

USING NARRATIVES TO EVOKE FETAL ALCOHOL SPECTRUM DISORDER
PREVENTION INTENTION: THE ROLE OF GUILT APPEAL,
POINT OF VIEW, AND MOTIVATION

By

XIAOHUI CAO

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To the Faculty of Washington State University:

The members of the Committee appointed to examine the thesis of XIAOHUI CAO find it satisfactory and recommend that it be accepted.

Porismita Borah, Ph.D., Chair

Wei Peng, Ph.D.

Erica W. Austin, Ph.D.

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Abstract

by Xiaohui Cao, M.A.
Washington State University
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Chair: Porismita Borah

Fetal Alcohol Spectrum Disorder (FASD) has become a public health challenge in the U.S. as an outcome of the high alcohol use rate among the public. To prevent FASD, pregnant women need to quit alcohol. This study explored if guilt appeal serves as a promising strategy in FASD prevention persuasion. An online randomized experiment ($N = 323$) with a 2 (guilt appeal VS. no guilt appeal) \times 2 (first-person POV VS. third-person POV) between-subjects factorial design was conducted. Results showed that overall, guilt appeal messages evoked significantly higher prevention intention than no-guilt appeal messages by evoking higher anticipated guilt. Moreover, an interaction effect between guilt appeal and POV was captured. The superiority of guilt appeal was amplified when the message was written in first-person pronouns and attenuated by third-person pronouns. The role of individual motivation (controlled-motivated VS. autonomous-motivated) was also investigated. Though it was found that controlled-motivated individuals generated higher resistance toward guilt appeal messages, this relationship was not moderated by the guilt narrative's POV. Moreover, motivation didn't moderate the interaction effects between guilt appeal and POV on behavioral intention. Theoretical contributions and practical implications were discussed.

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INTRODUCTION

Fetal alcohol spectrum disorders (FASD) refer to a series of conditions that can occur in a person who was exposed to alcohol before birth (CDC, 2023). In recent years, FASD has become a serious health challenge in the U.S. FASD is caused by a mother's drinking behavior during pregnancy. To prevent FASD, females should avoid alcohol if she is pregnant or might be pregnant. Those with alcohol use habits are particularly at high risk. However, though the seriousness of FASD has been recognized, effective interventions remain few. Symons et al. (2018) conducted a systematic review and found that there is little evidence that previous interventions aiming to reduce the risk of FASD have been effective. Therefore, there is an urgent need to explore alternative ways to increase the public's FASD prevention intention.

A lot of health promotion campaigns aiming to facilitate health behavior change in sizable audiences have been conducted over the past several years. Persuasive messages constitute the central type of content in these theory-based health campaigns (Atkin & Salmon, 2013). Emotions have always been perceived as the primary motivational system for human behavior change and an essential component of persuasion (Baumeister et al., 2007), emotional appeal thus serves as a promising persuasion strategy.

Guilt is an emotional state people feel when they recognize that they violate the behavioral standards they are supposed to comply with (Lazarus, 1991). There are several reasons why guilt appeal may work for FASD prevention persuasion. First, FASD is directly caused by the mother's drinking behavior during pregnancy, that is, the mother is responsible for the bad outcomes. Studies have found that guilt arises from the sense of responsibility for inflicting harm on others (e.g., Miceli & Castelfranchi, 2018; Roberts et al., 2014). Second, as

mentioned before, FASD is preventable as long as females avoid alcohol use during pregnancy. Controllability is a necessary precondition of guilt feeling, that is, the perceiver should have control over the victim's suffering (Antonetti & Maklan, 2014). Third, guilt feeling is the greatest when the perceiver and the victim are interpersonally close, such as in a family or friend relationship (Baumeister et al., 1994; Ghorbani et al., 2013), which makes guilt appeal fits well with the FASD context because FASD happens in a maternal-child relationship.

Another important characteristic of persuasive messages is their point of view (POV). First-person POV and third-person POV are most commonly used in narrative persuasion. Story written in first-person POV uses first-person pronouns (e.g., "I", "My", "Me"), tells the story from the protagonist's view, and invites the audience to vicariously experience the story events through the character's eyes; the third-person POV, on the other hand, tells the story from an observer's viewpoint using third-person pronouns (e.g., "She", "Her", "Hers"). The superiority of first-person POV in health persuasion has been supported by a large amount of literature (e.g., Nan et al., 2017).

Deci and Ryan (1985a) proposed that two types of motivations, autonomy motivation, and controlled motivation, have different impacts on an individual's willingness to integrate their positive and negative past experiences. Autonomy motivation emphasizes self-initiation and coordination of personally endorsed behaviors, whereas controlled motivation means that one's behavior tendency is driven by externally imposed and introjected contingencies. Autonomously motivated individuals, compared with controlled motivated people, are more accepting of their negative characters or past events. With an individual's motivation taken into consideration, the effectiveness of different POVs may change. As mentioned before, first-person POV makes the

audience imagine that they themselves are the protagonist of the story. However, this strategy may backfire when the audience is controlled-motivated because they are not accepting of such a negative image of themselves. In the meantime, third-person POV may be a better choice because it leaves a “safe distance” between the protagonist and the controlled-motivated audience.

Taken together, current research aims to answer three questions: First, if guilt appeal serves as an effective strategy to evoke young females’ FASD prevention intention; second, the interaction effects between guilt appeal and POV on prevention intention; third, this study also explored the role of individual’s motivation in these relationships.

Current research has several contributions. First of all, the role of guilt appeal in promoting health behavior change hasn’t been fully explored and prior studies intensively focused on anti-smoking and sexually transmitted disease topics. To the best of the author’s knowledge, this study is the first attempt to examine the effectiveness of guilt appeal in the FASD prevention context. Moreover, few studies have explored the difference between controlled- and autonomous-motivated individuals in health persuasion. The current study provides new evidence on motivation-oriented targeted persuasion. This study is practically significant as well. Excessive alcohol consumption is a serious public health challenge in the U.S., besides damaging the drinker’s personal health, its adverse effects can be transmitted intergenerationally, a typical result of which is FASD. In the absence of effective interventions, current research is an imperative exploration and provides directions for designing health campaigns to decrease the FASD rate.

LITERATURE REVIEW

Fetal Alcohol Spectrum Disorder (FASD)

Alcohol use among pregnant women is a serious problem in the U.S. Data from a 2022 Morbidity and Mortality Weekly Report (MMWR, 2022) showed that during 2018-2020, nearly 14% of pregnant people reported current drinking and about 5% reported binge drinking during the past 30 days. Alcohol use during pregnancy is risky for the baby because alcohol in the mother's blood could pass to the baby through the umbilical cord. A typical outcome is Fetal alcohol spectrum disorder (FASD), which is a series of conditions that could occur in a person when he/she is exposed to alcohol before birth (CDC, 2023). FASD's typical symptoms include low body weight, poor coordination, difficulty with attention, speech and language delays, etc. A study estimated that the prevalence of FASD in populations of younger school children in the U.S. may be as high as 2-5% (May et al., 2009). FASD is not curable but preventable. Moreover, there is no known safe amount of alcohol during pregnancy (CDC, 2023). Thus, to prevent FASD, women should totally avoid alcohol during pregnancy (CDC, 2023). In the meantime, drinking females are at higher risk than those who don't use alcohol.

The widely accepted child-bearing age for females is between the late 20s and early 30s. Data showed that the mean age at first birth was 26.3 years in 2014 (CDC, 2016). As such, females between 20 and 30 should be the main targeted population of FASD prevention campaigns. However, people at this age usually have difficulty engaging rational parts of their brains under certain conditions because of the immature cognitive control system, the result of which is that the more reactive, socioemotional system of the brain dominates, "particularly under conditions of high stress or emotion, peer presence or pressure, and perceived short-term

benefit” (Diekema, 2020). Allen and colleagues (2021) found that substance use among young adults was associated with a series of transient social and developmental factors such as popularity with peers, peer substance use, etc. This feature makes females at the child-bearing age particularly vulnerable.

Narrative Persuasion

Narrative, according to Hinyard and Kreuter (2007), is “any cohesive and coherent story with an identifiable beginning, middle, and end that provides information about scene, characters, and conflict; raised unanswered questions or unresolved conflict; and provides resolution.” Narrative message’s superiority over traditional persuasion (e.g., statistical evidence) in promoting behavior change has been supported by a plethora of empirical evidence (e.g., Kim et al., 2012; Slater & Rouner, 1996).

Deictic shift theory (Duchan et al., 2012) attributes narrative persuasion’s effectiveness to the process of individuals losing themselves in the narrative. It claims that message recipients shift their deictic center from themselves to a locus in the narrative to comprehend the story. Once this shift happens, message receivers would create a mental model of the story world and then gradually capture a whole understanding of the story (Hamby et al., 2016). This mental model is a representation of the story’s features (e.g., people, locations, events) and it helps message receivers vicariously experience the narrative (Zwaan, 2016). On the other hand, enjoying the story and analyzing its educational content are two tasks that compete for cognitive resources during the message exposure process (Dillard & Shen, 2013). As such, when individuals are immersed in the narrative, their ability to scrutinize messages and generate counterarguments will decrease, which could finally lead to better persuasion outcomes.

Emotional Appeal in Narrative Persuasion

Emotions are generally perceived as a short-lived internal mental state that represents an individual's evaluative reactions in response to external stimuli (Nabi, 2014). A lot of studies have supported that emotion is a key motivational system for human behavior (e.g., Baumeister et al., 2007). Two views have been widely adopted in emotion-related research. The first is the dimensional view (e.g., Bradley & Lang, 2000; Lang et al., 1993), which claims that emotions are characterized by two broad affective dimensions, typically labeled arousal (high arousal and low arousal) and valence (pleasure and displeasure). Research under this framework usually focuses on the degree of an individual's feeling (e.g., happiness-sadness, positive-negative). An alternative approach is a discrete perspective (e.g., Lazarus, 1991), which focuses on categorical emotional states (e.g., fear, anger, guilt). Studies adopting a discrete perspective focus on the various effects of different types of discrete emotions. The current study focused on guilt, a typical discrete emotion.

Narrative persuasion is well suited for emotional appeal strategies since a story naturally involves emotional stimuli (Nabi & Green, 2015). As such, the role of emotions in influencing individuals' persuasive message processing has been explored in many studies. For instance, Lang and Yegiyan (2008) found that health messages that evoke emotions could gain more audience attention than emotionally neutral messages.

Guilt, Guilt Appeal, and Anticipated Guilt

Guilt is an emotional state that individuals would experience when they recognize that they violate the personal, societal, or moral standards that they are supposed to uphold (Lazarus, 1991). It is closely associated with remorse and responsibility, which result in the motivation to

reduce this feeling through changing behaviors (O’Keefe, 2002). Miceli (1992) proposed two necessary ingredients to make a person feel guilty: First is to make this person recognize that he/she is responsible for an event; second is to make this person generate a negative evaluation of him/herself as the “perpetrator”. Guilt appeal messages usually present the existing inconsistency to evoke guilt feeling and then offer alternative ways that can reduce guilt (Xu & Guo, 2018). Guilt appeal’s effectiveness has been supported by some empirical evidence, though limited, especially in the pro-social domain (e.g., public health). For example, guilt appeal has been successfully utilized in anti-smoking campaigns by presenting smokers the negative consequences of second-hand smoke can inflict on others (e.g., Lee & Paek, 2013; Netemeyer et al., 2016). Hullett (2004) found that guilt appeal could effectively promote sexually transmitted disease testing. However, to date, no attempt has been made to explore the effectiveness of guilt appeal in the FASD prevention context.

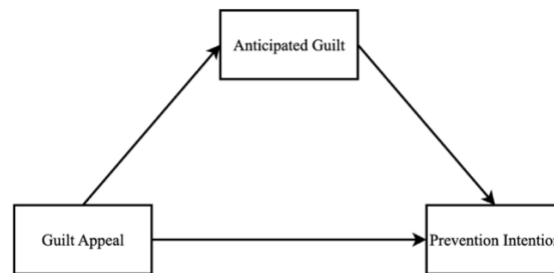
Peng et al. (2023) conducted a meta-analysis and found that the effectiveness of guilt appeal depends on several factors, including responsibility, controllability, and perceiver-victim relationships. First, responsibility drives people to acknowledge their mistakes and then take action to make up for the mistakes (Tangney et al., 2007). To elicit guilt feelings, the perceiver should be responsible for the victim’s suffering, that is, the victim’s suffering can be attributed to the perceiver. Second, controllability makes the perceiver develop a stronger sense of agency over the process and consequences of the causal event (Roberts et al., 2014). To elicit guilt feelings, the perceiver should have control over the victim’s suffering. Third, though guilt can be felt toward anyone, Baumeister et al. (1994) argued that it is strongest in close relationships (e.g., family) since such relationships are characterized by more mutual concern, love, and trust. They

pointed out that “the infliction of harm, loss, or distress on a relationship partner” is the “prototypical cause” of guilt. All these three preconditions are met in the FASD context, thus this research hypothesized that guilt appeal can be an effective persuasion strategy in evoking FASD prevention intention.

Different from the experienced guilt, anticipated guilt can be aroused without the actual performance of the behavior because people can speculate on the possible emotional consequences when they consider future behavioral alternatives (Carcioppolo et al., 2017; Tangney et al., 2007). Anticipated guilt, due to its unique characteristics, is more important than experienced guilt in facilitating behavior change. First, experienced emotions dissipate quickly, which means they are less likely to guide further decision-making. On the contrary, anticipated emotions last longer, which means they are able to more effectively influence individuals’ future activities (Baumeister et al., 2007). Second, an individual’s tendency to mentally stimulate future experiences is stronger than stimulate past events, and the mental stimulation amplifies anticipated emotions, thus anticipated emotions are more intense and evocative compared to emotions in retrospection (Van Boven & Ashworth, 2007). Third, an important function of emotion is providing feedback in terms of whether a behavior should be conducted. Anticipating future emotional outcomes, compared to making decisions in the middle of experiencing an emotion, is more helpful for people to make the most optimal decision (Baumeister et al., 2007). Some empirical studies have supported the effectiveness of appealing to anticipated guilt in health persuasion (e.g., Cao, 2022; Cao, 2023; Wang, 2011). In the context of the current study, females’ FASD prevention intention is expected to be evoked by showing the audience the

potential negative consequences. In that sense, what matters in this process should be anticipated guilt rather than experienced guilt. Grounded on previous literature, H1 was proposed:

H1: Messages with guilt appeal (compared to those without guilt appeal) will evoke higher FASD prevention intention (a), and this effect is mediated by anticipated guilt (b).



Theoretical model of H1

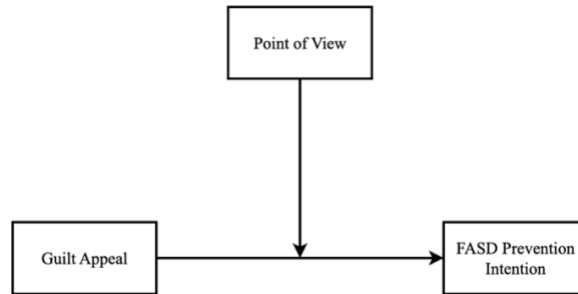
Point of View

After reviewing 153 empirical research regarding health-related narrative persuasion, de Graaf et al. (2016) pointed out that point of view (POV) is a crucial narrative characteristic. POV refers to the physical and psychological perspective presented in the narrative (Bal & Van Boheemen, 2009), and it guides the audience's reading, interpretation, and understanding of the story (Chen & Bell, 2021). The two most common perspectives in narratives are first-person POV and third-person POV (Fludernik, 1994). Specifically, the first-person POV tells the story from the narrator's perspective (e.g., "I was drunk last night.") using first-person pronouns; and a third-person POV tells the story from an observer's viewpoint (e.g., "Melissa was drunk last night.") using third-person pronouns. The core difference between the two POVs lies in the narrator's relation to the story. The first-person POV casts the narrator as the story's protagonist,

while the third-person POV places distance between the narrator and the protagonist (Ruby & Decety, 2001). Therefore, the first-person POV is more likely to promote a vicarious experience with the protagonist, whereas the onlooker's perspective of the third-person POV will foster a less personal experience (Kim et al., 2020).

The superiority of the first-person POV over the third-person POV has been supported by some empirical evidence. For example, Nan et al. (2017) found that a news story written in the first-person POV was more effective in inducing the perceived risk of getting HPV than the third-person POV. Some scholars have claimed that the first-person POV leads to better persuasion outcomes by eliciting higher levels of identification with the protagonist and greater transportation into the story (e.g., Green & Brock, 2000; Cohen, 2001). On the other hand, according to the Self-Discrepancy Theory (Higgins, 1987), the degree of discrepancy between the actual and ideal self is related to a variety of mental health outcomes such as guilt. As such, the guilt feeling should be internally generated, and based on one's self-evaluation rather than any other person's judgment on him/her. Grounded on previous literature and under the theoretical framework of the Self-Discrepancy Theory, current research hypothesized that the story would be more persuasive when the guilt feeling is expressed by the mother herself rather than an unrelated onlooker, which was H2:

H2: The superiority of guilt appeal (VS. guilt appeal absent) in evoking FASD prevention intention will be amplified by a first-person POV and attenuated by a third-person POV.



Theoretical model of H2

Autonomous Motivation VS. Controlled Motivation

The self-determination theory (SDT) proposes that integration is the process through which individuals acknowledge who they are and bring them in tune with their values, beliefs, and identities (Deci & Ryan, 1985b; Ryan & Deci, 2008). Successfully integrating past experiences and identities can help people build a coherent sense of self. According to Deci and Ryan (1985a), two types of motivations, autonomy motivation, and controlled motivation, have different effects on an individual's willingness to integrate their positive and negative past experiences.

Autonomy is a motivational state in which self-initiation and coordination of personally endorsed behaviors predominate. Autonomy encourages openness and receptivity (Hodgins & Knee, 2002), thus facilitating the integration of past experiences, especially negative experiences. On the contrary, control motivation means that an individual's behavior tendency is driven by externally imposed and introjected contingencies. Controlled-motivated people are under pressure to fulfill perceived expectations and care about the potential gain or loss of self-image or imagined approval by others (Weinstein et al., 2011). Thus, they behave more

defensively when integrating negative past experiences due to the desire to maintain an appealing self-image (Deci & Ryan, 1995; Hodgins et al., 2007). Weinstein and Hodgins (2009) found that people with autonomous motivation (VS. controlled motivation) generated less resistance toward a negative emotional stimulus and more processing. Another research by Weinstein et al. (2011) found that controlled motivation impeded individuals' acceptance of their negative identities because they try to keep up distance from the undesirable parts of themselves. Individuals' negative identities can be emphasized by guilt appeal, in the context of current research, because guilt appeal aims at evoking the negative evaluation of themselves by clearly pointing out a causal relationship between their drinking behavior and the baby's suffering. However, controlled-motivated people dislike such negative identities (i.e., don't want to admit the similarity between themselves and the protagonist), and thus should be unwilling to accept this type of narrative. Therefore, the current study hypothesized that when reading guilt appeal messages, controlled-motivated people will generate higher psychological resistance than autonomous-motivated individuals.

Identity Process Theory – an Alternative Conceptual Underpinning

Breakwell's (1986, 2015) Identity Process Theory (IPT) can be used to explain the relationship between motivation and resistance as well. At the core of IPT is the assertion that "individual actively seeks to construct and maintain an identity – and this process is orderly (in the sense that there appear to be relatively predictable states of identity that are sought)". A sense of self as integrated and congruent is essential for one's psychological well-being, while an identity threat may jeopardize this congruence and finally evoke negative consequences. A threat to identity occurs when the identity processes are unable to comply with the basic identity

principles, which are continuity, distinctiveness, self-efficacy, and self-esteem (Breakwell, 1986, 2015; Jaspal & Breakwell, 2014). A series of coping strategies when facing identity threats are available, according to IPT. At the intra-psychic level, people would either deflect or accept the implications of the identity threat. Deflection tactics (e.g., denial) entail the refusal to modify the content dimension of identity. Moreover, it has been supported that deflection strategies, in defense of the self under threat, could result in resistance to change (Murtagh et al., 2012).

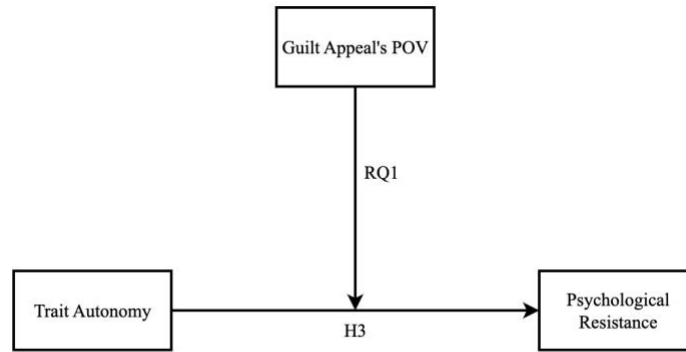
What facilitates people to adopt different coping strategies is their “identity resilience” (Breakwell, 2021). Identity resilience refers to “the extent to which an individual possesses an identity structure that: facilitates adaptive coping in the face of threat or uncertainty, can absorb change while retaining its subjective meaning and value, and is perceived to be able to cope with threat or trauma without experiencing permanent undesired change.” People reporting higher identity resilience respond more favorably to, and cope more effectively with, events and situations that question or threaten their identity; while those with lower identity resilience are harder and less likely to do this, which makes them switch to deflection strategies (Breakwell et al., 2022). Identity resilience and motivation are essentially the same thing, that is, how people cope with the negative aspects of themselves. Controlled motivated individuals, on the one hand, hold lower identity resilience, because they are unwilling to admit and accept their negative identities, therefore they are more likely to take a resistant attitude when facing identity threats; autonomous motivated people, on the other hand, have higher identity resilience, thus they are more willing to accept the bad aspects of their self-identities and make changes to cope with this identity threat.

In this study, a continuous variable – “trait autonomy” was created to represent one’s motivation. Simply speaking, higher trait autonomy refers to higher autonomous motivation, lower trait autonomy means higher controlled motivation. Procedures of how this variable was calculated will be elaborated in the following method section. Grounded on previous literature, H3 was proposed:

H3: Trait autonomy will be negatively associated with psychological resistance toward guilt appeal messages.

In the meantime, this study also explored if the guilt narrative’s POV could moderate this relationship, especially for people with controlled motivation. First-person POV, as mentioned before, provides the audience with a vicarious experience by making them take the protagonist’s viewpoint, which to some extent “silently emphasizes” the reader’s negative self-identity. Hence the controlled-motivated people’s resistance may be amplified when the guilt narrative is written in first-person POV. On the contrary, the third-person POV may reduce this resistance since it allows a distance between the controlled-motivated audience and the protagonist. On the other hand, autonomous motivated individuals are more accepting of their negative characteristics, hence the first-person POV and third-person POV may not differ too much. To further investigate, RQ1 was proposed:

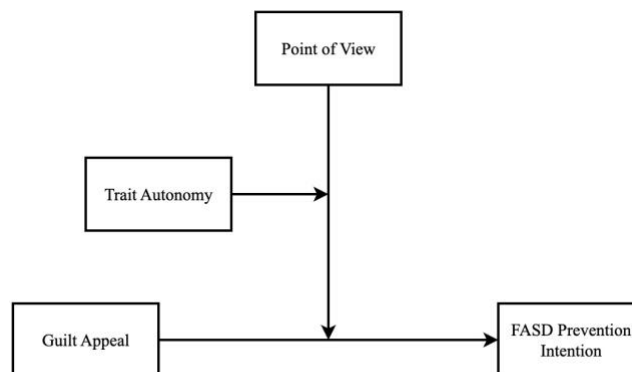
RQ1: Is the negative association between trait autonomy and psychological resistance moderated by the guilt appeal message’s POV?



Theoretical model of H3 and RQ1

Following this logic, if people with different types of motivation react differentially toward guilt narratives written in different POVs, then the interaction between guilt appeal and POV (i.e., H2) should be moderated by people’s motivation. In other words, the amplifying effect of first-person POV and the buffering effect of third-person POV may vary across populations with different motivations. Thus, RQ2 was posited here:

RQ2: Is the interaction effect between guilt appeal and POV on FASD prevention intention moderated by individuals’ trait autonomy?



Theoretical model of RQ2

METHOD

The Institutional Review Board (IRB) of Washington State University certificated that this study satisfies the criteria for exempt research (IRB # 20379-001). Upon the IRB approval, data was collected via Prolific, an online survey panel that has been shown to hold a significantly higher data quality compared to other platforms such as mTurk (Douglas et al., 2023). The total number of participants was 323. Each participant was compensated one dollar after completing the experiment. The inclusion criteria are females, who reside in the United States, are aged between 20 and 30, and use alcohol (no matter how much).

Participants

The average age of participants was 25.78 years old ($SD = 3.18$). Over half of them were white (56.0%), followed by Asian/Pacific Islander (19.2%), Hispanic or Latino (10.5%), Black or African American (9.3%), Native American or American Indian (1.2%), and other (3.7%). 65.3% of them held a bachelor's or higher degree.

Experimental Design

An online randomized experiment with a 2 (guilt appeal present VS. guilt appeal absent) \times 2 (first-person POV VS. third-person POV) between-subjects factorial design was conducted. At the beginning of the experiment, participants were asked to report their demographic information and motivational orientation. Then, they were randomly assigned to one condition and read a message. After reading the message, they answered a questionnaire assessing other key variables.

Experimental Stimuli

Four conditions were created: Guilt appeal in first-person POV ($N = 81$); Guilt appeal in third-person POV ($N = 81$); No-guilt appeal in first-person POV ($N = 80$); No-guilt appeal in third-person POV ($N = 81$). To promise a high internal validity and reduce the effects caused by some features in a specific story, eight messages were developed (see Appendix A), and two stories were shown alternately in each condition.

Guilt Appeal (present VS. absent)

Both conditions briefly introduced a story that how a mom's drinking behavior during pregnancy caused her son's FASD. The difference is that in the message with guilt appeal, there was one more paragraph describing how the mother felt guilty and regretful, while in the message without guilt appeal, there was no description of the mother's guilty feelings.

Point of View (first-person VS. third-person)

In the first-person POV condition, the story was told in first-person pronouns (e.g., "I", "my"). In the third-person POV, the story was written in third-person pronouns (e.g., "She", "Her").

Measurements

Trait Autonomy

Individual's motivational orientation was measured using the General Causality Orientations Scale (GCOS) developed by Deci and Ryan (1985a). It included 12 vignettes, and each one was followed by three questions that measured autonomous, controlled, and impersonal

traits respectively. Participants answered each question through a 7-point Likert scale according to the extent to which this response was typical for them. Thus, the scale was composed of three subscales (autonomy, controlled, and impersonal subscale), each subscale included 12 items respectively from each vignette. The score of each subscale was calculated by summing the score of 12 questions within this subscale. Current research only used the autonomy scale and controlled scale.

Consistent with previous research (e.g., Weinstein et al., 2011), two motivations were converted into a continuous variable – trait autonomy, which reflected an individual’s motivational orientation. To compute the trait autonomy score, the controlled score was subtracted from the autonomous score, thus higher score means higher autonomous motivation, lower score means more controlled motivation (Cronbach’s α for autonomous scale = .72, M_{auto} = 70.52, SD_{auto} = 6.88; Cronbach’s α for controlled scale = .58, $M_{control}$ = 56.10, $SD_{control}$ = 7.40).

FASD Prevention Intention

FASD prevention intention was captured by two questions adapted from previous studies (Yu, 2010). An example question was “What is the likelihood that you will take measures to prevent FASD?”. Answers were recorded on a five-point Likert scale (from 1 = extremely unlikely to 5 = extremely likely) (Cronbach’s α = .73, M = 4.65, SD = 0.56).

Anticipated Guilt

Anticipated guilt was measured using four items adapted from previous research (Wang, 2011). An example question was “Thinking about in the future, when you are pregnant, if you

elect not to avoid alcohol, then: ‘I would feel guilty for the potential harm on my baby.’”

Answers were assessed through a 5-point Likert scale (from 1 = strongly disagree to 5 = strongly agree) (Cronbach’s $\alpha = .84$, $M = 4.77$, $SD = 0.43$).

Resistance

Measurement of resistance was also adapted from previous research (Massi Lindsey, 2005). This measurement was originally designed to assess an individual’s psychological resistance towards guilt appeal intervention. However, it was developed originally in the bone marrow donation context, so slight revisions were made to make them fit the current study’s topic.

Specifically, the measurement included two facets. First is the individual’s psychological resistance assessment which included four items. An example item was “I am uncomfortable that I am being told how to feel about alcohol use.” Besides, the individual’s perception of the guilt appeal message was measured using another four items. An example item was “Messages that make people feel guilty should be banned.” Responses were assessed through a 5-point Likert scale (from 1 = strongly disagree to 5 = strongly agree) (Cronbach’s $\alpha = .86$, $M = 1.56$, $SD = 0.57$).

Covariates

Studies have found that ethnicity could predict females’ pregnancy decision-making (e.g., Bryant et al., 2010). In the meantime, self-reported health status (Petrie et al., 2008) and risk perception of alcohol use (e.g., Hampson et al., 2001; Lundborg & Lindgren, 2002) were also found to be significantly associated with alcohol use behaviors.

Considering all these issues, age, ethnicity, education, self-reported health status, self-reported alcohol use, and risk perception of alcohol use during pregnancy were set as covariates in data analysis.

Risk Perception of Alcohol Use during Pregnancy

Risk perception was assessed using a single term: “What do you think your baby’s chances are of getting FASD if you use alcohol during pregnancy?” Responses were assessed through a 5-point Likert scale (from 1 = very low to 5 = very high) ($M = 3.46$, $SD = 1.62$).

Self-reported Alcohol Use

Self-reported alcohol use was measured by the question “How many alcoholic drinks do you have each day in a typical week? We’ll start with Monday and take one day at a time.” This instrument has been proven to be relatively reliable compared to other measures (e.g., the 7-day recall method) because it takes into account the large variation in drinking habits over time (Ekholm et al., 2008) ($M = 1.24$, $SD = 3.58$).

Self-reported Health Status

Assessment of self-reported health was adapted from prior studies (e.g., Armstrong et al., 2006; Ware et al., 1995). It was measured using the General Health Perceptions question that asks participants to assess their health status on a five-point Likert scale (from 1 = poor to 5 = excellent). This instrument has been proven to be highly correlated with longer measures of health status, morbidity, and mortality (Connelly et al., 1989; Idler & Angel, 1990; Mossey & Shapiro, 1982), thus having a great internal validity ($M = 3.76$, $SD = 0.80$).

Data Analysis

Data was analyzed using SPSS. Frequency and descriptive analysis, a series of independent samples t-tests, two-way ANCOVA, and regression analysis were run to describe the samples, test hypotheses, and answer research questions.

RESULTS

Manipulation Check

To make sure the manipulation of guilt appeal is successful, an independent samples t-test was run to see if there is a significant difference in anticipated guilt between guilt appeal messages and no-guilt appeal messages. Results (please see Table 1) showed that the mean anticipated guilt score in the guilt appeal condition ($M = 4.86, SD = 0.26$) was significantly higher than the mean anticipated guilt score in the no-guilt appeal condition ($M = 4.68, SD = 0.53$), $t(233.71) = -4.01, p < .001$, Glass's $\Delta = -0.71$, 95% CI $[-0.28, -0.10]$. Therefore, the manipulation could be deemed successful.

Table 1. Results of independent-samples t-test.

	Levene's Test		t-test for Equality of Means				95% CI		
	F	Sig.	t	df	Two-sided p	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	39.55	< .001	-4.02	321	< .001	0.19	0.05	-0.28	-0.10
Equal variances not assumed			-4.01	233.71	< .001	0.19	0.05	-0.28	-0.10

Dependent variable: Anticipated Guilt

Testing H1

H1a hypothesized that messages with guilt appeal could evoke higher FASD prevention intention than messages without guilt appeal. An independent samples t-test was run to test H1a. Results (see Table 2) showed that the prevention intention score in the guilt appeal condition ($M = 4.80, SD = 0.38$) was significantly higher than in the no-guilt appeal condition ($M = 4.50, SD =$

0.66), $t(255.69) = -4.95$, $p < .001$, Glass's $\Delta = -0.78$, 95% CI [-0.41, -0.18]. Thus, H1a was supported.

Table 2. Results of independent-samples t-test.

	Levene's Test		t-test for Equality of Means					95% CI	
	F	Sig.	t	df	Two-sided p	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	42.54	< .001	-4.96	321	< .001	0.30	0.06	-0.41	-0.18
Equal variances not assumed			-4.95	255.69	< .001	0.30	0.06	-0.41	-0.18

Dependent variable: FASD Prevention Intention

H1b hypothesized that the effects of guilt appeal in H1a were mediated by anticipated guilt. Hayes' (2017) Macro Process Model 4 was run to test the mediation effects in H1b. Results (see Table 3.1 and Table 3.2) showed a significant mediation effect. Guilt appeal messages evoked significantly higher prevention intention by triggering higher anticipated guilt. Therefore, H1b was supported as well.

Table 3.1. Results of regression analysis in Model 4.

Outcome Variable	Predictors	Coefficient	se	t	p	LLCI	ULCI
Anticipate Guilt	Constant	4.35	0.23	18.69	.00	3.89	4.81
	Guilt Appeal	0.19	0.05	4.10	.00***	0.10	0.28
	Age	0.00	0.01	0.27	.79	-0.01	0.02
	Education	-0.01	0.02	-0.44	.66	-0.05	0.03
	Ethnicity	0.00	0.01	0.24	.81	-0.02	0.03
	Health Status	0.06	0.03	2.14	.03	0.01	0.12
	Risk Perception	0.02	0.01	1.10	.27	-0.01	0.04
	Alcohol Use	0.00	0.01	0.64	.52	-0.01	0.02
	R ²		.07				
Prevention Intention	Constant	2.54	0.41	6.18	.00	1.73	3.35

Guilt Appeal	.23	0.06	3.91	.00***	0.11	0.34
Anticipated Guilt	.42	0.07	6.10	.00***	0.28	0.55
Age	.00	0.01	0.32	.75	-0.02	0.02
Education	-.02	0.02	-0.93	.35	-0.07	0.03
Ethnicity	-.01	0.02	-0.84	.40	-0.05	0.02
Health Status	-.00	0.04	-0.08	.93	-0.08	0.07
Risk Perception	.02	0.02	1.08	.28	-0.02	0.05
Alcohol Use	.01	0.01	1.28	.20	-0.01	0.03
R ²	.19					

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3.2. Indirect effects of guilt appeal on prevention intention

Mediator	Effect	BootSE	BootLLCI	BootULCI
Anticipated Guilt	0.08	0.04	0.02	0.16

Testing H2

H2 hypothesized an interaction effect between guilt appeal and POV on FASD prevention intention. To test H2, a two-way between-groups ANCOVA was conducted with guilt appeal (present, absent) and POV (first-person, third-person) as between-group variables and FASD prevention intention as the dependent variable. The results (see Table 4) revealed a significant main effect of guilt appeal, $F(1, 313) = 26.87, p < .001, \eta_p^2 = .08$, and a significant main effect of POV, $F(1, 313) = 4.41, p < .05, \eta_p^2 = .01$. The interaction between guilt appeal and POV was also statistically significant, $F(1, 313) = 4.10, p < .05, \eta_p^2 = .01$.

Follow-up comparisons using independent-samples t-tests with a Bonferroni adjusted alpha level of .0125 indicated a significant spreading interaction between guilt appeal and POV. Specifically, when the message was written in first-person POV, guilt appeal condition generated

significantly higher prevention intention ($M = 4.92$, $SD = 0.26$) than no-guilt appeal condition ($M = 4.51$, $SD = 0.71$), $t(98.07) = -4.91$, $p < .001$, Glass's $\Delta = -1.62$, 98.75% CI $[-0.63, -0.20]$; when the message was written in third-person POV, guilt appeal condition generated higher prevention intention ($M = 4.68$, $SD = 0.44$) than no-guilt appeal condition ($M = 4.50$, $SD = 0.61$) though, the difference was not significant, $t(146.25) = -2.14$, $p = .03$, Glass's $\Delta = -0.41$, 98.75% CI $[-0.39, 0.03]$. When the message didn't use guilt appeal, there was no significant difference in prevention intention between first-person POV condition ($M = 4.51$, $SD = 0.71$) and third-person POV condition ($M = 4.50$, $SD = 0.61$), $t(159) = 0.06$, $p = .95$, $d = 0.01$, 98.75% CI $[-0.26, 0.27]$; when the message using guilt appeal, first-person POV ($M = 4.92$, $SD = 0.26$) generated significantly higher prevention intention than third-person POV ($M = 4.68$, $SD = 0.44$), $t(128.08) = 4.24$, $p < .001$, Glass's $\Delta = 0.54$, 98.75% CI $[0.10, 0.38]$. Thus, H2 was supported.

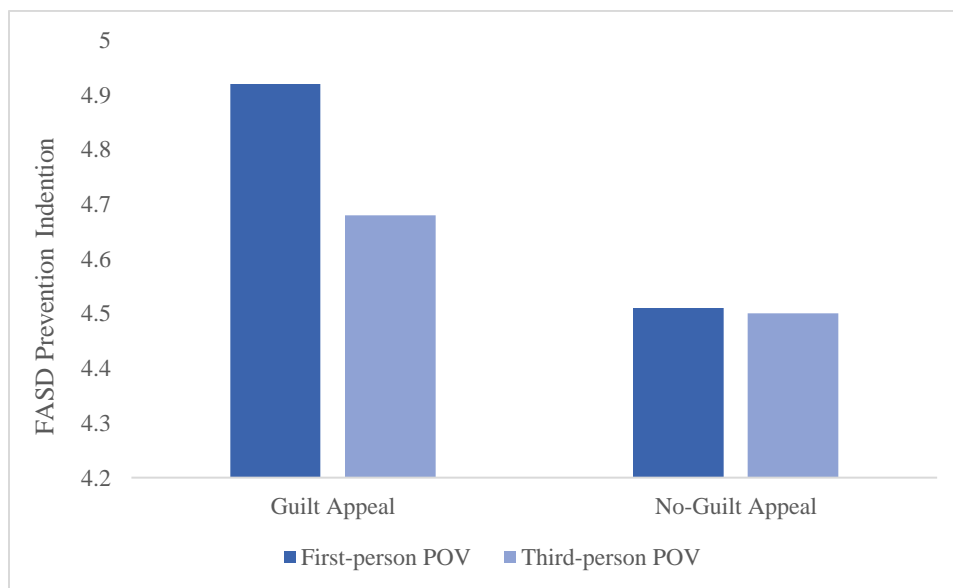


Figure 1. Interaction effects between guilt appeal and POV on prevention intention.

Table 4. Results of two-way ANCOVA.

	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	11.31	9	1.26	4.46	< .001***	.11
Intercept	64.05	1	64.05	227.17	< .001***	.42
Age	0.06	1	0.06	0.20	.66	.00
Education	0.25	1	0.25	0.89	.35	.00
Ethnicity	0.13	1	0.13	0.46	.50	.00
Health Status	0.18	1	0.18	0.65	.42	.00
Risk Perception	0.69	1	0.69	2.45	.12	.01
Alcohol Use	0.53	1	0.53	1.87	.17	.01
Guilt Appeal	7.58	1	7.58	26.87	< .001***	.08
POV	1.24	1	1.24	4.41	.04	.01
Guilt * POV	1.16	1	1.16	4.10	.04	.01
Error	88.26	313	0.28			
Total	7088.75	323				
Corrected Total	99.57	322				
R ²	.11					
Adjusted R ²	.09					

Dependent variable: FASD Prevention Intention

Testing H3 and Exploring RQ1

H3 hypothesized a negative relationship between trait autonomy and psychological resistance when people are exposed to guilt appeal messages. RQ1 asked if this association was moderated by the guilt appeal messages' POV. Hayes' (2017) Macro Process Model 1 was used to test H3 and RQ1, results can be seen in Table 5. A significantly negative relationship between trait autonomy and resistance was captured ($b = -0.02$, $t = -3.45$, $p < .001$, 95% CI [-0.03, -0.01]). Hence H3 was supported. Compared to autonomously motivated individuals, those with more controlled motivation generated higher resistance toward messages with guilt appeal. RQ1 asked if this negative association was moderated by guilt narrative's POV. Results showed that

the interaction effects between guilt narrative’s POV and trait autonomy on psychological resistance were not significant ($p = .94$). Therefore, it can be concluded that those with lower autonomous motivation (i.e., controlled-motivated individuals) did generate higher resistance than those with higher autonomous motivation, while this relationship didn’t vary with the story’s POV. In other words, third-person POV was not helpful in buffering the impacts of controlled motivation on resistance.

Table 5. Results of regression analysis in Model 1.

	Coefficient	se	t	p	LLCI	ULCI
Constant	2.38	0.43	5.54	.00	1.53	3.23
POV	-0.10	0.16	-0.63	.53	-0.40	0.21
Trait Autonomy	-0.02	0.01	-3.45	.00***	-0.03	-0.01
POV * Trait Auto	-0.00	0.01	-0.07	.94	-0.02	0.02
Age	-0.02	0.01	-1.28	.20	-0.05	0.01
Education	-0.04	0.04	-1.11	.27	-0.12	0.03
Ethnicity	-0.02	0.03	-0.77	.44	-0.07	0.03
Health Status	0.05	0.06	0.87	.39	-0.07	0.17
Risk Perception	0.03	0.03	0.96	.34	-0.03	0.08
Alcohol Use	-0.01	0.02	-0.63	.53	-0.06	0.03
R ²	.15					

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Exploring RQ2

RQ2 asked if the interaction effects between guilt appeal and POV on prevention intention were moderated by trait autonomy. A three-way interaction analysis was conducted using Hayes’ (2017) Macro Process Model 3 to answer RQ2. Results (see Table 6) showed a

non-significant interaction between guilt appeal, POV, and trait autonomy ($p = .89$). Therefore, the interaction between guilt appeal and POV was not moderated by trait autonomy.

Table 6. Results of regression analysis in Model 3.

	Coefficient	se	t	p	LLCI	ULCI
Constant	4.34	0.32	13.73	.00	3.72	4.97
Guilt Appeal	0.35	0.15	2.32	.02*	0.05	0.65
POV	-0.18	0.16	-1.12	.27	-0.50	0.14
Guilt * POV	-0.20	0.22	-0.92	.36	-0.63	0.23
Trait Autonomy	-0.01	0.01	-0.84	.40	-0.02	0.01
Guilt * Trait Auto	0.01	0.01	0.59	.56	-0.01	0.02
POV * Trait Auto	0.01	0.01	1.29	.20	-0.01	0.03
Guilt * Trait * POV	-0.00	0.01	-0.13	.89	-0.03	0.02
Age	0.00	0.01	0.47	.64	-0.01	0.02
Education	-0.03	0.03	-0.97	.33	-0.08	0.03
Ethnicity	-0.01	0.02	-0.51	.61	-0.04	0.03
Health Status	0.04	0.04	0.93	.35	-0.04	0.11
Risk Perception	0.03	0.02	1.54	.12	-0.01	0.06
Alcohol Use	0.01	0.01	1.54	.13	-0.04	0.03
R ²	.12					

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

DISCUSSION

This study explored the effectiveness of guilt appeal in promoting Fetal Alcohol Spectrum Disorder (FASD) prevention intention and its psychological mechanisms. The interaction effects between guilt appeal and narrative point of view were also examined and significant results were captured. Moreover, individuals' motivation was incorporated into the research model to see if different messages work differentially across different populations.

Results showed that guilt appeal serves as an effective strategy in promoting young females' FASD prevention intention by evoking anticipated guilt. These findings are consistent with previous studies in which the effectiveness of guilt appeal was supported (e.g., Lee & Paek, 2013; Netemeyer et al., 2016). The importance of anticipated emotions that has been already emphasized by some researchers (e.g., Baumeister et al., 2007) was supported again in this study. The significant mediation effects of anticipated guilt echo previous studies that revealed the effectiveness of appealing to anticipated guilt (e.g., Cao, 2022; Cao, 2023; Wang, 2011). Consistent with O'Keefe's (2000) meta-analysis, it was verified again in this study that anticipated guilt plays an important role in shaping behaviors and therefore provides a mechanism of social influence. For prevention-oriented health campaigns, the audience has not yet actually experienced the negative outcomes (e.g., disease, death) caused by not following health recommendations, appealing to anticipated emotions could evoke behavioral intention by helping them to image the prospective consequences (e.g., Cao, 2023), thus serving as an effective strategy in prevention-oriented health persuasion. Moreover, these results are not surprising considering the features of FASD. The meta-analysis from Peng et al. (2023) found that the effectiveness of guilt appeal depends on several preconditions: The first is responsibility,

that is, the victim's suffering is caused by the perceiver's behavior. The second is controllability, which means the victim's suffering can be attributed to a cause over which the perceiver has control. The third is the proximity of perceiver-victim relationships. The perceiver is more likely to feel guilty for making the victim suffer when they have a close relationship with the victim (e.g., friends, or family). All these conditions are met when it comes to the FASD context. Hence, there is every reason to assume the effectiveness of guilt appeal in FASD prevention campaigns, and this study's results did support these assumptions.

Moreover, it was found that the superiority of guilt appeal was contingent upon the point of view (POV). Specifically, the superiority of guilt appeal was amplified when the story was written in first-person POV, whereas the difference between guilt appeal message and no-guilt appeal message became non-significant when using third-person POV. These findings echo previous research which supported the superiority of first-person POV (e.g., Nan et al., 2017). Two mechanisms can explain the effectiveness of first-person POV. First, from the audience's perspective, the first-person POV creates a vicarious experience for them throughout the reading process (Kim et al., 2020), so the audience can feel what it would be like if the same things happened to them, thus generating story-consistent attitudes and beliefs. Second, from the speaker's perspective, it may have something to do with the nature of guilt emotion. According to the Self-Discrepancy Theory (Higgins, 1987), guilt is a mental outcome caused by the difference between the ideal self and the actual self. In other words, as an outcome of negative self-perception (or self-evaluation) that is generated from one's internal cognition, guilt is essentially about self, but not any other's judgment. Therefore, it should be more persuasive when expressed by the perceivers themselves rather than an unrelated third person.

Individual motivation's role was also examined. Results showed that trait autonomy could negatively predict psychological resistance, which means controlled-motivated individuals were more likely to resist guilt messages. This finding is consistent with previous literature about motivation (Weinstein & Hodgins, 2009; Weinstein et al., 2011). Stories that leverage guilt appeal to promote behavioral change work by reminding the audience of the bad outcomes caused by their inappropriate behaviors and inducing an individual's negative self-evaluation. However, controlled motivated individuals care so much about their self-images and others' approval (Weinstein et al., 2011), and low identity resilience makes them less likely to correctly cope with such identity threats. Hence, the most possible coping strategy they adopt would be resistance. The main effects of the guilt narrative's POV on resistance were not significant, which means that if the story is told from a first-person or third-person POV had no impact on resistance. The interaction between POV and trait autonomy on psychological resistance was not significant, either. Therefore, it can be determined that though controlled-motivated individuals generated higher resistance towards guilt messages, this impact was stable and didn't vary with different narrative POVs. Even if the third-person POV keeps a distance between the audience and the protagonist, it does not help reduce the resistance for controlled motivated individuals.

Finally, the three-way interaction between guilt appeal, POV, and motivation was not significant, which means that the moderation effects of POV on guilt appeal's impact on prevention intention didn't vary across people with different motivation styles. In other words, no matter whether the audience is controlled-motivated or autonomous-motivated, the superiority of guilt appeal in evoking prevention was always amplified by first-person POV and attenuated by third-person POV. Another interesting finding is that the interaction effects between guilt

appeal and motivation on prevention intention were not significant, either (as can be seen in Table 6). This is somewhat confusing since it has been supported that controlled motivated people generated higher resistance toward guilt appeal messages. If so, then the superiority of guilt appeal should be attenuated when the audience is controlled-motivated, but this is not the case in current research. These results showed that even if controlled motivated individuals generated higher psychological resistance toward the guilt appeal messages, they still decided to follow the health recommendations in the final decision-making process. This is quite relieving because it tells us personalities didn't influence people's final health decisions as strongly as we expected in the FASD prevention context. On the other hand, these seemingly conflicting results also hint that the association between psychological resistance and prevention intention may not be simply negative but moderated by some other factors (e.g., social norms). Therefore, further investigations are warranted.

CONTRIBUTIONS AND IMPLICATIONS

This research has some theoretical contributions. First, it added new evidence to emotional appeal, specifically, guilt appeal-related literature in the health persuasion. Emotional appeal is a promising strategy in recent health persuasion research. Guilt, as an emotion that generates from negative self-evaluations, is quite different from other emotions such as sadness, and joy. However, empirical evidence on guilt appeal in health persuasion remains few. The current research supported the effectiveness of guilt appeal in the FASD prevention context and further investigated how the narrative point of view moderates the impact of guilt appeal. Second, audience characteristic (i.e., motivation) was also taken into consideration following a targeted message design approach. Under the theoretical framework of Self-Determination Theory (Deci & Ryan, 1985b; Ryan & Deci, 2008) and Identity Process Theory (Breakwell, 1986, 2015), this study tried to find out if different messages work differentially for people with different motivations. However, it was shown that overall, individuals' motivation didn't influence people's message processing. That being said, the results of this study did partially support these theories. For example, the positive association between controlled motivation and psychological resistance was verified again in this research.

This study has some practical implications as well. The alcohol use rate in the U.S. remains quite high, which causes a series of public health problems. Even worse, the negative effects of alcohol use can be passed intergenerationally. Data showed that a large proportion of pregnant women reported alcohol use behavior (MMWR, 2022), one consequence of which is Fetal Alcohol Spectrum Disorder (FASD). A systematic review by Symons et al. (2018) found that few previous FASD prevention campaigns were effective. Hence, there is an urgent need to

explore more ways to lower the FASD rate in the U.S. Current research helped to address this gap and facilitate FASD prevention campaign developments.

LIMITATIONS AND FUTURE DIRECTIONS

This study is not without limitations. First, the outcome variable was FASD prevention intention rather than actual prevention behaviors. Though behavioral intention is treated as one of the most important predictors of behavior in many social psychological theories such as the Theory of Planned Behavior (Ajzen, 1985), the “gap” between intentions and behavior is not negligible. A meta-analysis of meta-analysis conducted by Sheeran (2002) found that intentions explained only 28% of the variance on average in future behavior, and the association between behavioral intention and actual behavior could be moderated by a series of factors such as the types of behaviors, the types and properties of intentions, and the cognitive and personality variables. Therefore, future research may consider adopting a longitudinal design with follow-up measurements on actual alcohol use behavior during pregnancy.

Second, findings from this study should be generalized into other contexts very cautiously. FASD, compared to other diseases, has its uniqueness, such as it happens in maternal-infant relationships, and it is caused by the mother’s alcohol use behavior. These specific features make guilt appeal a promising strategy to be used in FASD prevention campaigns. However, guilt appeal may not work so effectively when these specific preconditions are not met. Hence, future research should carefully consider the rationality of leveraging guilt appeal under specific health contexts before trying to replicate findings from this study.

Third, though it was found that first-person POV amplified the superiority of guilt appeal in the current research, the psychological and cognitive mechanisms of this effect remain unclear. Some researchers claimed that first-person POV increases health behavior intention through enhancing transportation and identification (e.g., Green & Brock, 2000; Cohen, 2001)

though, empirical evidence remains few. More investigations are needed to figure out why the first-person POV outperforms the third-person POV.

Fourth, current research adopted a self-reported approach in measuring anticipated guilt and psychological resistance. Though this is efficient and inexpensive, it has been suggested that self-reported data cannot provide researchers with valid measurements of the relevant psychological processes due to a lot of limitations such as the social desirability bias (e.g., Caputo, 2017), the responses may be rationalizations of feelings experienced at a subconscious level (e.g., Lodge & Taber, 2013), etc. Future research may explore multiple measurements relying on physiological indicators to see if the same results can be captured.

The stimulus in this study had some limitations as well. First, the two stories were not pre-tested to promise the similarity between them (e.g., readability), which may generate some confounds. Second, a control message was missed in the current study design. Third, in one story, the word “shame” was used, though it was perceived as similar to “guilt” by some researchers, while others consider these two as distinct emotions. Therefore, the use of “shame” may influence the audience’s emotional reactions toward the message. Future research will need to pay more careful attention to these two discrete emotions and manipulate the stimulus more cautiously, also they can measure shame as an independent construct if necessary. In addition, kids with FASD have abnormal facial features (e.g., small eyes, a smooth philtrum), thus visual images of FASD kids may help increase awareness of the negative outcomes of alcohol use during pregnancy. Future research may consider leveraging visuals in FASD prevention campaigns.

There are also several limitations regarding the covariates. First, self-reported alcohol use was treated as a covariate, while its impact on the audience's reactions toward the persuasive message was not explored in this study. One determinant of people's motivation to engage in messages is the perceived relevance of the given message (Petty & Priester, 1994). As such, the persuasive message may work better for heavy alcohol users compared to light drinkers because heavy alcohol users have a higher proximity to the topic and thus are more likely to generate higher perceived risk than light drinkers. Future research will need to integrate alcohol use into the main theoretical model (e.g., a moderator) rather than merely treating it as a covariate. Another limitation of covariates is that the pregnancy intention was not measured in this study. However, females with low pregnancy intentions may not think this topic is very related to themselves, that is, have lower proximity as well as perceived risk, which could in turn influence the message's effectiveness. Future research about FASD may consider treating pregnancy intention as a covariate.

Another limitation is the manipulation check. The manipulation check and hypothesis testing were conducted using the same dataset, while this can be risky because there is a possibility that the manipulation check would fail. Future research that manipulates emotions should conduct a pilot test before data collection to make sure the manipulation is effective.

In addition, this study found that guilt appeal was an effective strategy in FASD prevention persuasion though, the impact of guilt appeal intensity (i.e., low intensity, moderate intensity, high intensity) was not examined. Previous studies have found that high-intensity guilt appeal could backfire under specific conditions (e.g., Pinto & Priest, 1991; Pinto & Worobetz, 1992; Turner et al., 2018). A meta-analysis by O'Keefe (2000) found that more-explicit

(“strong” or “high”) guilt appeal, though evoked more guilt, was less persuasive than less-explicit (“weak” or “low”) guilt appeal, because it was more likely to evoke other unanticipated emotions (e.g., irritation, anger, annoyance) that interfere with acceptance of the message’s viewpoint. Therefore, it warrants exploring the role of guilt appeal intensity in future research so that we can get a clearer and more nuanced picture. Especially, as mentioned before, the health behaviors of young females at the best child-bearing age (in this case, age between 20 and 30) are more likely to be influenced by social norms and peer opinions because of the immature cognitive control system. As such, guilt appeal may evoke some negative reactions (e.g., evoke anger emotions). Therefore, the guilt appeal strategy should be leveraged cautiously.

Last but not least, narrative POV was examined in conjunction with the individual’s motivation in this research, which is a very new attempt. Except for generating a series of non-significant results, some unanswered questions were left as well. For example, as mentioned before, the relationship between psychological resistance and behavioral intention may not be as simple as we think but moderated by some other factors. Figuring out these questions is crucial for us to understand what role individual motivation plays in people’s health decision-making process and finally develop targeted messages to maximize persuasion effectiveness.

CONCLUSION

Using a randomized online experiment with a 2×2 between-subjects factorial design, this study explored the effectiveness of guilt appeal in evoking young females' FASD prevention intention and the roles of POV, anticipated guilt, and motivation in these relationships. A series of control variables (e.g., self-reported health status) were fully considered as well. Moreover, to maximize the internal validity, in each condition, two stories were displayed alternately, thus reducing the impact of any potential confounding variable generated from a specific story. With this rigorous experimental design, the results of this study could be deemed as having both high internal and external validity.

It was found that guilt appeal served as a promising strategy in the FASD prevention persuasion. Moreover, results showed that the superiority of guilt appeal was amplified by the first-person point of view and attenuated by the third-person point of view. These findings largely expanded the previous literature about guilt appeal in health persuasion. Besides, the role of an individual's motivation in these relationships was investigated. The only significant result was the negative relationship between trait autonomy and psychological resistance toward the guilt narrative. Some unanswered questions were left, as proposed in the discussion section. Because this is a very new attempt, few pre-existing studies could be used as reference, further explorations are needed in the future to get a more comprehensive and clearer picture.

Several limitations of this research were discussed as well, such as the limited generalizability of findings, the potential bias of self-reported data, etc. That being said, this study did make some theoretical contributions to the emotional appeal-, especially guilt appeal-

related research within the health persuasion domain and provided implications and directions for designing FASD prevention campaigns and maximizing persuasion effectiveness.

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APPENDIX

APPENDIX A: EXPERIMENTAL STIMULI

- **STORY#1**

first-person POV

I am Melissa. Amidst the towering skyscrapers and bustling streets of a sprawling metropolis, I found myself entangled in the relentless demands of my high-powered job. The city's ceaseless rhythm, coupled with the pressure of climbing the corporate ladder, became an overwhelming symphony that echoed in my ears long after I left the office. Seeking refuge from the chaos, I unwittingly turned to the soothing whispers of alcohol. Unbeknownst to me, the refuge I sought would cast a shadow over my unborn son, Liam. When my son was born, he looked perfect. However, as the years unfolded, the challenges became apparent. Liam faced hurdles that seemed insurmountable – poor coordination, hyperactivity, difficulty with attention and memory, difficulty in school, learning disability, speech and language delays, lower IQ, poor reasoning and judgment skills, and vision issues. He didn't like how clothes feel and he wore the same outfit for almost a year. On Liam's first day of kindergarten, the school called me because Liam had turned over all of the chairs that people weren't sitting in, turned over items in the kitchen area in the classroom, and thrown his shoes at the teacher. Concerned, I sought the advice of medical professionals who, after a thorough evaluation, diagnosed Liam with Fetal Alcohol Spectrum Disorder (FASD).

(When I finally realized what was going on, I thought this was horrifying, I felt guilty and ashamed. The cityscape, once a symbol of opportunity, now echoed with the haunting whispers of my own self-blame. The weight of regret bore down heavily on my shoulders, each step I took felt burdened by the knowledge that I had unknowingly caused harm to my precious son. In the quiet moments of introspection, I struggled with an unrelenting self-blame, a painful acknowledgment that my choices had woven an intricate tapestry of challenges for Liam.)

third-person POV

Amidst the towering skyscrapers and bustling streets of a sprawling metropolis, Melissa found herself entangled in the relentless demands of her high-powered job. The city's ceaseless rhythm, coupled with the pressure of climbing the corporate ladder, became an overwhelming symphony that echoed in her ears long after she left the office. Seeking refuge from the chaos, Melissa unwittingly turned to the soothing whispers of alcohol. Unbeknownst to her, the refuge she sought would cast a shadow over her unborn son, Liam. When Liam was born, he looked perfect. However, as the years unfolded, the challenges became apparent. Liam faced hurdles that seemed insurmountable – poor coordination, hyperactivity, difficulty with attention and memory, difficulty in school, learning disability, speech and language delays, lower IQ, poor reasoning and judgment skills, and vision issues. He didn't like how clothes feel and he wore the same outfit for almost a year. On Liam's first day of kindergarten, the school called Melissa because Liam had turned over all of the chairs that people weren't sitting in, turned over items in the kitchen area in the classroom, and thrown his shoes at the teacher. Concerned, Melissa sought the advice of medical professionals who, after a thorough evaluation, diagnosed Liam with Fetal Alcohol Spectrum Disorder (FASD).

(When Melissa finally realized what was going on, she thought this was horrifying, she felt guilty and ashamed. The cityscape, once a symbol of opportunity, now echoed with the haunting whispers of her own self-blame. The weight of regret bore down heavily on her shoulders, each step she took felt burdened by the knowledge that she had unknowingly caused harm to her precious son. In the quiet moments of introspection, Melissa struggled with an unrelenting self-blame, a painful acknowledgment that her choices had woven an intricate tapestry of challenges for Liam.)

- **STORY #2**

third-person POV

Melissa had been living in a small town for the past several decades. She was a vibrant soul, yet she carried a hidden burden: She once wrestled with an addiction to alcohol during her pregnancy. Despite the warnings, the allure of the bottle proved too strong, and she found herself succumbing to its grasp throughout her pregnancy. As the months passed, her cravings intensified, overshadowing the concerns of friends and family. However, she didn't realize at that time that with each sip, the delicate thread connecting her unborn child to a healthy future grew frayed. Then the day arrived, she gave birth to her baby boy, Liam. With Liam growing up, Melissa noticed that he exhibited physical abnormalities and developmental delays. Liam had been too slow to reach many milestones as an infant and participated in early childhood services for speech and physical therapy. He was small for his age throughout elementary school, and when he was in elementary school, he preferred to play with preschoolers rather than kids his own age. Liam also struggled academically, he had trouble staying on task, getting easily frustrated, and having outbursts and tantrums both in school and at home. It was also difficult for Liam to understand concepts such as time, money, and organization. Concerned, they went to see the doctor, and Liam was diagnosed with Fetal Alcohol Spectrum Disorder (FASD).

(As Melissa faced the challenges that came with caring for a child with FASDs, an ever-present undercurrent of regret coursed through her. The weight of what she had done to her precious son cast a persistent shadow on their journey. Regret was a constant companion, a silent reminder of the irreversible impact her choices had on Liam's life. Despite the progress they made and the love that enveloped them, the knowledge that Liam's struggles were born of her past actions weighed heavily on her conscience.)

first-person POV

I am Melissa. I have been living in a small town for the past several decades. I was a vibrant soul, yet I carried a hidden burden: I once wrestled with an addiction to alcohol during my

pregnancy. Despite the warnings, the allure of the bottle proved too strong, and I found myself succumbing to its grasp throughout my pregnancy. As the months passed, my cravings intensified, overshadowing the concerns of friends and family. However, I didn't realize at that time that with each sip, the delicate thread connecting my unborn child to a healthy future grew frayed. Then the day arrived, I gave birth to my baby boy, Liam. With Liam growing up, I noticed that he exhibited physical abnormalities and developmental delays. Liam had been too slow to reach many milestones as an infant and participated in early childhood services for speech and physical therapy. He was small for his age throughout elementary school, and when he was in elementary school, he preferred to play with preschoolers rather than kids his own age. Liam also struggled academically. He had trouble staying on task, getting easily frustrated, and having outbursts and tantrums both in school and at home. It was also difficult for Liam to understand concepts such as time, money, and organization. Concerned, we went to see the doctor and Liam was diagnosed with Fetal Alcohol Spectrum Disorder (FASD).

(As I faced the challenges that came with caring for a child with FASD, an ever-present undercurrent of regret coursed through me. The weight of what I had done to my precious son cast a persistent shadow on our journey. Regret was a constant companion, a silent reminder of the irreversible impact my choices had on Liam's life. Despite the progress we made and the love that enveloped us, the knowledge that his struggles were born of my past actions weighed heavily on my conscience.)

APPENDIX B: MEASUREMENTS

1. FASD prevention intention

What is the likelihood that you will take measures to prevent FASD?

Will you try to avoid alcohol use during the pregnancy period in the future?

2. Anticipated guilt

Thinking about in the future, when you are pregnant, if you elect not to avoid alcohol, then:

“I would feel guilty for the potential harm on my baby.”

“I would apologize for not trying my best to protect the baby’s health.”

“I would feel tense for the possible bad consequences.”

“I would feel I am in the wrong for not controlling the alcohol use.”

3. Resistance

I am uncomfortable that I am being told how to feel about alcohol use.

I do not like that I am being told how to feel about alcohol use.

It irritates me that the message told me how to feel about alcohol use.

I dislike that I am being told how to feel about alcohol use.

Messages that make people feel guilty should be banned.

It is wrong for messages to tell people that they should feel bad.

Messages should not be allowed to tell people that they might feel guilty about something.

It is okay for messages to tell people that they might feel guilty about something (R).

4. Self-reported alcohol use

How many alcoholic drinks do you have each day in a typical week? We’ll start with Monday and take one day at a time.

5. Self-reported health status

For your age would you say, in general, your health is: “bad, poor, fair, good, or excellent”

6. Risk perception of alcohol use during pregnancy

What do you think your baby’s chances are of getting FASDs if you use alcohol during pregnancy?

7. Trait autonomy (The General Causality Orientations Scale)

- **You have been offered a new position in a company where you have worked for some time. The first question that is likely to come to mind is:**

Will I make more at this position?

I wonder if the new work will be interesting.

- **You have a school-age daughter. On parents' night the teacher tells you that your daughter is doing poorly and doesn't seem involved in the work. You are likely to:**

Talk it over with your daughter to understand further what the problem is.

Make sure she does the assignments, because she should be working harder.

- **You had a job interview several weeks ago. In the mail you received a form letter which states that the position has been filled. It is likely that you might think:**

It's not what you know, but who you know.

Somehow they didn't see my qualifications as matching their needs.

- **You are a plant supervisor and have been charged with the task of allotting coffee breaks to three workers who cannot all break at once. You would likely handle this by:**

Telling the three workers the situation and having them work with you on the schedule.

Simply assigning times that each can break to avoid any problems.

- **A close (same-sex) friend of yours has been moody lately, and a couple of times has become very angry with you over "nothing." You might:**

Share your observations with him/her and try to find out what is going on for him/her.

Tell him/her that you're willing to spend time together if and only if he/she makes more effort to control him/herself.

- **You have just received the results of a test you took, and you discovered that you did very poorly. Your initial reaction is likely to be:**

"I wonder how it is I did so poorly," and feel disappointed.

"That stupid test doesn't show anything," and feel angry.

- **You have been invited to a large party where you know very few people. As you look forward to the evening, you would likely expect that:**

You'll try to fit in with whatever is happening in order to have a good time and not look bad.

You'll find some people with whom you can relate.

- **You are asked to plan a picnic for yourself and your fellow employees. Your style for approaching this project could most likely be characterized as:**

Take charge: that is, you would make most of the major decisions yourself.

Seek participation: get inputs from others who want to make them before you make the final plans.

- **Recently a position opened up at your place of work that could have meant a promotion for you. However, a person you work with was offered the job rather than you. In evaluating the situation, you're likely to think:**

The other person probably "did the right things" politically to get the job.

You would probably take a look at factors in your own performance that led you to be passed over.

- **You are embarking on a new career. The most important consideration is likely to be:**

How interested you are in that kind of work.

Whether there are good possibilities for advancement.

- **A woman who works for you has generally done an adequate job. However, for the past two weeks her work has not been up to par and she appears to be less actively interested in her work. Your reaction is likely to be:**

Tell her that her work is below what is expected and that she should start working harder.

Ask her about the problem and let her know you are available to help work it out.

- **Your company has promoted you to a position in a city far from your present location. As you think about the move you would probably:**

Feel interested in the new challenge and a little nervous at the same time.

Feel excited about the higher status and salary that is involved.

More information about GCOS can be found using the following link:

<https://selfdeterminationtheory.org/general-causality-orientations-scale/>