Increasing the Effectiveness of Public Service Announcements Among Gen Z by Using Influencer Advertising

Nguyen T. Pham
Monmouth University

In this study, we aim to explore the effectiveness of influencer advertising in the realm of public policy. More specifically, we will be examining key factors that can potentially increase psychological reactance among individuals belonging to Generation Z when they are processing anti-binge drinking Public Service Announcements. We then discuss how collaboration between federal agencies and social media influencers can overcome the hurdles posed by psychological reactance. By drawing upon the existing research on persuasive messages, psychological reactance, influencer advertising, and parasocial relationships, our findings will hold significant value for policymakers in disseminating impactful Public Service Announcements that resonate with Generation Z.

Keywords: Generation Z, social media influencers, influencer advertising, public service announcements, psychological reactance

INTRODUCTION

Alcohol abuse and binge drinking have been identified as significant public health concerns in the United States, particularly among full-time college students aged 18 to 22. According to the 2021 National Survey on Drug Use and Health, almost half of college students in this age group reported consuming alcohol in the past month, and more than a quarter of them engaged in binge drinking during that same period (National Institute on Alcohol Abuse and Alcoholism, 2023). These behaviors can have severe consequences, including poor academic performance, increased risk of sexual assault, and engaging in high-risk activities like drinking and driving. To combat these issues, federal agencies such as the National Institute on Alcohol Abuse and Alcoholism (NIAAA) and the Substance Abuse and Mental Health Services Administration (SAMHSA) have launched various Public Service Announcement campaigns to educate the public about the effects of alcohol on health and well-being, and to encourage behavior change. However, research suggests that anti-binge drinking messages may not always be effective, as they can prompt psychological reactance among specific individuals.

Young consumers place a high value on personal freedom and autonomy. They desire the ability to make their own decisions without being held back by the restrictions set by their parents and authorities. The yearning for independence is a natural part of the journey towards asserting their own identity and self-expression, and it can manifest in different ways, such as through fashions or hobbies. Gen Z consumers have come to expect that they have complete autonomy and control over their choices, including the decision to consume alcoholic beverages. They value the freedom to choose what they drink, based on their preferences and beliefs. In this study, we examine how young consumers evaluate anti-binge drinking PSAs

and explore the conditions under which they are most likely to develop psychological reactance, leading them to avoid or reject the PSAs or even engage in message-opposing behaviors.

Gen Z consumers, born between 1996 and 2010 (Parker & Igielnik, 2020), have grown up in a world where social media plays a central role in their lives. As a result, many rely heavily on recommendations from their favorite social media influencers (SMIs) when making decisions. In fact, these influencers have become an integral part of Gen Z's consumer culture and can have a significant impact on their behavior (Wahab et al., 2022). Drawing on the influencer advertising literature, we propose that partnering with SMIs could mitigate the adverse effect of psychological reactance among Gen Z. Influencer marketing has grown significantly in recent years and is now a crucial tool in firms' marketing strategies, with the US market estimated to exceed $7.14 billion in 2023 (Statistica, 2023). SMIs share their daily lives, personal viewpoints, and product recommendations on social media platforms like Instagram, YouTube, and TikTok. Unlike traditional authorities, such as policymakers, federal agencies, or even family members, SMIs have gained the trust of Gen Z (Kim & Kim, 2021). This is because SMIs share a common ground with their followers, often belonging to the same age group, sharing similar interests, and having a more approachable persona. Thus, we suggest that to engage Gen Z audiences effectively, federal agencies should consider collaborating with SMIs to promote their PSA campaigns. By leveraging the influence of SMIs, federal agencies can make their anti-binge drinking PSAs more relatable and appealing to Gen Z audiences. Our research provides both a theoretical rationale and empirical support demonstrating the effectiveness of influencer advertising. These contributions carry important implications for federal agencies in executing their PSA campaigns.

LITERATURE REVIEW

Public Service Announcements

Public Service Announcements (PSAs) are an effective means of disseminating messages created by non-profit organizations or federal agencies to raise public awareness or change public attitudes toward social issues such as suicide prevention, substance abuse, school shootings, and youth violence. PSAs are distributed across media platforms such as billboards, TVs, newspapers, and, more recently, social media. PSAs use positive and negative message framing (Rothman & Salovey, 1997; Wong et al., 2013). Positive (gain frame) PSAs focus on the benefits of recommended behaviors, whereas negative (loss frame) PSAs emphasize the severe consequences of misbehavior (Quick & Bates, 2010; Lee et al., 2018). Negative PSAs are commonly used to create shocking visuals and induce negative emotions such as fear, shame, and guilt among audiences (Brennan & Binney, 2010; Yıldırım et al., 2020). Research has shown that negative emotional messages have an attention-catching effect and are more likely to be shared via social media (Schöne et al., 2023). However, O'Keefe & Jensen (2008) suggested that negative PSAs, on average, are less effective regarding message acceptance because such messages pose a threat to one's self-identity and create cognitive dissonance (O'Keefe & Jensen, 2008), which may lead them to downplay the consequences of the misbehaviors.

Anti-binge drinking PSA campaigns are particularly focused on raising risk perceptions among young adults by highlighting the risks associated with binge drinking and alcohol abuse. However, research has suggested that anti-binge drinking PSAs are not always effective because risk or threatening information may pose a threat to an individual's self-image, leading them to respond defensively to maintain their positive image (Liberman & Chaiken, 1992). In some cases, people choose to believe that they are less susceptible to the negative consequences of drinking than others to reduce negative emotions, such as shame and guilt (Agrawal & Duhacheck, 2010). In addition, anti-binge drinking messages also have adverse effects, especially when one perceives them as a threat to their freedom of choice, leading them to do the opposite of what is intended by the messages. This phenomenon is called psychological reactance (Brehm, 1966; Bensley & Wu, 1991; Pham et al., 2016). Therefore, it is essential to carefully consider the framing and delivery of PSAs to ensure their effectiveness in bringing about the desired behavioral changes.

The Negative Effect of Psychological Reactance on PSAs Among Gen Z

A generation refers to a group of individuals born and living within the same historical period. A generation is defined by shared experiences, attitudes, values, and behaviors that are unique to that particular cohort. These characteristics are shaped by various factors, including historical events, technological advances, social norms, and economic conditions. Each generation has its own distinct identity that is influenced by the world around them, and this identity can have a profound impact on how they view themselves and their place in society. To create effective PSAs, it is crucial to thoroughly understand each generation's unique preferences and behaviors. One such generation is Gen Z, which encompasses individuals born between 1996 and 2010 (Parker & Igielnik, 2020). This group is known for its diverse interests and technological savviness. It is important to tailor PSAs toward their specific needs and preferences to engage and inform them effectively. Technology, the internet, and social media have shaped Gen Z's identity (Pichler & Granitz, 2021). Gen Z has a strong presence on social media and can influence trends and shape public opinion. They enjoy creating content to share on social media, actively participate in online communities, and trust recommendations from their peers (Pichler & Granitz, 2021).

Freedom is an essential aspect of human life. We know we can make mistakes, but we often want to make our own decisions. When individuals perceive that external factors or other individuals are constraining their freedom to choose, they tend to experience a motivational state of reactance, which is a psychological response aimed at restoring their freedom (Brehm, 1966; Bensley & Wu, 1991). In the context of persuasion and communication, individuals can use different forms of resistance, such as avoidance, rejection, or message-opposing behaviors, to counteract the perceived constraints and restore their sense of autonomy. Understanding psychological reactance can help us design more effective communication strategies that respect individuals' autonomy and reduce the likelihood of resistance or backlash. There are two requirements for reactance to be triggered: an expectation for free choice and a perception that the freedom to choose is threatened. According to a study conducted by Pichler and Granitz in 2021, the generation known as Gen Z places a high value on flexibility and freedom. As a result, it is anticipated that this particular age group will exhibit reactance when they feel their freedom or autonomy is being threatened or restricted. This suggests that Gen Z may be more likely to resist attempts at persuasion or influence, particularly if it is perceived as an infringement on their freedom. Research has documented cases of Gen Z failing to comply with health messages or PSAs due to psychological reactance. For example, some research has demonstrated that psychological reactance is the predictor of health risk behaviors among young adults, such as substance use and risky sexual activity (Miller & Quick, 2010) or tobacco use (Miller et al., 2006). Psychological reactance also positively correlated with a tendency to engage in binge drinking among college students (Jung et al., 2010). In addition, Gen Z with high traits of reactance is more resistant to persuasive messages in terms of warning labels on cigarette packages (Blanton et al., 2014; Lavoie et al., 2017), anti-vaping messages (Clayton et al., 2020) or depression PSA (Lienemann & Siegel, 2016). In their studies, Lienemann & Siegel (2016) found a backfiring effect among Gen Z with high reactance: depression PSA intended to encourage people to seek help for depression reduced help-seeking intentions among those that had high depressive tendencies. Clark & Evans (2014) demonstrated that consumers discredited persuasive messages that contradict their opinions.

Recent studies have shown that drinking has become a prevalent practice among Gen Z, and this demographic values the freedom to choose whether or not to consume alcohol. Anti-binge drinking PSA campaigns from authority figures, like federal agencies, may be perceived as attempts to limit their autonomy. This perception leads Gen Z to avoid, reject, or even engage in behavior that opposes the messages as a way to regain their freedom. Therefore, it is noteworthy to consider Gen Z's reactance as a critical factor that can hinder the effectiveness of anti-binge drinking PSAs. To tackle these challenges, we propose a partnership between federal agencies and SMIs, as this can help mitigate reactance among Gen Z. Gen Z trust SMIs and consider them credible sources of information. By collaborating with such influencers, federal agencies can leverage their reach and credibility to increase the effectiveness and impact of their public health PSA campaigns.Overall, such partnerships can be a win-win for both federal agencies and SMIs, as they can help achieve common goals and generate positive outcomes for society.

Social Media Influencers (SMIs) and Gen Z

Social media influencers (SMIs) are social media users who have gained online popularity for their knowledge and expertise on a specific topic. With the emergence of social networking sites such as Twitter, Instagram, YouTube, Facebook, and TikTok, SMIs are increasingly being used by businesses to communicate with their target audience, ranging from luxury consumer brands (such as Emma Chamberlain and Louis Vuitton) to pharmaceutical companies promoting over-the-counter medicines (such as Andie MacDowell and Tylenol) or prescription drugs (such as Khloe Kardashian and Nurtec ODT). These social media personalities share their daily life experiences, personal views, and product reviews with their followers, who often make their purchase decisions based on the recommendations of their favorite SMIs. Research on influencer marketing has suggested that SMIs can help to positively influence customer attitudes and increase marketing campaign engagement and purchase intention. Results of a survey with more than 1,000 young US consumers in 2020 suggested that consumers find influencers' recommendations more helpful and trustworthy than brand-generated content (Pudviels, 2020). Given the popularity of SMIs, surprisingly, little research has looked at the effectiveness of influencer advertising in the public policy domain. Since 2014, the FDA has only launched five public health education campaigns using SMIs (i.e., The Real Cost, Fresh Empire, This Free Life, Every Try Counts, and Next Legends), all of which are dedicated to preventing or reducing tobacco use "among at-risk multicultural youth ages 12–17 who identify with hip-hop culture, specifically African American, Hispanic, and Asian American and Pacific Islander youth." (FDA, 2023). In general, despite the effectiveness of SMIs, partnerships between US federal agencies and SMIs are still minimal.

A parasocial relationship (PSR) refers to a one-sided relationship where an individual feels a sense of emotional attachment and connection to a media personality despite the absence of any actual interaction or personal relationship. It is essentially an illusion of having a meaningful and enduring connection with a media figure (such as celebrities), which is often created through repeated exposure to their content and personal details shared in the media. In social media, PSRs are defined as socio-emotional connections developed through observing media influencers and interacting with them (Dai & Walther, 2018). Bond (2016) showed that adolescents who interacted with their favorite media influencers on social media would have stronger parasocial relationships than those with no such interactions. Individuals with a strong parasocial relationship with an SMI tend to perceive the SMI as a friend, have a warm relationship with him/her, trust him/her completely, and ask him/her for advice (Sokolova & Kefi, 2020; Tukachinsky, 2010). Parasocial relationships can help to increase customers' purchase intention (Farivar et al., 2021). Taken together, we propose that Gen Z are likely to perceive an anti-binge drinking PSA from their SMI as less intrusive and more trustworthy. This is because they view SMIs as friends who understand them and their lifestyles. SMIs often share content that resonates with their followers, making it easier for Gen Z to relate to them. Therefore, Gen Z is more likely to see an anti-binge drinking PSA delivered by an SMI (vs. a federal agency) as advice from a trusted friend who cares about their well-being. This approach could be effective in encouraging Gen Z to adopt responsible drinking habits.

METHODOLOGY

Participants and Design

Participants

For our study, we utilized Amazon Mechanical Turk, a popular platform for collecting data. To focus solely on individuals belonging to the Generation Z age group, we specifically recruited participants from this demographic who engage in binge drinking. Binge drinking is defined by the Centers for Disease Control and Prevention (CDC) as consuming four or more drinks on a single occasion. Our study sample consisted of a total of 178 participants, of which 35.4% were female. For a more in-depth look at our participants' demographic information, please refer to Table 1. We are aware that there are certain challenges in using MTurk workers for data collection, including inattention, self-selection bias, high attrition rates, inconsistent English language fluency, and non-naivete (Aguinis et al., 2021). To address these issues, we followed Aquinis et al.'s recommendations to devise a plan before conducting our study.

More specifically, we paid extra fees to set qualifications to screen MTurkers as follows: (1) HIT approval rate of at least 95%, (2) location in the U.S., and (3) the number of HITs approved greater than 100. By taking these extra steps, we aimed to ensure that the data collected through MTurk workers was high quality and reliable.

TABLE 1
SUMMARY OF PARTICIPANTS DEMOGRAPHICS

Demographic Variable	
Gender	
Male	115 (64.6%)
Female	63 (35.4%)
Ethnicity	
White	119 (66.9%)
Black or African Americans	21 (11.8%)
Hispanic	15 (8.4%)
Asian	11 (6.2%)
Other	12 (6.8%)
Education	
Highschool graduate	16 (9%)
Some College	41 (23%)
2-year degree	22 (12.4%)
4-year degree	99 (55.6%)

Design

In this study, we aimed to test our proposition that an anti-binge drinking PSA from SMIs (with both weak and strong parasocial relationships with Gen Z) would be more effective in comparison to the same message sent from a federal agency. The study employed a between-subjects design with three different conditions: (1) a PSA by a federal agency (Substance Abuse and Mental Health Services Administration – SAMHSA), (2) a PSA by a partnership between a federal agency and an SMI with whom Gen Z has a weak parasocial relationship, and (3) a PSA by a partnership between a federal agency and an SMI with whom Gen Z has a strong parasocial relationship. The ultimate goal of the study was to determine the effectiveness of the different messaging approaches in reducing binge drinking among Gen Z.

To ensure that participants received stimuli that aligned with their gender, we asked them to report their gender identity at the beginning of the study. We added a screening question so only those who engaged in binge drinking could complete the survey. After that, we randomly assigned them to one of the three conditions previously discussed. Following this, we requested the participants to evaluate the PSAs carefully. For reference, you can find the stimuli we used in the Appendix. As discussed in the literature review, we expect that individuals who come across a PSA that contradicts their pre-existing beliefs may tend to discredit the message's source through counter-arguing and debuting. We thus used a Likert 7-point scale to measure participants' counter argumentation (i.e., "I don't believe the hype. This PSA is not true", and "Few people got into trouble with binge drinking") message's source credibility (i.e., "c," "The source of this PSA is knowledgeable", "The source of this PSA is domineering") (1 = strongly disagree to 7 = strongly agree). We also measured participants' perceived freedom constraints (i.e., "This message is freedom constraining"). We then measured participant's psychological reactance using the Psychological Reactance scale (Hong & Faedda, 1996). Finally, we asked participants to report whether, after seeing this PSA, they would increase, decrease, or consume the same amount of alcohol. Finally, we collected participants' demographics, such as age, ethnicity, and education.

Results

Message Source Credibility

A one-way ANOVA on the statement "The source of this PSA is trustworthy" revealed that there was a statistically significant difference in the perceived trustworthiness between at least two conditions ($F(2,175) = 5.96$, $p < .01$). Tukey's HSD Test for multiple comparisons showed that the mean score of trustworthiness in the SMI-strong PSR ($M = 5.78$, $SD = 1.13$) was significantly higher than in the federal agency condition ($M = 5.02$, $SD = 1.21$, $p < .01$) and higher than in the SMI-weak PSR ($M = 5.19$, $SD = 1.40$, $p < .05$). The perceived trustworthiness of federal agency and the SMI-weak PSR did not differ significantly ($p = .76$). (Figure 1) In addition, a one-way ANOVA on the statement "The source of this PSA is knowledgeable" revealed that there was no statistically significant difference in the perceived knowledge between at least two conditions ($p = .12$), suggesting that participants thought that the sources of the PSA (i.e., federal agency, SMI-weak PSR, and SMI-strong PSR) have the same level of knowledge.

FIGURE 1
TRUSTWORTHINESS
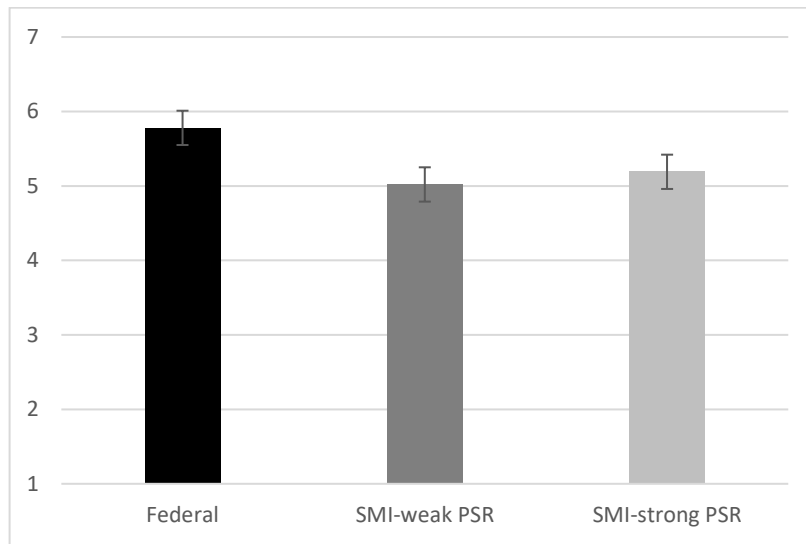
A one-way ANOVA on the statement "The source of this PSA is domineering" revealed that there was a statistically significant difference in the perceived domineeringness between at least two conditions ($F(2,175) = 21.09$, $p < .001$). Tukey's HSD Test for multiple comparisons showed that the mean score of domineeringness in the federal agency condition ($M = 5.22$, $SD = 1.60$) was significantly higher than the SMI-weak PSR condition ($M = 2.75$, $SD = 1.65$, $p < .001$) and higher than in the SMI-strong PSR condition ($M = 3.10$, $SD = 1.84$, $p < .01$). The mean score between SMI-strong PSR condition and the SMI-weak PSRcondition did not differ significantly ($p = .14$) (Figure 2).

FIGURE 2
DOMINEERINGNESS
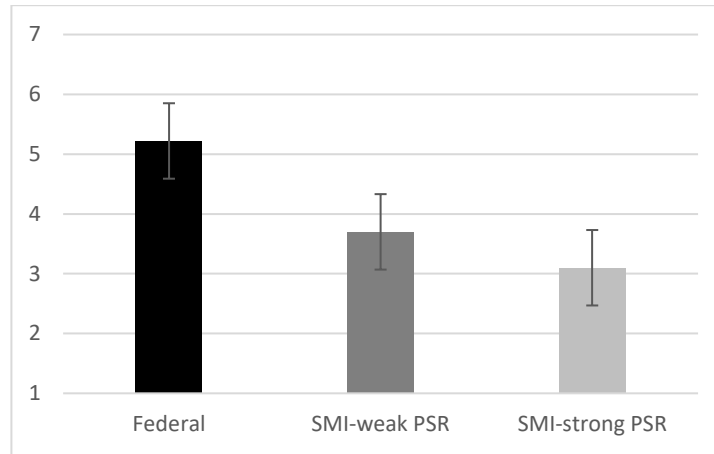
Counter Argumentation

We combined two items of counter-argumentation to create an index (α = .91). A one-way ANOVA on the counter-argumentation revealed that there was a statistically significant difference in the agreement of this question between at least two conditions ($F(2,175) = 9.38$, $p < .001$). Tukey's HSD Test for multiple comparisons showed that the mean score in the federal agency condition ($M = 4.31$, $SD = 2.11$) was significantly higher than in the SMI-weak PSR ($M = 2.89$, $SD = 1.57$ $p < .001$) and higher than in the SMI-strong PSR ($M = 3.07$, $SD = 1.74$, $p < .01$). The counter-argumentation between SMI-strong PSR and the SMI-weak PSRconditions did not differ significantly ($p = .84$) (Figure 3).

**FIGURE 3**
COUNTERARGUMENTATION
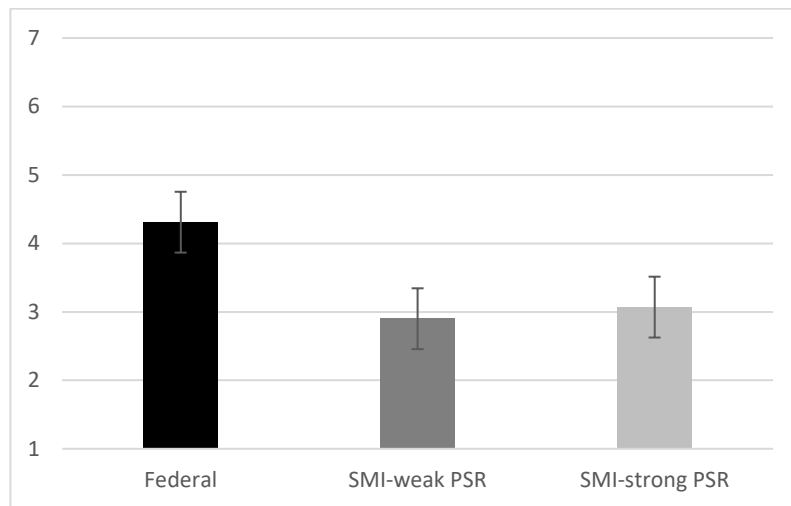
Freedom Constraint

A one-way ANOVA on the item "This PSA is constraining my freedom" revealed that there was a statistically significant difference in the agreement of this question between at least two conditions ($F(2,175) = 9.38$, $p < .001$). Tukey's HSD Test for multiple comparisons showed that the mean score in the federal agency condition ($M = 4.43$, $SD = 2.17$) was significantly higher than in the SMI-weak PSR ($M =

3.11, $SD = 1.63$ $p < .001$) and higher than in the SMI-strong PSR ($M = 2.94$, $SD = 1.77$, $p < .001$). The counter-argumentation between the SMI-strong PSR and the SMI-weak PSR conditions did not differ significantly ($p = .86$) (Figure 4).

FIGURE 4
FREEDOM CONSTRAINT
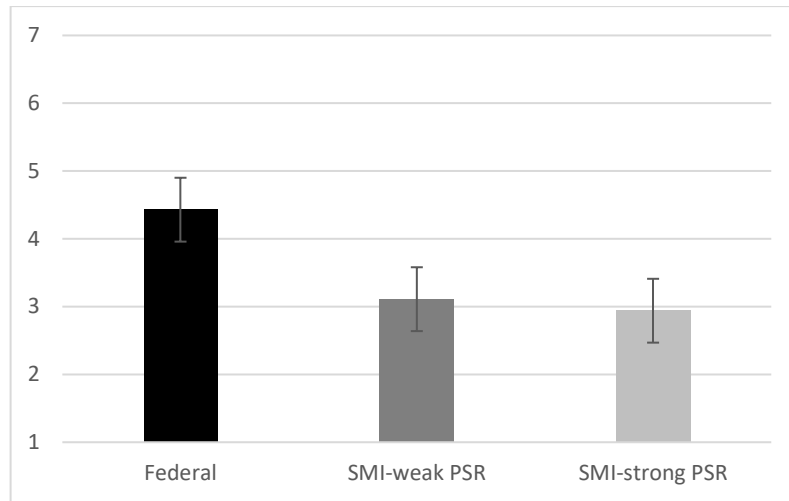
Psychological Reactance

We combined 11 items in the Psychological Reactance Scale to create an index ($\alpha = .95$). A one-way ANOVA on this item revealed that there was a statistically significant difference in psychological reactance between at least two conditions ($F(2,175) = 8.15$, $p < .001$). Tukey's HSD Test for multiple comparisons showed that the mean score in the federal agency condition ($M = 4.63$, $SD = 1.74$) was significantly higher than in the SMI-weak PSR ($M = 3.43$, $SD = 1.63$ $p < .001$) and higher than in the SMI-strong PSR ($M = 3.58$, $SD = 1.75$, $p < .001$). The psychological reactance between the SMI-strong PSR and the SMI-weak PSRconditions did not differ significantly ($p = .87$) (Figure 5).

**FIGURE 5**
PSYCHOLOGICAL REACTANCE
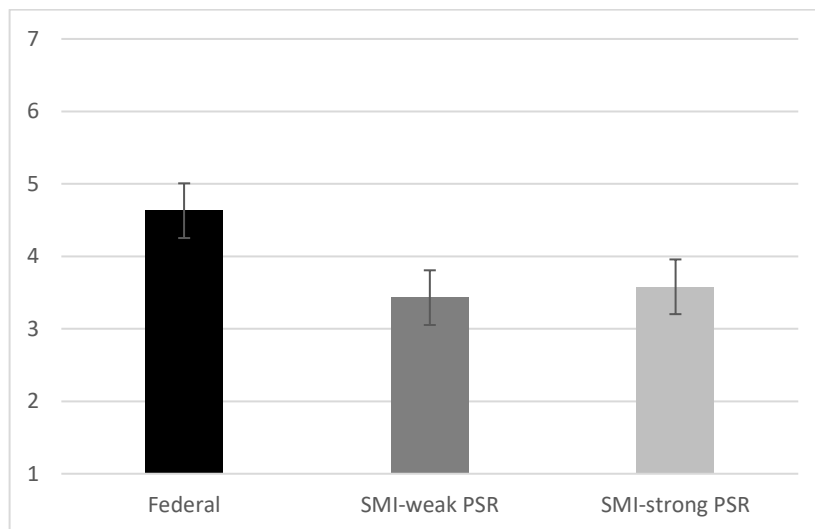
Behavioral Intention

Results of a cross-tabulation showed that among those who indicated that they were more likely to decrease their future alcohol consumption, 16.3% were from the federal agency condition, 39.8% from the SMI-weak PSR, and 44.90% from the SMI-strong PSR. Moreover, among those who indicated that they would increase their future alcohol consumption, 52.4% were from the federal agency condition, 28.6% were from the SMI-weak PSR, and 19% were from the SMI-strong PSR. Among those who indicated that they would maintain their current alcohol consumption, 28.7% were from the federal agency condition, 36% from the SMI-weak PSR, and 35.4% from the SMI-strong PSR. (Figure 6). A Pearson Chi-square test was performed to examine the relation between PSA conditions and behavioral intention on alcohol consumption. The relation between these variables was significant (X^2 (4, 178) = 10.86, p < .05).

Taken together, the study revealed several interesting findings. First, although participants considered both the federal agency and SMIs to be equally knowledgeable, they placed a higher level of trust in the SMIs as compared to the federal agency. This result indicated that SMIs are considered more reliable sources of information than federal agencies. Additionally, the study found that participants perceived the PSA from the federal agency as more domineering and freedom-constraining, which was consistent with our prediction, as discussed earlier. Furthermore, the results showed a higher level of reactance among those who saw the PSA from the federal agency, possibly due to the perceived domineering and freedom-constraining of the message. More importantly, Figure 6 illustrates that individuals who viewed the PSA from SMIs exhibited a greater willingness to reduce their alcohol consumption compared to those who viewed the same PSA but from the federal agency. This finding suggests that messages from SMIs could be more effective in promoting behavioral change related to alcohol consumption among Gen Z. Overall, the study provides valuable insights into the effectiveness of different sources of PSAs related to alcohol consumption, and the findings could be helpful in developing more effective messaging strategies in the future.

FIGURE 6
INTENTION TO CONSUME ALCOHOL
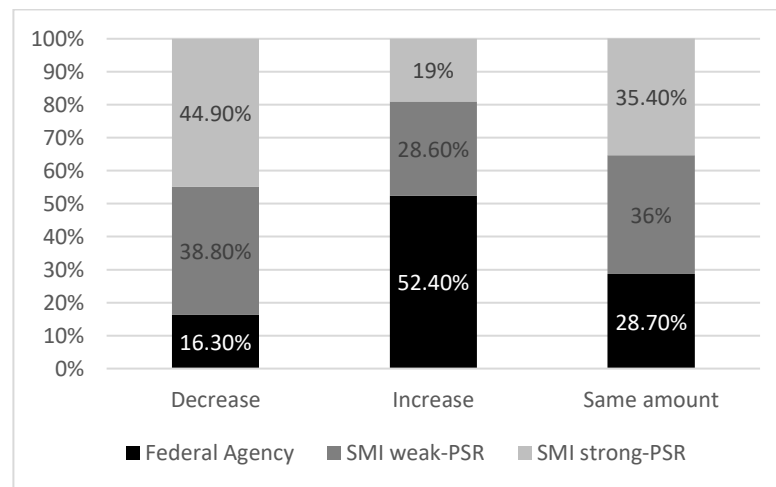
DISCUSSION

The first objective of this research is to explore the potential negative consequences of anti-binge drinking PSAs disseminated by federal agencies among Gen Z. By integrating research on psychological reactance (Brehm, 1981; Hong & Faedda, 1996) and SMIs (Dai & Walther, 2018), we demonstrate that such PSAs could backfire and lead to behaviors that contradict their intended purpose. Our study finds that anti-binge drinking PSAs from SMIs are more effective in reaching Gen Z because they generate fewer

counterarguments and are perceived as less freedom-constraining. This is particularly important, considering that Gen Z values flexibility and autonomy in all aspects of their lives. When confronted with a message from an authority figure that goes against these values, they engage in backfiring behaviors (e.g., increasing their alcohol consumption) that undermine the PSA's effectiveness. Second, we demonstrate the effectiveness of collaboration between federal agencies and SMIs in disseminating anti-binge drinking messages to the Gen Z population. Our findings indicate that when an SMI delivers the PSA, even when disclosing the partnership with a federal agency, the message is still perceived more positively than when it is delivered solely by the agency. Our research highlights the importance of leveraging the reach and influence of SMIs in promoting public health campaigns to younger audiences.

Moreover, the study results showed that the success of such campaigns can be heavily influenced by the strength of the PSR between SMIs and their followers. More specifically, SMIs who have a strong PSR with followers are more effective in persuading followers to change their behaviors than SMIs who have a weak PSR with followers. However, one pertinent question that needs to be addressed is how federal agencies can identify SMIs with strong PSRs with followers. When evaluating the strength of PSR, there are multiple factors that can be taken into account. One such factor is the SMI categories (e.g., mega- or micro-influencers). The existing influencer advertising categorized SMIs based on their number of followers, with mega-influencers, macro-influencers, micro-influencers, and nano-influencers being the four main categories (Campbell & Farrell, 2020). Each influencer category has different levels of engagement with its followers, which can significantly impact the development of PSR between SMIs and their followers. Mega-influencers, with more than one million followers, are less engaged and interactive with their followers (Conde & Casais, 2023). On the other hand, micro-influencers, with 10k to 100k followers, have a smaller following, leading to more engagement and interaction with their followers (Borges-Tiago, 2023). This increased level of engagement leads to the development of stronger parasocial relationships between the micro-influencers and their followers, which can ultimately lead to greater trust and authenticity in the eyes of their followers (Park et al., 2021).

In addition, SMI's perceived similarities among followers in terms of demographics, such as age, ethnicity, and gender, and psychographics, such as interests, lifestyles, and values, can also be used to determine the strength of PSR. Federal agencies can improve their outreach efforts by segmenting their target audiences into sub-groups and collaborating with SMIs, whose followers trust in each sub-group. An example is Dior's "67 Shades of Skin" campaign, where Dior collaborated with 67 micro-influencers to showcase the wide range of shades available in their new makeup product, Dior Forever Foundation. Each SMI's skin tone matches with one of Dior's 67 shades. The campaign was a huge success and received the Gold Winner at the 2020 Influencer Marketing Awards.

Our research has several limitations that can be addressed in future research. Cultural differences in individualism and collectivism should be taken into account when implementing public health campaigns that aim to change behaviors related to alcohol consumption. The study was conducted in the United States, where individualism is highly emphasized. Research showed that individuals from an individualistic cultural background tend to demonstrate more reactance when their individual freedom is threatened. On the other hand, people from a collectivistic cultural background show more reactance when their collective freedom is threatened (Jonas et al., 2009). Given that an anti-binge drinking PSA is more likely to threaten individual freedom than collective freedom, the adverse effects of psychological reactance may only hold in Western countries. Further, according to Hofstede's cultural dimensions theory, Eastern cultures tend to have high power distance, which means that individuals in these cultures give deference to those in positions of authority. On the other hand, Western cultures tend to have low power distance, which means that equal treatment is valued over hierarchical structures (Hofstede, 1984). In Eastern cultures, a public health message from a federal agency may be more effective than SMIs. Therefore, future studies should examine these cultural differences to better understand how to communicate health information effectively across cultures.

Moreover, our research only involved one study on the effectiveness of a PSA campaign. It is noteworthy that public health campaigns usually take place over months or even years. It is possible that prolonged exposure to a public health campaign may increase its effectiveness. However, it is also essential

to consider the potential fatigue among the audiences if a campaign is too long or too repetitive. Thus, future research can be conducted to examine the long-term effects of such campaigns to ensure they remain impactful over time. Last but not least, our study assessed the effectiveness of a negative anti-binge drinking PSA. Future research can explore the effect of using SMI to tackle other public health issues that are prevalent among Gen Z. For example, SMI can be used to promote safe sex, prevent smoking and substance abuse, and much more to improve the health and well-being of Gen Z.

REFERENCES

Agrawal, N., & Duhachek, A. (2010). Emotional compatibility and the effectiveness of antidrinking messages: A defensive processing perspective on shame and guilt. *Journal of Marketing Research*, *47*(2), 263–273.

Aguinis, H., Villamor, I., & Ramani, R.S. (2021). MTurk research: Review and recommendations. *Journal of Management*, *47*(4), 823–837

Bensley, L.S., & Wu, R. (1991). The role of psychological reactance in drinking following alcohol prevention messages. *Journal of Applied Social Psychology*, *21*(13), 1111–1124.

Blanton, H., Snyder, L.B., Strauts, E., & Larson, J.G. (2014). Effect of graphic cigarette warnings on smoking intentions in young adults. *PloS One*, *9*(5), e96315.

Bond, B.J. (2016). Following your "Friend": Social media and the strength of adolescents' parasocial relationships with media personae. *Cyberpsychology, Behavior, and Social Networking*, *19*(11), 656–660.

Borges-Tiago, M.T., Santiago, J., & Tiago, F. (2023). Mega or macro social media influencers: Who endorses brands better? *Journal of Business Research*, *157*, 113606.

Brehm, J.W. (1966). *A theory of psychological reactance*.

Brehm, J.W. (1989). Psychological reactance: Theory and applications. *ACR North American Advances*.

Brennan, L., & Binney, W. (2010). Fear, guilt, and shame appeals in social marketing. *Journal of Business Research*, *63*(2), 140–146.

Clark, J.K., & Evans, A.T. (2014). Source credibility and persuasion: The role of message position in self-validation. *Personality And Social Psychology Bulletin*, *40*(8), 1024–1036.

Clayton, R.B., Leshner, G., Sanders-Jackson, A., & Hendrickse, J. (2020). When counterarguing becomes the primary task: Examination of dogmatic anti-vaping messages on psychological reactance, available cognitive resources, and memory. *Journal of Communication*, *70*(4), 522–547.

Conde, R., & Casais, B. (2023). Micro, macro, and mega-influencers on Instagram: The power of persuasion via the parasocial relationship. *Journal of Business Research*, *158*, 113708.

Dai, Y., & Walther, J.B. (2018). Vicariously experiencing parasocial intimacy with public figures through observations of interactions on social media. *Human Communication Research*, *44*(3), 322–342.

Farivar, S., Wang, F., & Yuan, Y. (2021). Opinion leadership vs. parasocial relationship: Key factors in influencer marketing. *Journal of Retailing and Consumer Services*, *59*, 102371.

Food and Drug Administration (2023). *Public Health Education Campaign*. Retrieved from https://www.fda.gov/tobacco-products/public-health-education/public-health-education-campaigns#1

Hofstede, G. (1984). *Culture's Consequences: International Differences In Work-Related Values*. Newbury Park, CA: Sage.

Hong, S., & Faedda, S. (1996). Refinement of the Hong Psychological Reactance Scale. *Educational and Psychological Measurement*, *56*(1), 173–182.

Jonas, E., Graupmann, V., Niesta Kayser, D., Zanna, M., Traut-Mattausch, E., & Frey, D. (2009). Culture, self, and the emergence of reactance: Is there a "Universal" Feedom? *Journal of Experimental Social Psychology*, *45*(5), 1068–1080.

Jung, T., Shim, W., & Mantaro, T. (2010). Psychological reactance and effects of social norms messages among binge drinking college students. *Journal of Alcohol and Drug Education*, *54*(3), 7–18.

Kim, D.Y., & Kim, H.Y. (2021). Trust me, trust me not: A nuanced view of influencer marketing on social media. *Journal of Business Research*, *134*, 223–232.

LaVoie, N.R., Quick, B.L., Riles, J.M., & Lambert, N.J. (2017). Are graphic cigarette warning labels an effective message strategy? A test of psychological reactance theory and source appraisal. *Communication Research*, *44*(3), 416–436.

Lee, Y.I., Jin, Y., & Nowak, G. (2018). Motivating influenza vaccination among young adults: The effects of public service advertising message framing and text versus image support. *Social Marketing Quarterly*, *24*(2), 89–103.

Liberman, A., & Chaiken, S. (1992). Defensive processing of personally relevant health messages. *Personality and Social Psychology Bulletin*, *18*(6), 669–679.

Lienemann, B.A., & Siegel, J.T. (2016). State psychological reactance to depression public service announcements among people with varying levels of depressive symptomatology. *Health Communication*, *31*(1), 102–116.

Miller, C.H., & Quick, B.L. (2010). Sensation seeking and psychological reactance as health risk predictors for an emerging adult population. *Health Communication*, *25*(3), 266–275.

Miller, C.H., Burgoon, M., Grandpre, J.R., & Alvaro, E.M. (2006). identifying principal risk factors for the initiation of adolescent smoking behaviors: The significance of psychological reactance. *Health Communication*, *19*(3), 241–252.

National Institute on Alcohol Abuse and Alcoholism. (2023). *Alcohol Treatment in the United States: Age Groups and Demographic Characteristics*. Retrieved from https://www.niaaa.nih.gov/alcohols-effects-health/alcohol-topics/alcohol-facts-and-statistics/alcohol-treatment-united-states-age-groups-and-demographic-characteristics

O'Keefe, D.J., & Jensen, J.D. (2008). Do loss-framed persuasive messages engender greater message processing than do gain-framed messages? A meta-analytic review. *Communication Studies*, *59*(1), 51–67.

Park, J., Lee, J.M., Xiong, V.Y., Septianto, F., & Seo, Y. (2021). David and Goliath: When and why micro-influencers are more persuasive than mega-influencers. *Journal of Advertising*, *50*(5), 584–602.

Parker, K., & Igielnik, R. (2020). *On the Cusp of Adulthood and Facing an Uncertain Future: What We Know About Gen Z So Far*. Retrieved from https://www.pewresearch.org/social-trends/2020/05/14/on-the-cusp-of-adulthood-and-facing-an-uncertain-future-what-we-know-about-gen-z-so-far-2/

Pham, N., Mandel, N., & Morales, A.C. (2016). Messages From the Food Police: How Food-Related Warnings Backfire Among Dieters. *Journal of the Association For Consumer Research*, *1*(1), 175–190.

Pichler, S., Kohli, C., & Granitz, N. (2021). DITTO for Gen Z: A framework for leveraging the uniqueness of the new generation. *Business Horizons*, *64*(5), 599–610.

Pudviels, S. (2020). *Matter Survey Reveals Consumers Find Influencers More Helpful and Trustworthy than Brands During the Pandemic*. Retrieved from https://www.businesswire.com/news/home/20200526005058/en/Matter-Survey-Reveals-Consumers-Find-Influencers-More-Helpful-and-Trustworthy-than-Brands-During-the-Pandemic

Quick, B.L., & Bates, B.R. (2010). The use of gain-or loss-frame messages and efficacy appeals to dissuade excessive alcohol consumption among college students: A test of psychological reactance theory. *Journal of Health Communication*, *15*(6), 603–628.

Rothman, A.J., & Salovey, P. (1997). Shaping perceptions to motivate healthy behavior: The role of message framing. *Psychological Bulletin*, *121*(1), 3.

Schöne, J.P., Garcia, D., Parkinson, B., & Goldenberg, A. (2023). Negative expressions are shared more on Twitter for public figures than for ordinary users. *PNAS Nexus*, *2*(7), 219.

Sokolova, K., & Kefi, H. (2020). Instagram And Youtube bloggers promote it, why should I buy? How credibility and parasocial interaction influence purchase intentions. *Journal of Retailing and Consumer Services*, *53*, 101742.

Statistica. (2023). Retrieved from https://www.statista.com/statistics/1254039/influencer-marketing-spending-usa/

Wahab, H.K.A., Tao, M., Tandon, A., Ashfaq, M., & Dhir, A. (2022). Social media celebrities and new world order. What drives purchasing behavior among social media followers? *Journal of Retailing and Consumer Services*, *68*, 103076.

Wong, N.C., Harvell, L.A., & Harrison, K.J. (2013). The unintended target: Assessing nonsmokers' reactions to gain-and loss-framed antismoking public service announcements. *Journal of Health Communication*, *18*(12), 1402–1421.

Yıldırım, M., Geçer, E., & Akgül, Ö. (2021). The impacts of vulnerability, perceived risk, and fear on preventive behaviours against COVID-19. *Psychology, Health & Medicine*, *26*(1), 35–43.

APPENDIX: ANTI-BINGE DRINKING PSAS USED IN THE STUDY

Condition 1: A PSA by a federal agency
Brian/Emma is a social media influencer. You have been a follower of Brian/Emma for a few years. One day, you saw that Brian/Emma partnered with the Substance Abuse and Mental Health Services Administration (SAMHSA), an agency within the U.S. Department of Health and Human Services, and posted this PSA about binge drinking on his/her Instagram.

Condition 2: A PSA by a federal agency and SMI partnership – weak parasocial relationship.
Brian/Emma is a social media influencer. You have been a follower of Brian/Emma for a few years. One day, you saw that Brian/Emma partnered with the Substance Abuse and Mental Health Services Administration (SAMHSA), an agency within the U.S. Department of Health and Human Services, and posted this PSA about binge drinking on his/her Instagram.

Condition 3: A PSA by a federal agency and SMI partnership – strong parasocial relationship.
Brian/Emma is a social media influencer. You have been a follower of Brian/Emma for a few years, and you feel that you have a warm relationship with him/her and think he/she could be one of your friends. You could trust him/her completely. Sometimes, you wish you could ask Brian/Emma for advice. One day, you saw that Brian/Emma partnered with the Substance Abuse and Mental Health Services Administration (SAMHSA), an agency within the U.S. Department of Health and Human Services, and posted this PSA about binge drinking on his/her Instagram.