

THESIS

EVALUATING THE EFFECTS OF HUMOROUS NUTRITION-BASED NARRATIVES ON
INTENTION TO CONSUME FRUITS AND VEGETABLES

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ABSTRACT

EVALUATING THE EFFECTS OF HUMOROUS NUTRITION-BASED NARRATIVES ON INTENTION TO CONSUME FRUITS AND VEGETABLES

This study tested the viability of humorous narratives as a means to promote fruits and vegetables to adolescents. The study assessed the effects of two types of humorous narratives on transportation, counter-arguing of the message, perceived severity of consequences for not consuming fruits and vegetables, and intention to consume fruits and vegetables. The participants were 67 students at a middle school in the western United States. Participants read either a related-humor narrative, which featured humor related to nutrition, an un-related-humor narrative, which featured humor un-related to nutrition, or a control narrative about a non-nutrition topic. The related and un-related messages did not differ significantly from each other for any of the dependent variables. Neither of the humorous messages differed significantly from the control messages for any of the dependent variables. Participants held favorable pre-exposure attitudes toward eating fruits and vegetables, which may have strongly influenced the high levels of intention to consume fruits and vegetables. The study also had low statistical power, which may have affected the ability to detect effects in the sample. This study suggests that humorous narratives do not offer an advantage in nutrition promotion over non-humorous messages for adolescents. The study discusses implications, future research, and limitations.

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CHAPTER 1: INTRODUCTION

Childhood obesity in the United States has reached unprecedented levels, and media campaigns from the White House on down are attempting to reverse this trend. Traditionally, humorous media messages have largely been viewed as entertainment, and not educational. Humor has been used in health advocacy messages and this study hopes to contribute to the study of humorous communication's ability to both entertain and educate.

This study used narratives because of their ability to transport audiences so that they are engrossed in the story (Green & Brock, 2000; Slater & Rouner, 2002). Transportation lessens counter-arguing of the message, which is a characteristic narratives share with humorous communication (Nabi, Moyer-Gusé, & Byrne, 2007; Young, 2008). Humor has also been shown to increase source-liking, attention, and effortful message processing (Eisend, 2009; Nabi et al., 2007; Weinberger & Gulas, 1992). These are just some of the reasons humor may be an advantageous strategy for drawing adolescents' attention to messages about obesity, and, potentially, affecting positive behavior change.

This study examined how both humorous messages about proper nutrition and non-humorous messages about nutrition that are presented in a humorous context influence adolescents' counter-arguing of the message, perceived severity of the consequences of eating a poor diet, and intention to consume a more nutritious diet.

Obesity Prevalence and Health Problems in Adolescents

Diet and physical activity are major factors in determining whether people will become overweight, obese, or suffer from preventable diseases, such as type 2 diabetes, cardiovascular

disease, hypertension, osteoporosis, and certain types of cancer (U.S. Department of Agriculture and U.S. Department of Health and Human Services, 2010).

During the two-year period of 2009-2010, 18 percent of adolescents age 12 to 19 in the United States were obese (Ogden, Carroll, Kit, & Flegal, 2012). This percentage is more than triple the rate of 30 years ago (National Center for Health Statistics, 2012).

Obesity in adolescents creates both immediate and long-term negative health outcomes. Obese adolescents can suffer from a number of adverse health conditions including type 2 diabetes, metabolic syndrome, dyslipidemia, hypertension, obstructive sleep apnea, and depression (Daniels et al., 2005).

Negative physical health outcomes are not the only concerns for obese adolescents. Compared to their average-weight peers, obese female adolescents are more likely to report serious emotional problems, feelings of hopelessness, suicide attempts, being held back a grade in school, and to consider themselves poor (Falkner et al., 2001). Obese adolescent males are more likely feel their friends do not care about them, to consider themselves poor students, and to expect they will quit school when compared to average-weight peers (Falkner et al., 2001).

Overweight adolescents are also more likely to be overweight as adults than are healthy-weight adolescents (Freedman et al., 2005). Guo and Chumlea (1999) found that a person's body mass index (BMI) at 15 was a good predictor of BMI at 35 and that a person's BMI at 18 was an excellent predictor of BMI at 35. Overweight and obese children and adolescents are then at a greater risk for stroke, type 2 diabetes, heart disease, osteoarthritis, and many types of cancer later in life (U.S. Department of Health and Human Services, 2010).

Adolescents are consuming a diet (Neumark-Sztainer, Story, Resnick, & Blum, 1998) and making lifestyle choices (U.S. Department of Labor, 2013) that increase their likelihood of

becoming obese or overweight. Additionally, adolescents' diets are often below recommended standards for a number of vitamins and nutrients (Johnson, Johnson, Wang, Smiciklas-Wright, & Guthrie, 1994). This age group also falls short of ideal fruit, vegetable, and dairy intake and often uses unhealthful weight-control practices (Neumark-Sztainer et al., 1998).

Adolescents and Media Use

Understanding the potential media have to positively influence health behaviors is more important now than ever given the ubiquity of media in adolescents' lives. The Kaiser Family Foundation found that in 2009, youth ages 8 to 18 spent more than seven and a half hours a day consuming media, and, through media multitasking, they were packing 10 hours and 45 minutes of media exposure into the seven and a half hours they spend with media (Rideout, Foehr, & Roberts, 2010). This amount of media exposure is more than two hours higher than in 2004 (Rideout et al., 2010). Furthermore, the 11- to 14-year-old age group stands above the rest at nearly 12 hours of media exposure a day (Rideout et al., 2010).

Among all ads children and adolescents see on television, food is the most prevalent product category (Gantz, Schwartz, Angelini, & Rideout, 2007). On average, adolescents age 13 to 17 see more than 6,000 television ads for food each year; of these, 34 percent are for candy and snacks, 28 percent are for cereal, and 10 percent are for fast food (Gantz et al., 2007). In contrast, this same age group sees, on average, only 47 public service announcements (PSA) for nutrition or fitness each year (Gantz et al., 2007).

In 2009, food companies spent \$1.79 billion on marketing to youth and \$9.65 billion overall (Leibowitz, Rosch, Ramirez, Brill, & Ohlhausen, 2012). Quick-service restaurant foods, carbonated beverages, and breakfast cereals accounted for 72 percent of the expenditure for youth food marketing (Leibowitz et al., 2012).

Comparatively, in 2008 the U.S. Department of Agriculture (USDA) spent \$818.3 million on nutrition education programming, but this programming was largely directed toward USDA program participants and low-income populations, rather than the general public (U.S. Department of Agriculture, 2010). For example, \$131.7 million of 2008 funding was dedicated to the Women, Infants, and Children (WIC) breastfeeding promotion (U.S. Department of Agriculture, 2010).

Brown and Witherspoon (2002) examined the effects of mass media on adolescent health and found a troubling paradox. On one hand, adolescents are spending more time using media, and hence, not engaging in physical activity while also viewing advertisements primarily for unhealthy snack foods (Brown & Witherspoon, 2002). On the other hand, media portrayals of the ideal body type are increasingly thin, and these portrayals influence adolescents, especially girls, to strive for an unrealistic and unhealthy body type through excessive dieting (Brown & Witherspoon, 2002). Media also often frame health as attractiveness, rather than using more valid criteria to determine health (Brown & Witherspoon, 2002).

Especially relevant for female adolescents is the complex relationship many have with their body image, identity, and views of the mediated ideal body type (Duke, 2002; Usmani & Daniluk, 1997). This increasingly complicates health for this age and gender group, so effective nutrition education is of extra importance.

Part of the problem is the kind of media kids are consuming. The average child spends almost six hours a day viewing television or on the computer (Rideout et al., 2010). On the other hand, adolescents, especially older teenagers, spend very little time reading. The American Time Use Survey shows teenagers 15 to 19 spend as little as seven minutes a day reading any material (U.S. Department of Labor, 2013). Adolescents age 11 to 14 spend an average of 37 minutes a

day reading all print media, which includes books, magazines, and newspapers (Rideout et al., 2010). Any written health communication aimed at adolescents must be appealing and strategically sound. Strommen and Mates (2004) suggest that adolescents will be more likely to read regularly if their parents and social groups make it a part of their daily routine, and if a wide variety of reading materials is available to them. Additionally, Pitcher et al. (2007) explored adolescents' motivations to read and suggested teachers may be able to slow the decline in reading in later teen years if they recognize the multiple literacies and technologies students use to read outside the classroom, create engaging reading environments, and incorporate choice in reading decisions, among other suggestions. Even with those suggestions in mind, adolescents are a hard group to influence.

Adolescent Identity Development and Egocentrism

Adolescents are an interesting and important group from a developmental standpoint for a number of reasons. From a communication perspective, they represent a unique challenge, as well.

A potential contributing factor to adolescents' poor diet is their cognitive and emotional development. Adolescents across all generations and cultures are more reckless than people in other developmental periods (Arnett, 1992). Adolescent egocentrism, which is the inability to differentiate between the cognitive concerns of others and those of oneself (Elkind, 1967), is commonly linked with increased risk-taking. Adolescents begin to recognize that others have different thoughts than they do at 11- and 12-years-old, but they assume that others are concerned with the same things they are concerned with (Elkind, 1967). Thus, an adolescent believes that others are obsessed with his or her appearance and behavior, just as he or she is (Elkind, 1967).

This self-infatuation can lead adolescents to feel invulnerable and to believe that risks apply to others and not to them (Greene, Krcmar, Rubin, Walters, & Hale, 2002). “Sensation seeking and adolescent egocentrism are normative developmental features of adolescence” (Arnett, 1992, p. 366).

Research shows that adolescents are willing to drink and drive, have unprotected sex (Arnett, 1992), carry a weapon, and use alcohol and marijuana (Eaton et al., 2006). In the face of these kinds of risks, consuming an unhealthy diet certainly will not seem dangerous to many teens.

Additionally, as kids enter their teens they are typically given more freedom, and that increased autonomy is accompanied by a multitude of physical and emotional changes. “It has long been recognized that desire for independence and individuality along with a concomitant disavowal of authority are characteristic of adolescence” (Grandpre, Alvaro, Burgoon, Miller, & Hall, 2003, p. 350).

As adolescents enter puberty they view the world with increasing skepticism, develop a desire to form their own views separate from those of authority figures, question what their parents and other authorities say, and are significantly less receptive to messages from adults (Grandpre et al., 2003). Adolescents' reactance to authority and increased desire for individual freedom are part of the process of developing an adult identity. Because of their developmental stage, adolescents are among the audiences most likely to show high levels of counter-arguing. Thus, humorous narratives, given their ability to decrease counter-arguing (Moyer-Gusé, Mahood, & Brookes, 2011; Nabi et al., 2007; Young, 2008), may be uniquely suited to reach this particular audience.

Adolescents are going through a complex process of identity development through which they make choices about different facets of their identity and then deeply explore those identity choices, potential alternative identity choices, and determine the confidence they derive from those choices (Crocetti, Rubini, & Meeus, 2008). Because media are omnipresent in so many adolescents' lives, creating positive, effective health messages could make a beneficial impact on dietary choices during a time of such fluid identity development.

With media often conveying unhealthful practices to adolescents, health communicators must be strategic with the opportunities they have to inform this impressionable age group about healthy habits. Humorous health messages, as well as health messages presented in a humorous context, may be able to overcome the skepticism many adolescents have for educational material and inform or persuade them when they do not realize they are being persuaded.

CHAPTER 2: LITERATURE REVIEW

This literature review catalogs the current research on the use of humor in messages, narrative theories, trivialization of consequences, and related concepts.

Humor in Media Messages

In defining humor, psychologist Herbert M. Lefcourt (2001) starts with a simple definition, stating that, “humor occurs when there is a discernible happening or event; at least one person to perceive it; and possible, although this is not essential, someone else with whom to share it” (p.28). He notes that this description doesn't distinguish humor from other life events or processes, and adds, “Somewhere in the perception of the humorous event there must also be an element of play, whether physical, or verbal, as in the responses we privately entertain as we observe the event” (Lefcourt, 2001, p. 28).

This definition includes the physical act of creating humor and hints at the cognitive processes involved with perceiving humor, but lacks recognition of the affective element of humor.

This study used Martin's (2007) definition that “humor is a broad term that refers to anything that people say or do that is perceived as funny and tends to make others laugh, as well as the mental processes that go into both creating and perceiving such an amusing stimulus, and also the affective response involved in the enjoyment of it” (p. 5).

Martin's definition allows for the inclusion of all stimuli that are perceived as funny. This definition also recognizes the cognitive processing of both creating and perceiving humor, as well as the affective reactions to humor. The definition acknowledges all the relevant processes and qualities of humor. Martin's definition is especially relevant to this study because it makes

reference to the mental processes of perceiving humor. This study examined several mental processes, such as transportation, counter-arguing, and trivialization, that are not as commonly associated with humor in the way amusement is.

Research on the effectiveness of persuasive, humorous health messages is neither plentiful nor conclusive. Much of the research on the effect of humorous messages on persuasion has been performed in advertising. Research on humorous advertisements reveals a wide array of consumer responses (Cline, Altsech, & Kellaris, 2003; Cline & Kellaris, 2007; Lee, 2011). In this context, persuasion can be understood in terms of convincing an audience to plan to purchase or actually purchase a product.

In advertising, a meta-analysis by Eisend (2009) of 43 independent studies concluded that humorous messages positively influence attitude toward the ad and the brand, positive affective reactions, attention, and purchase intention. The study also noted the effects of humor in advertising were consistent over several decades.

In the studies Eisend (2009) analyzed, attitude toward the ad and brand, and purchase intention were the most studied variables, and humor in ads most strongly influenced attitude toward the ad, affective response, and attention. Eisend (2009) noted the effect size on attitude toward the ad was twice that of attitude toward the brand. This finding suggests that humor has a stronger effect on lower-order outcomes, such as affective reactions, than on higher-order outcomes such as thoughts, attitudes, and actions (Eisend, 2009). However, Eisend (2009) explained that humor's effect on attitude is commonly accepted as a transfer of lower-order, affective feelings such as fun and happiness, to the brand, which creates more lasting positive attitudes.

Eisend (2009) also revealed that humor can have a negative effect on source credibility, and no significant effect on negative or positive cognitions, and advertiser liking. While humorous ads create positive attitudes toward the ad, those feelings don't necessarily translate to the advertiser.

An earlier review of humor in advertising showed that humor made its strongest impact on increasing liking of the source (Weinberger & Gulas, 1992). This review also found that humorous messages increased attention to the ad, but mostly showed that generalizing humor's effects is difficult. Weinberger and Gulas (1992) found that audience characteristics and the nature of the product were significant mediating factors. An audience's ethnicity, age, and gender significantly influenced what it perceives as humorous, and this is further complicated by who is the butt of the joke (Weinberger & Gulas, 1992). Weinberger and Gulas (1992) used the example that researchers traditionally thought sexual humor appealed only to men, but this could have been based on the fact that most sexual humor was written from a male perspective. As for nature of the product, humor seems to be more effective for existing, low-involvement, and feeling-oriented products (Weinberger & Gulas, 1992).

Humor that is related to the product, source, or message type was shown to be superior to unrelated humor (Weinberger & Gulas, 1992). Findings for some effects of humor have been mixed. Some studies have found that humorous advertisements can have a positive effect on comprehension and recall (Weinberger, Spotts, Campbell, & Parsons, 1995; Zhang & Zinkhan, 1991) while others found a negative effect on comprehension (Gelb & Zinkhan, 1986). Weinberger and Gulas (1992) posit that it is more likely humor will not affect comprehension at all. They detail a litany of mixed and inconclusive results about humor's effect on

comprehension and suggest that humor type, such as satire, full comedy, and sentimental humor, and relatedness to the product are strong mediating factors (Weinberger & Gulas, 1992).

While some studies of humorous advertising show an influence on purchase intention (Eisend, 2009), others show a negligible effect on purchase intention (Weinberger & Gulas, 1992). “Though some examples of increased persuasion do exist, they tend to be qualified by gender, prior attitude and the nature of product or the event promoted” (Weinberger & Gulas, 1992, p. 56). Weinberger and Gulas (1992) find that much research shows that humor has a stronger persuasive effect on males, but that this may be related to the source, nature of the joke, and who is the butt of the joke. Humor has typically been produced from a male perspective (Weinberger & Gulas, 1992). Humor was also shown to have a greater persuasive effect on people who have a positive pre-existing attitude toward the brand being advertised (Weinberger & Gulas, 1992).

Soscia, Turrini, and Tanzi (2012) studied message recall of different HIV/AIDS prevention messages in Italy, where humorous prevention messages had been prevalent. Humorous messages were found to be inferior to fear-based messages in terms of spontaneous recall. Although it was not the main finding of their experiment, the authors noted that the effect of fear appeals could be more pronounced in this context because of the ubiquity of humorous messages for HIV/AIDS prevention in Italy, where perhaps the population had become too accustomed to humorous HIV/AIDS messages for them to have the predicted effect. Also, some research has shown that recall of messages does not necessarily correlate with attitude change (Fishbein & Azjen, 1972). Studies have found mixed results for humor’s effect on message recall, but even if humor negatively influences recall that might not correlate with negative attitude toward the message.

Others have studied the effects of humorous messages on specific populations in social marketing. Lee (2010) found that humorous anti-alcohol abuse messages that contained self-efficacy statements, “significantly increased highly rebellious individuals’ intentions to change their behaviors as well as their perceived risks of drinking and decreased their perceived fear in the messages” (p.644). Lee's study examined college students and shows good evidence of persuasion, but mainly tested humorous messages with self-efficacy statements against humorous messages without self-efficacy statements, rather than testing humorous messages against non-humorous messages. Lee (2010) used existing television and Internet ads that often highlighted less serious consequences of drinking, such as becoming loud and behaving in an embarrassing manner (rather than highlighting the health or legal consequences of drinking), and encouraged responsible drinking habits.

Humorous entertainment media content has been shown to aid recall of health information and spur conversation about delicate health topics, such as condom use. For example, Collins, Elliot, Berry, Kanouse, and Hunter (2003) found that 65 percent of adolescents age 12 to 17 who had viewed an episode of the television show *Friends* that featured an unplanned pregnancy resulting from condom failure recalled the failed condom story line and 31 percent of these viewers recalled that the characters said condoms were effective between 95 percent and 100 percent of the time (Collins et al., 2003). About 10 percent of confirmed viewers talked with an adult about the pregnancy in the episode or about condoms as a result of the episode, and those who talked with an adult were less likely to have reduced perceptions about condom efficacy than were those who did not talk to an adult (Collins et al., 2003).

Humorous Narratives and Narrative Theory

This study was interested in the ability of humorous narratives to influence an audience. Research on humorous narratives is sparse, but some researchers have examined how humorous narratives might affect audiences.

In health communication, persuasive messages typically aim to influence a change in attitude toward a health behavior, intention to perform a health behavior, or an actual health behavior. However, many of the studies on humor in health communication do not measure the actual persuasiveness of a message, but instead measure elements that logically influence persuasion, such as a reduction in counter-arguing of the message, an increase in liking of the message and an increase in positive attitude toward the message.

Humor may contribute to a more compelling narrative and bring attention to unique issues (Iannarino, Thompson, & Robinson, 2011). One case study suggested that humor can violate expectations about an illness, which creates “a pleasurable sense of liberation from the release of one’s previously inflexible preconceived notions” (Iannarino et al., 2011, p. 22). This case study also stated that a comedian’s deft use of humor in a narrative about sleepwalking helped create empathy and understanding of the health issue (Iannarino et al., 2011).

Buffing, Lagerwerf, and Vermeulen (2010) tested three levels of humor complexity in television commercials—funny bits, narrative shift, and irony and persiflage—and found that narrative shift commercials created more positive evaluations of the messages than the other conditions, as well as more complete processing of the commercial’s message. Narrative shift commercials contained drama and surprise, a final twist, and elements of exaggeration or transformation. Audience members responded more quickly to key claims of the commercial in

the narrative shift condition than in the less (funny bits) and more (irony and persiflage) complex humor conditions (Buffing et al., 2010).

Narratives are ubiquitous in our lives and in media to the point that Green, Strange, and Brock (2002) state that public narratives transmitted through various media, “command a large share of our waking attention” (p.1). In fact, some would argue that narratives are so ingrained in the human experience that, “Virtually all human knowledge is based on stories constructed around past experiences,” (Schank & Albeson, 1995, p. 1).

Perloff (2014) describes a narrative as a representation of events that typically includes such features as character, plotline, and other dramatic devices that draw on fiction and differentiate it from a persuasive or advocacy message. Perloff's definition seeks mainly to distinguish narratives from persuasive messages and leaves out many narrative characteristics. Hinyard and Kreuter (2007) drew on common concepts from many other studies and proposed the definition for narrative communication that this study used: “A narrative is any cohesive and coherent story with an identifiable beginning, middle, and end that provides information about scene, characters, and conflict; raises unanswered questions or unresolved conflict; and provides resolution” (p.778).

Narratives are not only common in our lives, but integral to the way we think and learn. Bruner (1986) contends that people have two modes of cognitive functioning: paradigmatic and narrative. Paradigmatic thought is based more on argument and empirical tests to verify truth and facts. Narrative thought occurs through stories, drama, personal experience, and accounts from others and history. Given the dual modes of cognitive functioning, both evidence-based and narrative messages can influence audiences and each has greater effects under certain circumstances. Evidence-based messages tend to be more effective when the message aligns with

the audience's beliefs, and the audience is sufficiently involved and motivated to process the factual message, while narrative messages are more persuasive when the audience is predisposed to disagree with the message (Perloff, 2014; Slater & Rouner, 1996) because narratives transport the audience into the world created by the author. Once transported, people tend to argue with the message less or perceive the issue in a different and usually more approachable way.

Narratives have been shown to influence ideology on controversial public policies, such as the death penalty (Slater, Rouner, & Long, 2006). This study found that narratives reduced counter-arguing and created support for one controversial topic that ran counter to previous ideology—the death penalty (Slater et al., 2006). Audience factors, such as issue involvement and relation to characters, had a mediating effect (Slater et al., 2006). Slater et al. (2006) suggested narratives may be able to create support for policies people are traditionally opposed to by reframing the issue in a more attractive or approachable way.

Hinyard and Kreuter (2007) conducted an overview of narrative communication as a means to creating health behavior change and suggested that narrative messages may be particularly useful by reducing counter-arguing and resistance to the message, facilitating observational learning, and influencing health-related social norms and perceived susceptibility to health problems.

Narratives offer a unique opportunity to transport people into a story and convey information in a way that does not feel persuasive. A key concept of much narrative theory is the idea that narratives can sweep the audience away so it forgets, temporarily, that it is consuming media. This concept is commonly referred to as transportation, presence, absorption, or immersion. The present study defines these concepts in the following paragraphs, but will largely use the term transportation.

Slater and Rouner (2002) consider transportation, absorption, and immersion three terms for the same phenomenon and define them as, “the degree to which a message recipient is cognitively and affectively invested in a narrative. By invested we mean that attention is fully engaged and emotional responses are occurring consistent with the vicarious experience of the fictional events” (p. 179).

Lombard and Ditton (1997) identified transportation and immersion as two of the six conceptualizations of presence, which they define simply as, “the perceptual illusion of nonmediation.” This illusion occurs when a person no longer recognizes a communication medium in his or her environment and then acts as if the medium is not there (Lombard & Ditton, 1997). Lombard and Ditton (1997) contend that presence does not occur in degrees, but rather as an on/off switch in any given moment. The strength of the feeling of presence is therefore caused by the number of those moments a person experiences while interacting with a medium. Other conceptualizations of presence, such as transportation, vary by degree, according to Lombard and Ditton (1997).

Lombard and Ditton’s (1997) conceptualizations often focus on the ability of technology, such as virtual reality, to create the illusion of nonmediation. The present study focused on the ability of narratives to transport an audience through descriptive story-telling.

Among the ways transportation has been conceptualized was Gerrig’s (1993) analogy, which used the literal process of transportation to illustrate the mental journey people take when transported by a narrative. The “traveler” is transported by a form of transportation, such as a narrative story, as a result of performing certain actions. The traveler is transported some distance from his or her world of origin, which makes that world inaccessible, and the traveler returns changed in some way through the process of transportation (Gerrig, 1993).

Lombard and Ditton (1997) posit that transportation occurs in one of three ways: A communication experience makes the audience feel as if it is taken to another place; the audience feels as if another world and its objects have been brought to the audience; or two or more communicators are connected in a place they share.

Green and Brock (2000) offer a more concise definition, which this study used, by describing transportation as “a convergent process, where all mental systems and capacities become focused on events occurring in the narrative” (p. 701).

Skalski, Tamborini, Glazer, and Smith (2009) reveal a complex path from humor to potential persuasion that incorporates presence. In studying humorous anti-alcohol public service announcements and their effects on presence, the researchers devised a model that showed humorous messages positively correlated with positive emotions, which in turn negatively affected reactance and positively affected perceived credibility. Perceived credibility then positively correlated with presence (Skalski et al., 2009).

Of the six conceptualizations of presence that Lombard and Ditton (1997) present, Skalski et al. (2009) focus mostly on the idea of presence as immersion. This concept focuses on the ability of a story or medium to engross the user’s senses and shut out the physical world (Lombard & Ditton, 1997).

Skalski et al. (2009) note that evidence on whether presence increases persuasion is mixed. Humor-induced presence affects people differently than presence created by other types of stories in that humor-induced presence is more heuristically-based, and this characteristic may have a greater influence on attitude change (Skalski et al., 2009). Skalski et al. (2009) found that presence created through humorous content negatively affected recall of persuasive messages, though they reasoned that the negative effect on recall would not negatively affect attitude

change, and may positively affect attitude change through heuristic processing. Heuristic processing is based more on peripheral cues in the message, and results in judgment based more on previously-held beliefs than quality of the argument made in the message (Skalski et al., 2009).

Studies have shown that non-humorous narratives can influence beliefs to reflect that of the story and reduce scrutiny of the story, largely through transportation (Green & Brock, 2000).

Green and Brock (2002) also argue that imagery is instrumental in triggering transportation, stating the following when comparing narratives to rhetorical persuasion: “The functional autonomy of images and their ability to serve as prompts for the entire messages in which they occurred would appear to provide narrative persuasion with superior effectiveness in comparison to persuasion that relies on arguments” (p. 338).

Transportation has also shown high correlation with enjoyment of narratives (Green, Brock, & Kaufman, 2004). Readers who show higher levels of transportation and enjoyment are more likely to recommend the stories to others or buy a sequel (Green, et al., 2004). This is a very positive finding in relation to the proliferation of narratives seeking to influence health behaviors. If people enjoy health narratives, they may be more likely to seek similar content and recommend it to peers, making health narratives more normative.

Elaboration Likelihood Model and Extended Elaboration Likelihood Model

Principles of the Elaboration Likelihood Model (ELM) (Petty & Cacioppo, 1986), and later, the Extended Elaboration Likelihood Model (EELM) (Slater & Rouner, 2002) are essential to understanding how narratives and humor affect audiences.

The ELM states that there are two distinct routes of cognitive processing that can lead to attitude change: central and peripheral (Petty & Cacioppo, 1986). The central route involves the

more thoughtful processing of a message and thorough consideration of the merits of a message, which can include counter-arguing of the message's persuasive elements (Petty & Cacioppo, 1986).

Only if a person is sufficiently motivated and capable of processing a message will he or she continue down the central route of processing. Personal relevance and need for cognition are two reasons why a person might be motivated to elaborate on the message. Message comprehensibility and prior knowledge of the issue might also affect ability to elaborate. Also, a person must have either predominantly negative or positive thoughts about an issue to further travel down the central route. Neutral feelings about the message will lead to peripheral processing. If a person is motivated to elaborate and continues along the central route of processing, and if a message creates a change in cognition about the topic, the message will have created either a positive or negative central route attitude change (Petty & Cacioppo, 1986). Attitudes created through the central route are typically more lasting, resistant to counter-persuasion, and predictive of behavior (Petty & Cacioppo, 1986).

The peripheral route consists of building associations based on positive or negative cues that a message creates and a much simpler consideration of an issue or message, which typically does not lead to counter-arguing because this route does not cause elaboration on the message (Petty & Cacioppo, 1986). People tend to process a message peripherally when they are not motivated or capable of processing the message through the central route. Thus, if the message includes a peripheral cue, such as a simple positive or negative affect or an attractive message source, it is likely to create attitude change. However, attitude change created through the peripheral route does not last, can easily be changed, and does not predict behavior. If a message

does not include a peripheral cue that encourages attitude change by the audience member, he or she is likely to retain his or her original attitude about the topic (Petty & Cacioppo, 1986).

Using the ELM as a starting point, the EELM attempts to explain how viewers process entertainment narratives (Slater & Rouner, 2002). The EELM states that people become absorbed in reading or viewing a narrative and expend a lot of mental effort to follow the storyline, rather than scrutinizing the information or message underlying the narrative (Slater & Rouner, 2002). The EELM (Slater & Rouner, 2002) posits that, because viewers are transported, and especially if they identify with characters, they will typically engage in less counter-arguing, which usually occurs in central route processing in the traditional ELM (Petty & Cacioppo, 1986).

According to the EELM, when people become transported, the message may persuade or inform them without their realizing it (Slater & Rouner, 2002). This transportation effect may create changes in attitude and beliefs even if the audience member is initially resistant to the behavior or message in the narrative (Slater & Rouner, 2002). Well-crafted narratives seem to produce more favorable thoughts toward the story than unfavorable thoughts, which can aid persuasion.

Cognitive Thought-Listing/Counter-Arguing

One of Cacioppo and Petty's (1981) primary contentions relating to attitude change was that the ability to assess information was less important than how a person cognitively evaluates information. A person's self-statements regarding a stimulus are very influential in attitude change. "If the audience generates favorable thoughts about a message, persuasion results; if counter-arguments are produced, resistance results" (Cacioppo & Petty, 1981, p. 310).

To measure what people thought in response to persuasive messages, Cacioppo and Petty (1981) developed the thought-listing technique, which relies on self-reporting of thoughts during

or shortly after an individual encounters a stimulus. “The thought-listing technique is based on the assumption that the psychological significance of an individual's thoughts and feelings, as well as the underlying cognitive processes, can be examined by content analyzing the individual's reported thoughts, ideas, images, and feelings” (Cacioppo, von Hippel, & Ernst, 1997, p. 929).

Analyzing thought lists is a laborious process, but of interest to this study was the way Cacioppo and Petty categorized responses and the weight they placed on counter-arguing. Cacioppo and Petty (1981) proposed three dimensions through which thoughts were categorized: polarity, origin, and target. Polarity, which parallels counter-arguing, represents the degree to which a thought is in favor of or opposed to a stimulus. Origin represents the source of the information in the thought, and target represents what the thought is directed at.

When researchers judge polarity, each thought is classified as either favorable, neutral/irrelevant, or unfavorable in relation to a persuasive message or other stimulus. Unfavorable thoughts represent a counter-argument to persuasive messages. Counterarguments can also be specific challenges to message content, realism, believability, or other message attributes. Counterarguments can take the form of valence, specific thoughts, or both. Cacioppo and Petty (1981) noted that the most consistent finding in cognitive-response communication research was that favorableness of thoughts produced by a stimulus positively related to evaluation of the stimulus. Meaning that reducing counter-arguing of a message correlates to favorable thoughts about the message.

Counter-arguing is sometimes studied in communication research as a mediating variable for attitude, intention, and behavioral change. Counter-arguing has also been recognized as an important component of resistance to persuasive messages, particularly in Inoculation Theory

(Papageorgis & McGuire, 1961). This theory, analogizing counter-attitudinal persuasive messages to immunizations, states that exposure to weakened arguments that run counter to a person's existing beliefs will strengthen that person's beliefs and attitudes.

Some studies have found that messages containing counter-arguments to previously held beliefs trigger a feeling of threat, which then prompts counter-argument generation under some conditions and strengthens one's beliefs (Pfau et al., 1997). Additional inoculation research has shown that counter-arguments generated in response to inoculation messages are surprisingly stable over time (Pfau et al., 2006).

Given counter-arguing's integral role in Inoculation Theory and resistance to persuasion, pro-health messages should attempt to reduce counter-arguing. Humor and narratives may be two strategies for combating resistance.

The EELM's premises explained above, especially a lack of counter-arguing and an increase in effortful processing of the message underlying the narrative, have been supported by studies of humorous political messages (Nabi et al., 2007) entertainment-education (Slater & Rouner, 2002) and late-night comedy (Young, 2008).

Nabi et al. (2007) found that humorous political monologues increased source liking and careful, but not critical, processing of the message. However, the study also found that audience members were more likely to discount the humorous message. While Nabi et al. (2007) found no immediate effect of the humorous monologue on attitude, they did find evidence of a moderate sleeper effect. That is, the effect of the humorous message on people's attitudes strengthened over several days to the point that it reached significant levels. Nabi et al. (2007) posited that this effect may be attributed to the fact that those who read or viewed a humorous message processed it more thoroughly than those who read or viewed non-humorous messages. While audience

members initially discounted the message as a joke, perhaps they considered the message more thoughtfully once the initial effect of humor had worn off. While the current study did not test for a sleeper effect, it is interesting to note that humor may have a different effect on attitude over time than it does immediately following exposure to the stimulus. This effect is also encouraging for health communicators as it suggests humorous messages stick with audiences and encourage thorough consideration of the message.

Slater and Rouner (2002) reviewed literature on entertainment education and concluded that it often influences attitudes, beliefs, and behaviors through narrative persuasion, which is enhanced by transportation and identification with story characters, which decrease counter-arguing of the persuasive content. Slater and Rouner noted that narrative persuasion may be stronger when audience members are empathetic toward the story characters than when they identify with characters. While relation to characters is important for persuasion, empathy might be a more important feeling than identification.

Young (2008) found that late-night humorous monologues created more comprehension- and appreciation-related thoughts than similar non-humorous stimuli, while also decreasing message scrutiny. Young (2008) suggested the lack of scrutiny occurs largely because people recognize humorous discourse as entirely separate from serious discourse and discount the humorous message.

Moyer-Gusé and colleagues (2011) found support for the EELM's principles, in a study of the effects of pregnancy-related humor from a situational comedy. The study used a related-humor condition, which included jokes about an unintended pregnancy, and an unrelated-humor condition, which presented the unintended pregnancy in a serious manner, but in the context of other humorous content. Moyer-Gusé et al. (2011) found that the related-humor narrative was

more likely to reduce counter-arguing of the message and the perceived severity of consequences for an unintended pregnancy than was the unrelated-humor condition. The study found that perceived severity of consequences was a stronger predictor of intention to practice safe sex than was counter-arguing. This finding suggests that humor's effect on perceived severity of consequences for a health behavior is a very important consideration in the study of humorous health narratives.

Trivialization/Perceived Severity of Consequences

It makes intuitive sense that audiences will not take humorous communication as seriously as they do other genres, such as drama or fear-based messages. Indeed, research shows that humorous messages can decrease source credibility (Eisend, 2009) and cause audiences to discount the message (Nabi et al., 2007; Young, 2008). What may be most relevant to humorous health narratives is a trivialization effect, through which audiences underestimate the severity of consequences of health behaviors.

Trivialization is rooted in Cognitive Dissonance Theory and identified as one of three modes by which people reduce cognitive dissonance (Festinger, 1957). This theory posits that an unsettling affective state, called dissonance, arises when people feel discrepancies between cognitions about their environment and themselves (Festinger, 1957). In a health context, someone may have a feeling of dissonance because he or she knows that consuming five servings of fruits and vegetables a day is optimal, yet he or she only consumes two servings.

Simon, Greenberg, and Brehm (1995) state that trivialization is a mechanism for reducing cognitive dissonance that typically occurs in two ways. First, people reduce the importance of an inconsistency between attitudes and behaviors by reducing the importance of

the dissonant elements. Second, people reduce the importance of relevant cognitions that lead to dissonance.

Building off Simon and colleagues' (1995) explanation, the current study defined trivialization as the act of reducing the importance of cognitive elements that create feelings of dissonance about the relationship between attitudes and behaviors.

Moyer-Gusé et al. (2011) suggest that pregnancy-related humor reduces counter-arguing, which may aid behavioral intention; however, they also found that counter-arguing was not a significant predictor of changing risky sexual behavior. Rather, they found that severity of perceived consequences was a much better predictor of risky sexual behavior intentions. This result is not encouraging for health communicators, as humorous content made consequences of unintended pregnancy seem less severe in this instance (Moyer-Gusé et al., 2011).

This trivialization finding is the central argument against using humorous messages to influence positive health behaviors. To the extent that humor may reduce a person's desire to scrutinize the underlying information of the message, it also may trivialize the consequences of potentially dangerous health behaviors (Moyer-Gusé et al., 2011).

According to Moyer-Gusé et al. (2011), trivialization tends to occur through two mechanisms. In the first mechanism, viewers come to trivialize the severity of health outcomes because the humorous content triggers their schemas about humor, and these "humor" schemas tell viewers that the content of the message is not serious. Brewer and Nakamura (1984) describe schemas as "the unconscious cognitive structures that underlie human knowledge and skill" (p.136). Potter, Pashupati, Pekurny, Hoffman, and Davis (2002) explain that "we use templates (called schema) to orient our perceptions of stimuli and also to guide our interpretations of the meaning of those stimuli" (p. 28).

Schema theory suggests that viewers have developed a template about humorous content that dictates what they come to expect from that content. The triggering of schemas based on certain cues can help shape how people classify and make sense of what they see (Potter et al., 2002).

In the second common mechanism of trivialization, viewers tend to trivialize outcomes through a cognitive down-shifting through which a subject presented in a humorous context is considered comedic, whereas that same subject presented in a serious context would be interpreted as grim (Kirsh, 2006). This cognitive change seems to prevent viewers from perceiving what they see in media as relating to their lives. Hence, consequences seem less relevant to viewers (Kirsh, 2006).

Kirsh (2006) also contends that trivialization, particularly that associated with humorous violence, occurs through priming and contextual factors in addition to cognitive transformation and schematic processing. Priming is the activation of thoughts, feelings, and concepts stored in a person's memory via a cue of some sort. For example, when people view violent content alone, it activates feelings of aggression (Kirsh, 2006). However, when people view violent content paired with humorous content it creates what Kirsh (2006) refers to as a dual-priming, which activates feelings, thoughts, and concepts related to humor in combination with aggressive feelings, thoughts, and concepts. This combination may lessen perceived levels of violence because the violence is portrayed in a more whimsical or light-hearted manner (Kirsh, 2006).

Contextual factors refer to the environment in which a violent act is depicted. Consequences for a violent action and the portrayal of the perpetrator and victim of violence are contextual factors that often influence the trivialization or legitimization of violence (Kirsh, 2006).

The idea of humor leading to trivialization has found support in the study of humor in violent media. Potter and Warren (1998) found that violent acts occurred more often in humorous programs than in other genres, and viewers perceived that violence in humorous programs was less severe.

Additionally, humorous cartoon violence has been found to trivialize violent actions largely by presenting consequences of violent actions in a humorous way or by minimizing the pain of the victim (Kirsh, 2006). Humorous cartoons can also lead audiences to believe that animated violent acts are less harmful and more appropriate for children than similar acts presented in a more realistic manner (Gunter & Furnham, 1984).

While research on the effect of humor on persuasive health messages is not plentiful, it shows that humorous messages may share some commonalities with narrative persuasion and entertainment-education. Humorous messages can be beneficial for health communicators looking for a way to increase attention, effortful processing, and source liking, while decreasing counter-arguing. Integrating humor into a narrative about nutrition offers a communication product that is attractive to audiences. Communication research on narratives and humor typically measures the effect of stimulus materials on attitudes, beliefs, and intentions rather than actual behavior. The Theory of Planned Behavior provides a link from behavioral intention to behavior.

Theory of Planned Behavior

Since this study did not measure consumption of fruits and vegetables, it is important to establish the connection between intention and actual behavior. Some of the strongest support for this link comes from the Theory of Planned Behavior (TPB). The TPB examines the cognitive

process that links beliefs and behaviors (Ajzen, 2012). Ajzen's theory states that behavioral intention directly precedes behavior and that intention is a product of attitude toward the behavior, a person's subjective norm relating to the behavior, and a person's perceived behavioral control. Further, the TPB states that a person's attitude toward the behavior is informed by beliefs about the perceived consequences of the behavior, subjective norms are informed by a person's beliefs about normative expectations of influential others, and perceived behavioral control is informed by a person's beliefs about the presence of factors that control the behavior in question (Ajzen, 2012).

Simply put, the TPB states that beliefs influence behavioral attitudes, subjective norms, and perceived behavioral control, all of which inform behavioral intention, which then strongly predicts behavior.

“As a general rule, the more favorable the attitude and subjective norm, and the greater the perceived control, the stronger the person's intention to perform the behavior in question. Finally, given a sufficient degree of actual control over the behavior, people are expected to carry out their intentions when the opportunity arises. Intention is thus assumed to be the immediate antecedent of behavior” (Ajzen, 2012, p. 448).

Adolescents have a sufficient level of actual control over their consumption of fruits and vegetables, so those who have strong intention to eat fruits and vegetables can be expected to do so.

The TPB, in general, and the intention-behavior link, in particular, have received a lot of support. Armitage and Conner (2001) conducted a meta-analysis of 189 studies that examined the TPB. The meta-analysis found 48 tests that directly examined the relationship between behavioral intention and behavior, and those tests revealed a strong correlation (effect size of .47)

between the two variables across a number of domains. Sheeran (2002) conducted a meta-analysis of meta-analyses that examined intention-behavior correlations and found a mean correlation between behavioral intention and behavior of .53.

In addition to the correlational data produced in the research listed above, research on the causal link between intentions and behavior is growing. Webb and Sheeran (2006) conducted a meta-analysis of intervention experiments and found 47 studies in which the intervention condition significantly affected behavioral intentions. This change in behavioral intention then created a significant impact on behavior, although the effect size was smaller than many correlational tests suggested (Webb & Sheeran, 2006).

With regard to fruit and vegetable consumption, Ickes (2011) found that intention to consume fruits and vegetables was a significant predictor of actual consumption for overweight and obese seventh and eighth graders. However, in the same study, intention was not a significant predictor of fruit and vegetable consumption for adolescents of a normal weight. Ickes (2011) also found that intention was a significant predictor of physical activity in all adolescents in the study. Given the predictive nature of intentions on behavior, this study attempted to measure the effect of humorous narratives on intention to consume fruits and vegetables.

The obvious downside to the use of humorous messages is trivialization of negative health outcomes. One interesting note was that Moyer-Gusé et al. (2011) found that humor unrelated to the unintended pregnancy storyline in their experiment led to greater intention to practice safer sexual habits among males than did humor related to the unintended pregnancy storyline. Based on this finding, the current study focused on the difference between a related-humor narrative and an unrelated-humor narrative. This study examined whether there was a significant difference between a humorous narrative that made jokes about consuming a healthy

diet and a humorous narrative that presented a healthy diet in a non-humorous way, but in a humorous context.

Figure 1 portrays the expected interaction of the variables for the related-humor condition.

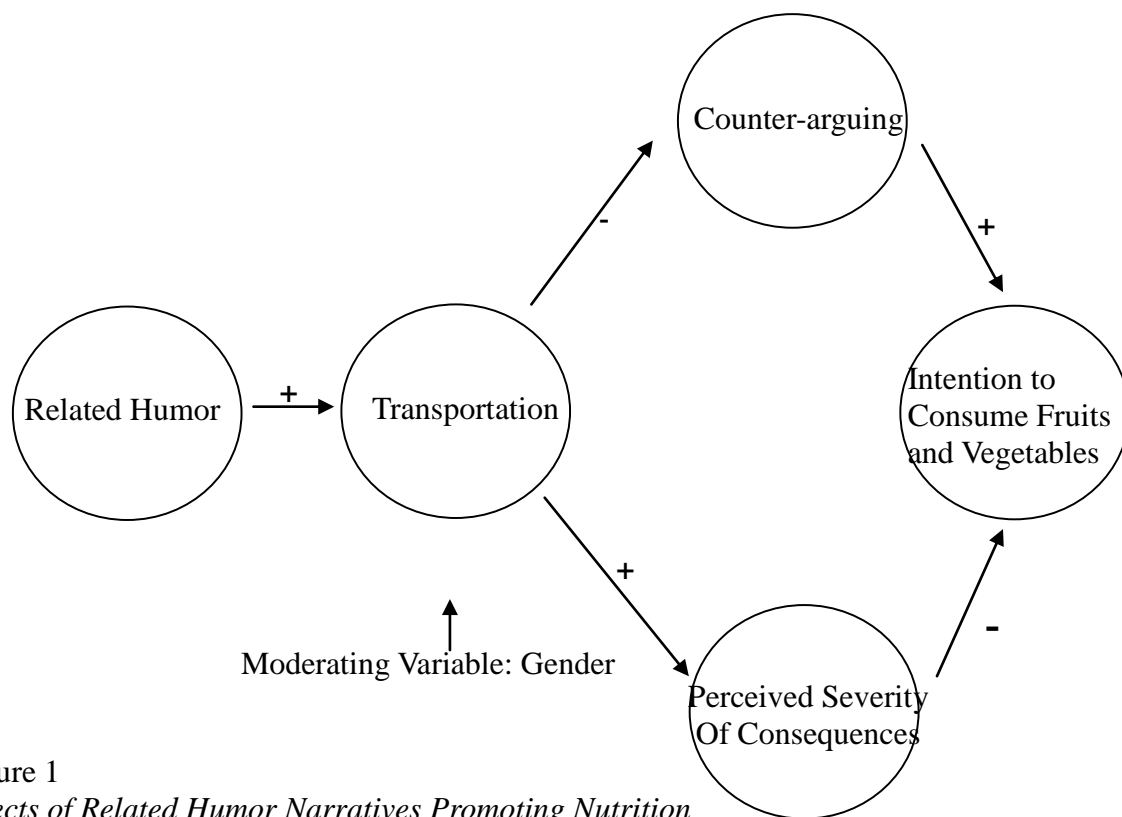


Figure 1
Effects of Related Humor Narratives Promoting Nutrition

Figure 2 portrays the expected interaction between the variables for the un-related humor condition.

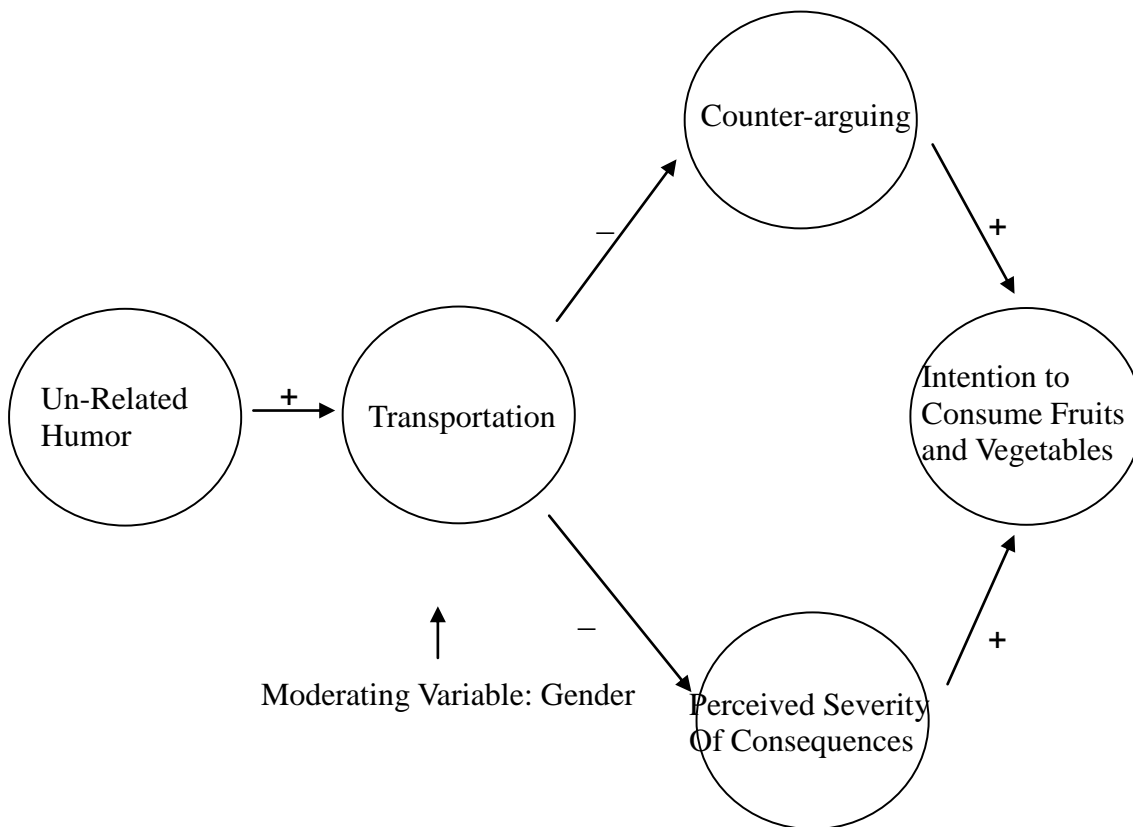


Figure 2
Effects of Un-Related Humor Narratives Promoting Nutrition

This study measured the effect these narratives had on transportation, intention to consume fruits and vegetables, counter-arguing, and perceived severity of consequences from not consuming a healthy diet. The overarching purpose of this study was to find out whether communicators can manipulate humorous narratives in a way that increases transportation and behavioral intention, while also decreasing counter-arguing and trivialization. The study proposed several hypotheses within this larger question.

Hypotheses

This study proposed several hypotheses testing a related humorous message, in which the actual message about nutrition is humorous, an un-related humorous message, which presents humor that is not related to the nutrition message, and a non-humorous control.

Counter-arguing Hypotheses

Hypothesis 1a: The related humorous message will have a significantly greater impact on reducing counter-arguing than will the un-related humorous message.

Hypothesis 1b: The related humorous message will have a significantly greater impact on reducing counter-arguing than will the control message.

Hypothesis 1c: The un-related humorous message will have a significantly greater impact on reducing counter-arguing than will the control message.

While both messages are expected to reduce counter-arguing the related humor should feel more like a “pure” piece of comedy. Humorous messages have a strong effect on reducing scrutiny of the message (Moyer-Gusé et al., 2011; Nabi et al., 2007; Young, 2008). Moyer-Gusé et al., (2011) found a very similar effect in their study in which the related-humor condition of an unintended pregnancy storyline was much more effective in reducing counter-arguing than the un-related humor condition.

Perceived Severity of Consequences Hypotheses

Hypothesis 2a: The un-related humorous message will result in significantly greater perceived severity of consequences from eating an unhealthy diet than will the related humorous message.

Hypothesis 2b: The un-related humorous message will result in significantly greater perceived severity of consequences from eating an unhealthy diet than will the control message.

Hypothesis 2c: The related humorous message will result in significantly greater perceived severity of consequences from eating an unhealthy diet than will the control message.

Humorous messages tend to trivialize consequences of health issues (Moyer-Gusé et al., 2011) and violence (Gunter & Furnham, 1984; Kirsh, 2006; Potter & Warren, 1998). Moyer-Gusé et al. (2011) found that their un-related humor condition created greater perceived severity of consequences than did their related-humor condition.

Intention to Consume Fruits and Vegetables Hypotheses

Hypothesis 3a: The un-related humorous message will create a significantly greater intention to consume fruits and vegetables than will the related humorous message.

Hypothesis 3b: The un-related humorous message will create significantly greater intention to consume fruits and vegetables than will the control message.

Hypothesis 3c: The related humorous message will create significantly greater intention to consume fruits and vegetables than will the control message.

Moyer-Gusé et al. (2011) noted that perceived severity of consequences was a stronger predictor of intention to engage in safe sex practices than reduced counter-arguing. Thus, this study predicted that the un-related humorous message will create greater perceived severity of consequences, which will influence intention to consume fruits and vegetables. Along this line of reasoning, Moyer-Gusé et al. (2011) found that, among males, the un-related humorous condition created a greater intention to practice safe sex.

This study also proposed two research questions.

Research Questions

Research Question 1: Will gender influence counter-arguing, perceived severity of consequences, transportation, and intention to consume fruits and vegetables within the related and un-related humorous conditions?

Following Moyer-Gusé and colleagues' (2011) finding that, among males, the un-related humorous condition created a greater intention to practice safe sex, this study tested gender's effect on the dependent variables within each humorous condition.

Research Question 2: Will the related humorous message, the un-related humorous message, or the control message create a greater transportation effect?

CHAPTER 3: METHODS

Design

This study employed a post-test only, control group design with one independent variable and four dependent variables. The independent variable was the use of humor within the narrative message. Each participant read either a related humorous narrative, which presented the message of consuming fruits and vegetables in a humorous context, a un-related humorous narrative, which presented serious messages about consuming fruits and vegetables within a larger humorous context, or a control narrative that did not use humor

The first dependent variable was transportation, or the degree that participants felt they were swept up or engaged in the narrative. The second dependent variable was intention to consume fruits and vegetables. The third dependent variable was trivialization of the consequences of not consuming a nutritious diet. The fourth dependent variable was counter-arguing, or the extent to which participants questioned or argued against the main message of the narrative.

Participants

The target population for this study was 11- to 14-year-old adolescents in northern Colorado. The study recruited 68 adolescents from 6th and 8th grade health classes at one middle school. All but one participant completed the experiment, creating a sample size of 67.

This population is beginning to experience varying degrees of independence, especially in their media selection, yet still live primarily in the family home environment. This population is of interest because of its impressionability, increased autonomy, and complex identity development.

Procedure

This study was approved by a large western public university's Institutional Review Board for human research. The study was administered in four class sessions at the middle school. Prior to the study, students were given a consent form and a parent information letter to take home for their parents to sign since they are under 18. The consent form and parent letter are located in Appendix A. Participants also signed an assent form, which can be found in Appendix B.

Participants were randomly assigned to one of the three experimental conditions. Before the experiment, the researcher informed participants that the experiment was designed to measure their reaction to a story, explained that they could stop at any time, asked them to answer honestly, and detailed the study procedures.

Initially, participants indicated their gender and age (Appendix C). Next, participants completed four semantic differential scales to determine their attitude toward fruits and vegetables. These scales are located in Appendix D. One scale asked about fruits and another about vegetables. The other two asked about other wearing a bike helmet and exercising regularly in order to keep participants from understanding the true purpose of the semantic differential scales.

Participants then read one of three narratives: a narrative that featured nutrition-related humor, a narrative that featured non-nutrition related humor, or the non-humorous control narrative. Participants then filled out scales to measure their intention to consume fruits and vegetables, transportation, counter-arguing of the main message of the narrative, perceived severity of the consequences of not consuming a fruits and vegetables, and story believability.

After participants finished the scales, the researcher thanked the students for participating and debriefed the participants by explaining that the goal of the study was to determine the effects of different humorous narratives.

Message Stimuli

This study's independent variable was the use of humor. The narrative stories involved characters similar to the participants and a plot that took place in school.

The related-humor narrative was the story about two middle-school students walking through the cafeteria at school where a new lunch lady is enthusiastically yelling about the benefits of eating fruits and vegetables and also yelling about other, random aspects of her life. This narrative is in Appendix E. The un-related humor message depicted two middle-school students in health class. While their teacher talked about the health benefits of fruits and vegetables a strange man is just outside their classroom window practicing karate and performing other strange acts. This narrative is located in Appendix F.

The control message was a story about two middle school students, one who is nice and one who is a bully, who become friends after the nice student helps save the bully's father's life. This narrative is in Appendix G.

The narratives were all between 603 and 693 words in length. The narratives were all between 4.3 and 5.8 in grade readability.

Measurement

Transportation was measured using the Panel 1 portion of Green and Brock's (2000) transportation scale. Panel 1 features 11 items that are measured in Likert fashion from “strongly

agree” to “strongly disagree.” Some items were reverse scored. This scale is located in Appendix H, Part II.

Intention to consume fruits and vegetables was measured using a six-items and a Likert scale format. This scale measured participants’ intention to consume fruits and vegetables in the near future and as a regular part of their diet. This scale is located in Appendix H, Part I.

Counter-arguing was measured using four-items that were adapted from Nabi et al. (2007). This scale was designed to measure the extent to which participants scrutinized the message or looked to argue with the message source. Some items were reverse scored. This scale is located in Appendix H, Part III. The Likert scales were chosen over other measures, such as thought-listing, because some researchers have noted that thought-listing is not a reliable measurement for younger populations because they are unable to accurately recall their mental dialogue (Cacioppo & Petty, 1981). Likert scales are consistent with the rest of the quantitative measures in the study. Additionally, adolescents might be likely to generate many statements that are hard to classify.

Perceived severity of consequences was measured using six items and a Likert scale. The items assessed participants’ beliefs about the extent to which consuming a non-nutritious diet will cause adverse health effects. This scale is located in Appendix H, Part IV. Believability was measured with a four-item Likert scale. This scale is located in Appendix H, Part V.

Pretest

An informal pretest was conducted to examine several aspects of the study. The pretest was conducted using 10 adolescents aged 11 to 14 from northern Colorado. The pretest helped determine whether the stimulus materials were funny and whether the stories made sense to the

audience and were believable. Using a four-item Likert scale to assess humor in which “Strongly Disagree” = 1 and “Strongly Agree” = 7, the mean score for the un-related humor condition was 5.8. The mean score for the related-humor condition was 7. The mean score for believability for the related condition was 4.4. The mean score for believability for the un-related condition was 3.15.

The pretest also helped determine how long the experiment would take, and it tested whether the participants were confused by the scales or questions, or found any part of the experiment problematic. Participants in the pretest went through the experiment just as participants in the actual experiment would with the addition of an extra questionnaire to determine whether students found stimulus materials funny, understood the message, or were confused by any part of the study. No participants in the pretest reported confusion about the experiment mechanics. The questionnaire to assess humor and believability, and determine if any part of the study was confusing is located in Appendix I.

Data Analysis

This study used ANOVAs to test for potential sources of systematic error and independent samples t-tests to examine the potential explanatory variable and to test all hypotheses and research questions. An alpha level of $p < .05$ was used for statistical tests.

CHAPTER 4: RESULTS

Participants

The participants for this study were 68 middle school students at a northern Colorado middle school. One participant did not read the narrative or answer the questions seriously, so that participant's answers were removed, creating a sample size of 67. Females made up 56.7 percent of the sample. The age of participants ranged from 11 to 14 years, with a mean of 12.88, and a median of 13. The exact age distribution is as follows: 41.8 percent were 14, 29.9 percent were 12, 16.4 percent were 13, and 11.9 percent were 11.

The related humor condition had 23 participants, with 14 females and 9 males. The unrelated humor condition had 21 participants, with 13 females and 8 males. The control condition had 23 participants, with 11 females and 12 males.

Scale Reliability

Scale reliabilities were calculated using Cronbach's alpha. Attitude toward fruits and vegetables was calculated using a seven-item semantic differential scale. Cronbach's alphas for attitude toward fruit (.74) and attitude toward vegetables (.82) were acceptable.

Intention to consume fruits and vegetables, transportation, perceived severity of consequences, counter-arguing, and story believability were measured using seven-point Likert scales. Intention to consume fruits and vegetables was measured with a six-item scale and produced a Cronbach's alpha of .86. Transportation was measured using an 11-item scale, and, after removing question two ("While I was reading the story, I noticed activity going on in the room around me."), produced a Cronbach's alpha of .71. Perceived severity of consequences was measured using a six-item scale, and, after removing question four ("Consuming vegetables is an

important part of good health.”), produced a Cronbach's alpha of .84. Believability was measured with a four-item scale, and, after removing question four (“I don't think this story would happen in real life.”), produced a Cronbach's alpha of .81. All of these scales were within the acceptable range for reliability.

Counter-arguing was the lone variable that produced a poor Cronbach's alpha for its four-item scale; the alpha was .36. The scale was not used, and hypotheses relating to counter-arguing were tested against each individual scale item. The poor reliability of the scale was confusing because similar scales have been used in other studies and produced acceptable Cronbach's alphas of .8 or higher, but with older populations (Moyer-Gusé et al., 2011; Nabi et al., 2007).

Dependent Variable Correlations

Correlations were run among the dependent variables to determine whether there were any significant overlaps among them. The highest proportion of variance explained by the correlations was only 9.3 percent. This correlation was not significant enough to warrant including the correlation data in the analysis.

Potential Sources of Systematic Error

Testing Session

Participants completed the study in one of four testing sessions; one session occurred in the morning, and the other three occurred in the afternoon. An ANOVA was run to determine whether the time of the testing session had a significant effect on the dependent variables.

Testing session did not have a significant effect on intention to consume fruits and vegetables

[$F(3, 60) = .07, p = .96$], transportation [$F(3, 62) = .98, p = .41$], or perceived severity of consequences [$F(3, 61) = 2.68, p = .06$].

Since the counter-arguing scale was unreliable, ANOVAs assessed the impact of testing session on each scale item. The tests did not find a significant effect for testing session on the first scale item (“I found myself looking for information in the story that was wrong.”) [$F(3, 63) = 1.35, p = .27$]. Testing session did not have a significant effect on the second scale item (“I found myself agreeing with the information in the story.”) [$F(3, 63) = 1.71, p = .17$]. Testing session did not have a significant effect on the third scale item (“I sometimes found myself thinking of ways I disagreed with what was being presented.”) [$F(3, 63) = .52, p = .67$]. Testing session did not have a significant effect on the fourth scale item (“It was easy to agree with the information presented in the message.”) [$F(3, 63) = .16, p = .92$].

Attitudes Toward Fruits and Vegetables

An ANOVA was run to test whether participants in the three experimental groups were similar in their attitudes toward fruits and vegetables prior to exposure to the experimental stimuli. There was no significant difference in attitude toward fruits [$F(3, 63) = .28, p = .84$] or vegetables [$F(3, 63) = 1.07, p = .37$] across the three groups.

Potential Explanatory Mechanism - Believability

Believability was included in this study as a possible explanatory variable for any significant findings among the dependent variables. Had the study found significant differences in transportation and other dependent variables, then differences in story believability could have helped explain the differences between other variables. The difference in believability between the related-humor condition ($M = 3.85, SD = 1.13$) and the un-related-humor condition ($M =$

4.53, $SD = 1.19$) was not significant ($t(40) = 1.92, p = .06$). The difference in believability between the related-humor condition ($M = 3.85, SD = 1.13$) and the control condition ($M = 5.35, SD = 1.19$) was significant ($t(43) = 4.34, p = .00$). However, this difference in believability did not influence transportation or other dependent variables since the related-humor condition was not significantly different from the control condition for any other variable. For this sample, the bully and bullied story probably sounded more plausible than a loud, enthusiastic lunch lady.

Hypothesis Testing

Hypotheses for Counter-Arguing

Since the counter-arguing scale did not reach an acceptable Cronbach's alpha for reliability, an independent samples t-test was run for each of the scale items.

Hypothesis 1a: The related humorous message will have a significantly greater impact on reducing counter-arguing than will the un-related humorous message.

This hypothesis was not supported. The analysis did not reveal any significant differences between the related-humor message and the un-related humor message for the scale items (see Table 1).

Table 1

Related and un-related humor condition t-test results for counter-arguing

Scale Item	Related Humor, <i>M (SD)</i>	Un-related Humor, <i>M (SD)</i>	<i>t value (DOF)</i>	<i>p value</i> (one-tailed)
1. I found myself looking for information in the story that was wrong.	2.78 (1.54)	2.38 (1.43)	0.89 (42)	.19
2. I found myself agreeing with the information in the story.	3.74 (1.25)	3.38 (1.53)	0.85 (42)	.2
3. I sometimes found myself thinking of ways I disagreed with what was being presented.	3.3 (1.29)	3.76 (1.64)	1.03 (42)	.16
4. It was easy to agree with the information presented in the message.	3.3 (1.11)	2.81 (1.25)	1.39 (42)	.09

Hypothesis 1b: The related humorous message will have a significantly greater impact on reducing counter-arguing than will the control message.

This hypothesis was not supported. The related humorous message did not significantly reduce counter-arguing over the control message. Independent samples t-tests found that for scale item two (“I found myself agreeing with the information in the story.”) the related-humor message reduced counter-arguing significantly more than the control message. The rest of the differences were not significant (see Table 2).

Table 2

Related humor and control condition t-test results for counter-arguing

Scale Item	Related Humor, <i>M (SD)</i>	Control, <i>M (SD)</i>	<i>t value (DOF)</i>	<i>p value</i> (one-tailed)
1. I found myself looking for information in the story that was wrong.	2.78 (1.54)	3 (1.59)	0.47 (44)	.32
2. I found myself agreeing with the information in the story.	3.74 (1.25)	2.96 (1.33)	2.06 (44)	.02*
3. I sometimes found myself thinking of ways I disagreed with what was being presented.	3.3 (1.29)	3.48 (1.5)	0.42 (44)	.34
4. It was easy to agree with the information presented in the message.	3.3 (1.11)	3.17 (1.11)	0.4 (44)	.35

Hypothesis 1c: The un-related humorous message will have a significantly greater impact on reducing counter-arguing than will the control message.

This hypothesis was not supported. The un-related humor message did not prove significantly better at reducing counter-arguing than the control message. No significant differences were found for any of the scale items (see Table 3).

Table 3

Un-related humor and control condition t-test results for counter-arguing

Scale Item	Un-related Humor, <i>M (SD)</i>	Control, <i>M (SD)</i>	<i>t value (DOF)</i>	<i>p value (one-tailed)</i>
1. I found myself looking for information in the story that was wrong.	2.38 (1.43)	3 (1.59)	1.35 (42)	.09
2. I found myself agreeing with the information in the story.	3.38 (1.53)	2.96 (1.33)	0.98 (42)	.17
3. I sometimes found myself thinking of ways I disagreed with what was being presented.	3.76 (1.64)	3.48 (1.5)	0.6 (42)	.28
4. It was easy to agree with the information presented in the message.	2.81 (1.25)	3.17 (1.11)	1.02 (42)	.16

Tests of Severity of Consequences

Because multiple t-tests were run among the experimental groups to test the following hypotheses involving severity of consequences as the dependent variable, the family-wise Type 1 error rate was controlled using a Bonferroni correction. This correction set the p value for each t-test at $p < .017$.

Hypothesis 2a: The un-related humorous message will result in significantly greater perceived severity of consequences for eating an unhealthy diet than will the related humorous message.

This hypothesis was not supported. The un-related humorous message did not produce greater perceived severity of consequences ($M = 5.67$, $SD = 1.31$) than did the related-humor message ($M = 5.77$, $SD = 1.06$), $t(41) = 0.29$, $p = .39$.

Hypothesis 2b: The un-related humorous message will result in significantly greater perceived severity of consequences from eating an unhealthy diet than will the control message.

This hypothesis was not supported. The difference in perceived severity of consequences between the un-related humorous message ($M = 5.67$, $SD = 1.06$) and the control message ($M = 5.64$, $SD = .9$) did not reach significance ($t(41) = 0.1$, $p = .46$).

Hypothesis 2c: The related humorous message will result in significantly greater perceived severity of consequences from eating an unhealthy diet than will the control message.

This hypothesis was not supported. The difference between the related-humor message ($M = 5.77$, $SD = 1.31$) and the control message ($M = 5.64$, $SD = .9$) was not significant ($t(42) = 0.4$, $p = .35$).

Tests of Intention to Consume Fruits and Vegetables

Because multiple t-tests were run among the experimental groups to test the following hypotheses about intention, the family-wise Type 1 error rate was controlled using a Bonferroni correction. This correction set the p value for each t-test at $p < .017$.

Hypothesis 3a: The un-related humorous message will create a significantly greater intention to consume fruits and vegetables than will the related humorous message.

This hypothesis was not supported. The un-related humorous message did not produce a significantly higher intention to consume fruits and vegetables ($M = 5.79$, $SD = .81$) than did the related humorous message ($M = 5.68$, $SD = .92$), $t(40) = .42$, $p = .34$.

Hypothesis 3b: The un-related humorous message will create significantly greater intention to consume fruits and vegetables than will the control message.

This hypothesis was not supported. The difference in intention to consume fruits and vegetables between the un-related humorous message ($M = 5.79$, $SD = .81$) and the control message ($M = 5.46$, $SD = .99$) did not reach significance ($t(41) = 1.2$, $p = .12$).

Hypothesis 3c: The related humorous message will create significantly greater intention to consume fruits and vegetables than will the control message.

This hypothesis was not supported. The difference between the related-humor message ($M = 5.68$, $SD = .92$) and the control message ($M = 5.46$, $SD = .99$) was not significant ($t(41) = 0.76$, $p = .23$).

Research Question Testing

Research Question 1: Will gender influence counter-arguing, perceived severity of consequences, transportation, and intention to consume fruits and vegetables within the related and un-related humorous conditions?

The study used independent samples t-tests to analyze whether gender affected the dependent variables with the humorous conditions. The related-humor condition featured 14 females and 9 males. The t-tests revealed no significant differences between genders for any of the dependent variables in the related-humor condition (See Table 4).

Table 4

Gender and dependent variables in the related-humor condition.

Dependent Variable	Males, <i>M</i> (<i>SD</i>)	Females, <i>M</i> (<i>SD</i>)	<i>t</i> value (<i>DOF</i>)	<i>p</i> value (two-tailed)
Intention to consume	5.74 (.67)	5.64 (1.04)	0.22 (19)	.83
Perceived Severity of Consequences	5.38 (1.91)	6.0 (.82)	1.08 (20)	.29
Transportation	4.36 (.45)	4.25 (.73)	0.39 (20)	.7
Counter-arguing 1	2.89 (1.45)	2.71 (1.64)	0.26 (21)	.8
Counter-arguing 2	3.56 (.73)	3.86 (1.51)	0.56 (21)	.59
Counter-arguing 3	3.67 (1.32)	3.07 (1.27)	1.08 (21)	.29
Counter-arguing 4	3.11 (.78)	3.43 (1.28)	.66 (21)	.51

The un-related humor condition featured 13 females and 8 males. Independent samples *t*-tests revealed no significant differences between females and males in the un-related humor condition for any of the dependent variables (See Table 5).

Table 5

Gender and dependent variables in the un-related-humor condition.

Dependent Variable	Males, <i>M</i> (<i>SD</i>)	Females, <i>M</i> (<i>SD</i>)	<i>t</i> value (<i>DOF</i>)	<i>p</i> value (two-tailed)
Intention to consume	5.92 (.66)	5.71 (.91)	0.57 (19)	.58
Perceived Severity of Consequences	5.43 (1.47)	5.82 (.73)	0.82 (19)	.42
Transportation	4.68 (.48)	4.2 (.99)	1.26 (19)	.22
Counter-arguing 1	2.75 (1.39)	2.15 (1.46)	0.92 (19)	.37
Counter-arguing 2	3.0 (1.2)	3.62 (1.71)	0.89 (19)	.39
Counter-arguing 3	3.38 (1.51)	4 (1.73)	0.84 (19)	.41
Counter-arguing 4	2.75 (1.04)	2.85 (1.41)	0.17 (19)	.87

Research Question 2: Will the related humorous message or the un-related humorous message create a greater transportation effect?

Independent samples t-tests were used to compare the transportation effect between conditions. The difference between the un-related humorous message ($M = 4.38$, $SD = .85$) and the related humorous message ($M = 4.29$, $SD = .63$) was not significant ($t(41) = .39$, $p = .35$).

CHAPTER 5: DISCUSSION AND CONCLUSIONS

Study findings suggest that, for 11- to 14-year-old adolescents, humorous narratives about eating fruits and vegetables (regardless of whether the humor is related to the consumption of these foods) do not offer an advantage over a non-humorous narrative that does not promote healthy eating habits. Results indicate that the humorous message conditions did not produce significantly stronger intentions to consume fruits and vegetables than did the control condition.

This lack of a significant difference for the humorous messages may have occurred for at least three reasons. First, participants indicated that they largely held favorable attitudes toward eating fruits and vegetables before reading the narratives. It stands to reason that the humorous narratives had relatively little room for decreasing trivialization and improving intention to consume fruits and vegetables in this sample.

Second, the researcher was only able to recruit 67 participants when he had hoped to recruit 120. This small sample size may have caused the study to be underpowered.

Third, the narratives may not have been long enough to produce significant effects. Had the messages been longer, participants might have become more involved in the story and reported higher intention, counter-arguing, or perceived severity of consequences.

The study also showed no significant differences between the humorous messages in terms of counter-arguing, perceived severity of consequences, and intention to consume fruits and vegetables. Moyer-Gusé and colleagues (2011) found that un-related humor created greater perceived severity of consequences while related humor reduced counter-arguing significantly, and that perceived severity of consequences was a greater predictor of behavioral intention. This study expected to see that pattern, but it did not come to fruition.

The results for intention to consume fruits and vegetables were in the predicted direction, in that un-related humor produced the greatest intention and the control produced the lowest intention, but the results were not significant. The study's low power might explain the lack of significance between conditions.

In the case of counter-arguing the study may not have found significant differences because the measure was unreliable. While cognitive thought-listing may be a problematic measuring technique for younger audiences, it may prove more reliable than a scale of Likert items. Another measure for counter-arguing used by Pfau and colleagues (2006) is the recognition check-off procedure. This measure provides participants a list of possible counter-arguments and participants can check the arguments that entered their minds while reading the stimuli. Then, participants are asked to assign a strength rating (1 = weak, 7 = strong) to each of the counter-arguments they checked. The recognition check-off procedure does not require the mental effort from participants that cognitive thought-listing does. Some researchers suggest that recognition check-off closely resembles the process of counter-arguing that people engage in when they resist a persuasive message (Benoit, 1991).

Alternatively, counter-arguing may have been affected by transportation. Results for transportation for the un-related humorous message ($M = 4.38$, $SD = .85$) and the related humorous message ($M = 4.29$, $SD = .63$) suggest that the participants were transported into the story. Given these results, and following the principles of the EELM (Slater & Rouner, 2006), if the participants were transported they may not have been counter-arguing the message. While it is still possible that the scale for counter-arguing was unreliable because it is ill-suited for the population, it might have also been unreliable because the participants were not counter-arguing, and the scale was attempting to measure an effect that was not occurring.

Also, counter-arguing may have been the wrong variable to measure. Counter-arguing implies that as people receive a message they are actively generating arguments against the message. Perhaps reactance would have been a better concept to study, and better suited for similar research. Psychological Reactance Theory originally proposed that messages that pose a threat to freedom trigger resistance in people, who then seek to regain the feeling of freedom and are not persuaded by the message (Brehm, 1966). However, Brehm long held that reactance was an immeasurable motivational state that hindered persuasion. Recent studies have had some success in operationalizing reactance as a composite of cognitive (negative thoughts) and affective (anger) outcomes (Dillard & Shen, 2005), and as a composite of anger, perceived freedom threat, and perceived argument quality (Kim, Levine, & Allen, 2013).

Reactance may be a better concept for what was happening in the adolescents in this study. They have likely been told many times that consuming fruits and vegetables is good for them, and assuming they recognize this fact, they do not actively generate counter-arguments. However, given that adolescents are naturally skeptical and resistant to authority figures they may have feelings of reactance to the source or the general idea of being told what to do. These resistant feelings might come without the participants arguing that fruits and vegetables are not important or healthful.

Another issue with the Likert scale measure for counter-arguing is that it may have put thoughts into the participants' minds. The participants may not have thought to argue with the message until the questions asked them about it.

The first scale item ("I found myself looking for information in the story that was wrong.") could have implied to participants that they should be looking for wrong information in the story. The second scale item ("I found myself agreeing with the information in the story.")

may have influenced participants in the opposite direction of the first scale item, and implied that they should agree with the story. While the reverse-scored items were used to force the participants to read each item carefully, they may have simply confused the participants. This confusion may have contributed to the inconsistent pattern in which the participants answered the counter-arguing items and the poor Cronbach's alpha for the scale.

The third scale item ("I sometimes found myself thinking of ways I disagreed with what was being presented.") presents the same issue as scale item one because participants may have felt they are supposed to be looking for ways to disagree with the message. The fourth scale item ("It was easy to agree with the information presented in the message.") may have also implied that participants should agree with the message. Also, the alternate pattern of normal and reverse-scored items may have added additional confusion and negatively influenced the scale's reliability.

The results for counter-arguing were the opposite of the researcher's predictions and other research on humor (Moyer-Gusé et al., 2011; Nabi et al., 2007; Young, 2008). Results for perceived severity of consequences also ran counter to the hypotheses and findings by Moyer-Gusé et al. (2011). The un-related humor message reduced counter-arguing to a greater degree than the related-humor message, and the related-humor message created greater perceived severity of consequences than the un-related message. Again, these differences in means were not significant.

The study setting may also have influenced the participants. All students participated in the study during their health class. The researcher asked all students to answer honestly and told them their answers would not affect their grade in the class, but they may have still felt some pressure to give the "right" answer for intention and perceived severity of consequences. If

students were influenced by the setting, the study might have measured what the students thought was the desirable answer, rather than what their honest answer was.

The study could have avoided the setting influence if the testing sessions had been run in classrooms in several different subjects, and not just health. However, the researcher was only able to recruit participants from the middle school's health class.

The lack of significant findings may also be partially attributable to the lack of research on adolescents. Much of the research on narratives and humor has been conducted with older populations (Buffing et al., 2010; Moyer-Gusé et al., 2011; Nabi et al., 2007; Slater et al., 2006; Young, 2008). It is possible that humor does not produce the same cognitive reactions in adolescents that it has in older populations. Adolescents are highly skeptical and frequently question messages from adults (Grandpre et al., 2003). This inherent skepticism may have led the sample to experience lower levels of transportation and higher levels of counter-arguing than expected. As mentioned earlier, it appears the participants were transported, and it is possible they were not counter-arguing.

Another relevant factor is adolescents' media use. Adolescents spend an average of six hours a day watching television or on a computer, and only 37 minutes reading any materials (Rideout et al., 2010). Therefore, a written story meant to entertain and transport the sample may have seemed slightly foreign, and not produced the expected changes in dependent variables. If adolescents only read an average of 37 minutes a day, the majority is likely related to school and they might not view reading as a source of entertainment.

Additionally, Pitcher et al. (2007) found that adolescents are more likely to read and enjoy reading if the environment is engaging, incorporates technology that students use to read outside the classroom, and the students are given choice of reading materials. The study setting

offered none of these advantages, which could have affected the extent to which the participants enjoyed the story and became engaged.

Another possibility is that the messages triggered a boomerang effect, in which the intention of nutrition promotion backfired. Ringold (2002) reviewed a number of studies on many public health interventions and warnings, especially those related to alcohol consumption, and learned that many initiatives trigger psychological reactance. Ringold found that warnings, restrictions, and even educational messages can feel like a threat to individual freedom in some audience members. This threat can then cause some people to pursue the behavior that the message was trying to prevent.

The humorous narratives were written to feel more like entertainment than persuasion, but the participants, especially given the setting, could have interpreted the message as persuasive or informative. Ringold (2002) noted that the populations that show the most resistance to persuasive messages are those the message was targeted at. Ringold uses the example that heavy alcohol consumers are often predisposed to reactance to persuasion. Adolescents are certainly predisposed to opposing persuasive communication (Grandpre et al., 2003).

Limitations

As mentioned in part of the Discussion section, this study has several limitations. The first limitation is a small sample size. The researcher was only able to recruit 67 participants, and had hoped to recruit 120. This had a negative effect on the power of the findings. The small sample hindered the ability of the study to detect an effect should one exist in this sample. Subsamples for Research Question 1 to determine what effect gender had on the dependent

variables had even lower statistical power. The small samples negatively affected the study's ability to detect effects.

The sample and results are also not generalizable to all adolescents in the country. The sample was not randomly selected and is not representative of the country's adolescent population.

The Likert scale used for measuring counter-arguing was unreliable. Counter-arguing was then measured on an item-by-item basis, which damages the measure's internal validity. The researcher cannot be sure the study accurately measured the participants' counter-arguing. As previous researchers have suggested that cognitive thought-listing is also a problematic method for measuring counter-arguing in young populations, future studies should explore other methods for measuring counter-arguing, such as the recognition check-off procedure.

This study did not measure attitude toward fruits and vegetables after the participants read the narratives. Attitude change might have been a useful variable to help measure the impact of the narratives, and is a natural contributing factor to behavioral intention and behavior change (Ajzen, 2012). Attitude change has been an integral part of many studies of narratives (Perloff, 2014; Slater & Rouner, 2002). Much of the theoretical background for this study is based on the ELM (Petty & Cacioppo, 1986) and the EELM (Slater & Rouner, 2002), which detail the processes of attitude change. Since the study did not find significant results for behavioral intention, attitude change might have yielded some informative results.

Additionally, Eisend (2009) highlighted the process in advertising of lower-order attitudes, such as affective reactions, about a message transferring to higher-order, lasting attitudes about a brand. It would be interesting to see if a similar process occurs with health-related topics, rather than consumer products.

Another measure that was left out for length considerations was a character identification or character empathy scale to measure the degree to which participants related to or felt empathy for the characters in the narratives. This feeling of connection to characters can influence transportation, and could have helped explain significant variations in transportation had those existed (Slater et al., 2006; Slater & Rouner, 2002). Other measures that also could have been added to measure the participants' evaluation of the message are source credibility, message persuasiveness, and humor. The study relied on humor measurements from the pretest, but it is possible the experiment participants did not find the narratives as humorous as the pretest participants. Source credibility and persuasiveness could also be potential explanatory variables for the lack of significant findings.

Another limitation is that the study only covered intention to consume fruits and vegetables. The humorous conditions may have had different effects for different topics, such as increasing exercise, decreasing unhealthy food consumption, or tobacco use.

As mentioned in the Discussion section, the narratives may not have been long enough to trigger transportation and influence other dependent variables. Other studies have used television shows as their stimuli (Moyer-Gusé et al., 2011; Slater et al., 2006), while studies using written humorous stimuli used short jokes (Young, 2008) or monologues (Nabi et al., 2007). Longer narratives may have allowed for more engagement and character identification.

Future Research

Although this study did not produce any significant results, researchers should continue to examine the use of humor in health communication and promotion. Humorous communication has not been studied extensively outside of advertising, and adolescents are an understudied

population. The target population for this study, 11- to 14-year-olds, is exposed to an average of 12 hours of media each day (Rideout et al., 2010). Determining the kind of promotional nutrition message that will influence adolescents is very important, especially given their obesity rate (Ogden et al., 2012) and the finding that BMI in adolescence is highly predictive of BMI later in life (Guo & Chumlea, 1999).

Despite the growing obesity rate for adolescents we know little about how promotional nutrition messages of any kind affect adolescents. A review of meta-analyses showed that mediated interventions for fruit and vegetable consumption yield rather small effect sizes (.05), while school-based, interpersonal interventions for nutrition behaviors produce slightly larger effect sizes (.12) (Snyder & LaCroix, 2013). Meta-analyses that examine school- and program-based interventions are also more common than those that evaluate media campaigns (Gonzalez-Suarez, Worely, Grimmer-Somers, & Dones, 2009; Strice, Shaw, & Marti, 2006). Gonzalez-Suarez et al. (2009) found that school-based programs that addressed childhood obesity were effective in reducing the prevalence of obesity, but possibly only in the short-term. Strice et al. (2006) examined a broader range of intervention programs, and found that interventions produced larger effect sizes if they targeted only weight loss behaviors as opposed to other health behaviors, tested the intervention in a pilot study, and featured participants who chose to opt in to the intervention. However, these studies examined obesity prevention broadly, rather than solely studying fruit and vegetable promotion.

Similar studies to this one, such as Moyer-Gusé and colleagues (2011), found significant results with a larger and older sample. Similar studies of adolescents with adequate power could help us better understand if humor affects adolescents differently than older populations.

Future research should continue to examine different humorous manipulations, such as related and un-related, to determine what strategies can utilize the advantageous aspects of humor without trivializing consequences. For example, Buffing et al. (2010) tested narrative shift humor against “funny bits,” and irony, and found that use of narrative shift humor resulted in greater message liking, processing, and recall. However, this study was performed with an older sample, and adolescents might respond better to a different form of humor.

Also, narratives are very versatile and adaptable. A similar story and message adapted to different media, such as television or an illustrated story, may produce different effects. Adolescents likely consume more humorous media via television or computers because they use these media so much more than they read (Rideout et al., 2010). The familiarity with a more visual presentation may create greater effects in adolescents.

Researchers should also attempt similar studies in different locations, where the population may have different attitudes toward nutrition. The participants in this study held favorable attitudes toward fruits and vegetables prior to exposure to the narratives, so there may have been a ceiling on how much the narratives could improve intention to consume fruits and vegetables beyond the participants' inherent intention. Adolescents in different areas in the country might not hold such positive attitudes toward fruits and vegetables prior to reading the narratives. Therefore, the narratives might make a bigger difference in intention to consume fruits and vegetables.

Future research should also incorporate measures of attitude into studies about humorous health communication. Even though participants held favorable attitudes toward fruits and vegetables prior to exposure to the messages, measuring the attitude change from pre- to post-exposure could have been illuminating. According to the Theory of Planned Behavior, attitude

toward a behavior is a significant contributing factor to behavioral intention and behavior (Ajzen, 2012).

This study did not produce significant results, but provided valuable lessons. Perhaps the most important insight is the difficulty in studying adolescents and gaining significant results. Adolescents are uniquely skeptical and distrusting of authority. This mindset likely influences the way adolescents process messages, which requires a re-thinking about how humor and narratives may affect this age range. Future research should attempt to better understand how adolescents counter-argue or resist persuasive messages. Studies could include a message adolescents are expected to counter-argue to see if they are counter-arguing to the degree one would expect. These studies could also employ different measurements, such as verbal assessment, in which participants speak their thoughts aloud, or cognitive thought-listing. These measures would allow researchers to hear how adolescents counter-argue or show reactance in their own language. From this, researchers could create Likert scales for adolescent counter-arguing employing the language adolescents actually use. This strategy may create a scale adolescents better understand, and answer in a more reliable fashion, so that researchers have a reliable, close-ended, quantitative measure for adolescent counter-arguing that is more valid.

Humor is appealing and humorous messages may offer unique advantages for health promotion, but this study did not help to clarify the ways humor may be most beneficial. Future research should continue to explore strategies for promoting health to adolescents.

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APPENDIX A – PARENT LETTER AND CONSENT FORM

LETTER SENT HOME TO PARENTS TO INTRODUCE THE RESEARCH AND ACCOMPANY THE DOCUMENTED CONSENT FORM

Dear Parents/Guardians,

My name is Kyle Garratt, and I am a graduate student researcher from Colorado State University in the Journalism and Technical Communications Department. Under the guidance of my advisor, Marilee Long, Ph.D., Professor, I am conducting a research study on the effects of different narratives that promote nutrition. The title of our project is “Evaluating the Effects of Nutrition-Based Narratives.” The Principal Investigator is Marilee Long, Ph.D., Professor in the Journalism and Technical Communications Department, and I am the Co-Principal Investigator.

I am asking for your permission to have your student participate in this study. We would like your child to complete a brief questionnaire with questions about their attitudes toward several topics and they will read three narrative stories, and then will answer some questions about the narratives. Your child’s participation in this research is voluntary. If your child decides to participate in the study, s/he may withdraw their consent and stop participation at any time without penalty. If your child participates or does not participate in this research will no effect on your child’s grade or status in the class.

While there are no direct benefits to your child associated with this research, we hope to gain more knowledge on the effects of narratives that promote nutrition. This study is anonymous. For this study, we are not obtaining your child's name or other identifiable data from your child beyond the consent form, so nobody (not even the research team) will be able to identify your child or your child's data. Your child’s information will be combined with information from the other students taking part in the study. When we write about the study to share with other researchers, we will write about the combined information we have gathered. Your child will not be identified in these written materials.

There are no known risks associated with participation in this research. It is not possible to identify all potential risks in research procedures, but the researcher(s) have taken reasonable safeguards to minimize any known and potential, but unknown, risks.

I have enclosed the consent form for you and your child to read and sign. Please return to his/her ____ teacher by March 7. If you have any questions about the research, please feel free to contact me at: kgarratt06@gmail.com ; (970) 214-7645 or my advisor, Marilee Long, Ph.D. at (970) 491-6463. If you have any questions about your rights as a volunteer in this research, contact Janell Barker, Human Research Coordinator, at 970-491-1655.

Sincerely,

Kyle Garratt, M.S. Candidate
Co-Principal Investigator

Marilee Long, Ph.D.
Professor and Principal Investigator

Consent to Participate in a Research Study –

Colorado State University

TITLE OF STUDY: Evaluating the Effects of Nutrition-Based Narratives

PRINCIPAL INVESTIGATOR: Marilee Long, Ph. D, Professor, Department of Journalism and Technical Communication, (970) 491-6463

CO-PRINCIPAL INVESTIGATOR: Kyle Garratt, M.S. Candidate, Department of Journalism and Technical Communication, (970) 214-7645; kgarratt06@gmail.com

STUDY POPULATION: This study is interested in adolescents and how narrative messages promoting nutrition affect them.

RESEARCHER: Kyle Garratt will be the primary researcher for this study and will conduct all study procedures.

PURPOSE OF THE RESEARCH: The purpose of this study is to determine the effects of different narratives promoting nutrition.

STUDY LOCATION AND DURATION: The study will take place at your child's school and should take about 30-40 minutes.

PROCEDURE: Participants will be asked to indicate their age and gender strictly for data analysis purposes. They will then be asked to fill out a questionnaire to determine their attitudes toward several topics. Participants will then read one of three narrative stories. Following the reading participants will be asked to answer some questions about the narrative.

POSSIBLE RISKS AND DISCOMFORTS: The researchers do not anticipate any risks or discomforts as a result of participating in this study. If participants feel uncomfortable with any part of the study they can skip that part or withdrawal from the study entirely. It is not possible to identify all potential risks in research procedures, but the researchers have taken reasonable safeguards to minimize any known and potential, but unknown, risks.

POTENTIAL BENEFITS: This study will produce no known direct benefits to the participant. Participation in the study will help us better understand what kinds of nutrition messages have positive effects on adolescents. Participants in this study will help us better understand how adolescents respond to health messages.

OPPORTUNITY TO WITHDRAWAL: Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participating at any time without penalty or loss of benefits to which you are otherwise entitled.

CONFIDENTIALITY: This study is anonymous. For this study, we are not obtaining your child's name or other identifiable data from your child beyond the consent form, so nobody (not even the research team) will be able to identify your child or your child's data. Informed consent with the participant's name will not be linked to other information and no name will appear on other research protocols. We may be asked to share the research files for audit purposes with the CSU Institutional Review Board ethics committee, if necessary.

LIABILITY: If you have any questions or concerns about this study please contact Kyle Garratt at kgarratt06@gmail.com or Committee Chairperson Marilee Long at

QUESTIONS: Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now or at any point by contacting Kyle Garratt at kgarratt06@gmail.com. If you have any questions about your child's rights as a volunteer in this research, contact Janell Barker, Human Research Administrator at 970-491-1655. We will give your child a copy of this consent form.

Signature of person agreeing to take part in the study _____ Date _____

Printed name of person agreeing to take part in the study

Name of person providing information to participant	Date
---	------

Signature of Research Staff

As parent or guardian I authorize _____ (print name) to become a participant for the described research. The nature and general purpose of the project have been satisfactorily explained to me by _____ and I am satisfied that proper precautions will be observed.

Minor's date of birth

Parent/Guardian name (printed)

Parent/Guardian Signature Date

Colorado State University Assent Form

Hi!

I'm a Graduate Student at Colorado State University. I study communication.

This is called research. My research is about stories that help youth learn about health and nutrition. I am asking you if it is OK that you help me with my research while you are at school.

If you say it is OK, I'll ask you to read a short story and then answer some questions about it on a worksheet. It will ask questions about what you thought about the story and how it made you feel. There isn't a right or wrong answer -- it is just about what you think. It will take about 15 minutes. Your name won't be on the worksheets, so no one will know how you answered.

Agreeing to be in this project cannot hurt you. It won't help you, either. You won't get any gift for doing it. You don't have to do it. If you say "yes" now but later change your mind, you can stop being in the research any time by just telling me.

I will ask your parents if it is OK that you do this, too. If you want to be in this research, write your name and write today's date on the line below.

Student

Date

Researcher

Date

APPENDIX C – AGE AND GENDER

What is your age? _____

What is your gender? _____

APPENDIX D – SEMANTIC DIFFERENTIAL SCALES

For each of the following pairs of words please place an “x” in the space that represents how you feel about wearing a helmet while riding a bike.

Example: Meaningful	:__:__:__:__:__:__:__:__:__:	Not Meaningful
1. Important	:__:__:__:__:__:__:__:__:__:	Unimportant
2. Not Beneficial	:__:__:__:__:__:__:__:__:__:	Beneficial
3. Significant	:__:__:__:__:__:__:__:__:__:	Not Significant
4. Interested	:__:__:__:__:__:__:__:__:__:	Not Interested
5. Bad	:__:__:__:__:__:__:__:__:__:	Good
6. Smart	:__:__:__:__:__:__:__:__:__:	Not Smart
7. Matters to me	:__:__:__:__:__:__:__:__:__:	Doesn't matter to me

For each of the following pairs of words please place an “x” in the space that represents how you feel about eating fruit.

1. Important	:__:__:__:__:__:__:__:__:__:	Unimportant
2. Not Beneficial	:__:__:__:__:__:__:__:__:__:	Beneficial
3. Significant	:__:__:__:__:__:__:__:__:__:	Not Significant
4. Interested	:__:__:__:__:__:__:__:__:__:	Not Interested
5. Bad	:__:__:__:__:__:__:__:__:__:	Good
6. Smart	:__:__:__:__:__:__:__:__:__:	Not Smart
7. Matters to me	:__:__:__:__:__:__:__:__:__:	Doesn't matter to me

For each of the following pairs of words please place an “x” in the space that represents how you feel about exercising regularly.

- | | | |
|-------------------|------------------------------|----------------------|
| 1. Important | :__:__:__:__:__:__:__:__:__: | Unimportant |
| 2. Not Beneficial | :__:__:__:__:__:__:__:__:__: | Beneficial |
| 3. Significant | :__:__:__:__:__:__:__:__:__: | Not Significant |
| 4. Interested | :__:__:__:__:__:__:__:__:__: | Not Interested |
| 5. Bad | :__:__:__:__:__:__:__:__:__: | Good |
| 6. Smart | :__:__:__:__:__:__:__:__:__: | Not Smart |
| 7. Matters to me | :__:__:__:__:__:__:__:__:__: | Doesn't matter to me |

For each of the following pairs of words please place an “x” in the space that represents how you feel about eating vegetables.

- | | | |
|-------------------|------------------------------|----------------------|
| 1. Important | :__:__:__:__:__:__:__:__:__: | Unimportant |
| 2. Not Beneficial | :__:__:__:__:__:__:__:__:__: | Beneficial |
| 3. Significant | :__:__:__:__:__:__:__:__:__: | Not Significant |
| 4. Interested | :__:__:__:__:__:__:__:__:__: | Not Interested |
| 5. Bad | :__:__:__:__:__:__:__:__:__: | Good |
| 6. Smart | :__:__:__:__:__:__:__:__:__: | Not Smart |
| 7. Matters to me | :__:__:__:__:__:__:__:__:__: | Doesn't matter to me |

APPENDIX E – RELATED-HUMOR NARRATIVE

Sam and Emily walked out of their English class and headed to the cafeteria of their middle school to get some lunch. They walked a little faster than most days and were a little more excited to get lunch. They were not excited for a new food item or to trade stories with friends. No, today they wanted to see what the buzz in the hallways was about. They heard all day about the new lunch lady. Neither Sam nor Emily had ever really bothered to speak with the people who served them food at school, but this lunch lady had just moved to their school from a nearby school and rumor of her odd serving style was the talk of the school.

“I’ve heard this new lunch lady does something a little weird,” said Sam.

“What lunch lady doesn’t do something weird?” said Emily as she thought about the lunch lady from last year who was always battle-rapping against the fruit cups.

“Rumor is that she is really into healthy food. So every time you pick a fruit or vegetable she will either scream a fact about that food or something completely random from her life,” said Sam. “Sometimes both.”

“Sounds kind of like my little brother,” said Emily.

As they arrived in the lunch line a couple of students stood in line in front of Emily and Sam. The two took about 0.5 seconds to figure out who the new lunch lady was. She had a clown-like smile across her entire face and was making a motion like she was playing an invisible tambourine.

A student a couple steps in front of Emily and Sam slowly picked an orange from a large bowl of fruit. The new lunch lady’s eyes got as large as if she had just found \$1 million. She crouched down a little and began to shake just a bit.

“Oranges are full of Vitamin Ceeeeeeee!” she yelled. The lunch lady sang the “C” part in a very high, sharp pitch. She appeared to be the happiest person on earth.

Then, it was Emily and Sam’s turn. Sam slowly stepped up to the food counter and scanned the options. The lunch lady had the kind of look on her face that people have right before they go down the first hill on a roller coaster. Sam shyly grabbed a small salad. The lunch lady began nodding in a very quick, short motion. Emily and Sam stood still out of slight fear and excitement.

“Good choice!” exclaimed the lunch lady. “I dressed my cats up like the seven dwarves and had their pictures taken professionally!”

Emily and Sam could not hold back their laughter. They let out a few snickers and then stopped quickly for fear of offending the lunch lady. But she starred back at them with the same slightly crazed, really, really happy smile.

Emily wanted to see the next reaction so she chose the watermelon slices.

“Increased energy!” shouted the lunch lady, as she played an air guitar. “I collect antique back-scratchers!”

Sam and Emily moved down the line and chose a few more lunch items. Then they picked seats in the lunch room where they could still hear the new lunch lady and her extremely happy, informative, odd outbursts.

“Broccoli! Nutrients in your face!”

“I have an intense fear of ducks!”

“Your brain will thank you for the blueberries!”

“I once fell off the top of a cheerleading pyramid!”

And with every student who chose another fruit or vegetable the lunch lady would yell something informative or strange. The students at Sam and Emily's school had never been so healthy or entertained.

APPENDIX F – UN-RELATED-HUMOR NARRATIVE

It was a normal day in Matt and Sarah's middle school health class. They both sat near the windows on a sunny fall day while Mr. Taylor was talking about the health benefits of fruits and vegetables. Matt already knew he felt better when he ate fruits and vegetables, so he wasn't paying too much attention to Mr. Taylor. Mr. Taylor was talking about how blueberries were full of antioxidants. Matt didn't know what those were, just that they are good for you.

"Too many letters for one word. Don't care," thought Matt. He turned slightly and looked out the window.

A very strange-looking man walked through the large, grassy area next to the classroom. The man outside had a long pony-tail and a thick beard that was dyed purple. His shirt featured a large picture of Barney, from the children's television show. He was wearing neon green tights. Each leg had a big word printed on it that looked like it came from a comic book. "Pow!" read the left leg and "Wham!" was written on the right. The man was not wearing shoes.

He was the oddest looking man Matt had ever seen. He poked Sarah, who was sitting in front of him, and pointed out the window. Her eyes bulged as she saw the man outside and she held in a laugh.

Matt suddenly remembered he was still in class and looked back at Mr. Taylor. He was talking about how broccoli was full of Vitamin C and he did not seem to notice the odd man outside. Matt paid attention long enough to hear Mr. Taylor say that green, leafy vegetables might help you live longer. But Matt just had to see what the man outside was doing.

Well, he appeared to be practicing some form of karate. Only, like, the worst karate ever. He tried multiple round-house kicks and fell every single time. When he hit the ground he let out a cry that sounded exactly like Matt's six-year-old sister. His karate chops looked more like he was fighting off a swarm of angry bees.

"Matt!" Mr. Taylor's voice snapped Matt back into class.

"Would you mind paying attention?" asked Mr. Taylor.

"Ok," mumbled Matt.

It took all of Matt's mental strength to pay attention. Mr. Taylor was talking about how apples can help with weight loss. Matt was listening to Mr. Taylor when he heard Sarah snickering. He couldn't resist and looked outside.

The strange man had a tree branch in a head lock. He started screaming at the tree, "Have you had enough?!"

Sarah and Matt tried to hold in their laugh, but Mr. Taylor busted them.

"Matt and Sarah, stop the joking or I will see you in detention after school," said Mr. Taylor.

Matt and Sarah straightened up in their seats and listened to Mr. Taylor. He mentioned that eating fruits and vegetables regularly can reduce the risk for a number of diseases. He said fruits and

vegetables give people energy and help prevent mood swings. Sarah and Matt were paying attention really well when the man outside started yelling again.

“Try to steal my fanny pack now!” the man screamed at no one in particular. He was now simply spinning in a circle with his arms extended and his fists clinched.

At this point Sarah and Matt began laughing loudly.

“Sarah and Matt, stop disturbing class!” Mr. Taylor scolded.

“B-bbut,” Sarah mumbled as she pointed out the window.

“What is so funny?” asked Mr. Taylor.

“Look!” Matt said. Matt and Sarah turned to look out the window but saw the strange man for only a second as he disappeared into a patch of trees.

Mr. Taylor and the rest of the class starred out the window at an empty grass field.

“There was a man,” stammered Matt.

“Yeah!” said Sarah. “He was wearing a Barney shirt and neon tights and he was practicing karate.”

The entire class starred at the two of them as if they had just stepped off a UFO.

“Uh-huh,” said Mr. Taylor. “I’ll see you in detention.”

APPENDIX G – CONTROL NARRATIVE

Ken was an average school kid. His grades were average or maybe even a little below, and he lived in a suburb of Mantown. He had a great mother and she loved him a lot. She would take time out of her busy schedule as a baker to teach Ken and play with him.

Had it not been for Ken's mother, he might have gotten into trouble and hung out with bad kids. Instead, Ken started reading all the time. He was even consulted by the teachers on which book the class should read. But Ken still didn't have any friends.

One reason he didn't like school was because of Jay Royal. Jay was the biggest bully in his class. Jay used to call Ken Jetsam. At first Ken thought Jetsam was a way to call someone cool. But Ken looked in the dictionary and realized it meant unwanted luggage thrown off a jet. Yet Ken didn't care. He would find a true friend sooner or later.

Exams approached and Ken started studying very hard, especially for the first examination in math. Ken's preparation was amazing. He practiced each sum twice and learned the formulas by heart. He waited for the exam with crossed fingers. He had prepared so much.

The day of the exam finally arrived. His mother wished him luck and he set out to take his test. It was a hot day and he felt drowsy as he walked to school. He saw a tall gentleman in front of him who seemed sort of familiar. The man appeared to be waiting for somebody, maybe a cab.

Ken noticed that the man didn't seem very patient. After waiting for a few minutes he started walking ahead in long, fast strides. But he hadn't even walked 20 feet when something strange happened—the man fainted.

Ken rushed towards him. All the color had drained out of the man's face. Ken dragged him toward the nearest shelter and splashed some drops of water on his face. Then Ken called an ambulance from a public telephone. Ken had to go with the man in the ambulance to tell the paramedics what happened. The trip to the hospital took a long time.

After the man was taken care of at the hospital one of the nurses dropped Ken off at school, but it was of no use, the exam time limit was over.

The principal had been informed about Ken's good deed but the damage was done. Ken had missed the math test. He went home and cried to his mother. Ken's mom smiled and said that his father would be proud of him because Ken had saved someone's life and made the right and ethical choice.

The next day mom took him to a function at the huge town hall. When Ken looked around the hall he saw boards saying "Our hero Ken Baton."

Apparently, the man Ken saved was a rich businessman and had funded this function in Ken's honor. But more surprising was that Jay Royal was at the function. As soon as Jay saw Ken

coming he hugged Ken and said, "I was wrong. You are not jetsam. You are god. You saved my daddy's life. You are a hero." Without warning Jay burst into tears. The school's principal was also at the party and he whispered in Ken's ear that he should enjoy the occasion, but no need to worry about the exam, he would have a re-test.

Everybody cheered for Ken and at the end of the day Jay came and talked to him. Soon they became best friends.....true friends.

APPENDIX H – LIKERT SCALES

Part I: Please circle the answer that best represents your feelings regarding each statement.

1. I intend to consume multiple servings of fruit each day.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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2. I intend to consume multiple servings of vegetables each day.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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3. I intend to increase the amount of fruit I consume.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
-------------------	----------	-------------------	---------	----------------	-------	----------------

4. I intend to increase the amount of vegetables I consume.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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5. I intend to eat fruit on a regular basis.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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6. I intend to eat vegetables on a regular basis.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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Part II: Please circle the answer that best represents your feelings about each statement as it relates to the narrative you read.

1. While I was reading the story, I could easily picture the events in it taking place.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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2. While I was reading the story, I noticed activity going on in the room around me.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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3. I could picture myself in the events described in the story.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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4. I was mentally involved in the story while reading it.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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5. After finishing the story, I found it easy to forget about it.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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6. While reading, I wanted to learn how the story ended.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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7. The story affected me emotionally.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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8. I found myself thinking of ways the story could have turned out differently.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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9. I found my mind wandering while reading the story.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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10. The events in the story are relevant to my everyday life.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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11. The events in the story have changed my life.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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Part III: Please circle the answer that best represents your feelings about each statement.

1. I found myself looking for information in the story that was wrong.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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2. I found myself agreeing with the information in the story.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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3. I sometimes found myself thinking of ways I disagreed with what was being presented.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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4. It was easy to agree with the information presented in the message.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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Part IV: Please circle the answer that best represents your feelings about each statement.

1. There are health consequences to not consuming fruit each day.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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2. There are health consequences to not consuming vegetables each day.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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3. Consuming fruit is an important part of good health.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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4. Consuming vegetables is an important part of good health.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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5. Not consuming enough fruit can cause poor health.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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6. Not consuming enough vegetables can cause poor health.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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Part V: Please circle the answer that best represents your feelings about each statement about the story you read.

1. I found the story believable.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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2. I could see this situation happening in real life.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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3. The characters were realistic.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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4. I don't think this story would happen in real life.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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APPENDIX I – PRETEST SURVEY

Please circle the answer that best represents your feelings about each statement about the story you read.

1. I found the story funny.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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2. The story made me laugh.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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3. I found one or more of the characters in the story funny.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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4. I found myself smiling at several points while reading the story.

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
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5. What would you say is the main message of this story?

6. Did any part of the story or study procedures confuse you? If so, please describe.
