on Y

Effect	se	t	p	LLCI	ULCI
.086	.118	.727	.468	-.147	.318

Conditional indirect effects of X on Y:

Indirect Effect
pres_mth → nar_eng → pers_out

opn_exp	Effect	BootSE	BootLLCI	BootULCI
-1.027	.026	.038	- .041	.111
.000	.078	.035	.022	.158
1.027	.130	.053	.044	.251

Index of moderated mediation:

	Index	BootSE	BootLLCI	BootULCI
opn_exp	.051	.029	.001	.117

The complete model (Table 4 above, illustrated in Figure 4, pg. 46) indicates the Index of Moderated Mediation was .051, bootstrap 95% CI [.001 - .117]. Since zero does not fall within the lower and upper bound of the bootstrap 95% CI, the test was statistically significant because zero (no effect) is not a probable outcome. This is evidence of moderated mediation.

The conditional indirect effect of presentation method on narrative engagement at -1sd of openness to experience was .026; bootstrap 95% CI [-.041, .111]. The effect was not statistically significant because zero falls within the lower and upper bounds of the interval.

The conditional indirect effect of presentation method on narrative engagement at the mean of openness was .078; bootstrap 95% CI [.022, .158]. The effect was statistically significant because zero does not fall within the lower and upper bounds of the interval.

The conditional indirect effect of presentation method on narrative engagement at +1sd of openness was .130; bootstrap 95% CI [.044, .251]. The effect was statistically significant because zero does not fall within the lower and upper bounds of the interval.

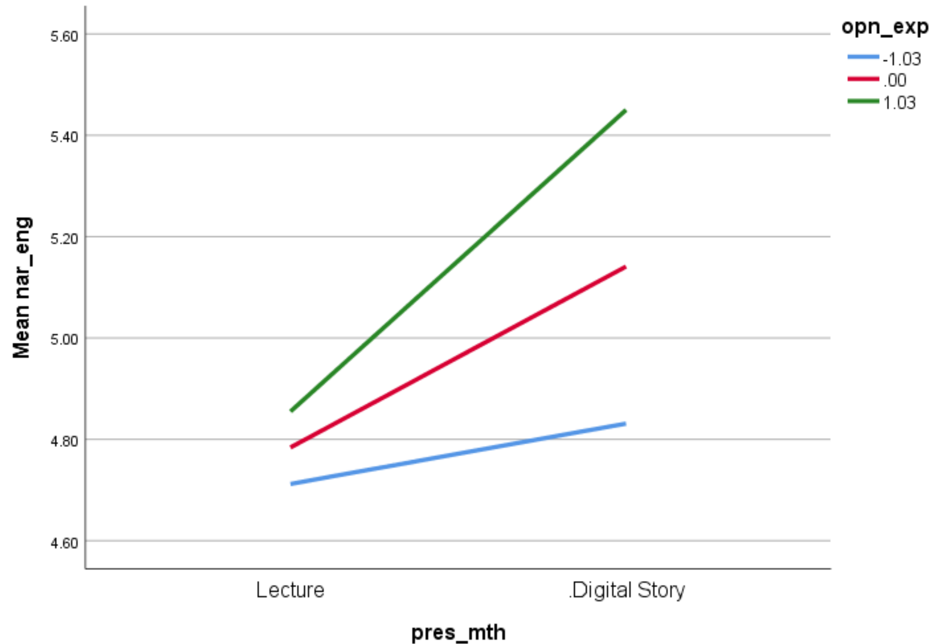
There is no direct effect of presentation method on persuasive outcomes ($p > .05$). However, there is a conditional indirect effect of presentation method on persuasive outcomes mediated by narrative engagement as moderated by openness to experience.

In Figure 11 below, the slope at one SD below the mean of openness to experience is .026 (blue line), at the mean is .078 (red line), and at one SD above, the mean is .130 (green line). Moving from lower openness to higher openness, the slope becomes more pronounced,

indicating a greater effect of the digital story presentation method on narrative engagement as openness to experience increases (see also Table 4 above).

Figure 11

The Effect of X (Presentation Method) on M (Narrative Engagement) at Levels of W (Openness)



Results Related to Hypotheses

H_1: Educational information about Christopher Columbus presented in a digital story format predicts greater persuasive outcomes than the same information presented in a non-narrative lecture format.

Submodel 1 shows no direct effect of the digital story presentation method on persuasive outcomes. However, submodels 2 and 3, as well as the full model, indicate an indirect effect of the presentation method on persuasive outcomes through narrative engagement conditioned by openness to experience. Therefore, the first hypothesis is partially supported.

H_2: The effect of an educational digital story on persuasive outcomes is mediated by narrative engagement.

Submodel 2 indicates no interaction between presentation method and narrative engagement in predicting persuasive outcomes. However, submodel 3 and the full model indicate an indirect mediating effect of narrative engagement on persuasive outcomes when conditioned by openness to experience. As the effect of presentation method on persuasive outcomes depended on narrative engagement, this is full (and not partial) mediation. Hypothesis 2 is supported.

H_3: A person's propensity for narrative engagement is moderated by their openness to experience.

Submodel 3 shows that openness to experience was a positive and significant predictor of narrative engagement. It also shows the interaction of presentation method and openness on narrative engagement was significant. In addition, the complete model provides evidence of moderated mediation. Therefore, Hypothesis 3 is supported.

CHAPTER FIVE: DISCUSSION

The legend of a heroic Christopher Columbus is woven into the American national identity. However, that myth excludes many disturbing realities about Columbus uncovered by historians (see Bigelow, 1998; Stannard, 2006; Zinn, 2015). This study examined the effect of how those uncomfortable facts could be presented to an audience in a way that would influence beliefs about Columbus. Specifically, it looked at how an educational digital story, following a narrative format, could influence audience beliefs about Columbus compared to the same information presented in a non-narrative lecture. Furthermore, it examined the mediating role of narrative engagement as both a result of the presentation method digital story and, in turn, as a predictor of persuasive influence on audience beliefs. This study also explored how the personality trait openness to experience affected the strength of the presentation method on narrative engagement and, thus, indirectly on persuasive outcomes.

Narrative identity theory states that a person's identity comprises events sequenced together in story form. Narrative identity includes both personal and collective stories. Collective stories consist of group narratives such as shared memories, ideology, and culture rooted in shared history. However, when that history is distorted, so are its lessons. With that, the opportunity to apply those lessons in creating a better future is lost. This study sought to understand if digital storytelling could be a way to successfully impact beliefs about the Columbus myth and bring to light the embedded lessons. It also sought to understand the conditional roles of narrative engagement and openness to experience in that process. With this information, teachers and other content creators can cognize how to use digital narratives to convey historical truths and help build a society more capable of applying its historical lessons.

Summary of Findings

The findings of this present research show that educational information about Christopher Columbus presented in a digital story format did not have a direct effect on subsequent audience beliefs about Columbus. However, there was a total significant effect when the presentation method was combined with narrative engagement. This suggests that the effect of the digital story was fully mediated, or determined by, the degree to which an audience member was engaged. In addition, an individual's openness to experience influenced the level or strength of that narrative engagement.

Therefore, educational information about Christopher Columbus presented in a digital story format can result in greater persuasive outcomes than the same information presented in a non-narrative lecture format when the story is crafted in such a way that it creates the experience of narrative engagement. The persuasive effect mediated by narrative engagement is also moderated by the personality trait of openness to experience. Narrative engagement was the process through which the digital story affected beliefs about Columbus. The extent of narrative engagement and, thus, persuasive outcomes was due to a person's openness to the experience.

Interpretation of Findings

The findings support previous research indicating a digital story presentation method can have a positive effect on persuasive outcomes through narrative engagement. The findings also confirm previous results suggesting that individual differences, such as one's degree of openness to experience, play a role in achieving the experience of narrative engagement.

The Effect of Presentation Method on Persuasive Outcomes

Early humans evolved to think narratively (Beach et al., 2016; Oatley, 2021). Therefore, people often think in narrative form. Freud recognized that his patients recounted their life

histories through stories (Freud, 1893-1895/1955). Scholars have argued that since the human mind naturally thinks in story form, stories then are a natural way into that mind (e.g., Beach et al., 2016; Haven, 2007). A study by Bullock et al. (2021) found that people process narratives more easily than non-narratives, leading to greater persuasive effects. Another study by Moyer-Gusé and Nabi (2010) discovered that a persuasive argument embedded in an entertaining narrative could diminish audience resistance to persuasion by lowering perceptions that the material was intended to persuade. Scholars also suggest that the rising tension and subsequent emotional release of the story arc engages the audience (see Alam & So, 2020; Haven, 2007; Nabi & Green, 2015). Images and music help promote that emotional flow (Bartsch et al., 2014; Phinney, 2016; Yoo & Kim, 2014). The story arc, images, and music are all elements of a digital story (La Rose & Detlor, 2021; Ohler, 2013).

These assertions were all supported by the present study with some limitations. The experimental educational digital story predicted persuasive outcomes when audience members engaged with the story. Those who watched the digital story presentation were more likely to engage. However, presentation method alone did not predict persuasiveness but required an emotional connection to the story as measured by narrative engagement. Therefore, the experimental presentation method had an indirect but not a direct effect on persuasive outcomes. Stories that are well-written and well-told are most successful at engaging their audience (Rutledge, 2021). These stories are the most effective at delivering their arguments and are most likely to influence attitude change.

The Mediating Effect of Narrative Engagement

Narrative engagement encompasses the concepts of narrative transportation and character identification, along with narrative understanding and attentional focus (Busselle & Bilandzic,

2009). Transportation, or detaching from the real world and becoming absorbed in the world of a story, leads to taking on the beliefs of that narrative world (Appel & Richter, 2010; Green & Brock, 2000, 2002). Similarly, identifying with a story character by taking on their perspective and experience can also predict adopting the character's beliefs (Cohen, 2001; Moyer-Gusé, 2008; Slater & Rouner, 2002). The aspects of narrative engagement include narrative presence, which correlates with transportation, and emotional engagement, which involves identification (see Appendix C).

In this present study, the digital story presentation method did not directly predict persuasive outcomes. Only when the presentation method was combined with narrative engagement was there a significant positive effect on audience beliefs. Since the presentation method relied on the participant experiencing narrative engagement, this indirect effect is evidence of full mediation. This finding agrees with the previous work of scholars indicating that stories evoking transportation, identification, or narrative engagement can affect audience beliefs (e.g., Busselle & Bilandzic, 2009; Cohen, 2001; Green & Brock, 2000).

The Moderating Effect of Openness to Experience

A meta-analysis by Braddock and Dillard (2016) of 74 studies on narrative persuasion found a positive effect of narrative-based arguments on audience beliefs, attitudes, behavioral intent, or behaviors. Their study also indicated, however, that unidentified moderators could influence the impact of stories on persuasive outcomes. Dal Cin (2005) and Tukachinsky and Tokunaga (2016) argued that individual variances can alter how a story impacts different audience members. Studies on the need for affect (Appel & Richter, 2010), transportability (Busselle & Bilandzic, 2009), and narrative engageability (Bilandzic et al., 2019) all demonstrate similar relationships.

Previous scholarship portends that divergences in the Big Five personality trait of openness to experience could influence narrative engagement. Openness is related to creativity which involves a willingness to venture from the known into the unknown (Ivcevic & Brackett, 2015; McCrae, 1987; Tan et al., 2019). A similar experience occurs during narrative engagement as the audience mentally and emotionally shifts from the known world and their own identity into that of the story and its characters. Openness has also been associated with identity exploration (Tesch & Cameron, 1987) and identity flexibility (Whitbourne, 1986), both of which may be associated with identification with a protagonist. Those who exhibit openness are also more willing to experience new realities and sensations (McCrae, 1987; Tan et al., 2019), such as the new realities and sensations of a story world.

Consistent with this research, results from this present study show that openness to experience predicted narrative engagement. The depth of a person's engagement, which in turn predicted persuasive outcomes, was dependent on their degree of openness to experience. Previous research has shown that individual differences influence how a story affects different people. The level of openness to experience was the individual difference tested in this study, chosen for its links to creativity, imagination, and cognitive processing. Results confirmed previous findings on the relationship of individual difference with aspects of narrative engagement and persuasive outcomes (e.g., Appel & Richter, 2010; Bilandzic et al., 2019; Lilgendahl & McAdams, 2011).

Limitations

This study was limited by the use of a single story/lecture content. Shifting national identity is about more than just the Columbus tale. Subject matter can affect the degree of a story's influence (Tukachinsky & Tokunaga, 2016). Confronting topics more controversial than

the Columbus myth may make audience members feel less safe and thus less open to experience. Therefore, the results may have limited applicability when used with other provocative subjects.

The time discrepancy between the two video stimuli was also a limitation. The digital story version was 12 minutes, whereas the PowerPoint lecture version lasted 7 ½ minutes. The length of time may have had a confounding effect on participants who watched the longer version. The study design intentionally manipulated the message format of digital story vs. lecture which created an unintentional difference in the message length. However, any effect from the time discrepancy was not apparent in the final results showing the indirect effect of presentation method on persuasive outcomes through narrative engagement. However, it may have confounded the insignificant direct effect result through cumulative fatigue while answering the survey items resulting in more careless responses.

A design limitation of this study was the lack of accounting for previously held views about the Columbus story. The recent rise in awareness of the historical facts surrounding Columbus has resulted in the removal of over 40 Columbus statues and an official White House declaration of Indigenous Peoples' Day (see The White House, 2021; Youjin et al., 2021). A pre-test/post-test or other measurements allowing participants to indicate belief change after watching the video may have provided a more accurate measure of persuasive outcomes. Qualtrics software randomly assigned participants to one of the two video versions. While this would equally distribute participants irrespective of previously held beliefs, measuring previously held beliefs might help better ascertain the ability of the narrative to effect belief change and persuasive outcomes.

This study was also limited by the use of one personality trait, openness to experience, as the central focus of the research. Personality is not confined to merely one trait but is an

amalgamation of multiple traits and the expression of those traits under various circumstances. Data were collected from participants to measure the other Big Five personality traits of extraversion, agreeableness, conscientiousness, and negative emotionality (Soto & John, 2017a). Results, not stated above, did not show a significant moderating effect on narrative engagement from any of these traits. However, these traits were measured using the Big Five Inventory-2 Extra Short Form (BFI-2-XS). The BFI-2-XS used in this present study measured three facets per trait. The original Big Five Inventory-2 (BFI-2) uses 12 measurements per trait. The XS version was chosen to minimize participant fatigue. The BFI-2-XS retains about 84% of the original BFI-2's reliability and external validity. Therefore, the BFI-2 may have provided a richer understanding.

Similarly, the six-item Big Five Inventory-2 Short Form (BFI-2-S) was used to measure openness. The BFI-2-S retains 93% of the original BFI-2's reliability and external validity. Using the original BFI-2 subscale for openness could have provided more reliability and nuance.

Recommendations for Future Research

In Table 4, the index of moderated mediation showed a bootstrap lower-level confidence interval (LLCI) of .001 and a bootstrap upper-level confidence interval (ULCI) of .117, which indicates significant moderated mediation. This would include a significant effect of openness to experience on narrative engagement and narrative engagement on persuasive outcomes. Had the LLCI fallen below zero, such as -.001, the result would not have been significant because zero (indicating no effect) would have been a probable value. Therefore, although there was significant moderated mediation, it was narrowly so. Further research could help confirm or not confirm the moderated mediation and identify particular circumstances that might affect its significance.

Several changes in the methodology might be useful, such as using the original BFI-2 subscale for openness instead of the shorter BFI-2 S, creating video versions of equal length, and testing different topics that might be more controversial and or feel less safe. Veganism and factory farming, critical race theory, LGBTQ+ issues, and women's reproductive rights might be topics that would enhance that understanding.

A research focus to further investigate the mediation on persuasive outcomes could come from deconstructing the construct of narrative engagement. Busselle and Bilandzic (2009) argue that their ideas of narrative presence, emotional engagement, attentional focus, and narrative understanding, the subdomains of narrative engagement, correlate with transportation and identification. Their test comparing the three scales together supported this claim. However, this present study found (not reported above as it was not a central focus) that narrative presence (bootstrap CI = -.018, .036), emotional engagement (bootstrap CI = -.205, .227), and attentional focus (bootstrap CI = -.014, .036) did not produce significant evidence of moderated mediation along with openness. However, the subdomain of narrative understanding (bootstrap CI = .006, .109), along with the overall narrative engagement measurement, did.

The finding that primarily the narrative understanding element led to moderated mediation warrants further investigation. Transportation and identification are separate constructs and evidence of transportation does not necessarily correlate with evidence of identification (see Moyer-Gusé & Nabi, 2010). This present study did show a mediating effect of narrative engagement, and when combined with openness, produced evidence of moderated mediation. However, a similar study that separately measured transportation, identification, and narrative understanding might prove enlightening. This approach would also more thoroughly encompass measuring the idea of message elaboration, which is an essential element of

persuasion in both the elaboration likelihood and extended-elaboration likelihood models of persuasion. The relationship of narrative understanding with the elaborative aspects of transportation might bring greater comprehension of the relationship.

Implications

The results of this study add to the fields of media psychology and education theory by shedding light on the influence of openness in narrative persuasion. It also advances comprehension related to the education of sensitive issues and suggests a means of progressing human relations.

Openness and Narrative Persuasion

This study contributes to the evolving area of narrative persuasion within media psychology. Previous research in narrative persuasion has yielded some surprising and conflicting results (see Lien & Chen, 2013; Moyer-Gusé & Nabi, 2010; Schreiner et al., 2018). The complexities and nuances of narrative persuasion theory offer endless research and learning opportunities. One such opportunity unveiled in this present study is the role of the personality trait openness to experience in narrative persuasion and suggests that creating safe learning environments through narratives can encourage acceptance and understanding of new ideas.

Education

Like other personality traits, expressing openness to experience is subject to environmental cues (Beck & Jackson, 2021; Fleeson, 2001, 2004; Mischel & Shoda, 1995; Morin & Racy, 2021). In a narrative world, audience members can develop a sense of safety as the emotions generated from the story are less intense than those in the real world (Dill-Shackleford & Vinney, 2020; Eyal & Cohen, 2006). However, the emotions themselves are the same as a real-world experience.

Neurological studies show that an empathetic response, such as one might experience while engaged in a story, fires along the same neural pathways as when personal experience generates the emotion. However, this empathetic stimulation is less intense than the same emotion resulting from self-experience (Preston & de Waal, 2002; Wang & Wang, 2015). This allows the audience to explore feelings in the simulated environment of the story world with a sense that they can safely return to reality. Audience members can securely experience the story world while remaining tethered to the real world (Dill-Shackleford & Vinney, 2020).

A self-produced digital story may not have the production quality of a professionally produced film. It may not feature a variety of characters, each experiencing their ups and downs, and the pain and joy skillfully brought to life by an accomplished novelist or screenwriter. However, educational content developers, including teachers and social justice advocates, can learn how to structure a good story and spark narrative engagement as evidenced by this study. They can leverage the sense of safety created by a narrative environment, much like this experimental video. By producing educational material in digital story form that is engaging, candid. and sensitive, content creators can encourage openness in audience members. This can help foster narrative engagement that can challenge previous indoctrination and lead to belief change.

Empathy and Social Simulation

By extending the use of storytelling in formal and informal education, people can extend their understanding of each other. Consuming personal narratives strengthens one's empathy and bond with others (Oatley, 2021). The emotions one experiences in empathy with a story character emulate the perceived emotions of that character. Nonetheless, they are the reader's or viewer's emotions (Oatley, 1999, 2021). In this way, a person comes to understand the character

more fully (Oatley, 1999). This is similar to the process in which a person comes to understand another living human being through social interaction.

This social interplay with a story world and its characters is described as social simulation (Oatley, 1999, 2016, 2021). Simulation in this context is human interaction with the fictional or biographical world of another's narrative. It allows an interrelation between the audience and the protagonist to explore hypothetical situations and understand possible outcomes. In much the same way, a pilot-in-training practices in a flight simulator to rehearse situations and experience the results of their decisions within a safe environment (Oatley, 2016, 2021). When an audience member takes on the experience of a protagonist through social simulation, the level of intimacy can be greater than one's everyday relations in real life (Dill-Shackleford & Vinney, 2020). Through experiencing the stories of others, people can learn to understand and appreciate each other more deeply.

Conclusion

Identity flexibility is one's willingness and ability to evolve their identity over time in response to new information and experience (Whitbourne, 1986). Identity flexibility is positively associated with openness to experience and acceptance of others. The relationship between identity flexibility and openness may have a two-fold impact on shifting national identity regarding the Columbus myth.

First, since openness to experience and identity flexibility are positively associated, this may help explain why in this present study, more open participants were also more likely to engage in the lives and experiences of the story world. These same participants were also more likely to be persuaded by the facts presented within a narrative form about Columbus. By developing educational content using the format of a personal story, including digital stories,

teachers and others can create material that encourages openness and participant willingness to fully engage in a protagonist's life. By encouraging this identity flexibility associated with character identification, stories can encourage persuasive outcomes and belief evolution.

Secondly, with an evolution of beliefs, there can be an evolution in national identity. Those more open and with greater identity flexibility could lead such a shift. Rephrasing the words of Thomas Jefferson, those who understand their past can better shape their future. However, by identifying with a non-existent past, there is nothing to truly understand. Those who are more open to experience may be more open to learning from an accurate history through engaging with stories. Therefore, those who are more open to experience may be more open to a national identity based not in myth, but in facts. Teachers, advocates, and other content creators can encourage that openness with stories that tell the truth in an engaging and sensitive way.

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Appendices

Appendix A

Video Scripts

Digital Story Version

(12 minutes, 08 seconds)
Link to watch this video:
https://youtu.be/Gmg1SjFTZeM

Script:

Like many Americans, I grew up with the idea that Christopher Columbus was a great hero! I was taught that Columbus exemplified courage, perseverance, and opportunity for all.

But later in life?... I wasn't so sure. Was this champion of the American way really who I believed that he was?

I made it my quest to discover Christopher Columbus.

I had gone back to school after over 40 years and wanted to know more about America's history, and especially about the people who were here before my ancestors came from Europe.

I became interested in Columbus and started reading to see what I could find out.

This is what I learned…

Columbus set sail from Spain on his first of four voyages west with a crew of 90 and his three ships: the Nina, Pinta, and Santa Maria. Columbus landed in the Bahamas on October 12, 1492.

Of the Native Taíno people the Europeans met, Columbus wrote that they "exhibit great love towards all others in preference to themselves" and were "men of great deference and kindness."

And of these kind people, the Spaniards under the command of Columbus, took six prisoners who would never see their families again.

Columbus, his crew and captives, then sailed southwest in search of gold. Following the coastline of Cuba and eastward, they soon landed on the island that Columbus would name Hispaniola, meaning Little Spain – home to modern-day Haiti and the Dominican Republic.

Estimates of the Taíno population on Hispaniola when Columbus arrived range up to 8 million.

So to say that Columbus "discovered" America is not accurate. Ancestors of the Taíno had already "discovered" the Caribbean islands thousands of years before.

Jorge Estevez, a Taíno descendant, explains at the Smithsonian National Museum of the American Indian in New York City.

(Video segment, approx. 1 min, 24 secs – Jorge discusses early migration to the Caribbean islands)

Within days after their arrival at Hispaniola, the Europeans started taking more captives – including women and children, as they began their march for gold, labor, and control.

But on Christmas Eve, the flagship Santa Maria crept too close to shore where it met the jagged coral underneath.

The Taíno responded to help salvage materials and supplies. Columbus journaled on that Christmas Day... "They love their neighbors as themselves… They are a people so full of love and without greed… I believe there is no better race or better land in the world."

A few decades later, Dominican friar Bartolomé de las Casas would write in the margin of that journal, next to those words of Columbus "Observe the humanity of the Indians toward the tyrants who have exterminated them."

De las Casas was wrong though on one count, the Taíno were not exterminated.

Although he estimated their once millions had dwindled to just about two hundred, de las Casas did not account for the perhaps thousands who survived by hiding in the mountains. Though decimated by the Columbus-led Spanish, the Taíno were not finished.

Jorge again explains from the National Museum of the American Indian…

(Video segment, 17 secs – Jorge discusses how that Taíno hid in caves)

Columbus returned to Spain the following spring. And by late September of 1493 he was headed back to the Caribbean on his second of four voyages. This time with 17 ships and over 1200 men. The brutality that followed was unimaginable.

Columbus' 13-year-old son, Ferdinand, who set sail on this second trip with his now-famous father, writes that when they reached the first of the islands, several men went ashore "looting and destroying all they found."

At another stop, this time encountering a group of Carib natives, more women were taken. Columbus' friend Michele de Cuneo describes "a very beautiful Carib woman, whom the said Lord Admiral gave to me"

… de Cueno details his assault and how he "took a rope and thrashed her well, for which she raised such unheard of screams that you would not have believed your ears."

After the ships reached Hispaniola, A gold quota was demanded of the Taino, and those who did not fill theirs' were mutilated.

Some who tried to escape the assaults were hunted down by vicious war hounds. Girls as young as nine or ten were sold in the sex trade. Under the watch of Columbus, his soldiers made games of execution.

Bartolomé de las Casas summed up their acts as sheer "evil" and as "mortal sin."

After these discoveries, I wondered, why then is Columbus Day still a national holiday in the United States? Why is it still celebrated with an annual parade that attracts hundreds of thousands?

I wanted to understand, and so off I went to New York City.

It was a chance to visit my new granddaughter Abby, my son and daughter in law, to meet Jorge, and to see the Columbus Day parade. (Video segment, 18 secs. – NYC Columbus Day parade)

But you know? Not one person at the parade seemed to be celebrating the terrible things Columbus and the Spaniards had done.

And I realized, that among all the parade-goers that day, it was quite possible that not one of them knew the documented truth.

Thomas Jefferson once wrote that “History, by apprising of the past, will enable them (students) to judge the future; it will avail them of the experience of other times … it will qualify them as judges of the actions and designs of men.”

I’ve come to realize that there are consequences for not knowing that past. History recycles.

Columbus was not the only one who took slaves for labor, stole children from their families, and took young women.

But in acknowledging the past, we can begin to learn the lessons about when greed overtakes humanity. That courage, perseverance, and opportunity through violence are not heroic deeds.

We can become better judges of our world and ourselves.

And from that knowledge, lay the foundation for a better future.

PowerPoint Lecture Version (Control Group)

(7 minutes, 33 seconds)
Link to watch this video:
https://youtu.be/eJIGr9lScYE

Script:

Christopher Columbus sailed from Spain on his first of four voyages west with a crew of 90 and three ships: the Nina, Pinta, and Santa Maria.

He landed in what is now called the Bahamas on October 12, 1492.

Columbus named the Native people “Indians,” thinking that he had found a shorter trade route to the East Indies.

In his logs, Columbus wrote about the kindness and deference of the Indians.

However, under the command of Columbus, the Spaniards took six prisoners.

From the Bahamas, Columbus’ ships then sailed southwest in search of gold. They followed the coastline of Cuba, then continuing east, landed on the island that Columbus named Hispaniola, meaning Little Spain.

Hispaniola is now modern-day Haiti and the Dominican Republic.

Some research has estimated that when Columbus arrived on Hispaniola, the Indian population was nearly 8 million people.

Many credit Columbus for “discovering” America. But that isn’t accurate as scientists have found that the Caribbean native population dates back thousands of years before.

8000 years ago according to scientists, there were no human beings in the Caribbean. At that time water levels were lower than they are today so the distance between the Yucatan and Cuba was only about 60 miles.

One theory is that early Central Americans began canoeing eastward and reached Cuba. Over time they continued migrating across the Caribbean islands and eventually reached Puerto Rico.

Then about 4000 years ago, people from the northern Amazon River basin; Venezuela and Guyana, that spoke the Arawak language began island hopping northward. They also reached and settled in the Caribbean. This was not a single migration but was several migrations over a period of time.

These migrations can be traced by comparing the early artifacts and languages spoken in the Caribbean with those where the migrants originated from. The various cultures merged to form the different Peoples of the Caribbean that existed when Columbus arrived.

After reaching Hispaniola, the Europeans took more captives – including women and children.

In spite of that, when the flagship Santa Maria crept too close to shore and was damaged by the jagged coral underneath on Christmas Eve, the Indians helped the Europeans save materials and supplies.

Columbus wrote in his logs that the Indians were generous and sharing, describing them as full of love and without greed. He concluded that there was no better race or land in the world.

Over the subsequent years, living conditions for the Indians under European dominance declined steadily.

The Dominican friar Bartolomé de las Casas later wrote in the margin next to the reflections in Columbus' logs that the Indians acted with humanity toward the Europeans though eventually their tribes were nearly wiped out.

Some Natives survived however.

De las Casas estimated that the once millions of Indians were down to about two hundred. De las Casas probably did not know though about the thousands who had fled and survived by hiding in the mountains.

In the Dominican Republic alone, there are over 40,000 caves. To escape the Europeans, many of the Indians were able to make their way into seclusion and relative safety.

In the spring, Columbus returned to Spain.

In September of 1493, on his second of four voyages, Columbus returned to the Caribbean with 17 ships and over 1200 men.

Accounts document how upon arriving at the islands, several men went ashore looting and destroying. Native women were also captured and taken on board the ships.

Assuming that Hispaniola had great wealth in gold, Columbus demanded a gold quota from each Indian. For those who did not meet their quota, the punishment was mutilation.

Indians who tried to escape were hunted down by using large dogs the Europeans had specially trained for fighting. The Spaniards took more Indians as slaves. Girls as young as nine or ten were sold in the sex trade. Soldiers made games of execution.

Columbus is remembered by many Americans as the person who discovered America. Columbus Day is still a national holiday in the United States, celebrated with an annual parade that attracts hundreds of thousands.

Would the people in the parade still celebrate if they heard these facts about Columbus?

Appendix B
Confirmations and Attention Checks

Confirmation:
I watched the entire video about Christopher Columbus (though not necessarily all the references and credits at the end).

Technical issues question:
Did you have any trouble with watching the video (video wouldn't play, couldn't hear audio, kept freezing up, etc.)? (yes/no)

Open-ended attention check question:
In at least one complete sentence: What is one thing specifically that you liked or disliked about the video and why?

Multiple choice attention check question:
According to the video, Columbus described the Natives as:
(selfish/unkind - loving/kind - warriors/fierce)

Appendix C

Narrative Engagement Scale (original version for reference only, not used in this study)
Busselle & Bilandzic (2009)
PLEASE NOTE: This is the original scale which I have modified slightly for this study. The modified version used in this study is provided following).
R = Reverse Scored

Narrative understanding
1. At points, I had a hard time making sense of what was going on in the program. (R)
2. My understanding of the characters is unclear. (R)
3. I had a hard time recognizing the thread of the story. (R)

Attentional focus
4. I found my mind wandering while the program was on. (R)
5. While the program was on I found myself thinking about other things. (R)
6. I had a hard time keeping my mind on the program. (R)

Narrative presence
7. During the program, my body was in the room, but my mind was inside the world created by the story.
8. The program created a new world, and then that world suddenly disappeared when the program ended.
9. At times during the program, the story world was closer to me than the real world.

Emotional engagement
10. The story affected me emotionally.
11. During the program, when a main character succeeded, I felt happy, and when they suffered in some way, I felt sad.
12. I felt sorry for some of the characters in the program.

Narrative Engagement Scale (modified version for this study)

Measured with a 7-point Likert-type scale from Disagree Strongly to Agree Strongly
R = Reverse Scored

Narrative understanding
1. It was easy to make sense of what was going on in the video.
2. My understanding of the characters or narrator is unclear. (R)
3. It was not difficult for me to recognize the thread of the presentation.

Attentional focus
4. I found my mind wandering while the program was on. (R)
5. While the video was on I found myself thinking about other things. (R)
6. I had an easy time keeping my mind on the program.

Narrative presence

7. During the video, my body was in the room, but my mind was inside the world created by the video.
8. The video created a new world, and then that world suddenly disappeared when the video ended.
9. My mind stayed in the real world; I did not enter into any world created by the video. (R)

Emotional engagement

10. The video did not affect me emotionally. (R)
11. During the video, I felt what the narrator felt.
12. I felt sorry for the Native people referred to in the video.

Reference

Busselle, R., & Bilandzic, H. (2009). Measuring narrative engagement. *Media Psychology*, *12*(4), 321–347. https://doi.org/10.1080/15213260903287259

Appendix D

Openness Scale
Big Five Inventory-2 Short Form (BFI-2-S) Open-Mindedness Subscale
Soto & John (2017)

Measured with a 7-point Likert-type scale from Disagree Strongly to Agree Strongly
R = Reverse Scored

I am someone who…

1. Is fascinated by art, music, or literature.
2. Has little interest in abstract ideas. (R)
3. Is original, comes up with new ideas.
4. Has few artistic interests. (R)
5. Is complex, a deep thinker.
6. Has little creativity. (R)

Reference

Soto, C. J., & John, O. P. (2017). Short and extra-short forms of the Big Five Inventory–2: The BFI-2-S and BFI-2-XS. *Journal of Research in Personality*, *68*, 69–81. https://doi.org/10.1016/j.jrp.2017.02.004

Appendix E

Additional Big Five Inventory Subscales

Big Five Inventory-2 Extra Short Form (BFI-2-XS) Subscales

Soto & John, 2017

Measured with a 7-point Likert-type scale from Disagree Strongly to Agree Strongly

R = Reverse Scored

I am someone who…

Extraversion

1. Tends to be quiet. (R)
2. Is dominant, acts as a leader.
3. Is full of energy.

Agreeableness

4. Is compassionate, has a soft heart.
5. Is sometimes rude to others. (R)
6. Assumes the best about people.

Conscientiousness

7. Tends to be disorganized. (R)
8. Has difficulty getting started on tasks. (R)
9. Is reliable, can always be counted on.

Negative Emotionality

10. Worries a lot.
11. Tends to feel depressed, blue.
12. Is emotionally stable, not easily upset. (R)

Reference

Soto, C. J., & John, O. P. (2017). Short and extra-short forms of the Big Five Inventory–2: The BFI-2-S and BFI-2-XS. *Journal of Research in Personality*, *68*, 69–81. https://doi.org/10.1016/j.jrp.2017.02.004

Appendix F

Persuasive Outcomes Scale (Presentation-Consistent Beliefs)
(See Green & Brock 2000; Schreiner et al., 2018)
Measured with a 7-point Likert-type scale from Disagree Strongly to Agree Strongly
R – Reverse Scored

1. Christopher Columbus is a great hero in American history. (R)
2. Christopher Columbus did not discover America.
3. The acts of Columbus and his men were justified by bringing progress and development. (R)
4. Columbus took advantage of his opportunity through enslavement and violence.
5. Columbus Day should continue to be celebrated as a national holiday in the United States. (R)
6. It is important to learn historical truths, even when they contradict commonly accepted beliefs.

References

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Schreiner, C., Appel, M., Isberner, M. B., & Richter, T. (2018). Argument strength and the persuasiveness of stories. *Discourse Processes*, *55*(4), 371–386. https://doi.org/10.1080/0163853X.2016.1257406

Appendix G

Demographics

1. What is your age range? (18-24, 25-34, 35-44, 45-54, 55-64, 65+, prefer not to say)
2. What is your gender? (male, female, non-binary, prefer not to say)
3. Which of the following best describes your race or ethnicity? (African/Black, Asian, Caucasian/White, Hispanic/Latino, Indigenous/Native, other, multiple, prefer not to say)
4. What is the highest level of education you have completed? (grade 6 or below, grade 8 or middle school/junior high, high school, associate's or technical degree, bachelor's degree, master's degree, doctoral degree, prefer not to say)

Appendix H

IRB Approval

FGU Institutional Review Board | (805) 898-4034 | IRB@Fielding.edu

December 13, 2022

Kenneth Walker
Cc: Pamela Rutledge

RE: IRB No. 22-1201 (Dissertation) "The Relationship of Educational Digital Storytelling and Narrative Persuasion: A Conditional Process Model" by Kenneth Walker.

Dear Ken,

Congratulations! On behalf of the Fielding Institutional Review Board, it is my pleasure to confirm that the IRB documents received for the **Dec 2022** IRB review cycle have been **APPROVED**.

STUDY ID:	22-1201 WALKER Kenneth (SOP-MED Dec 2022)
TYPE:	Dissertation *
CATEGORY:	Minimal Risk (Expedited)
DETERMINATION:	APPROVED (12/13/2022)
EXPIRATION:	12/12/2023

This study is subject to continuing review by 12/12/2023 unless closed before this date.

** This approval only applies to the study type(s) listed. If this is an HOD Pilot study, you must upgrade your study to dissertation-status via the Revision Request process before beginning your dissertation work. Revision Request instructions can be downloaded from the IRB website. All other pilots must submit a new IRB application for their dissertation study.*

This approval does not replace any other permissions or approvals required of students, faculty, or other researchers. If committee or other approvals are required to conduct your study, all approvals must be received by the researcher before recruitment, enrollment, or data collection begins. Each school has very specific requirements for approvals to be obtained and the IRB requests that you ensure that all requirements have been met. If institutional/organizational approvals are required, retain a copy of the approval(s) with your study documents.

The following information is provided to help you comply with human subjects protection requirements:

1. You must adhere to the Belmont Commission's ethical principles of respect, beneficence, and justice.
2. You must use the final IRB approved study documents to conduct your study.
3. All recruitment materials must receive IRB approval prior to utilization.
4. You must submit reports on unexpected or serious adverse events experienced by participants.
5. Federal guidelines require that projects undergo continuing review at least once a year. You will receive a communication approximately 4 weeks prior to the expiration date noted above. Complete and return the required documents prior to the expiration date to avoid a lapse of approval.
6. After you complete your study, go to http://web.fielding.edu/private/research/IRB_Forms.asp and download the Status Report form. Email the completed form to irb@fielding.edu.
7. Documentation of informed consent and a written research summary for your project must be maintained for at least three years following the date of completion. Documentation may be in hard copy, electronic, or other media formats. The IRB may review your records relating to this project.

Any proposed changes or modifications to your approved study must be submitted to the IRB for review and approval. Some changes may be approved by expedited review; others may require full board review. **Revision Request Instructions** can be downloaded from the IRB website.

Once your study has completed, you must submit an IRB **Status Report** form to the IRB office. Submitting this form will initiate the formal closure of your study OR allow you to request an extension of your approval expiration. This form may be submitted at any time during your approval period but must be

received no later than 2 weeks prior to your study expiration date. The Status Report form can be downloaded from the IRB website.

Please contact irb@fielding.edu if you have any questions or require further information.

Best wishes,

Annabelle Nelson, PhD
Institutional Review Board Chair
Fielding Graduate University