EFFECTS OF CONSPICUITY AND INTEGRATION OF WARNING MESSAGES IN SOCIAL MEDIA ALCOHOL ADS: BALANCING BETWEEN PERSUASION AND REACTANCE AMONG UNDERAGE YOUTH

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ABSTRACT

EFFECTS OF CONSPICUITY AND INTEGRATION OF WARNING MESSAGES IN SOCIAL MEDIA ALCOHOL ADS: BALANCING BETWEEN PERSUASION AND REACTANCE AMONG UNDERAGE YOUTH

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Underage drinking is a critical public health concern in the United States, which has not only contributed to youth fatality (Centers for Disease Control and Prevention [CDC], 2008), but has also been coupled with other concerns. With the proliferation of low-cost digital alcohol marketing, alcohol advertisers and marketers have been increasingly investing in digital marketing and social media marketing. Despite its adoption of an alcohol marketing self-regulation code (Federal Trade Commission [FTC], 2014), the alcohol industry has been in violation of that code when it comes to social media marketing (Barry et al., 2015a, 2015b). Adopting psychological reactance theory and warning conspicuity and integration literature, the current study investigated the effects of incorporating warning messages on social media alcohol ads by manipulating conspicuity (i.e., font size) and integration of the warning message into Instagram beer ads.

This experimental lab study used a 2 (conspicuous warning vs. discreet warning) x 2 (integrated warning vs. disintegrated warning) x 3 (ad repetition) x 3 (order) mixed factorial design ($N = 65$), with all factors except order manipulated within-subject. After identifying three familiar beer brands (i.e., *Budweiser*, *Bud Light*, and *Corona Extra*) among underage youths, actual ads and ad copies were extracted from the three brands' Instagram accounts targeting the United States market, and a total of 12 ads were selected and used as stimuli after a pilot study.

The findings from this study evidenced the ineffectiveness of alcohol marketers' current practice, in which alcohol marketers who have followed self-regulation code opt to place warnings that are close to Instagram ad margin and disintegrated from main ad copy, let alone the majority of alcohol marketers who failed to follow alcohol industry's self-regulation code in terms of their marketing activities on social media. In particular, this study found that beer ads with conspicuous warnings, compared to discreet warnings, were more effective in curbing underage youths' intentions to consume alcohol. Also, beer ads with integrated warnings facilitated higher level of reactance among underage youths than ads with disintegrated warnings, which resulted in less favorable attitude toward the ad and brand. However, such reactance did not spill over to affect underage groups' drinking intention. Ads with integrated warnings were shown to be a more effective strategy to curb underage youths' alcohol consumption intentions than disintegrated warnings. Further, eye-tracking measurements indicated that discreet and disintegrated warnings currently adopted by alcohol marketers were hardly being noticed.

This study's findings will not only provide empirical guidance for the alcohol industry, policy makers, and the public, but also extended the current literature by examining whether the design features of warning messages may elicit potential reactance among underage consumers, as well as the relationship between visual allocation to warnings and cognitive processing.

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CHAPTER 1: INTRODUCTION

Underage drinking is a significant public health concern in the United States, with striking prevalence. In the United States, underage drinking refers to the consumption of alcohol by any person under the age of 21. A survey on alcohol consumption in 2011 revealed that among 12- to 20-year-olds, 24.8% reported having consumed alcohol in the past 30 days, and underage youth initiated drinking at a median age of 14.35 years from 2009 to 2011 (Chen, Yi, & Faden, 2013). One recent U.S. study showed that 10% of eighth graders, 25% of 10th graders, and 40% of 12th graders reported they had consumed alcohol in the past month (Johnston et al., 2014). More strikingly, teens consider alcohol of all types—ranging from beer, spirits, wine, and distilled spirits, to flavored pre-mixed drinks—to be appealing (Siegel et al., 2013).

Every year, around 4,700 youth die in incidents involving alcohol use (Centers for Disease Control and Prevention [CDC], 2008), and the total medical costs related to underage drinking reached around US$755 million in 2008 (Kim et al., 2012). Underage drinking is also associated with other problems, such as drunk driving (Hingson et al., 2009; Wechsler, Lee, Kuo, & Lee, 2000), unsafe sexual activity (Abbey, Ross, McDuffie, & McAuslan, 1996; U.S. Department of Health and Human Services, 2007), potential illicit drug use (Kim et al., 2012), and poor academic performance (Presley, Meilman, & Lyerla, 1993; Wechsler et al., 2000). In addition, excessive underage drinking potentially affects youths' brain function and development and may lead to cognitive defects (Neiman, 1998).

Previous studies have examined the influence of environmental, psychological, and social normative factors that contribute to high-risk drinking activities among youth (Lin & Carlson, 2009; Neighbors et al., 2007; Wagenaar & Toomey, 2002). A considerable number of interventions have been conducted to lower alcohol consumption among youth, including school-

based interventions targeting individual-level factors, family-oriented programs, and community-based education (Komro & Toomey, 2002; Schinke, Cole, & Fang, 2009). Paek and Hove (2012) identified alcohol marketing as the biggest contributing factor to underage drinking, followed by youths' perceived injunctive norms related to drinking (i.e., their perception that others approve of alcohol consumption), and loose policy execution, respectively.

While much of the literature has examined the persuasiveness of alcohol messages among underage youth via traditional media (e.g., Anderson et al., 2009; Chen et al., 2005; Slater et al., 1996; Wallack, Cassady, & Grube, 1990), recent studies have attempted to decipher the ways in which the interactive nature of social media influences users' alcohol consumption intentions and behaviors (e.g., Alhabash et al., 2015, 2016). With the exception of a handful of studies (e.g., Nicholls, 2012; Winpenny, Marteau, & Nolte, 2014), little research has investigated the effects of online or social media alcohol marketing on underage youths. There is a critical need to examine these effects amidst the shift of alcohol marketing expenditure from traditional to digital media (Federal Trade Commission [FTC], 2014). Despite the fact that the alcohol industry has adopted a self-regulation code regarding marketing activities (Federal Trade Commission [FTC], 2014), Barry and colleagues (2015a, 2015b) set up profiles on YouTube, Twitter, and Instagram, and showed that profiles with users aged 13 and 17 were not only able to see alcohol-branded content on these social media platforms, but also received such content (pushed) in their news feeds. Such marketing practices violate the alcohol industry's self-regulation code. Considering the high social media adoption and usage rates among youth and young adults (Lenhart, 2015), the lack of forceful self-regulation governing alcohol marketing and promotion via social media heightens alcohol ads' potential adverse effects on underage youth.

Past research has documented the relationship between teens' exposure to alcohol advertising and their alcohol use initiation or increased alcohol consumption (Anderson et al., 2009; Saffer, 2002; Stacy et al., 2004). Research using a sample of young adults (15–26 years old) also showed that exposure to alcohol advertising led to favorable attitudes toward alcohol ads, which in turn led to greater intention to consume alcohol (Martin et al., 2002). On social media platforms, underage consumers can easily access alcohol advertising content (e.g., display ads, posts by brands, branded posts shared by friends); therefore, there is a critical need to examine effective ways of curbing the effects of alcohol-branded content on underage youth to better inform policy makers as well as parents. In addition to exploring the direct effects of alcohol advertising on underage consumers, this study aims to identify effective strategies for incorporating warning messages on social media alcohol ads that would enhance message compliance and reduce psychological reactance (i.e., individuals' motivational reaction to orders or regulations that have the potential to threaten their choice of freedom [Brehm, 1966; Brehm & Brehm, 1981]).

Congress passed legislation requiring the alcohol industry to place warnings on all alcoholic beverage containers distributed since November 18, 1989 in the United States (Federal Register, 1989). Additional laws that would require advertisers to place warnings on alcohol ads have been proposed (Kennedy, 1990). The Distilled Spirits Council of the United States' latest Code of Responsible Practices for Beverage Alcohol Advertising and Marketing requires that all alcohol beverage advertising, marketing messages, and promotional events include responsible drinking statements when practicable (Distilled Spirits Council of the United States [DISCUS], 2011). However, alcohol marketing on social media doesn't always uphold such regulations. Without self-regulatory mechanisms, the inclusion of warning messages on social media alcohol

advertising is dependent on alcohol companies' desire to advertise responsibly. Given that warning labels may counter the effectiveness of alcohol advertising, it is reasonable to expect that many alcohol companies might prefer to avoid them. Indeed, at the time this study was conducted, the researcher of this study performed an informal content analysis of the 10 most recent Instagram posts from the top 25 alcoholic beverage brands (Siegel et al., 2013) popular among underage youth in the United States (24 out of the 25 brands have Instagram accounts), and found that only four brands (*Bud Light, Budweiser, Captain Morgan,* and *Four Loko*) included legal drinking age warnings in the posts. Even with only four brands adopting a legal drinking age warning, there were clear discrepancies on how these warning messages were placed in the posts (i.e., some were more noticeable than others).

A number of studies have investigated the effectiveness of warning messages from a design perspective, focusing on the warning salience and placement on either alcohol containers or ads (e.g., Foxman, Muehling, & Moore, 1988; Thomsen & Fulton, 2007; Torres, Sierra, & Heiser, 2007; Wogalter, Conzola, & Smith-Jackson, 2002). While evidence is mixed among these studies, some suggested that placing a warning in a conspicuous location on the ad and incorporating it into the ad content is more effective at informing consumers of alcohol hazards (Foxman, Muehling, & Moore, 1988; Thomsen & Fulton, 2007).

The present study looks specifically at how underage youths' attention allocation to warnings with varying conspicuity and degree of integration into alcohol ads will affect their state reactance in relation to perceived threat to their freedom of choice regarding drinking, thus influencing the effectiveness of these warning messages. To do so, the study relies on both eye-tracking measures of visual (perceptual) attention and self-reported measures of reactance and behavioral intentions.

The findings from this study are expected to offer theoretical and managerial implications. First, by examining the effectiveness of warning message inclusion in social media alcohol advertisements (conspicuity and integration), the study provides alcohol marketers and producers—as well as policy makers—with empirical evidence to support self-regulatory and policy guidelines for social media alcohol advertising. Second, by employing the psychological reactance theory (Brehm, 1966; Brehm & Brehm, 1981), this study also extends the current literature by examining whether the design features of warning messages (the level of warning noticeability and the warning's integration level into alcohol ads) may elicit or inhibit psychological reactance among underage youth, thus informing the industry of effective standards for the inclusion of warning messages in alcohol ads. Therefore, the study provides health communicators with new evidence on strategic adoption of alcohol warnings targeting underage youth. Third, the study's hypothesis testing through eye-tracking measures of visual attention, as well as psychological reactance and behavioral outcomes, provides a more accurate depiction of the success or failure of employing warning messages in social media alcohol advertisements.

In the following chapters, Chapter 2 elaborated on previous literatures and theoretical framework used in this study, of which included parts on alcohol marketing, alcohol advertising regulations, alcohol-warning features (i.e., conspicuity and integration), and psychology reactance theory. Following that, the method part was covered in Chapter 3. In Chapter 4, results from hypotheses and model testing were reported. Chapter 5 focused on discussion, implications, limitations, as well as conclusion.

CHAPTER 2: LITERATURE REVIEW

Social Media and Alcohol Marketing

Instagram has more than 400 million monthly active users: Over 53% of the 77 million American users are between 18 and 29 years of age, and over half of all American teens use Instagram (Duggan et al., 2015; Instagram, 2016; Walton, 2015). Millennials and teens have been migrating from popular social networking sites (SNSs) like Facebook and Twitter to Instagram (Hoelzel, 2015). In the latest Piper Jaffray survey, more than a quarter of U.S. teens (14–19 years old) reported Instagram (27%) and Snapchat (28%) as the most important social networks in their lives, compared with 17% who expressed a similar statement about Facebook (Woollaston, 2016). While Facebook boasts 1.59 billion users, less than two fifths of its users are between the ages of 18 and 34; thus it has been perceived to be an aging social media site (Facebook, 2016; Hoelzel, 2015). More importantly, except for brands in the consumer products and telecommunication and cable industries, brands in general have the highest engagement rates on Instagram compared to other SNSs (e.g., Facebook, Twitter, Pinterest, and LinkedIn) (TrackMaven, 2015). Food and beverage brands on Instagram get more than 34 times the engagement ratio (engagement ratio here refers to the average number of interactions [e.g., liking, commenting, sharing] per post per 1,000 followers) they see on Facebook and more than 57 times the engagement ratio they see on Twitter (TrackMaven, 2015). An analysis of the top 38 brands in the food and beverage category selected from the Global 500 and leading brands showed that beer brands on Instagram received the highest social media engagement ratio of 26.2 compared to other subcategories (23.2 for soda, 18.9 for energy drinks, and 13.3 for food brands) (TrackMaven, 2015).

The above-mentioned data shed light on why alcohol marketers are cutting down expenditure on traditional media advertising and investing more resources in online marketing (Federal Trade Commission [FTC], 2014). The most recent FTC report[1] (2014) on alcohol industry spending and practices showed that the top 14 alcohol companies allocated 7.9% of their marketing expenditures to digital and online marketing in 2011, which was almost a four-fold increase from the 2% expenditure observed in 2008. More recently, savvy alcohol brands have started moving faster in converting to digital marketing; for instance, the British beer brand *Newcastle Brown Ale* has shifted its marketing budget to all-digital campaigns since 2014, *Heineken* decided to spend a quarter of its 2016 summer campaign on digital media, and *Patrón* invested a third of its marketing budget on digital marketing last year (Johnson, 2015). Given the relatively low cost of digital marketing and its higher engagement rate among consumers (TrackMaven, 2015), it is expected that the prevalence of mostly or all-digital alcohol marketing will only continue to grow.

Considering high engagement rates that are mirrored with increasing investment in marketing via Instagram among alcohol brands, it is important to decipher the uniqueness of Instagram as it relates to alcohol marketing and advertising. Along with Snapchat, Instagram is growing to be one of the top media of choice among underage youth. Although Instagram enforces an age restriction so that users must be at least 13 years of age to sign up for an account (Leachman, 2015), research has shown that underage youth are able to follow alcohol brands, receive their ads, and interact with them on the SNS (Barry et al., 2015a; Doyle, 2015). This demonstrates that the age information in Instagram's database is not being used to restrict content exposure according to a user's stated age unless the alcohol brands choose to do so. With

[1] similar reports released in 1999, 2003, and 2008

60% of underage youth reporting that they have seen alcohol marketing online (Doyle, 2016), there is a critical need to understand the mechanism of how to curb the effects of alcohol marketing through using counterarguments or warnings on alcohol ads disseminated via Instagram. This critical need is heightened by the lack of clear regulatory and policy guidelines that govern alcohol marketing and advertising on social media. The following section provides a review of the existing regulations related to alcohol marketing and advertising.

Alcohol Marketing and Advertising Self-Regulations

According to the Federal Trade Commission (FTC), the alcohol industry (i.e., the three major alcohol supplier trade associations) in the United States has adopted voluntary or self-regulatory codes for advertising and marketing practices (FTC, 2014). As a function of these self-regulatory codes, alcohol advertisers commit to placing alcohol ads in media channels in which at least 71.6% of the current audience or users are aged 21 or older. For alcohol marketing on social media, the U.S. Alcohol and Tobacco Tax and Trade Bureau (TTB) has provided guidance for advertisers and industry members' voluntary compliance with the Federal Alcohol Administration Act (FAA Act) and TTB regulations (TTB, 2013); yet these are still subject to voluntary compliance and are not enforced in any way. Other countries, such as the United Kingdom, face similar regulation demands regarding alcohol marketing online and via social media (Alcohol Concern, 2013). France passed a restrictive alcohol advertising regulation in 1991 ("Loi Evin" law), and only allows alcohol advertising, as well as alcoholic beverage packaging, to display objective product information (Rigaud & Craplet, 2004). Finland, as an exception, has banned alcohol-branded marketing on social media since the beginning of 2015, stating that alcohol advertising could encourage early alcohol consumption and excessive drinking by the young generation (European Centre for Monitoring Alcohol Marketing, 2014).

Despite claims from the alcohol industry that it has followed the self-regulation codes when distributing marketing content online, alcohol ads are still accessible to underage youth on multiple popular social media platforms (Barry et al., 2015a, 2015b). Facebook requires age verification when users set up their accounts and has enabled alcohol brands' pages to set age-gating to weed out underage followers (Flacy, 2012). Similarly, Twitter has launched age-screening procedures and partnered with a number of alcohol brands to filter out underage followers (Jain, 2013). YouTube grants brands the option to self-regulate their marketing message and not reach underage youth. Instagram requires users to be at least 13 years old to register, and alcohol brands can enable an age-gating feature for their account page to filter out underage followers (Leachman, 2015). However, whether alcohol brands are adhering to the self-regulation rule is in question. Moreover, their inability to perform any form of age verification for users who provide false date of birth data is problematic. Hence, it might be more practical to assume that a user's exact age is unknown (since children under the age of 13 are known to falsify this information to gain access to social media) and to turn the self-regulatory focus away from age-based targeted advertising and instead toward effective warning labels if it is assumed that people of any age might see the content.

The U.S. Congress passed a regulation in 1989 requiring the alcohol industry to place warning messages on all alcoholic beverage containers (Federal Register, 1989), and additional laws further required advertisers to place warnings on alcohol ads (Kennedy, 1990). However, it is not common to see warning messages on alcohol ads on social media, if only a few brands (i.e., *Budweiser, Bud Light, Captain Morgan,* and *Four Loko*) have chosen to do so. Given that it might be impossible with the current First Amendment in the U.S. to enforce a government ban on alcohol marketing and advertising via social media, other forms of regulation, such as

including warning messages on alcohol ads, might be a middle-of-the-road solution. Saffet (2002) showed that using counter-advertising rather than implementing new bans could be effective in reducing underage alcohol use. It is urgent for alcohol brands to put simultaneously accessible counterarguments (i.e., warning messages) alongside their commercial ads to their target audience on social media. The reason those warnings are missing in the majority of current alcohol marketing practices on social media also calls for a closer examination of the potential effectiveness of these warnings in curbing alcohol ads' effects on underage youth. Thus, the current study investigates the effectiveness of warning messages on alcohol ads in social media, especially their potential positive persuasiveness on underage youth. The following section reviews studies evidencing the effectiveness of warning messages in alcohol advertising.

Alcohol Warnings on Ads

To curb adverse consequences and social problems arising from alcohol consumption and to better inform the public of alcohol use hazards, Congress passed legislation requiring the alcohol industry to place the following warning on all alcoholic beverage containers in the United States beginning on November 18, 1989 (Federal Register, 1989):

> *GOVERNMENT WARNING: (1) According to the Surgeon General, women should not drink alcoholic beverages during pregnancy because of the risks of birth defects. (2) Consumption of alcoholic beverages impairs your ability to drive a car or operate machinery and may cause health problems.*

Similarly, besides alcoholic beverge, among a wide range of product categories, marketers also use disclaimers in their marketing messages to fulfill multiple goals; for example, to provide consumers with complementary information, to clarify statements in the ad, or for legal self-protection purposes (Foxman, Muehling, & Moore, 1988). The display of disclaimers

on ads is either mandated by the Federal Trade Commission (FTC) or done as a result of the advertisers' decision (Foxman, Muehling, & Moore, 1988). Generally, disclaimers are expected to provide comprehensive information for consumers to make rational decisions.

Andrews, Netemeyer, and Durvasula (1990) tested the impact of the above-mentioned two government warnings among other warning messages on college students' beliefs and attitudes toward alcohol labels. The researchers found that government warnings (i.e., birth defects and impairment) were more believable than other options (e.g., cancer, addiction, or hypertension). Additionally, participants' prior attitudes toward alcohol consumption negatively affected their acceptance of alcohol warning label information.

Another form of a health-related warning message can be found in the "drink responsibly" social marketing campaigns advocated by alcohol producers (e.g., Center on Alcohol Marketing and Youth, 2005). However, such warning messages have been criticized for being strategically ambiguous by using overly simplified social marketing approaches (e.g., mostly slogans) and have been perceived to be ineffective in fulfilling their pro-health purpose (e.g., Brown, 1991; Roznowski & Eckert, 2006; Smith, Atkin, & Roznowski, 2006; Wolburg, 2001). In particular, Roznowski and Eckert (2006) found that instead of curbing underage drinking, underage college students interpreted drink responsibly as a slogan advocating moderate drinking rather than teetotaling until the legal drinking age is reached. More importantly, past studies found that design features of alcohol warnings influence the effectiveness of these messages, which will be elaborated on in the following section.

Alcohol Warnings' Conspicuity

Foxman, Muehling, and Moore (1988) found that smaller disclaimer type size and placement as a footnote on camera ads contributed to higher levels of miscomprehension of the

message and hence suggested that advertisers and the FTC should incorporate disclaimer information into the main ad copy. Addressing the elements determining the effectiveness of warning message design, Wogalter, Conzola, and Smith-Jackson (2002) proposed that noticeability or conspicuity is the first requirement for a warning to be effective, and suggested that the conspicuity of a warning message could be improved by using large, bold print with high contrast, as well as elements like color, borders, pictorial symbols, and special effects. Similarly, Godfrey and colleagues (1991) conducted an experiment to evaluate the influence of various existing warning design features on a warning's noticeability on alcoholic beverage containers, and suggested that warnings with larger print, proper contrast, frontal location, and less surrounding information clutter would be more likely to be noticed by consumers.

Thomsen and Fulton (2007) used eye tracking to determine adolescents' (12–14 years old) attention allocation to responsibility messages (i.e., drink responsibly) in magazine alcohol ads, and found that attention and recall for warning messages were the worst for small messages that appeared at the bottom of the ad. Jones and Gregory (2010) examined Australian college students' attitudes toward warnings on alcohol products in focus group discussions and found that most of the students hardly considered the warning messages, which were modeled after U.S. warnings, to be believable even though they were quite aware of alcohol use hazards. These researchers proposed that alcohol warnings highlighting short-term consequences of alcohol use rather than long-term consequences would be more effective among this young adult group. It should also be noted that participants in this study were mostly of legal drinking age (age 18 in Australia), and their perceptions may have differed from those of underage drinkers in other studies.

Barlow and Wogalter (1993) found that, compared to less conspicuous warnings (e.g., small size, less contrasting color), highly conspicuous warnings on alcohol ads were more likely to attract viewers' attention and contribute to their knowledge of the warning. Torres, Sierra, and Heiser (2007) conducted a content analysis and found that alcohol magazine ads tend to place warning messages at the bottom. Employing an experiment examining warnings about toothpaste, Torres et al. (2007) argued from a social contract perspective that consumers actually showed more favorable attitudes toward the ad and brand, and rated the brand as more responsible in advertising, when the warning was conspicuously rather than discretely placed. Given the participant sample aged 18 to 25 being used in Torres et al.'s (2007) study, this current study's focus – the underage youth – might actually react differently to conspicuous warning on Instagram ads. Since the warning (i.e., "For Legal Drinking Age 21+") directly speaks to drinking age qualification, the conspicuous warning, compared to discreet warning on Instagram ads, is expected to induce greater restrictive and threatening cognitions among underage youth. Underage viewers of ads with conspicuous warnings could perceive more threat to their freedom to drink, which would result in higher reactance and greater likelihood to reject the message than discreet warnings (Brehm, 1966; Brehm & Brehm, 1981). Therefore, the following hypotheses are proposed:

> Upon viewing alcohol ads with conspicuous warning, underage youth will express **H1a)** less favorable attitudes toward the ad, and **H2a)** less favorable attitudes toward brand, **H3a)** lower viral behavioral intentions than ads with discreet (i.e., hard-to-see) warning.

Besides investigating the effects of warning label features on consumers' beliefs and attitudes, researchers also studied how warnings affect behavioral intention toward alcohol

consumption. DeCarlo et al. (1997) found that even though the majority of the subjects (mostly college students with some working adults) considered warnings to be moderately persuasive, few of them reported potential behavioral intention change with regard to future alcohol consumption. MacKinnon and Lapin (1998) found that warning labels on alcohol ads increased perceived risk of drinking alcohol and decreased perceived benefits after viewing the ads. Scholes-Balog, Heerde, and Hemphill (2012) found that alcohol warnings did not seem to change young adults' drinking behaviors nor dissuade them from participating in risky alcohol-related behaviors. Andrews et al. (1991) argued that frequent alcohol users tended to perceive the warnings as less believable and favorable than occasional or non-alcohol drinkers, but the latter users were more confident in their warning evaluation than the frequent drinkers. According to Andrews and Netemeyer (1996), provision of warning information may be futile for heavy drinkers when trying to combat their experience related to alcohol consumption. However, the question of how to make the warning or risk information available and internalized among underage adults is critical to ask. Compared to youth of legal drinking age, underage youth tend to have less experience with alcohol consumption. Hence, provision of warning messages or other educational messages for underage youth are argued to affect their perceived risk and drinking intention in a positive way (e.g., Andrews & Netemeyer, 1996; Garretson & Burton, 1998; MacKinnon & Lapin, 1998):

H4a: Underage youth will express lower intentions to consume alcohol upon exposure to ads with a conspicuous than a discreet warning message.

Regarding alcohol marketing on social media, especially on Instagram (with the highest engagement rate between brands and users), there is no enforced age-gate that prevents underage youth from following alcohol brands. (By employing an age-gating feature, brands could opt to

restrict underage followers at their own will.) As long as users are over 13 years old (i.e., the age limit to register on Instagram), they could easily follow any alcohol brands, receive ads, and interact with the ads (Barry et al., 2015a). Only a small segment of U.S. alcohol brands opt to put warnings discreetly at the bottom of their ads on Instagram (e.g., *Budweiser*'s "For legal drinking age+," *Bud Light*'s "MSG for 21+," *Captain Morgan*'s "Drink Responsibly," and *Four Loko*'s "Drink Responsibly") with small print type. A large group of alcohol brands do not put any warnings on their ads except a short disclaimer on the bio description (e.g., *Coors Light, Jack Daniel's, Bacardi*). By using eye-tracking measures, the current study examines underage youths' perceptual processing and visual attention allocation to alcohol marketing messages and warnings on Instagram. In particular, this study examines how conspicuity (discreet vs. conspicuous) and integration level of the warning (poorly integrated vs. well-integrated into the ad copy/caption) may affect underage youths' attention allocation and behavioral intention. The question of why the placement of warnings within the ad copy/caption matters was discussed in detail in the following part.

Ad–Warning Integration

It is common to see advertisers provide a caption either below or beside their ads on social media, which could give supplementary information (e.g., picture or video ad) about the ad context, tell brand stories, incite conversations, and engage with consumers (York, 2015). Regarding alcohol ads on social media (e.g., Instagram), putting alcohol warnings at the bottom margin of the image ads is more discreet than integrating into the ad caption (ad copy). Past researchers discussed this problem and proposed that advertisers should make changes and incorporate warnings into the main ad content (e.g., Foxman, Muehling, & Moore, 1988;

Thomsen & Fulton, 2007). Gestalt theory and the concept of integrated placement from product placement will be employed to explicate this practice's potential pro-health effectiveness.

Gestalt Theory

Developed by Max Wertheimer, Wolfgang Köhler, and Kurt Koffka, Gestalt theory was originally initiated in the 1910s and aimed to decipher the ways in which human perceive various elements and organize them into patterns or groups (e.g., Köhler, 1920; Wertheimer, 1923; Koffka, 1935). Gestalt theory focused on humans' perception and understanding of physically contingent objects as a whole, and generally proposes that humans tend to perceive elements in relation to their larger background or environments and follow a certain grouping principles, such as common fate, good continuation, proximity, and similarity. Based on Gestalt theory, the proximity principle claims that individual elements that are physically close or adjacent to each other will be perceived as one unit (Wertheimer, 1923). Also, Koffka argues that an environment "contains a number of equal parts, those among them which are in greater proximity will be organized into a higher unit" (Koffka, 1935, p. 164 - 165).

Moreover, Holsanova, Holmberg, and Homqvist (2005) examined viewers' eye movements when reading newspapers with different layouts and showed that readers mentally integrated graphics and text when they were integrated into each other, and treated the text and graphic as two independent units when they were separately placed. The authors adopted the Gestalt theory and argued that spatially or physically contingent elements will be perceived as one integrated cluster and readers are more likely to ignore nonintegrated material than integrated material. Möller, Brezing, and Unz (2012) implemented the Gestalt principles in constructing corporate websites and investigated factors influencing internet users' browsing behaviors, and found that viewers rated website pages that are constructed without reflecting the

principle of proximity less favorable than pages with implementation of proximity principle. Niemelä and Saarinen (2000) investigated how participants identify a target file on a computer interface and showed that spatial grouping of icons led to speeded search for a target file than ungrouped icons did.

With regard to this current study, warnings placed right following the ad copy will be more spatially contingent than warnings placed on ad margin and separately from the ad copy, and such spatial or physical proximity will facilitate viewers to view both of ad copy and warning as an integrated unit.

Integration in Product Placement

Product placement, also called brand placement, refers to "a paid product message aimed at influencing movie (or television) audiences via the planned and unobtrusive entry of a branded product into a movie (or television program)" (Balasubramanian, 1994, p. 31). Advertisers and marketers pay for their products' appearance in various motion pictures and television programs in exchange for broader audience reach, improved brand performance, and ultimately increased revenue (Morton & Friedman, 2002). Previous studies have provided evidence that product placement could influence consumers' brand recognition, recall, and attitudes (e.g., Gibson & Maurer, 2000; Gupta & Lord, 1998; Karrh, Frith, & Callison, 2001; Russell, 2002). Further, other researchers examined the relationship between product placement and product use intentions and actual behaviors and found that some beliefs related to product placement in a movie predicted relevant behaviors (e.g., Morton & Friedman, 2002).

Besides movie and television programs, product placement also takes place in a variety of media forms, such as video games, promotional contests, and websites (Tiwsakul, Hackley, & Szmigin, 2005). There are generally three categories of product placement strategies: implicit

product placement, integrated explicit product placement, and non-integrated explicit product placement (d'Astous & Seguin, 1999; Tiwsakul, Hackley & Szmigin, 2005).

Implicit product placement usually involves a branded product appearing in a motion picture or media program in a passive way, wherein its brand name is not formally spoken and no explicit product benefit or sponsorship is announced. For example, a *Budweiser* beer showing up in a movie scene in the background without extra scenes regarding the beer would be an implicit product placement. A non-integrated explicit product placement usually presents a brand or a company's sponsorship at a certain part of a media program, but product or related information is not integrated into the media content. One such example would be a comedy show naming its sponsors (e.g., brands or companies) at the end of the program. On the other hand, integrated explicit product placement not only showcases the branded product in the media program, but also demonstrates the product's features and benefits via the characters. For instance, 007 drives an *Aston Martin* DB10 in the 2015 James Bond movie *Spectre*. More importantly, these product placement strategies could affect consumers' brand evaluations and behavioral intentions (Hong, Wang, & De Los Santos, 2008; Tiwsakul, Hackley, & Szmigin, 2005).

D'Astous and Seguin (1999) tested the effect of the three product placement strategies used in TV programs and found that consumers' reactions to different product placement strategies were contingent on the type of TV programs in which they were embedded. Tiwsakul, Hackley, and Szmigin (2005) conducted in-depth interviews and questionnaires among British consumers regarding product placements in 11 television programs, and found that respondents expressed low brand recall to non-integrated explicit product placement in all TV programs. Provided that no conclusive findings were found on these three types of product placement

strategies' impact on consumers, Hong et al. (2008) discussed the degree of integration in product placement and categorized product placement into two general categories: well-integrated product placement and poorly integrated product placement. Well-integrated product placement refers to instances when the product nicely "melts into the story and the moment" (Bree, 1996, p. 70), whereas poorly integrated product placement refers to products being unnaturally or artificially inserted into a motion picture without being connected to the environment or plot (e.g., d'Astous & Seguin, 1999). Well-integrated product placements lead to more positive evaluations of the placements than poorly integrated placements (e.g., d'Astous & Seguin, 1999; d'Astous & Chartier, 2000).

In the current study, however, the opposite scenario is applied. Instead of investigating product placement in media content, this study investigates the effects of placing an alcohol warning in an alcohol ad, wherein the warning will be either well integrated into or disconnected from the ad copy. It could be considered as either well-integrated warning placement or poorly integrated warning placement. Compared to poorly integrated warnings in alcohol ads, this study proposes that well-integrated warnings are more likely to be perused and remembered (Tiwsakul, Hackley, & Szmigin, 2005), and will tend to elicit more favorable attitudes from the target audience toward the integration of warnings in alcohol ads (e.g., d'Astous & Chartier, 2000; d'Astous & Seguin, 1999). Therefore, well-integrated warnings in alcohol ads are more likely to be accepted by the target audience than poorly integrated warnings. The following hypothesis is proposed:

> Participants will express **H1b)** more favorable attitudes toward the ad, **H2b)** more favorable attitudes toward the brand, **H3b)** greater viral behavioral intentions, and

H4b) lower intention to consume alcohol upon exposure to ads featuring well-integrated than poorly integrated warning messages in alcohol ads on instagram.

According to H1a-H4b and H1b-H4b, both the alcohol ad warning's conspicuity and integration level have main effects on underage youths' attitude toward the ad and brand, viral behavioral intention, and drinking intention. However, the potential interaction effect of these two components on underage viewers' reactions must be tested. I asked:

How will conspicuity and integration level of warning messages in alcohol Instagram ads interact in affecting underage youths' **RQ1)** attitudes toward the ad, **RQ2)** attitudes toward the brand, **RQ3)** viral behavioral intentions, and **RQ4)** intentions to consume alcohol?

This study also aims to examine how viewers' visual attention toward warnings on alcohol ads could influence their processing of the ad and warning information and their cognition formation afterward. The following part elaborates on the importance of attention allocation in persuasion.

Visual Attention

On a daily basis, people are bombarded with an overwhelming amount of information. For example, most Americans are estimated to see around 4,000 to 10,000 ads daily (Marshall, 2015). People make about 10,000 decisions each day, and many of them are related to purchase behaviors (ISPO News, 2015). However, each individual has a limited cognitive capacity and cannot possibly fully process all of the incoming information (Lang, 2000). Human brains are only able to attend to a portion of the information from the environment and filter out the rest. The concept of attention has been studied not only in communication but also in cognitive sciences (Weber et al., 2009). In the context of communication, attention is usually

conceptualized as the means by which cognitive resources are allocated to select and process media information (Reeves, Thorson, & Schleuder, 1986).

Attention is involved in such cognitive processing and refers to how the human brain selects information for further processing (Banich, 2004). Viewers can only pay visual attention to a limited number of elements from an entire scenario at any given time (Ju & Johnson, 2010). To identify an individual's visual attention, two critical components—*where* and *what*—are indispensable. *Where* refers to specific elements or details on which the viewer is focusing, which are usually determined by the viewer's interest or will (Von Helmholtz, 1925). The *what* component of visual attention usually involves inspection or perception of the selected attention focus via internal mechanisms (Duchowski, 2003). Visual attention can be operationalized and measured via eye-tracking research, since measures of eye movements not only record a viewer's attention path (where), but also the viewer's attention focus (what) (Duchowski, 2003).

Considering that people's subconscious eye movements are direct and difficult to manipulate responses related to information processing (Bates & Istance, 2002), this study investigates audience members' visual attention allocation across alcohol ads with warnings placed in different locations. Generally, eye movements have been found to be significantly and directly related to cognitive processing (Wedel & Pieters, 2007). It is important to validate self-report data with psychophysiological responses to better understand the mechanism of cognitive processing of persuasive messages, especially advertising and marketing messages (e.g., Stewart & Furse, 1982; Wedel & Pieters, 2007). Previous researchers have used eye-tracking methods to examine adolescents' attention toward warnings in alcohol ads (e.g., Fox et al., 1998; Thomsen & Fulton, 2007), on cigarette packaging (Kessels & Ruiter, 2012), and on cigarette ad warnings (Krugman et al., 1994; Peterson, Thomsen, Lindsay, & John, 2010).

To examine whether and how long the warnings on alcohol ads have been attended to by underage youth, this study uses an unobtrusive computer-embedded eye tracker to record viewers' eye movements moment by moment. In particular, this study aims to find viewers' attention allocation toward alcohol ad warnings, and to determine whether their level of attention to each warning correlates to their acceptance of the ad message and their behavioral intention toward drinking. Before extracting visual attention data, the areas of interest (AOIs) will be defined arbitrarily by the researcher of this study. These are usually rectangular or other shapes drawn on a stimulus. For instance, for an alcohol ad on Instagram, the AOIs could consist of ad copy, the product image, and the warning message in different rectangular boxes, depending on the research goals. With the focus of the present study being the processing of warning labels, the hypotheses will be limited to warning messages as AOIs.

Viewers' eye-motion measures (e.g., fixation, duration of fixation) recorded by an eye tracker have been argued to correlate to the depth of cognitive processing within an AOI (Inhoff & Radach, 1998). This study will measure participants' total fixation duration on an AOI to represent the attention measure. Fixation refers to the short periods of stopping or stable time when participants' eyes are fixating on a particular part of an ad, which has been argued to be related to cognitive processing (e.g., Just & Carpenter, 1980; Rayner, 1978), as people fixate on a particular piece of a message when it is being attended to and interpreted. Fixation counts refer to the number of times an individual fixates on an AOI, which has been considered to represent the noticeability of an AOI during a viewing task (Poole, Ball, & Phillips, 2004). Fixation count has been considered to relate to information processing (Jacob & Karn, 2003); however, sometimes it may be indicative of the volume of words or the density of information that needs to be extracted (Holmqvist et al., 2011; Polle & Ball, 2005). The duration of fixations on a

particular piece of information—the total fixation duration—has been argued to correlate with cognition formation (e.g., recall and memory) (e.g., Krugman et al., 1994; Fletcher et al., 1995; Wedel & Pieters, 2000).

Eye-tracking measures, serving as unobtrusive methods, have been used to examine warning messages' effectiveness among viewers (e.g., Fox et al., 1998; Thomsen & Fulton, 2007). For example, Fox et al. (1998) examined 14- to 18-year-old high school students' attention to warnings in both cigarette and beer ads, and found that students spent more time viewing a beer ad than a soft drink ad, and around one third of the students did not pay attention to a "think when you drink" warning on the beer ad. Rayner et al. (2001) investigated viewers' eye movements on print ads that incorporated both text and pictorial content and found that, irrespective of the product category being advertised (car vs. skin care), viewers tended to dwell longer on the text part than the picture part of an ad, and they usually viewed the larger type print first before moving on to the small print. Truitt et al. (2002) determined the effect of tobacco ad warning features (e.g., size, contrast) on warning recall, and found that larger font size warnings were more likely to be recalled than those with a smaller font when controlling for covariates. More importantly, large objects or elements in an advertisement are more likely to be attended to and attract more attention than small ones (Peschel & Orquin, 2013; Wedel & Pieters, 2007). Peschel and Orquin (2013) conducted a review of previous literature and theories on the effect of ad surface size on viewers' visual attention and proposed a model—demand for attention—to better explain the impact of object size on attention. According to Peschel and Orquin (2013), an increase in the size of the target object leads to attention increase logarithmically, and objects placed in the center of a surface (e.g., on ads) gain more attention as a function of size increase than objects placed in other places.

In the present study, it is predicted that a warning will be less likely to be noticed when it is placed discreetly on the margin of an alcohol ad with small type, than when the warning is placed saliently in the center of the ad with large type:

H5a: Participants will exhibit longer total fixation duration for warning messages placed conspicuously than discretely.

Further, this study proposes: when warnings are well integrated into alcohol ad copy – with ad copy being placed in the center of the ad, they are more noticeable and conspicuous than warnings poorly integrated into ad copy (e.g., put close to the ad margin), regardless of the size of the warning. Therefore, when a well-integrated warning is weaved into the main ad copy and placed as the center focus of the ad, it will demand attention from viewers. Therefore, this study hypothesizes:

H5b: Well-integrated warning messages on alcohol ads will elicit longer total fixation duration from viewers than poorly integrated warnings.

Since H5a and H5b argue that both the conspicuity and the integration level of the alcohol ad warning have main effects on underage youths' attention duration, an alcohol warning that is conspicuous and well-integrated into ad copy is proposed to elicit the longest attention duration compared to other warning formats. However, regarding these two components' potential interaction effect on underage viewers' attention allocation, the following research question is raised:

RQ5: How will the interaction between conspicuity and integration affect total fixation duration on the warning? If so, what will the interaction effect be?

Further, being noticed is the first step for warning messages to be effective in curbing underage youths' potential drinking intention; however, others have also argued that alcohol

warnings could lead to psychological reactance or boomerang effect among young adults, which could actually contribute to their increased level of perceived benefits associated with drinking alcohol (e.g., Snyder & Blood, 1992). Ringold (2002) argued that interventions or campaigns designed to reduce young adults' alcohol consumption were subject to failure due to target audiences' reactance to the messages. Therefore, making sure that the warnings on alcohol ads are conspicuous enough to be seen while at the same time decrease audiences' potential reactance to the warning is the priority in this regard. In the following section, psychological reactance theory is used to explicate the potential outcomes regarding alcohol ads with warnings in different formats.

Psychological Reactance Theory

Psychological reactance theory (PRT) refers to individuals' motivational reaction to orders or regulations that have the potential to threaten their choice of freedom (Brehm, 1966; Brehm & Brehm, 1981). Brehm (1966) argued that individuals' state reactance happens when their perceived ability to choose among a range of alternatives is being reduced or denied. PRT has been employed to explain scenarios wherein persuasive messages result in ineffectiveness, boomerang effects, or state reactance among target audiences (Quick & Bates, 2010). *State reactance* is defined and measured as an aversive motivational state infused with a combination of anger and negative thoughts (Brehm & Brehm, 1981; Dillard & Shen, 2005; Quick & Stephenson, 2008; Rains & Turner, 2007). For individuals' reactance to a certain message to happen, they must perceive a sense of freedom to perform a certain behavior before viewing the message and sense the threats to their freedom after being exposed to the message (Brehm & Brehm, 1981). During the process of trying to restore their threatened freedom, individuals tend to reject the message (Brehm, 1966). To summarize, an intertwined model (e.g., Dillard & Shen,

2005; Rains & Turner, 2007) has conceptualized reactance process as affect (e.g., anger) and negative cognition (e.g., counterarguments or thoughts with negative valence) arising from viewing a certain persuasive message, and such reactance affects later attitudinal formation and behavioral intentions, with perceived threat to freedom as the antecedent of reactance responses.

PRT has been applied and tested across a diverse range of public health topics, wherein a wide range of message features have been found to be able to activate audiences' state reactance to the message: for example, controlling language that promotes anti-excessive drinking (Quick & Considine, 2008; Quick & Kim, 2009), concrete language (Miller et al., 2007), and language with high intensity (Dillard & Shen, 2005). Rains and Turner (2007) examined message factors—argument quality, threat severity, and magnitude of request—that could potentially exacerbate or mitigate reactance among audience members, and evidenced the magnitude of the requested behavior in persuasive health messages to be a predictor of reactance among audiences. Accordingly, health campaigns could opt to make minor behavior requests to facilitate message acceptance. Further, other message strategies have been documented to attenuate potential reactance and facilitate message acceptance, such as directive messages granting autonomy to an audience (Miller et al., 2007), messages prompting empathy (Shen, 2010), and messages imbued with narratives (e.g., Busselle & Bilandzic, 2009; Green, 2006). Also, since warnings such as "For legal drinking age+" and "MSG for 21+" in bigger type would be more conspicuous than small type on alcohol ads, they may at the same time appear to be more restrictive or threatening than hard-to-see small type warnings, and threatening messages or warnings are argued to restrict underage alcohol consumers' choice of freedom and elicit potential reactance (Brehm, 1966; Brehm & Brehm, 1981; Süssenbach, Niemeier, & Glock, 2013). Therefore, this study hypothesizes:

H6a: Participants will express greater state reactance upon exposure to alcohol ads with conspicuous than discrete warnings.

Furthermore, warnings may frame certain products as "forbidden fruit" and may actually make them desirable to younger adults (Parker-Pope, 1997). In addition, quasi story-telling formats—like well-integrated warnings in alcohol ad copy—in persuasive health messages have been argued to play a significant role in mitigating audiences' state reactance (e.g., Gardner & Leshner, 2016). Specifically this study hypothesizes:

H6b: Participants will express lower state reactance upon exposure to ads with well-integrated than poorly integrated warnings.

According to H6a and H6b, both the conspicuity and the level of integration of an alcohol ad warning have main effects on underage youths' state reactance to warnings on alcohol ads. It makes sense that an alcohol warning that is conspicuous and poorly integrated into ad copy is more likely to elicit a higher level of reactance when compared to other warning formats. However, regarding these two components' potential interaction effect on underage viewers' reactance, the following research question is proposed:

RQ6: How will the interaction between conspicuity and integration affect on underage youths' reactance to the warning messages?

A complete model for this study is summarized and proposed below. According to the intertwined model of psychological reactance (Dillard & Shen, 2005; Rains & Turner, 2007), audiences' state reactance (motivation responses, including both anger and negative thoughts) to persuasive messages affects audience members' attitude and behavioral intention. This study manipulated the conspicuity of warnings on alcohol ads and the degree of integration of the warning into the alcohol ad copy to determine the potentially most effective warning format

among underage youth. As mentioned in the above discussion about warning conspicuity and integration, a warning's conspicuity on an alcohol ad is hypothesized to predict underage consumers' attitude toward the ad (H1a), attitude toward the brand (H2a), viral behavioral intention toward the ad (H3a), drinking intention (H4a), visual attention allocation to the warning (H5a), and state reactance to the warning (H6a); whereas the warning's degree of integration into the ad copy is hypothesized to affect underage youths' attitude toward the ad (H1b), attitude toward the brand (H2b), viral behavioral intention toward the ad (H3b), drinking intention (H4b), visual attention (H5b), and state reactance to the ad (H6b).

Also, combining eye-tracking measurements, this study intended to test how underage viewers' visual attention (M1) to the warning and reactance (M2) to the ad will mediate warning conspicuity and integration level's impact. Given that previous studies only tapped into the impact of people's length of attention to ad warnings on their recall of warning content (e.g., Krugman et al., 1994; Thomsen & Fulton, 2007), this study tries to answer the question of how audiences' visual attention to warnings on alcohol ads may mediate warning conspicuity and integration level's impact on their attitude formation and drinking intention:

> **RQ7:** How will total fixation duration on the warning message mediate the effect of warning conspicuity and integration level on underage youths' **a**) attitudes toward the ad, **b**) attitudes toward the brand, **c**) viral behavioral intentions toward the ad, and **d**) intentions to consume alcohol?

As consumers' reactance to the message will affect message acceptance, which in turn could influence audiences' attitudinal evaluation and behavioral intention, this study hypothesizes state reactance will be a mediator that affect warning conspicuity and integration level's impact on participants' reactions:

RQ8: How will participants' reactance to warning messages mediate the effect of warning conspicuity and integration level on their **a**) attitude toward the ads, **b**) attitudes toward the brand, **c**) viral behavioral intentions, and **d**) intentions to consume alcohol? Therefore, the following model is given:

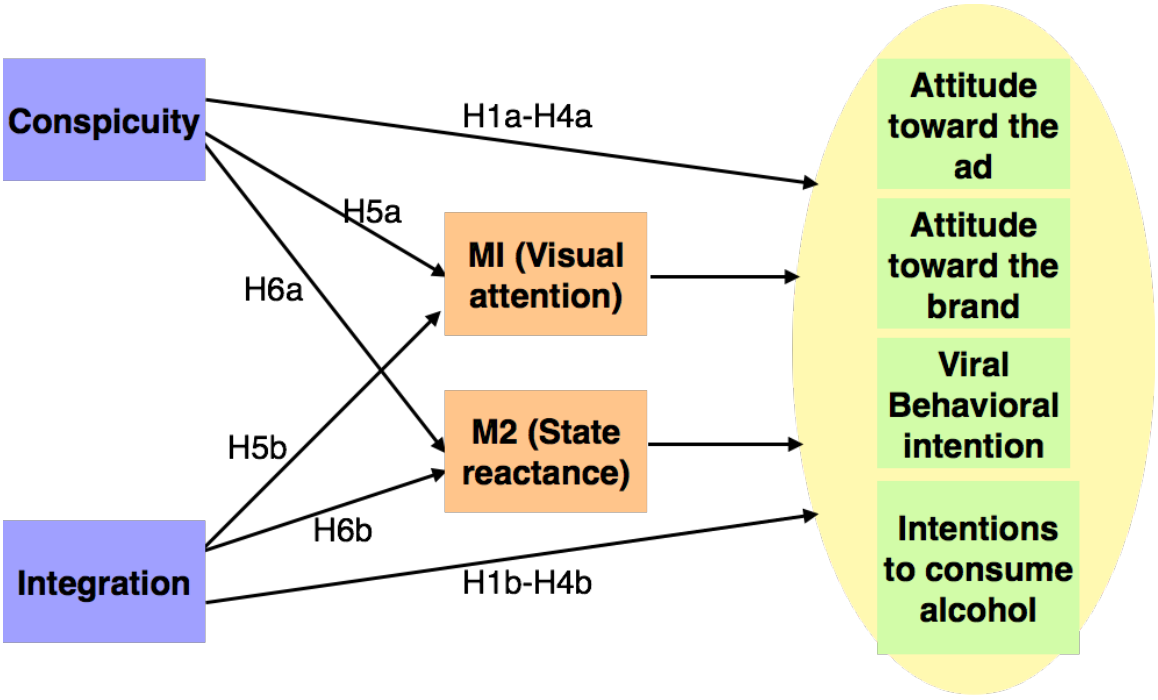


Figure 1 The Hypothesized Model
Note: The model represents 4 distinct models on each of the DVs.

CHAPTER 3: METHOD

This study employed a 2 (warning conspicuity: conspicuous vs. discreet) x 2 (warning integration level: well vs. poor) x 3 (brand repetition) within-subject factorial design. This study extracted alcohol ads from Instagram and manipulated the conspicuity level of the warning on each ad and integration level of the warning into the ad copy. Each participant was asked to review a total of 12 different Instagram ads (four ads per brand, from three different brands – *Budweiser*, *Bud Light*, and *Corona Extra*) and answer questionnaires. During the viewing process, participants' eye movements were recorded using the Tobii TX300 eye tracker and Tobii Studio in an experiment lab (Tobii, 2001).

Main Study Participants

Participants between the ages of 18 and 20 ($N = 65$, only one being non-college student) from a large Midwestern university's community subject pool were recruited. Nearly two-thirds of participants (65.2%) were female ($N = 43$), the majority indicated they were white (69.7%), followed by 18.2% Asians, and 10.6% African Americans. Participants had an average age of 19.82 years old ($SD = .86$) and 13.86 years of formal education excluding kindergarten ($SD = .79$). Upon completion, each of the participants was compensated with $20 in cash. According to participants' answers in the open-ended question asking about the purpose of the study in the end, three participants correctly guessed part of the current study's purpose. However, given no strong arguments recommend deleting those participants from final data analysis, all of the 65 participants' answers were used in data analysis.

Independent variables

Conspicuity. Alcohol ads' warning has either a small font size (Helvetica bold font, 12-point) or a large one (Helvetica bold font, 24-point) to represent the discreet and conspicuous

level of the conspicuity factor, respectively. There were no color and transparency variations among the warnings.

Integration. With regard to integration of the warning into ad copy, the well-integrated warning were incorporated into the ad copy and put in the center of ad (e.g., "Let the party start, only if you're 21+"), and the poorly integrated warning were separated from ad copy (ad copy always being placed in the ad center) and placed to the ad margin as how they usually appear on Instagram alcohol ads (e.g., "Let the party start," "For legal age drinking 21+"). Both of the well-integrated ad copy and poorly integrated ad copy have approximately same number of words (see Appendix E for sample stimuli).

Brand Repetition. To rule out the potential confounding effect of using ads from one beer brand, a pretest has been conducted to select three familiar beer brands among underage youth (see results from Pretest 1 in the stimuli development part). In order to increase this study's ecological validity, familiar brands, instead of unfamiliar brands, were adopted. Budweiser, Bud Light, and Corona Extra were identified as the most familiar beer brands with comparable levels of brand favorability among underage youth. Instagram ads from these three brands' United States account were extracted, edited, and used in the main study.

Order. To combat against Tobii studio's limitation in randomizing the presentation order of multiple stimuli, all of the 12 ads were numbered (1 to 12) and three random orders (1 to 12) were generated via an online randomizer (random.org) to represent three different presentation sequences. Three tests with different stimuli presentation sequence were created in Tobii Studio, and each of the participants was randomly assigned to one of the presentation order at the beginning of the study.

Dependent Measures

State Reactance. According to Dillard and Shen (2005), state reactance could be operationalized through measuring individuals' affect and cognition, in other words – anger and negative thoughts – after being exposed to a persuasive message. Participants' anger toward the ad was measured via rating the extent to which they feel irritated, angry, annoyed, and aggravated. Those items were measured on a seven-point scale anchored by "none of this feeling" and "a great deal of this feeling" on a seven-point scale. Items had acceptable reliability (*Cronbach's α* Range: .82 - .96) and were averaged per ad.

Also, following Dillard and Shen's (2005) operationalization, participants' negative cognitions were gathered by following the thought-listing method (Petty & Cacioppo, 1986). Participants were given 90 seconds to recall and write down any thoughts they had in their mind regarding the ad they have just seen. Participants' open-ended answers were coded in a three-step sequence by two trained coders (78, or 10% of the total comments were randomly selected, and two coders respectively coded the 78 comments by following the coding protocol. After comparing, two coders discussed their answers' difference and reached agreement regarding their interpretation of comments against the protocol). First, the coders identified each answer as being either affective expressions or cognitive thoughts. Since affective expressions were redundant with the self-reported anger measure, affective expressions were removed from final analysis. Coders employed a list of emotional terms summarized by Shaver, Schartz, Kirson, and O'Connor (1987) to decide whether the answer was pure affective response or not (percent agreement between the two coders: 93.72%). Second, coders decided on whether answers were relevant to evaluation of the beer ads they just saw. Only relevant responses were included for data analysis to reduce noise in their answers (percent agreement between the two coders:

99.0%). Last, after excluding pure affective responses and irrelevant ones, coders code the remaining answers as either a) negative thought, b) neutral thought, and c) supportive thought. Negative thoughts were those that indicated disagreement with the ad copy and "For legal drinking age 21+/ Only if you're 21+," derogations of the beer ad, the brand, and intention to engage in pre-legal-drinking-age drinking to challenge the warning message. Supportive answers were those expressed positive evaluation of the ad, the brand, and agreement with the ad copy or warning message. Those non-judgmental answers to the ad were coded as neutral, such as "the beer ad displayed their product and used male models" (percent agreement between the two coders: 87.6%). Only participants' number of negative thoughts viewing each ad was entered to represent negative cognition, and thoughts coded as otherwise were all entered with zero in the data file. When both of negative thoughts and positive thoughts coexisted in one answer, only the number of negative thoughts was entered and used for data analysis.

Attitudes toward the Ad (Aad). Participants' attitudes toward the ad were measured using three 7-point semantic differential scales, anchored by "not at all enjoyable – very enjoyable," "not at all likable – very likable," and "not at all appealing – very appealing" (Kelly, Slater, & Karan, 2002). Items had acceptable reliability (*Cronbach's α* Range: .94 - .98) and were averaged per ad.

Attitudes toward the Brand (AB). Participants' attitudes toward the brand were measured by four 7-point semantic differential scales borrowed from Kelly et al. (2002): "not at all appealing – appealing," "not at all cool – very cool," "not at all in-style – very in-style," and "not at all likable – very likable." Items had acceptable reliability (*Cronbach's α* Range .94 - .97) and were averaged per ad.

Viral Behavioral Intentions (VBI). Viral behavioral intentions measured participants' likelihood to interact with the Instagram beer ads (Alhabash et al., 2015). Participants indicated the degree to which they agree with the following statements using a seven-point Likert-type scale: "The ad is worth sharing with others," "I will recommend this ad to others," "I will 'like' this ad on Instagram," "I will '#regram' this ad on my Instagram," and "I will 'comment' on this ad on Instagram." Items had acceptable reliability (*Cronbach's α* Range: .82 - .91) and were averaged per ad.

Intentions to Consume Alcohol (ICA). Participants' behavioral intention to drink alcohol were measured with the following four items (Alhabash et al., 2015; 2016): seeing this Instagram beer ad "makes me want to have an alcoholic drink," "makes alcohol sounds more appealing," "makes me want to drink alcohol," and "makes me want to get completely wasted." Participants chose from options ranging from "strongly disagree" to "strongly agree" on 7-point Likert scale. Items had acceptable reliability (*Cronbach's α* Range: .90 - .94) and were averaged per ad.

Total Fixation Duration (TFD). Total fixation duration (TFD) was measured using the Tobii TX300, where eye-tracking data was captured at 300 Hz, at a sampling variability rate lower than .3%, and at a 1.0 to 3.3 millisecond processing latency. Upon collection of TFD data, AOIs for the warning message in each of the ad repetitions were created. TFD was operationalized as "the total time spent on fixations" (Lai et al., 2013, p. 93), whereas the fixation in itself was considered a temporal measure indicative of "stable state of eye movement" (Lai et al., 2013, p. 92). TFD could be interpreted as the total amount of time in which a participant paid attention to the warning message on the Instagram ad.

Other Variable

Daily Alcohol Consumption. Participants were asked to self-report their drinking frequency and quantity by answering the following two questions (Rehm, 198): "how often, if ever, did you drink alcoholic beverages during the past 12 months? " with options such as "more than once a day," "about everyday," "about four to five times a week," etc. Also, participants reported their drinking quantity by answering – "on those days when you drank, how many drinks did you usually have?" Their drinking frequency and quantity are multiplicatively combined to represent total volume. Their daily alcohol consumption was obtained by having their total drinking volume divided by 365. They had an average of .50 drink (SD = .62) or half a standard drink daily in the past 12 months. Only 12.3% of participants reported that they have never drunk alcoholic beverages during the past 12 months (see Figure 2).

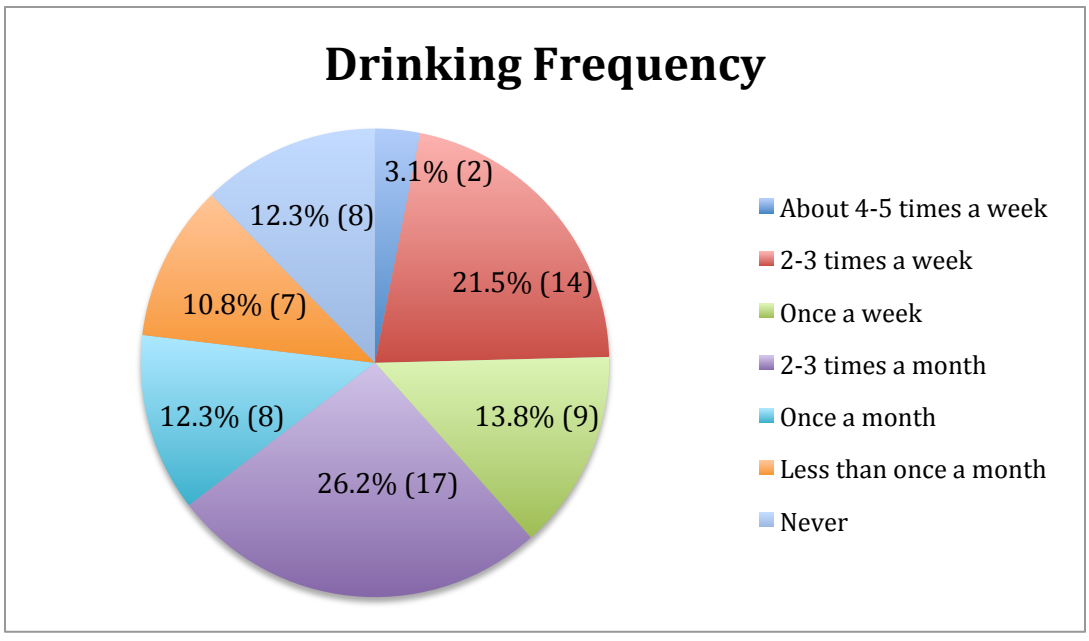


Figure 2 Percentage and Number of Drinking Frequency in the Past 12 Months
Note: N = 65; number of participants in parentheses.

Stimuli Development

Pretest 1: Identifying Brands

First, a pretest was conducted to identify three familiar beer brands among under youth (18-20 years old). Familiar beer brands, rather than unfamiliar brands, were used in this study to enhance ecological validity. A sample of underage college students ($N = 19$, $M_{age} = 19.53$ years old, ranger: 19 – 20 years old; 68.4% white, 78.9% female) was recruited from a participant pool at a large Midwestern university to participate in a lab study for extra credit. Participants rated their familiarity, attitudes toward the brand, and past-month consumption of 12 well-known beer brands. Familiarity was measured using a seven-point semantic differential scale anchored by "not at all familiar" and "extremely familiar". Attitude toward the brand were measured using three semantic differential scales, anchored by "good – bad," "negative – positive," and "unfavorable – favorable." Also, participants indicated whether they have consumed beer from each brand in the past 30 days (Yes/No), and if applicable, they also reported on how many days they have consumed that brand of beer in the past 30 days. Three beer brands were selected as the most familiar ones and with positive attitude evaluation. A repeated measures ANOVA test was performed and results showed that participants' attitude toward the three brands did not significantly differ from each other (F (2, 36) = 2.32, p = .11). Similarly, another repeated measures ANOVA test indicated that their familiarity level toward the three brands also did not differ significantly from each other (F (2, 36) = .29, p = .75).

Table 1 Descriptives for the three selected brands

Brands	Familiarity	Attitude toward the brand	If consumed in past 30 days		On how many days consumed
Budweiser	6.16 (1.43)	5.26 (1.46)	Yes: 4	No: 15	1.63 (1.46)
Bud Light	6.37 (.76)	5.04 (1.66)	Yes: 9	No: 10	2.79 (2.23)
Corona Extra	6.37 (1.34)	5.67 (1.46)	Yes: 8	No: 11	2.00 (1.73)

Pretest 2: Ad Copy and Design Selection

In a second pretest, a sample (N = 235) of underage youth (more than 18-year-old and less than 21) were recruited from Amazon Mechanical Turk (MTurk) and asked to fill out an online survey on Qualtrics.com. Participants had an average age of 19.61 (SD = .58) and 12.89 years of formal education (SD = 1.98) excluding kindergarten. Participants were evenly split in terms of gender (51.1% female). Three-quarter of participants (76.6%) indicated they were white, followed by 11.9% African American, and 12.3% Asian.

A total of 36 alcohol ads were taken from the U.S. Instagram accounts of three brands chosen in Pretest 1 (Budweiser, Miller Lite, or Corona Extra); 12 ads extracted per brand. Ads were similar across the three brands in terms of style and inclusion of a human element (e.g., hands or murky faces), and product display. Across the three brands, selected ads were edited and paired with warnings varying in type size (conspicuous and discreet level) and integration level via Adobe Photoshop CS6. Since Helvetica (a sans serif type) has been considered as the standard for warning labels (FMC Corporation, 1985; Westinghouse, 1981) and found to be more readable than Times or Goudy (Silver & Braun, 1993), all of the ad copies and warning messages were added in Helvetica bold font. All the Instagram ads were square-shaped and had identical size (640 x 640 pixels) and resolution (72 pixels/inch). Given the ad size, this study adopted 40-point Helvetica bold type for all of ad copies. Accordingly, following previous literature examining readable type size (e.g., Paterson & Tinker, 1940) and studies manipulating warning type size (Barlow & Wogalter, 1991; 1993), this study adopted either 12-point or 24-point type to represent the discreet and conspicuous level of the warning size (see Appendix E for stimuli examples).

For example, ads with conspicuous and well-integrated warning have the 24-point type size warning weaved into ad copy and placed in the center of the ad (e.g., LET THE PARTY START/ ONLY IF YOU'RE 21+; SHARE A BUD WITH FRIENDS/ ONLY IF YOU'RE 21+). Depending on the ad component and composition, the ad copy and warning were put either in the slightly upper level of the picture or in the near-to-center of the picture. For the warning with discreet level of conspicuity, except the warning type being 12-point, placements of the warning were similar across ads as integrated warning.

In ads with poorly-integrated warnings, the ad copy was placed in the center, with warning placed separately from the ad copy and close to ad margin on the lower left (e.g., ad copy – "CHEERS TO WEEKEND"; warning: "FOR LEGAL DRINKING AGE 21+"). To reflect the conspicuity level of the warning, warning size varied from 12-point to 24-point type.

Pretest 2 participants were randomly assigned to one of the four conditions (2 conspicuity levels x 2 integration levels x 9 message repetition), and each of them viewed a total of nine different ads (three per brand). At the beginning of the online survey, participants were told that they are going to view some commercial ads for a marketing company to help design popular social media ads and happen to be assigned to view ads from the alcohol beverage category. Then they were asked to answer questions related to their alcohol consumption and Instagram use. Afterwards, each participant rated a series of nine ads presented in a random order (three ads per beer brand). After viewing each ad, they indicated their state reactance toward the ad, attitudes toward ad, attitudes toward the brand, viral behavioral intentions, and intentions to consume alcohol. Lastly, participants answered demographical questions (e.g., age, gender, education). Upon completion, each participant was compensated with $1.17 on MTurk. The average completion time was 23 minutes and it ranged from 10 minutes to 52 minutes.

After analyzing data, across each of the four conditions, one ad per brand out of three ads was selected for main study, resulting a total of 12 ads. The 12 ads were similar in design elements. Multiple mixed-design ANCOVA tests showed that ad repetition across each condition was not significant in affecting any of the dependent variables -- anger (F (2, 454) = .929, *ns*), attitude toward the ad (F (2, 454) = 1.544, *ns*), attitude toward the brand (F (2, 454) = .322, *ns*), VBI (F (2, 454) = .079, *ns*), and ICA (F (2, 454) = 1.035, *ns*). Selection of the 12 ads was acceptable in terms of design homogeneity. The 12 ads selected from pretest 2 were stimuli shown to each participant in the main study.

Main Study Procedure

After consenting to participate, participants were introduced to the study with a cover story, wherein they were told that they were going to rate a series of Instagram ads from different product categories (such as, clothing, cosmetic, food, beverage, etc.) for a marketing company while having their eye movements recorded on an eye tracker. Then, they were seated in front of a computer monitor equipped with the Tobii TX 300 eye tracker and asked to pick one slip from an open glass container filled with folded paper slips written with three numbers (i.e., 1, 2, 3, representing the three tests with different stimuli presentation sequence). After reporting the number to the experimenter, participants were told that they have been randomly assigned to view and rate a series of alcohol ads (all participants were given the same information). This was conducted to alleviate any bias in responding by participants. Before being able to view the ads, they were told to first answer a series of questions about their product consumption experiences (i.e., drinking frequency and quantity) and Instagram use.

Afterwards, participants filled out the survey embedded on Qualtrics. They were then guided to sit still in front of the computer monitor and have their pupils calibrated on the eye

tracker (Tobii Technology, 2001). After acceptable calibration (Gaze Samples ranges: 53% - 97%, M = 81.37%, SD = 9.79; 90.77% of the Gaze Samples are equal or above 70%), participants were presented with 12 ads in the order to which they have been randomly assigned through random selection. Participants viewed each ad for six seconds and were then directed to a Qualtrics survey to evaluate that particular ad. Every time before participants were able to access the survey, the experimenter in the control room would type in the sequence number they have selected and their participant number. In the survey, participants were asked to self-report their state reactance to the ad (i.e., anger and negative thoughts), attitude toward the ad, attitude toward the brand, viral behavioral intention, and alcohol drinking intention.

After completing each ad viewing and evaluation block, the experimenter pressed F10 in the control room computer to close the survey webpage and bring on the Tobii Studio to the participant. Participants could press spacebar when they were ready to view the next ad and finish answering the questions in the survey afterward. This was repeated 12 times.

Upon completing viewing and evaluating all ads, participants completed a demographic questionnaire asking them about their birth year, years of formal education, race, and gender. Finally, participants were debriefed, thanked, and provided with $20 cash as an incentive. The experiment took 45 minutes to complete.

Data Analysis

In testing the first set of hypotheses (H1-H5) and research questions (RQ1-5), five mixed-design ANOVA tests were conducted to examine the effect of warning conspicuity and integration level on viewers' attitudes toward the ad, attitudes toward the brand, viral behavioral intentions, intentions to consume alcohol, and total fixation duration, as well as their potential interaction effect on all of the DVs and attention duration.

Similarly, another mixed-design ANOVA test were performed to test H6a, H6b, and RQ6, examining the main effect of warning conspicuity and integration on viewers' state reactance to the ad, as well as their interaction effect on viewers' reactance.

Regarding testing the two mediators – visual attention and state reactance' role in the proposed model (RQ7a-d, RQ8a-d), Mplus version 7 software were employed to run structural equation modeling (SEM) (Muthén & Muthén, 2012), because Mplus can handle non-normality and non-independence data using robust maximum likelihood estimation with standard errors when specified properly.

CHAPTER 4: RESULTS

Multiple mixed-design ANOVA tests were conducted to test the main effect of alcohol ad warning's conspicuity and integration level, as well as their interaction effect, on underage youth's attitude toward the ad, attitude toward the brand, viral behavioral intention toward the ad, behavioral intention, total fixation duration, and state reactance (in terms of anger and number of negative thoughts).

Attitudes toward the Ad (Aad)

To answer H1a-b, and RQ1, a mixed-design ANOVA test was conducted to test the main effect of alcohol ad warning's conspicuity and integration level, as well as their interaction effect, on underage youth's attitudes toward the ad. The stimuli presentation order did not show any significant effect on participants' Aad, $F\ (2, 61) = .425$, *ns*. There was a significant main effect of warning conspicuity on Aad, $F\ (1, 61) = 9.198$, $p < .01$, $\eta^2 = .13$, such that participants expressed greater favorability toward ads with a discrete ($M = 4.35$, $SD = .16$) than conspicuous ($M = 4.12$, $SD = .16$) warning. H1a was supported. The main effect of integration level on Aad was significant, $F\ (1, 61) = 47.72$, $p < .001$, $\eta^2 = .44$. Participants rated ads with integrated warnings less favorably ($M = 3.86$, $SD = .16$) than disintegrated ones ($M = 4.61$, $SD = .17$). While the main effect of integration was significant, it was not in the hypothesized direction. H1b was not supported. The effect of the interaction between warning conspicuity and integration level on Aad was significant, $F\ (1, 61) = 13.964$, $p < .001$, $\eta^2 = .19$. As shown in Figure 3, simple effects results showed that the difference between the two levels of conspicuity was only evident when the ad was integrated, with more favorable Aad for discreet than conspicuous warnings, $F\ (1, 61) = 22.895$, $p < .001$, $\eta^2 = .27$, yet no differences were found when the warning messages were disintegrated, $F\ (1, 61) = .531$, ns.

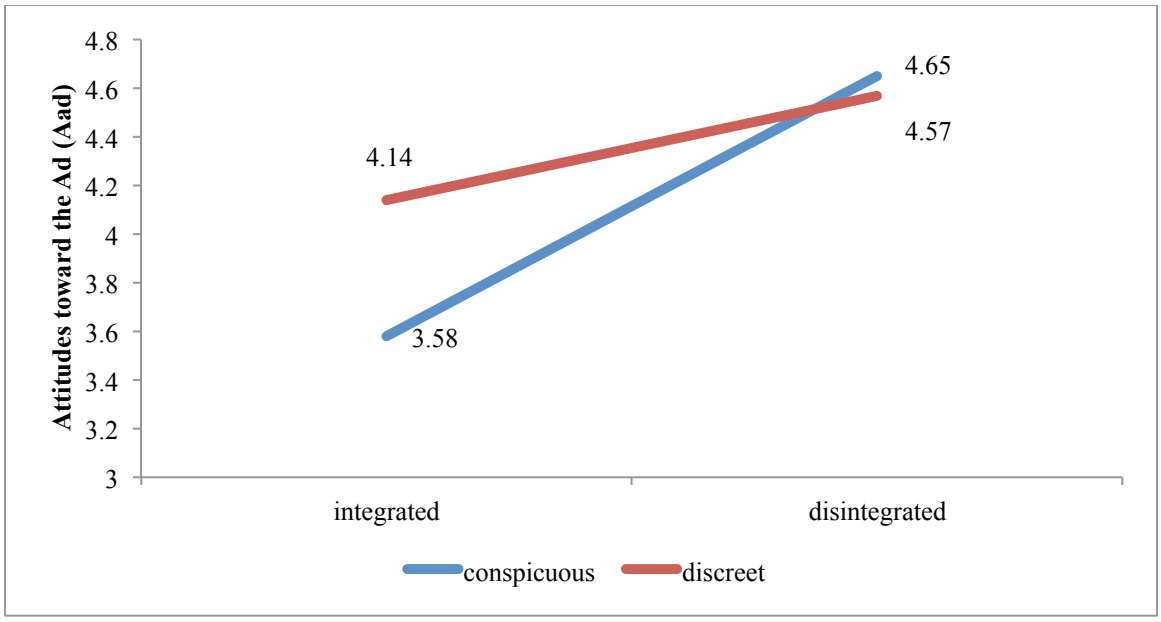


Figure 3 Effect of Conspicuity X Integration Interaction on Aad

Attitude toward the Brand (AB)

To answer H2a-b, and RQ2, another mixed-design ANOVA test was conducted to test the main effect of alcohol ad warning's conspicuity and integration level, as well as their interaction effect, on underage youth's attitudes toward the brand. The stimuli presentation order did not show any significant effect on participants' AB, $F\ (2, 61) = .603$, *ns*. There was a significant main effect of warning conspicuity on AB, $F\ (1, 61) = 9.137$, $p < .01$, $\eta^2 = .13$, such that participants expressed greater favorability toward brands with a discrete ($M = 4.66$, $SD = .18$) than conspicuous ($M = 4.47$, $SD = .17$) warning. H2a was supported. The main effect of integration level on AB was significant, $F\ (1, 61) = 29.106$, $p < .001$, $\eta^2 = .32$. Participants rated brands with integrated warnings less favorably ($M = 4.36$, $SD = .18$) than disintegrated ones ($M = 4.77$, $SD = .17$). While the main effect of integration was significant, it was not in the hypothesized direction. H2b was not supported. The effect of the interaction between warning conspicuity and integration level on AB was not significant, $F\ (1, 61) = 1.05$, *ns*. Within

warnings with either conspicuous or discreet level, participants consistently rated brands with integrated warnings to be less favorable than brands with disintegrated warnings.

Viral Behavioral Intentions (VBI)

In order to test H3a-b, and RQ3, another mixed-design ANOVA test was conducted to test the main effect of alcohol ad warning's conspicuity and integration level, as well as their interaction effect, on underage youth's VBI. The stimuli presentation order did not show any significant effect on participants' VBI, F (2, 61) = .044, *ns*. The main effect of warning conspicuity on VBI was not significant, F (1, 61) = 1.651, *ns*. Participants' VBI toward ads with discrete warnings (M = 1.84, SD = .13) did not differ significantly from VBI toward ads with conspicuous (M = 1.79, SD = .12) warnings. H3a was not supported. The main effect of integration level on VBI was significant, F (1, 61) = 15.518, $p < .001$, $\eta^2 = .20$. Participants indicated higher levels of VBI toward ads with disintegrated warnings (M = 1.97, SD = .15) than those with integrated ones (M = 1.67, SD = .11). While the main effect of integration was significant, it was not in the hypothesized direction. H3b was not supported. The effect of the interaction between warning conspicuity and integration level on VBI was not significant, F (1, 61) = .314, ns. Within warnings with either conspicuous or discreet level, participants consistently indicated higher VBI toward ads with disintegrated warnings than toward ads with integrated warnings.

Intentions to Consume Alcohol (ICA)

In answering H4a-b, and RQ4, a fourth mixed-design ANOVA test was conducted to test the main effect of alcohol ad warning's conspicuity and integration level, as well as their interaction effect, on underage youth's behavioral intentions to consume alcohol. The stimuli presentation order did not show any significant effect on participants' ICA, F (2, 61) = .25, *ns*.

There was a significant main effect of warning conspicuity on ICA, $F\ (1, 61) = 7.11, p < .05, \eta^2 = .10$, such that participants expressed greater ICA upon exposure to ads with a discrete ($M = 2.68$, $SD = .17$) than conspicuous ($M = 2.53$, $SD = .16$) warnings. H4a was supported. The main effect of integration level on ICA was significant, $F\ (1, 61) = 25.509, p < .001, \eta^2 = .30$. Participants indicated lower ICA upon exposure to ads with integrated ($M = 2.37$, $SD = .16$) than disintegrated ($M = 2.84$, $SD = .19$) warnings. H4b was supported. The effect of the interaction between warning conspicuity and integration level on ICA was significant, $F\ (1, 61) = 5.551, p < .05, \eta^2 = .08$. As shown in Figure 4, simple effects results showed that the difference between the two levels of conspicuity was only evident when the ad was integrated, with higher ICA for discreet than conspicuous warnings, $F\ (1, 61) = 10.323, p < .05, \eta^2 = .15$, yet no differences were found when the warning messages were disintegrated, $F\ (1, 61) = .03$, ns.

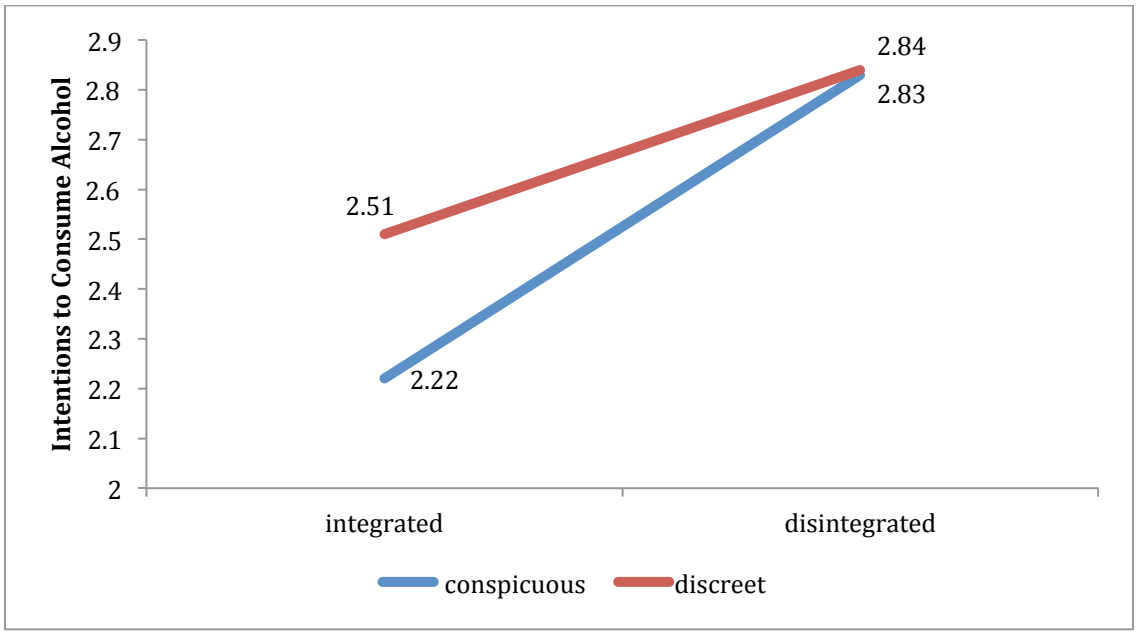


Figure 4 Effect of Conspicuity X Integration Interaction on Intentions to Consume Alcohol

Total Fixation Duration (TFD)

To test H5a-b, and RQ5c, another mixed-design ANOVA test was performed to test the main effect of alcohol ad warning's conspicuity and integration level, as well as their interaction effect, on underage youth's visual attention to warning. The stimuli presentation order did not show any significant effect on participants' TFD, F (2, 62) = .21, *ns*. There was a significant main effect of warning conspicuity on TFD, F (1, 62) = 35.15, $p < .001$, $\eta^2 = .36$, such that participants fixated longer (measured in seconds) to conspicuous (M = .38, SD = .03) than discreet warnings (M = .22, SD = .02). H5a was supported. The main effect of integration level on TFD was significant, F (1, 62) = 44.787, $p < .001$, $\eta^2 = .42$. Participants fixated longer on integrated warnings (M = .42, SD = .04) than disintegrated ones (M = .17, SD = .02). H5b was supported. The effect of the interaction between warning conspicuity and integration level on TFD was not significant, F (1, 62) = .079, *ns*). Within warnings with either conspicuous or discreet level, participants consistently paid more attention to integrated warnings than disintegrated warnings. In other words, within warnings with either integrated or disintegrated level, participants consistently paid more attention to conspicuous than discreet warnings.

Additionally, if comparing the percentage of participants noticing the warnings or not across the different conditions (see Table 2), the mixed-design ANOVA test results showed that there was a significant main effect of warning conspicuity on its likelihood of being noticed, F (1, 62) = 59.274, $p < .001$, $\eta^2 = .49$. Participants were more likely to notice conspicuous warnings (65.33%, M = 1.96, SD = .09) than discreet warnings (43.67%, M = 1.31, SD = .08). The main effect of integration level on warning's noticeability likelihood was significant, F (1, 62) = 51.597, $p < .001$, $\eta^2 = .44$. Participants were more likely to notice integrated warnings (69.33%, M = 2.08, SD = .10) than disintegrated ones (39.33%, M = 1.18, SD = .10). The effect of the

interaction between warning conspicuity and integration level on warning's noticeability likelihood was not significant, $F\ (1, 62) = 3.65, ns$. The stimuli presentation order did not show any significant effect on warnings' noticeability likelihood, $F\ (2, 62) = .511, ns$.

Table 2 Number and Percentage of Participants Noticing Warnings

Warning Types	Ads	No. of Participants Noticing (%)
Conspicuous + Integrated	1 Budweiser	54 (83.1%)
	2 Bud Light	47 (72.3%)
	3 Corona Extra	49 (75.4%)
Discreet + Integrated	1 Budweiser	38 (58.5%)
	2 Bud Light	44 (67.7%)
	3 Corona Extra	39 (60%)
Conspicuous + Disintegrated	1 Budweiser	35 (53.8%)
	2 Bud Light	38 (58.5%)
	3 Corona Extra	32 (49.2%)
Discreet + Disintegrated	1 Budweiser	15 (23.1%)
	2 Bud Light	19 (29.2%)
	3 Corona Extra	15 (23.1%)

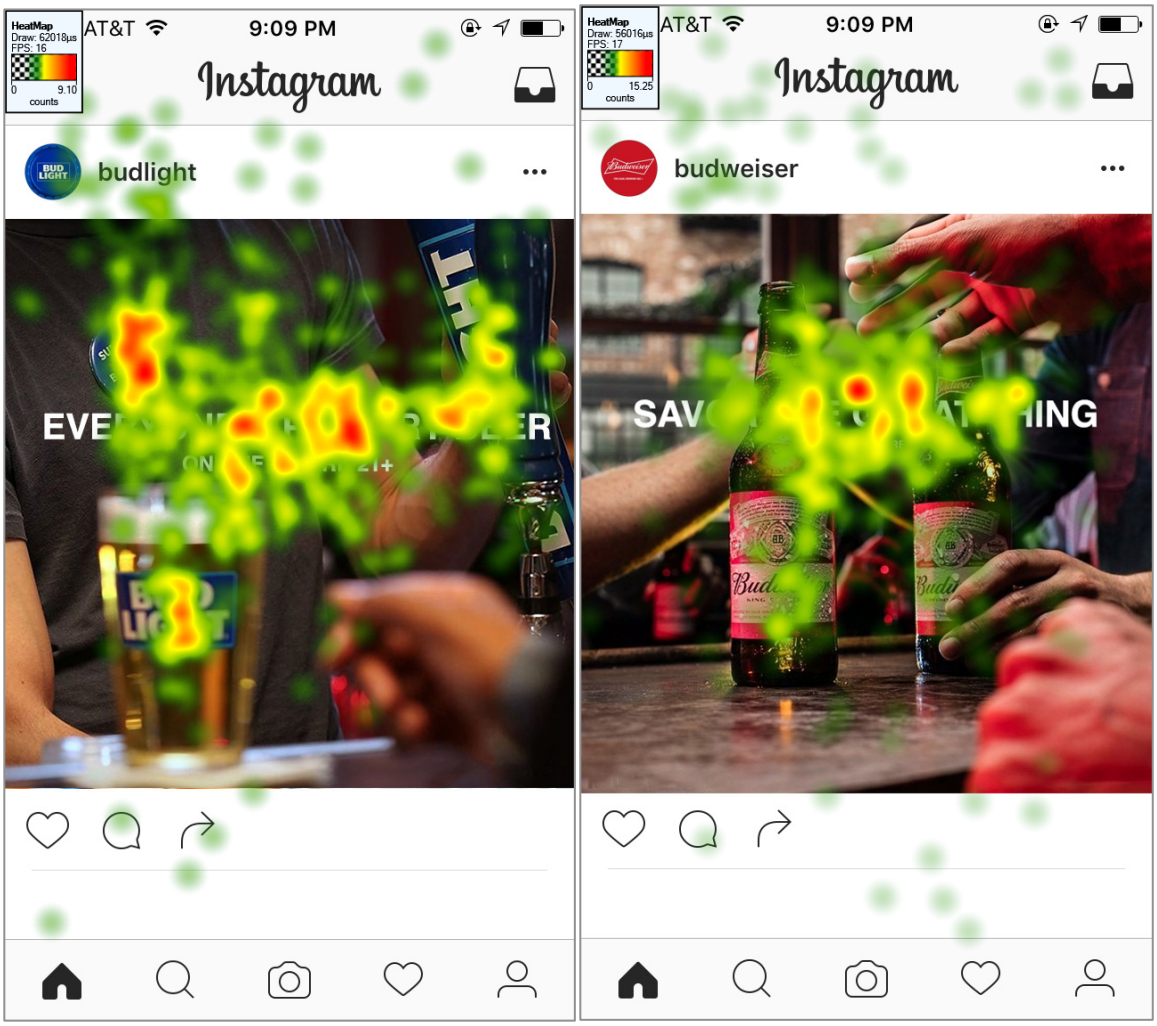
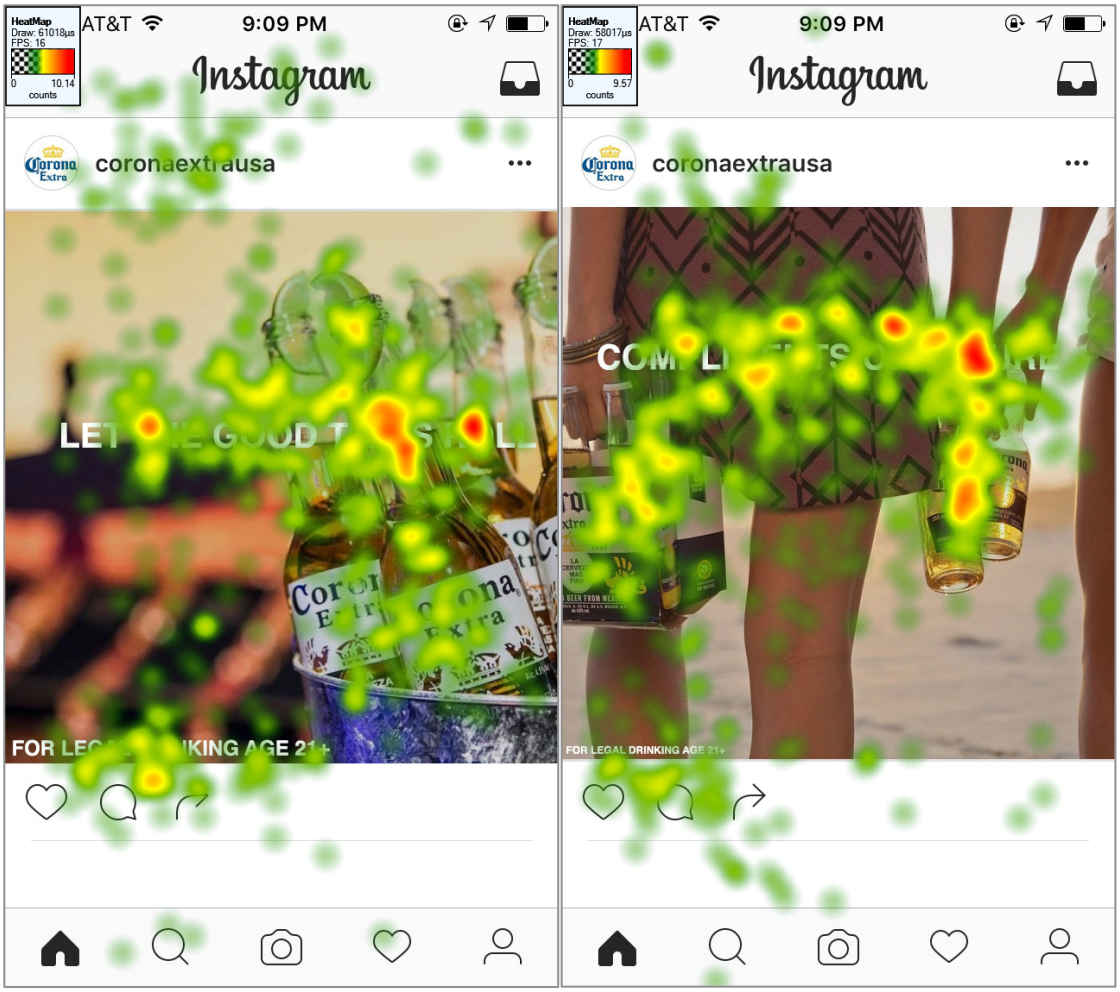


Figure 5 Eye-Tracking Heatmaps of stimuli across the four conditions

Note: From upper left to lower left clockwise: conspicuous + integrated warning; discreet + integrated; discreet + disintegrated; conspicuous + disintegrated.

Figure 5 (cont'd)



State Reactance

Participants' state reactance was measured in terms of self-reported anger and number of negative thoughts after viewing each ad. In testing H6a-b, and RQ6, a first mixed-design ANOVA test was conducted to test the main effect of alcohol ad warning's conspicuity and integration level, as well as their interaction effect, on underage youth's anger level toward the ad. The stimuli presentation order did not show any significant effect on participants' anger, F (2, 61) = .811, *ns*. The main effect of warning conspicuity on anger was not significant, F (1, 61) = 1.32, ns, such that participants' anger toward ads with a discrete warning (M = 1.50, SD = .09)

did not differ significantly from that toward conspicuous warning ($M = 1.54$, $SD = .09$). The main effect of integration level on anger was significant, $F\ (1, 61) = 23.71$, $p < .001$, $\eta^2 = .28$. Participants indicated higher anger levels toward ads with integrated ($M = 1.65$, $SD = .11$) disintegrated ($M = 1.39$, $SD = .09$) warnings. The effect of the interaction between warning conspicuity and integration level on anger was significant, $F\ (1, 61) = 21.202$, $p < .001$, $\eta^2 = .26$. As shown in Figure 6, simple effects results also showed that the difference between the two levels of integration was only evident when the ad was conspicuous, with more anger for integrated than disintegrated warnings, $F\ (1, 61) = 30.001$, $p < .001$, $\eta^2 = .33$, yet no differences were found when the warning messages were discreet, $F\ (1, 61) = .012$, ns.

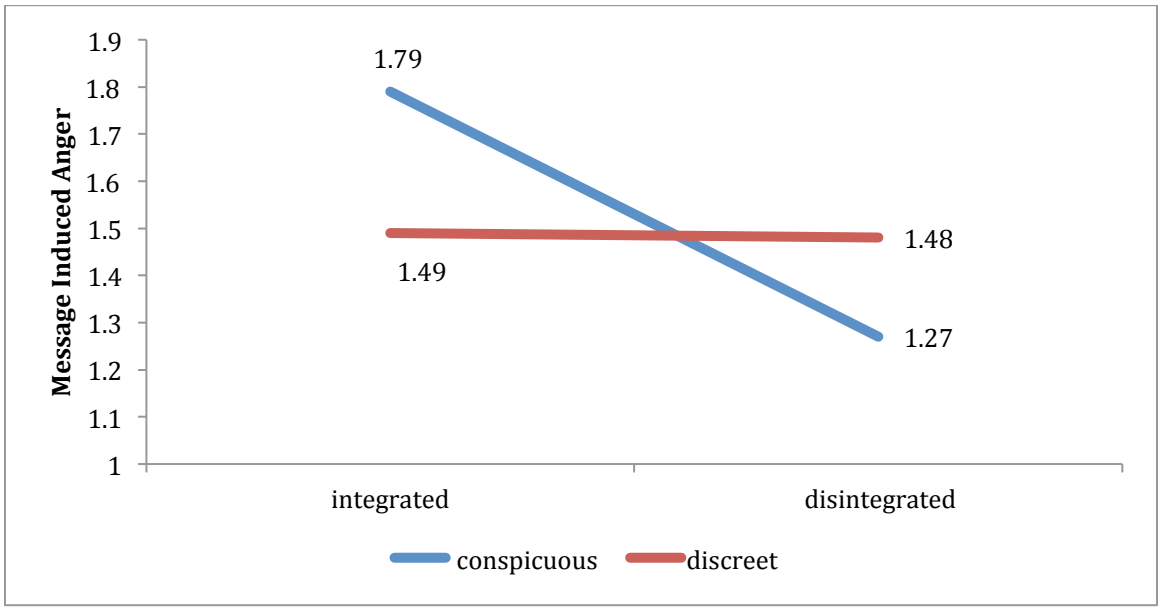


Figure 6 Effect of Conspicuity X Integration Interaction on Anger

Regarding ad warning conspicuity and integration level's effect on participants' negative thoughts, a second mixed-design ANOVA test was conducted to test the main effect of alcohol ad warning's conspicuity and integration level, as well as their interaction effect, on underage youth's negative thoughts toward the ad. The stimuli presentation order did not show any significant effect on participants' anger, $F\ (2, 62) = .843$, *ns*. The main effect of warning

conspicuity on negative thoughts was significant, F (1, 61) = 13.456, p < .01, η^2= .18, such that participants reported more negative thoughts toward ads with a conspicuous warning (M = .34, SD = .03) than toward discreet warning (M = .22, SD = .03). The main effect of integration level on negative thoughts was also significant, F (1, 62) = 23.395, p < .001, η^2= .27. Participants indicated more negative thoughts toward ads with integrated warnings (M = .37, SD = .04) than that toward ads with disintegrated ones (M = .20, SD = .02). The effect of the interaction between warning conspicuity and integration level on negative thoughts was significant, F (1, 62) = 11.113, p < .01, η^2= .15. As shown in Figure 7, simple effects results also showed that the difference between the two levels of conspicuity was only evident when the ad was integrated, with more negative thoughts for conspicuous than discreet warnings, F (1, 62) = 21.128, p < .001, η^2= .25, yet no differences were found when the warning messages were disintegrated, F (1, 61) = .123, ns. Combining results from two mixed-design ANOVA, H6a was partially supported regarding negative thoughts, and H6b was not supported.

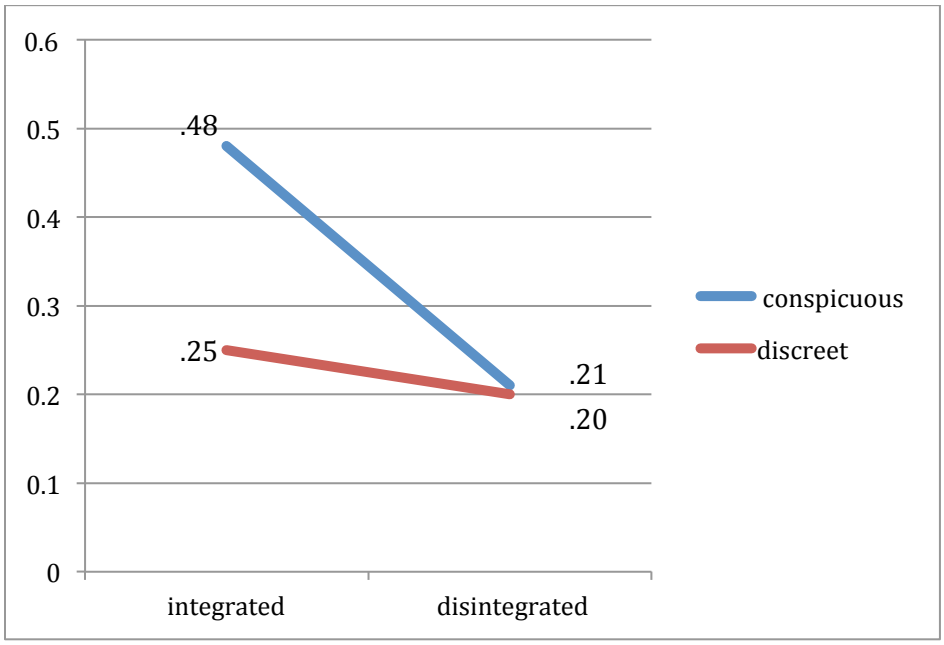


Figure 7 Effect of Warning Conspicuity X Integration on Number of Negative Thoughts

Table 3 Means and Standard Deviations of Dependent Variables

Dependent Variable	Integrated	Disintegrated	Sub-Total
Anger			
Conspicuous	1.81 (.13)	1.28 (.07)	1.54 (.09)
Discreet	1.49 (.09)	1.50 (.10)	1.50 (.09)
Sub-Total	1.65 (.11)	1.39 (.09)	1.52 (.09)
Negative Thoughts			
Conspicuous	.48 (.05)	.21 (.04)	.34 (.03)
Discreet	.25 (.04)	.19 (.03)	.22 (.03)
Sub-Total	.37 (.04)	.20 (.02)	.28 (.03)
Total Fixation Duration (TDF) [a]			
Conspicuous	.51 (.04)	.25 (.03)	.38 (.03)
Discreet	.34 (.04)	.10 (.02)	.22 (.02)
Sub-Total	.42 (.04)	.17 (.02)	.30 (.02)
Attitudes toward the Ad (Aad)			
Conspicuous	3.58 (.17)	4.65 (.18)	4.12 (.16)
Discreet	4.14 (.17)	4.57 (.18)	4.35 (.16)
Sub-Total	3.86 (.16)	4.61 (.17)	4.24 (.16)
Attitudes torwad the Brand (AB)			
Conspicuous	4.23 (.19)	4.72 (.18)	4.47 (.17)
Discreet	4.49 (.18)	4.82 (.18)	4.66 (.18)
Sub-Total	4.36 (.18)	4.77 (.17)	4.57 (.17)
Viral Behavioral Intentions (VBI)			
Conspicuous	1.63 (.12)	1.95 (.15)	1.79 (.12)
Discreet	1.71 (.12)	1.98 (.15)	1.84 (.13)
Table 3 (cont'd)			
Sub-Total	1.67 (.11)	1.97 (.15)	1.82 (.12)
Intentions to Consume Alcohol (ICA)			
Conspicuous	2.22 (.16)	2.83 (.19)	2.53 (.16)
Discreet	2.51 (.16)	2.84 (.19)	2.68 (.17)
Sub-Total	2.37 (.16)	2.84 (.19)	2.60 (.17)

Note: a. measured in seconds. Mean values with SD in parentheses.

Mediation Testing

RQ7 and RQ8 asked about how participants' attention allocation (M1) and state reactance (M2) to the warning mediate the effect of warning conspicuity and integration level on their a) Aad, b) AB, c) VBI, and d) ICA. To answer RQ7 and RQ8, as well as test the proposed model (see in Figure 1), participants' data ($N = 65$) were restructured and transformed to a long data format (i.e., 65*12, $N = 780$) for Structural Equation Modeling (SEM) testing with Mplus

version 7 (Muthén & Muthén, 2012), with the participant ID specified as cluster. SEM has been used to test how well a proposed model fits the data and enables researchers to simultaneously test multiple hypotheses and research questions among various variables.

In the current model (Figure 1), state reactance, attitude toward the ad, attitude toward the brand, viral behavioral intention, and behavioral intention were measured as latent constructs. Warning conspicuity level and warning integration level were recoded and treated as exogenous variables. Participants' total fixation duration and state reactance were specified as two mediators. Direct paths were specified from both of warning conspicuity and integration level (IVs) to total fixation duration (M1) and state reactance (M2). Also, the two exogenous variables (IVs) were specified to predict the four criterion variables, respectively ((i.e., attitude toward ad, brand, VBI, and ICA).

Results from the first model predicting attitude toward the ad showed a good fit to the data with multiple goodness-of-fit indices, X^2 (38) = 135.51, $p < .001$, comparative fit index (CFI) = .95, root mean square error of approximation (RMSEA) = .057 [90% CI: 0.047, 0.068], and standardized root-mean-square residual (SRMR) = .055 (Hu & Bentler, 1999). Statistically significantly direct and indirect effects on attitude toward the ad were specified in Figure 8.

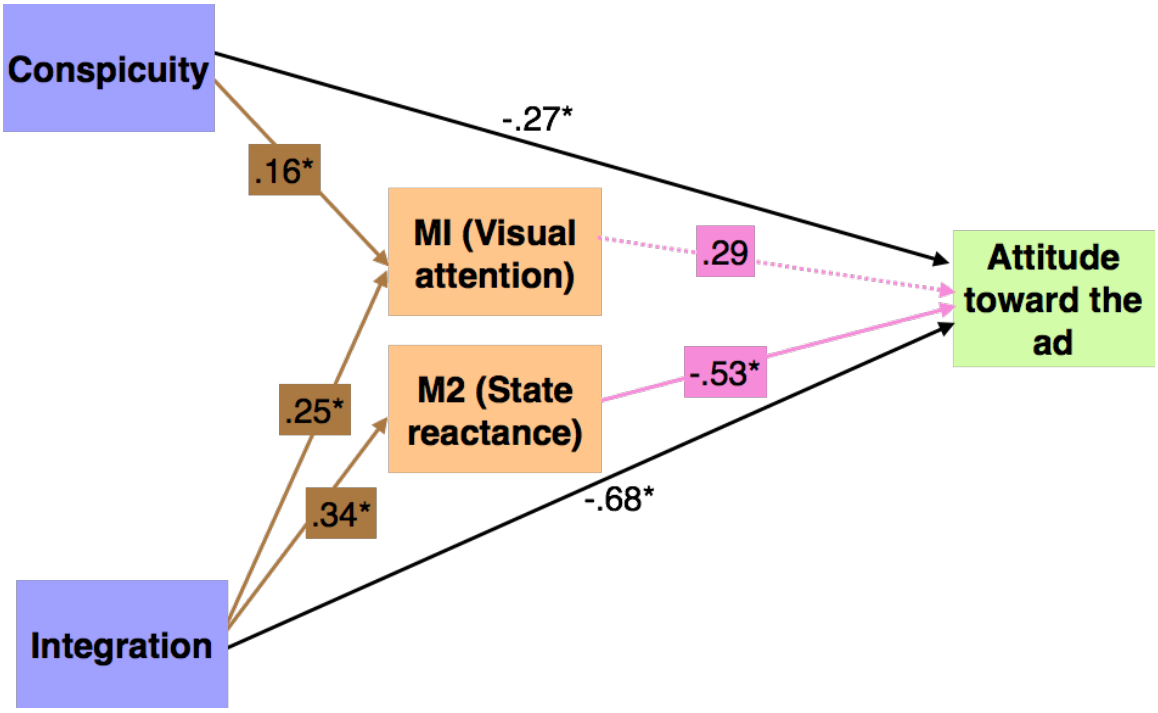


Figure 8 Estimated Parameters of the Hypothesized Model on Attitude Toward the Ad

*Note: * indicates $p < .05$.*

Aligned with findings from H1a and H1b, the model results showed that beer ad warnings' conspicuity and integration level showed significant main effects on underage youth's Aad (conspicuity: $\beta = -.27$, $SE = .07$, $p < .001$; integration: $\beta = -.68$, $SE = .11$, $p < .001$). Beer ads with conspicuous warnings led to less favorable Aad compared to discreet warnings, and integrated warnings resulted in less favorable Aad than disintegrated warnings. The model results also agreed with findings from H5a, H5b, H7a, and H7b: both of warning conspicuity and integration level significantly predicted participants' attention allocation to the warning (conspicuity: $\beta = .16$, $SE = .03$, $p < .001$; integration: $\beta = .25$, $SE = .04$, $p < .001$); only warnings' integration level significantly predicted participants' reactance toward the ad ($\beta = .34$, $SE = .09$, $p < .001$).

More importantly, beer ad warnings' conspicuity and integration level showed indirect effects on underage youth's Aad, mediated by visual attention and state reactance. In particular,

ad warning conspicuity and integration's effects on participants' Aad were partially mediated by their visual attention to warning and state reactance, and neither of the two indirect effects were significant (but approached significance: conspicuity indirect via TFD: $\beta = .05$, $SE = .03$, $p = .07$; integration indirect via TFD: $\beta = .07$, $SE = .04$, $p = .07$). Specifically, conspicuous warnings, compared to discreet warnings, received more attention, and the increased attention level led to more favorable Aad. Integrated warning induced more attention than disintegrated warning, and such increase in attention resulted in more favorable Aad. Moreover, compared to disintegrated warning, integrated warning begot higher reactance among underage youth, which in turn led to less favorable Aad (integration indirect via SR: $\beta = -.18$, $SE = .06$, $p < .01$). Warning conspicuity's effect on Aad was not mediated by state reactance (conspicuity indirect via SR: $\beta = -.03$, $SE = .03$, $p = .20$).

Results from the second model predicting attitude toward the brand also showed a good fit to the data with multiple goodness-of-fit indices, X^2 (48) = 167.06, $p < .001$, comparative fit index (CFI) = .95, root mean square error of approximation (RMSEA) = .056 [90% CI: 0.047, 0.066], and standardized root-mean-square residual (SRMR) = .04 (Hu & Bentler, 1999). Statistically significantly direct and indirect effects on AB were specified in Figure 9.

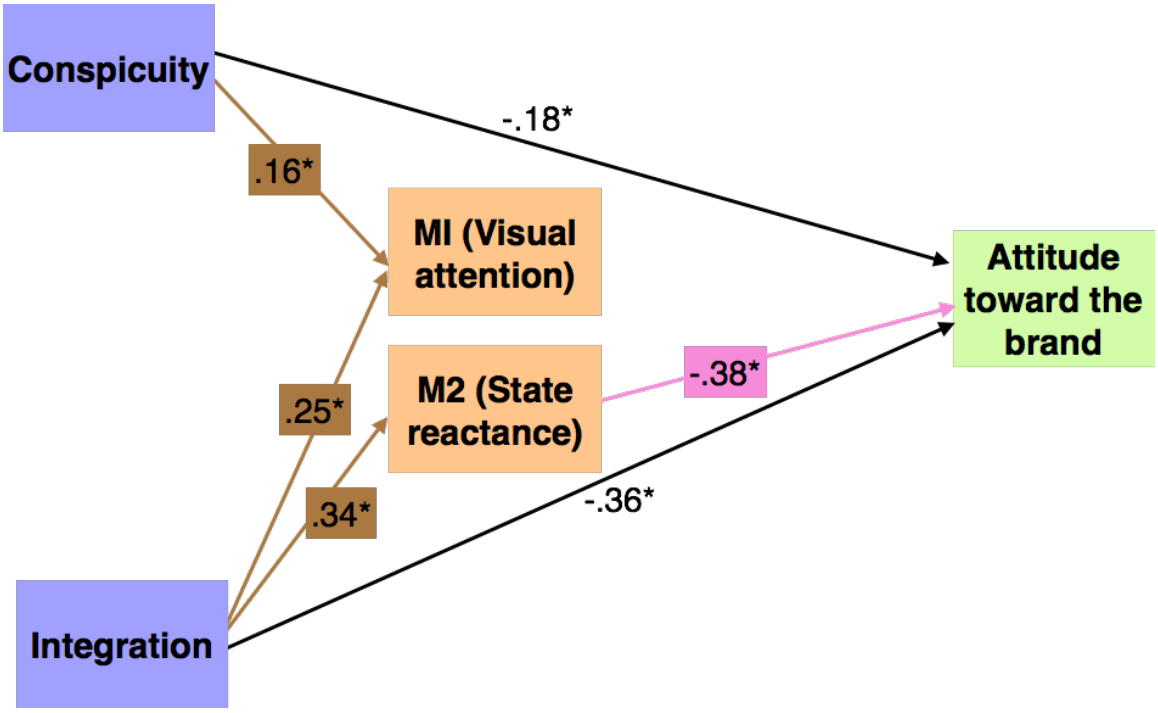


Figure 9 Estimated Parameters of the Hypothesized Model on Attitude Toward the Brand

*Note: * indicates $p < .05$*

In line with findings from H2a and H2b, the model results showed that beer ad warnings' conspicuity and integration level showed significant main effect on underage youth's AB (conspicuity: $\beta = -.18$, $SE = .07$, $p < .01$; integration: $\beta = -.36$, $SE = .09$, $p < .001$). Beer ads with conspicuous warnings led to less favorable AB compared to discreet warnings, and integrated warnings resulted in less favorable AB than disintegrated warnings.

Regarding the indirect effects of two IVs on AB, only state reactance was found to be a significant mediator of integration's effect on AB. Compared to discreet warnings, integrated warnings gave rise to higher level of reactance among underage youth, and the increased reactance led to less favorable AB (integration indirect via SR: $\beta = -.13$, $SE = .05$, $p < .05$). However, warning integration's effect on AB was not mediated by visual attention (TFD) (integration indirect via TFD: $\beta = .04$, $SE = .04$, $p = .37$). Neither of visual attention nor state

reactance was mediating warning conspicuity's effects on AB (conspicuity indirect via TFD: β = .02, SE = .03, p = .34; conspicuity indirect via SR: β = -.02, SE = .02, p = .18).

A third SEM model predicting VBI showed a not-so-good fit to the data with multiple goodness-of-fit indices, X^2 (59) = 265.10, p < .001, comparative fit index (CFI) = .90, root mean square error of approximation (RMSEA) = .067 [90% CI: 0.059, 0.075], and standardized root-mean-square residual (SRMR) = .049 (Hu & Bentler, 1999). Statistically significantly direct and indirect effects on attitude toward the ad were specified in Figure 10.

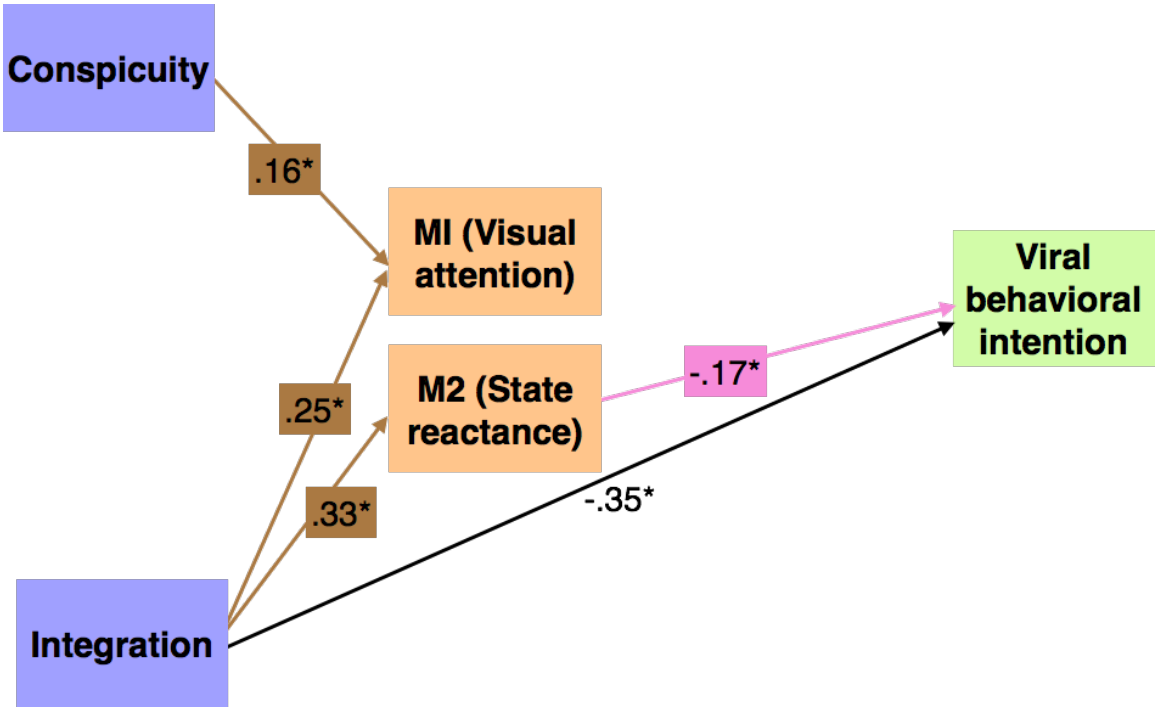


Figure 10 Estimated Parameters of the Hypothesized Model on Viral Behavioral Intentions

Similar as H3a and H3b's findings, warning integration showed significant main effect on VBI (β = -.35, SE = .11, p < .01) and conspicuity level's effect on VBI was not significant (β = -.06, SE = .05, p = .28). Integrated warnings, compared to disintegrated warnings, resulted in lower VBI.

Regarding the two IVs' indirect effects on VBI, state reactance was found to be mediating warning integration's effect on VBI (approached significance, integration indirect via SR: β = -.06, SE = .05, p = .07). Integrated warnings induced higher level of state reactance than disintegrated warnings, which in turn led to lower VBI. Visual attention was not mediating warning integration's effect on VBI (integration indirect via TFD: β = .01, SE = .04, p = .78), and neither visual attention nor state reactance was mediating warning conspicuity's effects on VBI (conspicuity indirect via TFD: β = .01, SE = .02, p = .77; conspicuity indirect via SR: β = -.01, SE = .01, p = .29).

A fourth model predicting ICA also showed a good fit to the data with multiple goodness-of-fit indices, X^2 (48) = 164.64, p < .001, comparative fit index (CFI) = .95, root mean square error of approximation (RMSEA) = .056 [90% CI: 0.047, 0.065], and standardized root-mean-square residual (SRMR) = .047 (Hu & Bentler, 1999). Statistically significantly direct and indirect effects on ICA were specified in Figure 11.

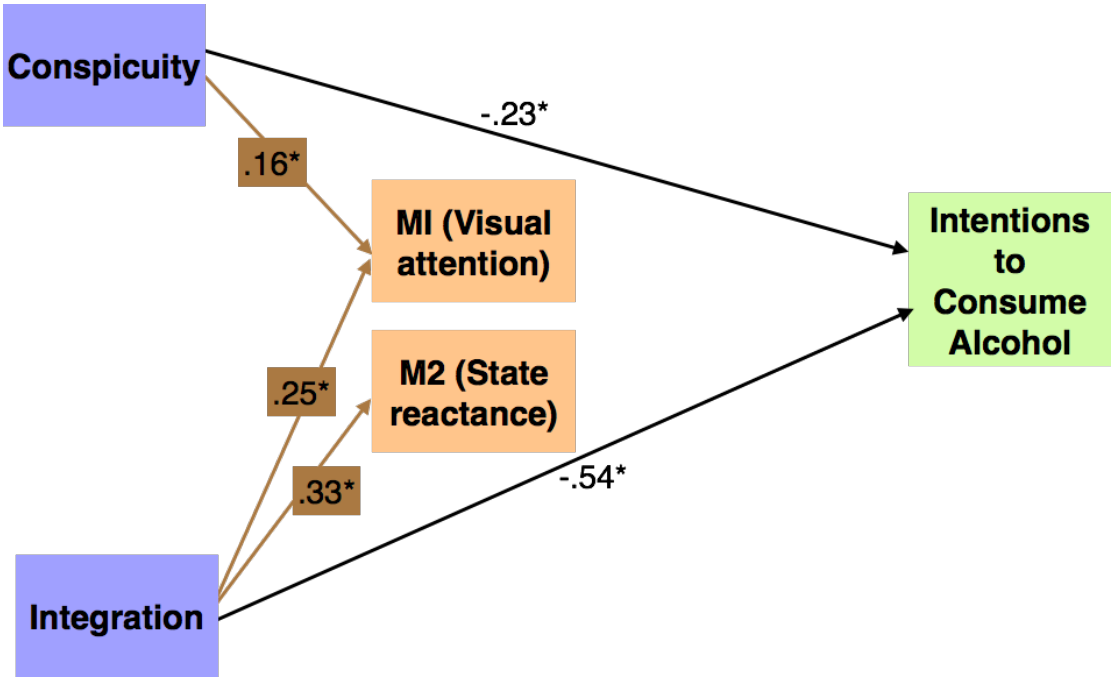


Figure 11 Estimated Parameters of the Hypothesized Model on ICA

The model results showed similar results as H4a and H4b: warning conspicuity and integration level both showed significant main effects on intentions to consumer alcohol (conspicuity: $\beta = -.23$, $SE = .08$, $p < .01$; integration: $\beta = -.54$, $SE = .12$, $p < .001$). Conspicuous warnings resulted in lower ICA than discreet warnings, and integrated warnings gave rise to lower ICA than disintegrated warnings.

However, the two IVs' effects on ICA were not partially mediated by either of the mediators (conspicuity indirect via TFD: $\beta = .02$, $SE = .03$, $p = .52$; conspicuity indirect via SR: $\beta = -.01$, $SE = .01$, $p = .32$; integration indirect via TFD: $\beta = .04$, $SE = .06$, $p = .54$; integration indirect via SR: $\beta = -.07$, $SE = .05$, $p = .18$).

Table 4 Summary of Hypotheses Testing (a = .05)

Hypothesis	Dependent Variable	Supported (Y/N)
Upon viewing alcohol ads with conspicuous warning, underage youth will express **H1a)** less favorable attitude toward the ad, and **H2a)** less favorable attitude toward brand, **H3a)** less likelihood to interact with the ad (i.e., viral behavioral intentions) than ads with discreet (i.e., hard-to-see) warning.	H1a) Attitude toward the ad	Yes
	H2a) Attitude toward the brand	Yes
	H3a) Viral behavioral intention	No
H4a: Underage youth will express lower intention to consume alcohol upon exposure to ads with a conspicuous warning message than ads with a discreet warning.	Behavioral intention	Yes
Participants will express **H1b)** a more positive attitude toward the ad, **H2b)** a more positive attitude toward the brand, **H3b)** higher likelihood to interact with the message, and **H4b)** lower intention to consume alcohol upon exposure to ads featuring well-integrated warning messages than ads with poorly integrated warning messages.	H1b) Attitude toward the ad	No
	H2b) Attitude toward the brand	No
	H3b) Viral behavioral intention	No
	H4b) Behavioral intention	Yes
H5a: Participants will exhibit longer total fixation duration for warning messages placed conspicuously than messages placed discretely.	Total fixation duration	Yes
H5b: Well-integrated warning messages on alcohol ads will elicit longer total fixation duration from viewers than poorly integrated warnings.	Total fixation duration	Yes
H6a: Participants are likely to express greater levels of state reactance upon exposure to alcohol ads with conspicuous warnings than ads with discrete warnings.	State reactance	Partially Yes
H6b: Participants are likely to express lower levels of state reactance (i.e., in terms of anger and negative thoughts) upon exposure to ads with well-integrated rather than poorly integrated warnings.	State reactance	No

CHAPTER 5: DISCUSSION

Summary of Findings

Combining all of the hypotheses' and research questions' testing and modeling testing results, Instagram beer ads with conspicuous warnings were less favored by underage youths compared to ads with discreet warnings, and a similar sentiment held true to the brands in the ads – brands in ads with conspicuous warning were liked less than those with discreet warnings. Beer ads with conspicuous warnings were more effective in eliciting lower levels of drinking intentions than ads with discreet warnings. Regarding the effects of warning integration, ads with integrated warnings were more effective in curbing potential drinking intentions than ads with disintegrated warnings, and underage viewers rated ads and brands with integrated warnings less favorable than ads and brands with disintegrated warnings and indicated lower level of interaction likelihood to ads with integrated warnings than ads with disintegrated ones.

The effect of the interaction between conspicuity and integration was significant only in relation to Aad and ICA, where differences between conspicuous and discreet warnings were only evident when they warnings were integrated, while no significant difference was found for warnings when they were disintegrated. Moreover, underage viewers paid longer attention to conspicuous warnings than discreet warnings, and also perused integrated warnings for longer period of time than disintegrated warnings. Compared to ads with disintegrated warnings, ads with integrated warnings resulted in higher level of reactance in terms of anger level and number of negative thoughts toward the ad.

Finally, SEM model testing results showed that ad warnings' conspicuity and integration level's effects on underage youth's attitude toward ad were mediated by their attention allocation to the warning: conspicuous warnings, as opposed to discreet warnings, and integrated warnings

– instead of disintegrated warnings – attracted longer attention duration to the warning, respectively, and the longer participants paid attention to the warning, the more favorable they rated the ad. Lastly, ad warnings' integration level's effect on underage youth's Aad, AB, and VBI were respectively mediated by participants' state reactance to the ad: compared to disintegrated warnings, integrated warnings led to higher level of reactance toward the ad, which in turn resulted in less favorable attitude toward the ad, less favorable attitude toward the brand, and lower likelihood to interact with the ad.

The Effects of Ad Warning Conspicuity: Direct & Indirect

As hypothesized, underage youth rated both of beer ads and brands with conspicuous warning as less favorable than those with discreet warnings. According to psychological reactance theory's propositions (Brehm, 1966; Brehm & Brehm, 1981), it is sensible that conspicuous warnings on alcohol ads, compared to discreet ones were more obvious to be perceived and appeared to be more restrictive or threatening to underage group, especially when the warnings speak to the reality of under-legal-drinking age youth are excluded from beer ads' target consumers and it is illegal for them to consumer alcoholic drinks in the moment. Compared to discreet warnings, conspicuous warnings were more likely to activate underage youth's reactance and to be rejected. Therefore, beer ads and brands with conspicuous warnings were rated as less favorable than ads with discreet warnings. Contrary to what Torres et al. (2007) have found, underage consumers in this study did not show more favorable Aad or AB when warnings were conspicuously rather than discretely placed. Considering the sample's age range (18 – 25 years old) in Torres et al.'s (2007) study, findings from this current study suggested that future research may want to differentiate underage group from legal-drinking-age group when examining warnings' advertising effects. Also, supporting previous literature on

conspicuous elements' effect on attracting attention (e.g., Barlow & Wogalter, 1993; Peschel & Orquin, 2013; Wedel & Pieters, 2007), this study evidenced that conspicuous warnings – compared to discreet ones – are more likely to be attended and given longer attention duration. Given a fixed period of time to view each ad, namely six seconds, results showed that 76.92 % of participants noticed warnings that were conspicuous and integrated to the ad copy, 62.05% of them seeing discreet integrated warnings, 53.85% for conspicuous disintegrated ones and only 25.13% noting the discreet and disintegrated ones. For the most noticeable conspicuous and integrated warnings, participants fixated on them for an average of .50 seconds, for least noticeable ones – viewing discreet and disintegrated warnings for less than .10 seconds on average.

Even thought previous literature argued that eye movements or visual attention allocation has been found to be significantly and directly related to cognitive processing (e.g., Fletcher et al., 1995; Krugman et al., 1994; Wedel & Pieters, 2007), being seen and being seen long enough should be essential and indispensable to facilitate later cognition formation. Considering that even for the most noticeable warnings (i.e., conspicuous + integrated), less than 80% of participants actually noticed them and paid attention long enough, let alone their attention allocation to less noticeable warnings. This could explain the limited mediating role that visual attention has played in affecting warning conspicuity's effect on those cognitive measurements (i.e., attitudes, VBI, and ICA): visual attention was only mediating warning conspicuity level's effects on Aad (approached significance). Underage youths paid longer attention to conspicuous warnings than discreet warnings and the increased attention allocation led to more favorable attitude toward the ad. Since conspicuous warnings, compared to discreet warnings, were more likely to beget more involuntary attention from viewers, it is sensible that conspicuity warnings

attracted longer attention duration than discreet warnings. However, the indirect relationship showed that, longer attention paid to conspicuous warning led to more favorable Aad than Aad toward ad with discreet warnings. Predicted by the psychological reactance theory, this actually showed that those underage youth viewers, the longer they deliberated on the warning, the more likely they would employ defensive psychological mechanisms (or boomerang) to protect themselves from the warning message by liking the beer ad (Aad) more.

On the other hand, participants' state reactance was not significant in mediating warning conspicuity level's effect on any of those dependent variables. Even though warning conspicuity level showed a main effect on eliciting negative thoughts after viewing ads – conspicuous warnings resulted in more negative thoughts than discreet ones. In terms of the emotional outcome – anger indicated by participants, conspicuous warnings did not differ from what discreet warnings brought out from participants. Given the limited effect of warning conspicuity on state reactance (e.g., only evident with negative thoughts, but not with anger), it may contribute to the finding that state reactance was not mediating warning conspicuity level's effect on any of the cognitive measurements.

However, most importantly to note, conspicuous warnings showed main and direct effect on participants' alcohol drinking intentions and were more effective in curbing underage viewers' alcohol consumption intentions than discreet ones, and warning conspicuity's effects on drinking intentions were not mediated by either of the mediators.

To summarize, from this current study's findings: seeing is behaving. It seemed that placing a conspicuous warning alone on Instagram beer ads could affect under-drinking-age youths' reported drinking intentions, even though it is hard to decide whether their self-reported drinking intentions may actually translate into actual behaviors. Putting a more conspicuous but

not obnoxiously obvious warnings on social media alcohol ads seem to be an easy way or the first step to execute effective preventive message among underage viewers. Future replications of this current study are called for to validate current findings, but results from this study can be used to call for policy makers' and marketers' attention in the near future.

The Effects of Ad Warning Integration: Direct & Indirect

Underage participants rated beer ads and brands with integrated warnings to be less favorable than those with disintegrated warnings. Even thought the product placement literature evidenced that well-integrated product placements in media were better received and rated as more favorable by audience than poorly-integrated product placements (e.g., d'Astous & Chartier, 2000; d'Astous & Seguin, 1999), it did not hold true in the context of warning-ad integration. It could be explained that, unlike product placements promoting favorable cognition formation relevant to the products, warning placements are actually dissuading consumers from forming positive attitude or behavioral intention toward the product. When warnings were well integrated into beer ad copy, consumers' initially formed positive cognition after viewing the ad copy was interrupted when they move on and see the warning. In this way, well-integrated warnings are more intrusive and annoying to viewers especially when they are processing pro-product ad copy than they do to poorly integrated warnings on the ads, and such unpleasant experience could have spilled over and contributed to their negative evaluation toward the ad and brands afterward. Participants' less favorable attitude toward ads with integrated warnings – when compared to ads with disintegrated warnings – could also account for their lower likelihood to interact with the ads (i.e., in terms of liking, commenting, and sharing on Instagram) than that of ads with discreet warnings.

Regarding suggestions for marketers to promote responsible alcohol marketing messages, the results showed that alcohol ads with integrated warnings were more effective in curbing underage youths' alcohol drinking intentions after seeing ads. Considering that ads with integrated warning into ad copy also resulted in less favorable attitude toward the brand and lower level of engagement intentions with the ad on social media among underage populations, alcohol marketers are facing a dilemma of balancing between aiming to achieve optimal marketing and advertising effect, presumably potential sales increase, and delivering socially responsible messages targeting potential consumers. Agreeing with past researchers' suggestions to advertisers and marketers (e.g., Foxman, Muehling, & Moore, 1988; Thomsen & Fulton, 2007), this study used empirical findings to strongly recommend that advertisers and marketers should incorporate warning messages into their main ad content or ad copy.

Additionally, integrated warnings received longer attention duration than disintegrated warnings, even though the average attention duration paid to warnings across the four types of warnings were not sufficient enough to affect cognition processing except attitude toward the ad (as discussed earlier on in the conspicuity part). Placing warnings integrated into ad copy definitely increased the possibility of warning being noticed and being viewed for longer period of time than disintegrated warnings, and the integration of warning into ad copy also indirectly affected underage youth's Aad via affecting their attention allocation. Compared to disintegrated warnings, integrated warnings attracted longer fixation, which in turn contributed to more favorable Aad. Similar as what has been discussed in the earlier part on conspicuity's indirect effect on Aad via visual attention, integrated waning invited more involuntary attention from underage youth than disintegrated warning. The longer they deliberated on the warning, the more

likely they would employ defensive psychological mechanisms (or boomerang) to protect themselves from the warning message by liking the beer ad (Aad) more.

Moreover, compared to disintegrated warnings, integrated warnings succeeded in eliciting considerably more anger and negative thoughts among underage viewers after a short period of exposure time. Warning integration level's effect on participants' attitude toward the ad, attitude toward brand, and viral behavioral intention were partially mediated by their reactance level to the ad, respectively. Compared to disintegrated warnings, integrated warnings led to higher reactance level, and such increase in reactance resulted in less favorable attitude toward the ad and brand, as well as lower likelihood to engage with the ad on social media. According to Psychological Reactance theory (Brehm, 1996; Brehm & Brehm, 1981), individuals' state reactance takes place when seeing their perceived freedom of choice being threatened or reduced, and individuals tend to reject the message in order to restore their denied or reduced freedom. Seeing ads with integrated warnings gave rise to perceived threat to freedom of choice and reactance, which lead to message rejection that was illustrated with less favorable attitude toward the ad and brand, and lower intentions to interact with the ad. Importantly to note, state reactance did not mediate warning integration's effect on underage viewers' behavioral intention to drink. It could be explained that with the amount of state reactance aroused from seeing integrated waning, underage viewers largely vented their anger and negative thoughts by disliking or disapproving the ad and brand, and not willing to interact with the ad on Instagram. However, as the warning states the legal drinking age regulation as it is by law, even being integrated into ad copy, the warning did not induce higher level of reported drinking behavioral intentions. Even though it is hard to decide whether such outcome happens either due to underage youth's internalization of the warning message or due to social desirability under

being studied, this study's findings at least evidence the possibility of providing effective preventive warning messages and at same time curbing drinking behavioral intention boomerang.

However, one thing to note is that even though warning integration's indirect effect on VBI via affecting SR approached significance, the model predicting VBI did not show good fit to the data. It could be that warning conspicuity and integration level may not be the most important predictors of VBI, and other potential factors such as their interaction behaviors on social media, social norms related to VBI, or Instagram use habit may have more explanatory power.

Interaction effects of Conspicuity & Integration

Warning conspicuity and integration level's interaction effects was significant on underage group's attitude toward the ad, but was not significant on their attitude toward brand. The difference between underage youths' attitude toward the ad when seeing either conspicuous disintegrated warning or discreet disintegrated warning was not evident as the difference between their Aad for conspicuous *integrated* warning and discreet integrated warning. Participants liked ads with conspicuous and integrated warnings least, followed by ads with discreet and integrated warnings, and they held relatively similarly more favorable attitude toward ads with either conspicuous disintegrated warning or discreet disintegrated warning. Alcohol ads with conspicuous and integrated warnings turned out to be most effective in curbing underage viewers' formation of positive attitude toward the ad. It seemed that the adding of integration component further polarized the difference between Aad toward ad with either conspicuous or discreet warnings. Similar interaction effect also took place on their behavioral intentions: the adding of ad-warning integration further broadened underage viewers' behavioral intention difference between seeing either conspicuous *integrated* warning or discreet integrated

warning. Making warning conspicuous on alcohol ad could serve as a first step, and incorporating it into ad copy will make it even more effective in influencing underage groups' drinking intentions.

The interaction effect of warning conspicuity and integration on underage viewers' reported anger and negative thoughts were significant. Even though warning conspicuity did not have a main effect on anger level toward the ad, being conspicuous seems to be the prerequisite for the integration component to affect anger level. Since underage youths' reported anger level did not differ between seeing ads with discreet integrated or discreet disintegrated warnings, rather they reported significantly higher level of anger to ads with conspicuous integrated warnings than conspicuous disintegrated ones. So to say, the integration component seems to be driving the significant difference of anger between seeing conspicuous integrated and conspicuous disintegrated warnings to take place. On the other hand, underage youth's reported number of negative thoughts did not differ when seeing either conspicuous disintegrated warnings or discreet disintegrated warnings, but they reported more negative thoughts to ads with conspicuous integrated warnings than those with discreet integrated ones. Regarding conspicuity and integration's effect on negative thoughts, integration level seems to be pivotal in polarizing conspicuous warnings' effect.

Combining what has been discussed on warning integration's indirect effect on Aad, Ab, VBI via affecting state reactance, the following suggestions could be made. For alcohol advertisers and marketers, providing noticeable or conspicuous warnings on social media alcohol ads is a more socially responsible way to promote their brands or products, especially when underage youths comprise a considerable amount of social media users. However, given warning conspicuity's effect on underage youth's Aad, AB, and ICA, alcohol advertisers and marketers

may be reluctant to make their current warning font size larger. If they are not able to or not willing to make warning on alcohol ads conspicuous, incorporating them into main ad copy or content seems to be an alternative viable way to make the message more socially responsible, or namely less attractive to underage youths, and vice versa. The least likely to happen is scenario in which alcohol warnings are being made not only conspicuous but also integrated into ad content by advertisers, which, however, might be the optimal solution to provide preventive message among underage youth.

Limitations & Recommendations for Future Research

This study has a few noteworthy limitations. Firstly, involving using eye tracker to record participants' eye movements, this study arbitrarily assigned six seconds for participants to view each ad in order to control for internal validity. This may differ from underage youths' actual reading habits of ads on Instagram, and also may have contributed to the relatively low level of attention paid to the warnings across all of the stimuli. Future researchers may either give more control to the participants when viewing the ads or resort to using other methods, such as observations or focus group, which can provide more in-depth understanding of how underage youths perceive social media alcohol ads and warnings. Second, this study recruited mainly 18- to 20-year-old participants, which could bias the results in terms of intergenerational differences in alcohol use between pre-college and college populations. Future researchers may also want to look into other younger groups (i.e., less than 18 years old) to broaden our understanding of underage youths' perception of social media alcohol ads and warnings. Third, integrated warnings – "only if you're 21 +" is slightly different from disintegrated warnings – "For legal drinking age 21+," and such difference may have a confounding effect on the impact of warning integration level. Future studies should rule out the confounding possibility.

Lastly, as most controlled experimental studies, behavioral intentions were the furthest point this study has tapped into when trying to understand target audiences' behavioral related activities. Behavioral intentions are not proxy to actual behaviors. Due to social desirability or pressure during their participation in the study, participants may have reported inaccurate behavioral intentions that are deviant from their actual behaviors. Future studies should try to find alternative and subtle ways to gauge actual behaviors, which could shed more light on guiding potential policy change and marketing practice modifications.

CHAPTER 6: CONCLUSIONS

Amidst the shift of alcohol marketing expenditure moving from traditional to digital and social media, based on the fact that younger adults have a high adoption usage of social media and there is a lack of forceful self-regulation governing alcohol marketing via social media, this current study aimed to identify potentially effective warnings to be added on alcohol ads on Instagram to curb underage youths' drinking intentions while at same time reduce their state reactance toward the message. Findings from this study showed that conspicuous warnings – compared to the discreet type adopted by some of the alcohol brands – were more effective in eliciting less favorable attitude toward the ad and brand, and most importantly lower level of drinking intentions among underage youths. Also, compared to warnings disintegrated from ad copy (what most alcohol brands are adopting now), warnings integrated into ad copy were more persuasive in intriguing less favorable attitude toward the ad and brand, lower intentions to interact with the ad, and lower intentions to drink alcohol. More importantly, ads with conspicuous and at same time integrated warnings turned out to be most effective in curbing underage youths' alcohol consumption intentions. If alcohol marketers and advertisers failed to employ conspicuous warnings, incorporating warnings into main ad copy could be an alternative solution, and vice versa. Alcohol marketers, if adopting either one of the two above-mentioned warning strategies, will be more socially responsible than their current marketing practices. Additionally, eye-tracking data also added new evidence to the ineffectiveness of alcohol advertisers' current marketing practice (e.g., using discreet and disintegrated warning placed to the margin of the ad): discreet and disintegrated warnings were hardly noticed by the majority of underage viewers, and attention paid to conspicuous and integrated warnings was better than other types of warning formats, but still had limited effect in attracting attention. Also, this study

also evidenced that visual attention is related to later cognitive processing. Lastly, adding warnings to ad copy may sound like a bold recommendation to alcohol marketers, however, it actually worked in a desirable fashion in which underage youths on one hand vented their dislike of the warning via disliking the ad, brand and being less willing to interact with the ad, and on the other hand turned out to be affected by the warning and state reactance, with SR in turn contributing to their reported lower level of alcohol drinking intentions.

The current study's findings could be used to guide alcohol marketers' socially responsible marketing conducts and serve as new evidence for policy making suggestions regarding social media alcohol marketing.

APPENDICES

APPENDIX A: Consent Form

Dear Participant,

Thank you for coming to our study! You are invited to participate in a research project related to rating marketing company ads on Instagram. The goal of this project is to help marketers design popular ads on social media. This study will take 45 minutes to complete. You will view a number of ads and complete online questionnaires to rate each of them. During this process, your visual attention will be recorded via an eye tracker.

All of your answers will remain confidential and your information will be kept confidential to the maximum extent allowable by law. Your name and identity will not be linked to your answers, and will not appear in any reporting of the data.

There are no foreseeable risks associated with participation in this study. Your participation in this research is completely voluntary, and you are free to withdraw at any time. In case you experience any discomfort while completing the study, you may withdraw from the study with no penalty. You may choose not to answer specific questions or to stop participating at any time without any consequences. You will be compensated with $20 cash upon your completion of this study.

If you have concerns or questions about this study, such as scientific issues, how to do any part of it, or to report an injury, or to request information about the results of the study, please contact Chen Lou (louchen1@msu.edu, 517-432-2178).

If you have questions or concerns about your role and rights as a research participant, would like to obtain information or offer input, or would like to register a complaint about this study, you may contact, anonymously if you wish, the Michigan State University's Human Research Protection Program at 517-355-2180, Fax 517-432-4503, or e-mail irb@msu.edu or regular mail at 408 W. Circle Dr., 207 Olds Hall, MSU, East Lansing, MI 48824.

By click on the ">>" button below, you indicate that you have read and understood the above information and that you voluntarily agree to participate in this research study based on the information provided in this consent form. Thank you very much for your time and attention. Your assistance in this project is greatly appreciated.

APPENDIX B: Survey Questionnaires

Part 1: The following section includes questions related to your personal experience and habit (if applicable). Your answers will remain confidential; please answer as accurately as possible.

1. Alcohol consumption – please answer the following questions. (Rehm, 1998; Russell, 1991)
    a. How often, if ever, did you drink alcoholic beverages during the past 12 months? (this means any type of alcohol)
        ☐ More than once a day
        ☐ About everyday
        ☐ About 4 to 5 times a week
        ☐ 2 to 3 times a week
        ☐ Once a week
        ☐ 2 to 3 times a month
        ☐ Once a month
        ☐ Less than once a month
        ☐ Don't know

    b. On those days when you drank, how many drinks did you usually have? (drink means: one 12-oz bottle of beer or a glass of draft, one 5-oz glass of wine, or one straight or mixed drink with $1^1/_2$ oz of hard liquor)
        N = _____

Instagram Use

Do you have an Instagram account?

☐Yes
☐No

How much time you spend on Instagram daily in hours and minutes? *(Lup, Trub, & Rosenthal, 2015)*

_____ Hours and _____ minutes

or please select option from below:

☐ 10 minutes or less
☐ 11-30 minutes
☐ 31-60 minutes
☐ 1-2 hours
☐ 2-3 hours
☐ > 3 hours

Approximately how many accounts you are following on Instagram?

N= _____

Approximately how many followers do you have on Instagram?

N =_____

Instagram use motivation – Please indicate your agreement or disagreement with the following statements. Use the scale from 1=Never to 5=Always to rate each statement

	Never 1	2	3	4	Always 5
I use Instagram to interact with my friends	☐	☐	☐	☐	☐
I use Instagram to see "visual status updates" of my friends	☐	☐	☐	☐	☐
I use Instagram because it is fun	☐	☐	☐	☐	☐
I use Instagram to follow my friends	☐	☐	☐	☐	☐
I use Instagram to see what other people share	☐	☐	☐	☐	☐
I use Instagram to "like" my followers' photos	☐	☐	☐	☐	☐
I use Instagram to creep through other people's posts	☐	☐	☐	☐	☐
I use Instagram to depict my life through photos	☐	☐	☐	☐	☐
I use Instagram to remember special events	☐	☐	☐	☐	☐
I use Instagram to share my life with other people	☐	☐	☐	☐	☐
I use Instagram to document the world around me	☐	☐	☐	☐	☐
I use Instagram to commemorate an event	☐	☐	☐	☐	☐
I use Instagram to remember something important	☐	☐	☐	☐	☐
I use Instagram to become popular	☐	☐	☐	☐	☐
I use Instagram because it is cool	☐	☐	☐	☐	☐
I use Instagram to self-promote	☐	☐	☐	☐	☐
I use Instagram to provide "visual status updates" for my friends	☐	☐	☐	☐	☐
I use Instagram to find people with whom I have common interests	☐	☐	☐	☐	☐
I use Instagram to create art	☐	☐	☐	☐	☐
I use Instagram to show off my photography skills	☐	☐	☐	☐	☐

Part 2: In the following part, you will see a series of Instagram ads varying in formats and you will be asked to evaluate each of them after viewing. Please pay due attention to EACH of those ads before you finish viewing and go to next page.

[All of the participants will view 18 ads in total. After viewing each ad, they will be given the following questions to answer].

Please indicate how much you agree with the following statements by clicking on the option with which you agree the most.

Anger:	None of this feeling	A great deal of

	1	2	3	4	5	6	this feeling 7
After viewing the ad, I feel irritated	☐	☐	☐	☐	☐	☐	☐
After viewing the ad, I feel angry	☐	☐	☐	☐	☐	☐	☐
After viewing the ad, I feel annoyed	☐	☐	☐	☐	☐	☐	☐
After viewing the ad, I feel aggravated	☐	☐	☐	☐	☐	☐	☐

Next, regarding the ad you have just viewed, you have 90 seconds now to recall and write down your thoughts about it.

_____
_____
_____
_____

I found the beer ad I just saw to be: (Kelly, Slater, & Karan, 2002)

Not at all enjoyable	☐	☐	☐	☐	☐	☐	☐	Very enjoyable
Not at all likable	☐	☐	☐	☐	☐	☐	☐	Very Likable
Not at all appealing	☐	☐	☐	☐	☐	☐	☐	Very appealing

I found Budweiser/Bud Light/Corona Extra is:

Not at all appealing	☐	☐	☐	☐	☐	☐	☐	Very appealing
Not at all cool	☐	☐	☐	☐	☐	☐	☐	Very cool
Not at all in-style	☐	☐	☐	☐	☐	☐	☐	Very in-style
Not at all likable	☐	☐	☐	☐	☐	☐	☐	Very likable

Please indicate your agreement or disagreement with the following statements regarding what you could possibly do in relation to the <u>ad</u> you've just seen. Use the scale from 1=Strongly Disagree to 7=Strongly Agree to rate each statement.

	Strongly Disagree 1	2	3	4	5	6	Strongly Agree 7
This beer ad is worth sharing with others	☐	☐	☐	☐	☐	☐	☐
I will recommend this ad to others	☐	☐	☐	☐	☐	☐	☐
I will "like" this ad on Instagram	☐	☐	☐	☐	☐	☐	☐
I will "#regram" this ad on my Instagram	☐	☐	☐	☐	☐	☐	☐
I will "comment" on this ad on Instagram	☐	☐	☐	☐	☐	☐	☐

Behavioral intention:	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
This Instagram beer ad makes me want to have an alcoholic drink	☐	☐	☐	☐	☐	☐	☐
This Instagram beer ad makes alcohol sounds more appealing	☐	☐	☐	☐	☐	☐	☐

This Instagram beer ad makes me want to drink alcohol	☐	☐	☐	☐	☐	☐	☐
This Instagram beer ad makes me want to get completely wasted	☐	☐	☐	☐	☐	☐	☐

Part 3: In the last part, please tell us a bit about yourself:

What is your gender?

☐ Female
☐ Male

In what year where you born? _____

What is your education level?

❍ Completed some high school
❍ High school graduate
❍ Completed some college
❍ Associate degree
❍ Bachelor's degree
❍ Completed some postgraduate
❍ Master's degree
❍ Ph.D., law or medical degree
❍ Other advanced degree beyond a Master's degree

Are you Hispanic?

❍ Yes
❍ No

What is your race? (select all that apply)

❑ White/Caucasian
❑ Black/African American
❑ Asian
❑ American Indian or Alaska Native
❑ Native Hawaiian or Other Pacific Islander
❑ Other

After finishing this study, what do you think this study is about? (please list your thoughts below)

_____

Thank you. You have completed the study. This study intends to examine how youth might react

differently to alcohol ads with warning messages varying in formats. If you want to know more about this study's results or findings, please contact Chen Lou at louchen1@msu.edu or Saleem Alhabash at sa@msu.edu.

Thank you again for your participation!

You will receive $20 cash as a compensation for your time.

APPENDIX C: Coding Protocol

Coding cognitive responses:

Step 1.
If affective responses (feeling terms, e.g., love, fear, surprise, joy, sadness, anger related terms) were identified, please code the answer as type "E," Value = "0."
e.g., this ad is annoying. If nothing cognitive thought is written after this, then code as "E" and "0."

Step 2.
Decide whether or not the answer was relevant to the ad. If they talk about themselves and other random and irrelevant things to the ad, brand, or message in the ad, please code the answer as type "I" and Value = "0"

Step 3.
Evaluating each of the answers as either being negative, neutral, or positive based on:

• *Supportive/positive thoughts* were defined as responses that expressed agreement with the ad, self-identification with the ad, and positive thoughts toward the ad, the brand, or the advocacy; and indicated intention to comply with the advocacy in the ad (e.g., enjoying a drink/drinking when you are 21+), etc.

-- Please code the answer as type = "P"

-- Also please count the number of different thoughts, and code Value = the number of positive thoughts

• *Negative thoughts* were defined as responses that expressed disagreement with the ad, negative intention to comply with the advocacy (e.g., challenge the warning "drink when you are 21+"), intention to engage in the risky behavior (e.g., I want to drink now), or indicated derogations of the ad or brand, etc.

-- Please code the answer as type = "N"

-- Also please count the number of different thoughts, and code Value = the number of negative thoughts

• *Neutral thoughts* were defined as non-evaluative responses to the message, such as "This ad shows a beer bottle."

-- Please leave the type as empty and put Value = "0"

APPENDIX D: Descriptives & Reliability Coefficients of DVs

Table 5 Items, Descriptives and Reliability Coefficients of Dependent Measures

	Anger			Aad			AB			VBI			BI		
	M	SD	α	M	SD	α	M	SD	α	M	SD	α	M	SD	α
Ad1	1.71	1.22	.91	3.84	1.75	.96	4.12	1.63	.96	1.65	1.03	.90	2.24	1.34	.91
Ad2	1.78	1.25	.90	3.60	2.00	.98	4.22	1.84	.97	1.74	1.21	.90	2.23	1.57	.94
Ad3	1.89	1.26	.93	3.34	1.66	.96	4.45	1.73	.97	1.48	.99	.91	2.20	1.45	.93
Ad4	1.42	.89	.85	3.98	1.87	.98	4.40	1.66	.95	1.61	.96	.87	2.34	1.56	.94
Ad5	1.68	.97	.83	3.36	1.84	.97	4.06	1.77	.97	1.54	.87	.82	2.26	1.37	.91
Ad6	1.38	.81	.90	5.15	1.64	.97	5.11	1.64	.96	1.99	.129	.89	2.97	1.70	.90
Ad7	1.24	.53	.82	4.51	1.65	.95	4.55	1.66	.96	1.82	1.08	.88	2.71	1.49	.93
Ad8	1.35	.76	.89	4.62	1.74	.95	4.66	1.75	.97	1.99	1.33	.89	2.82	1.73	.94
Ad9	1.22	.70	.88	4.93	1.72	.96	5.05	1.51	.96	2.15	1.42	.89	3.03	1.64	90
Ad10	1.45	.99	.88	4.54	1.89	.98	4.80	1.69	.97	1.94	1.27	.89	2.68	1.64	.92
Ad11	1.49	1.01	.96	4.79	1.80	.96	4.83	1.76	.96	2.12	1.40	.89	3.10	1.90	.94
Ad12	1.47	.97	.91	4.54	1.64	.94	4.96	1.50	.94	1.96	1.19	.87	2.82	1.65	.91

Note: Ad1-3: conspicuous integrated; Ad4-6: discreet integrated; Ad7-9: conspicuous disintegrated; Ad10-12: discreet disintegrated.

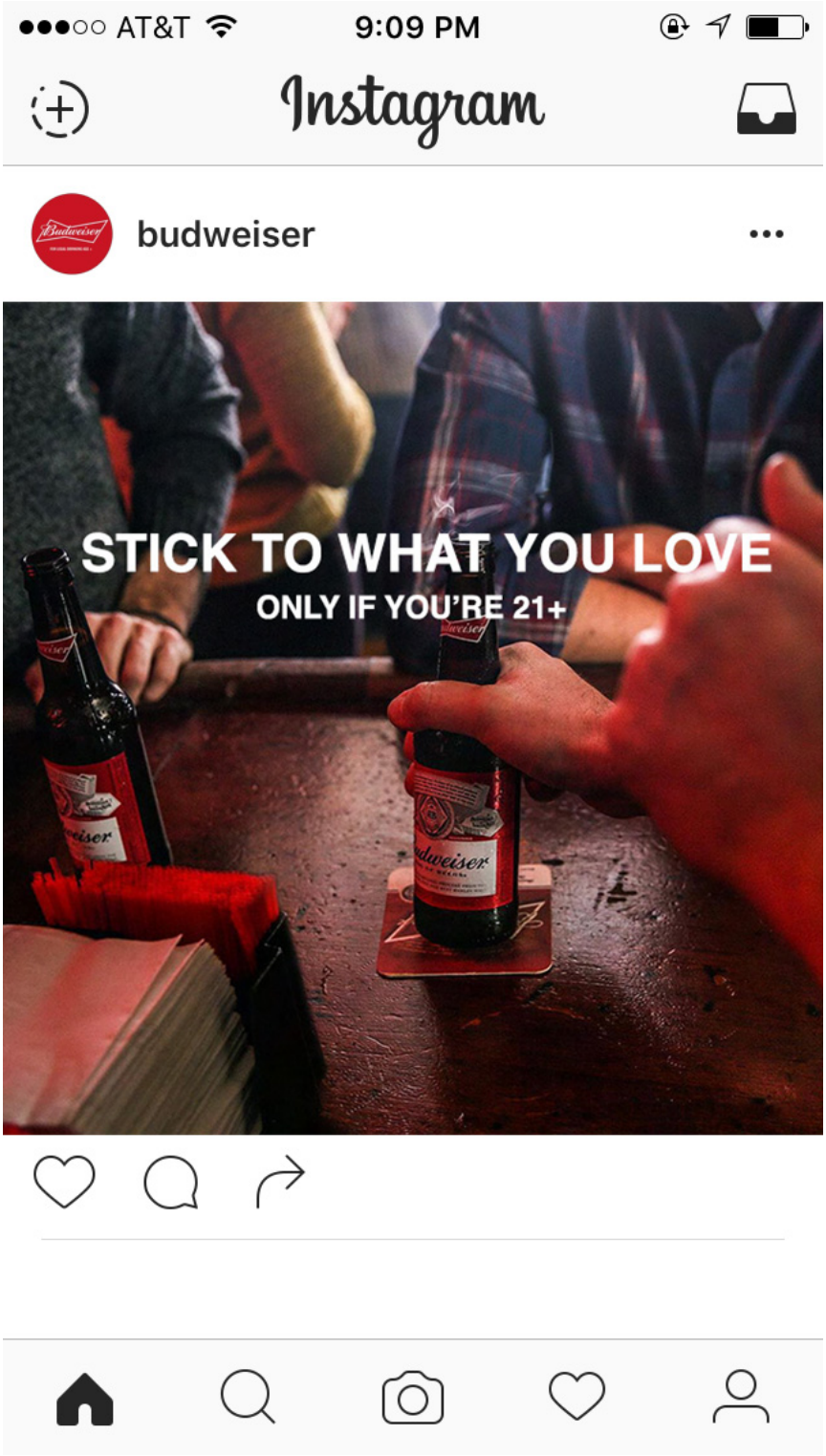


Figure 12 Budweiser Ad with Conspicuous Integrated Warning

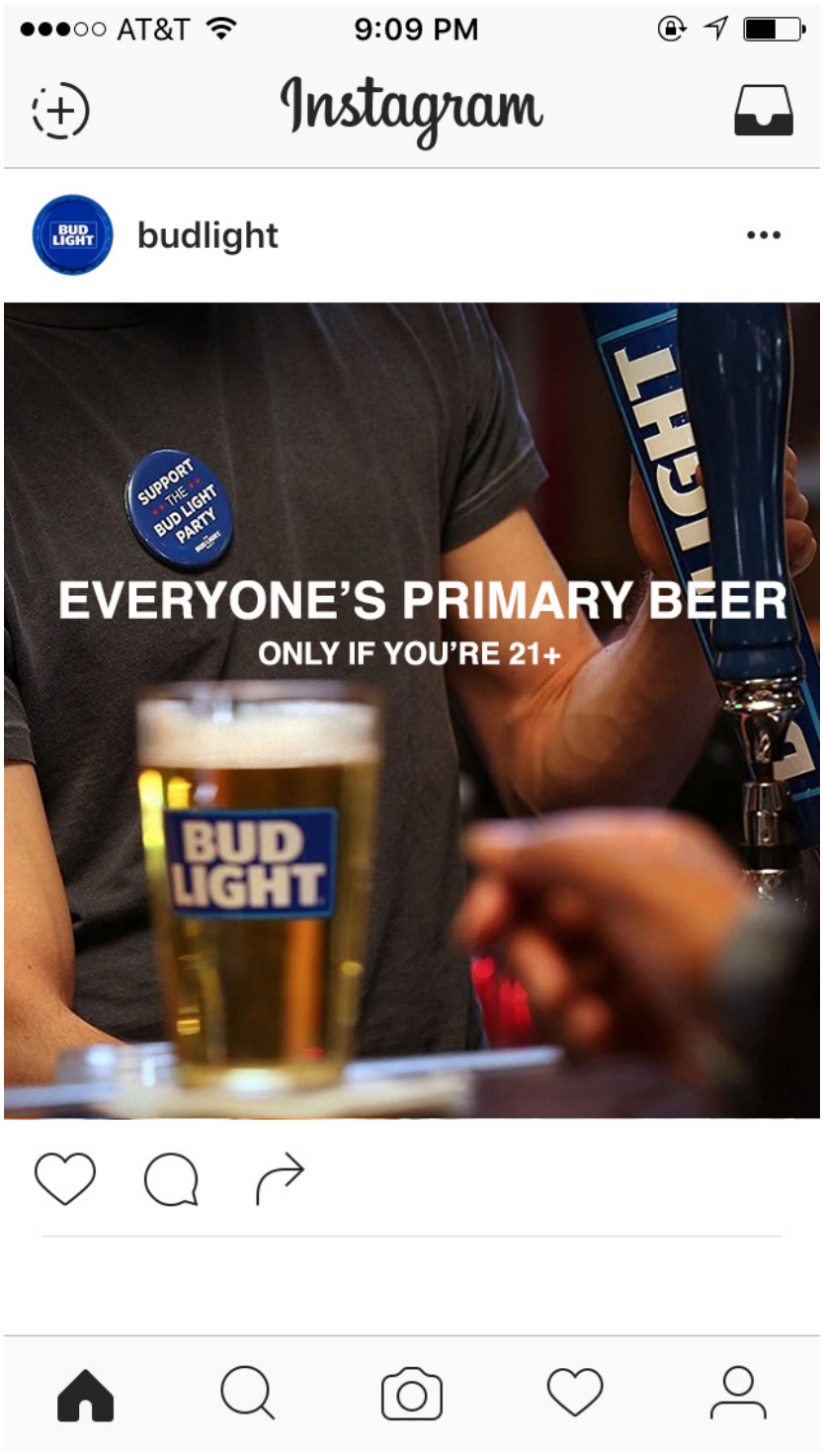


Figure 13 Bud Light Ad with Conspicuous Integrated Warning

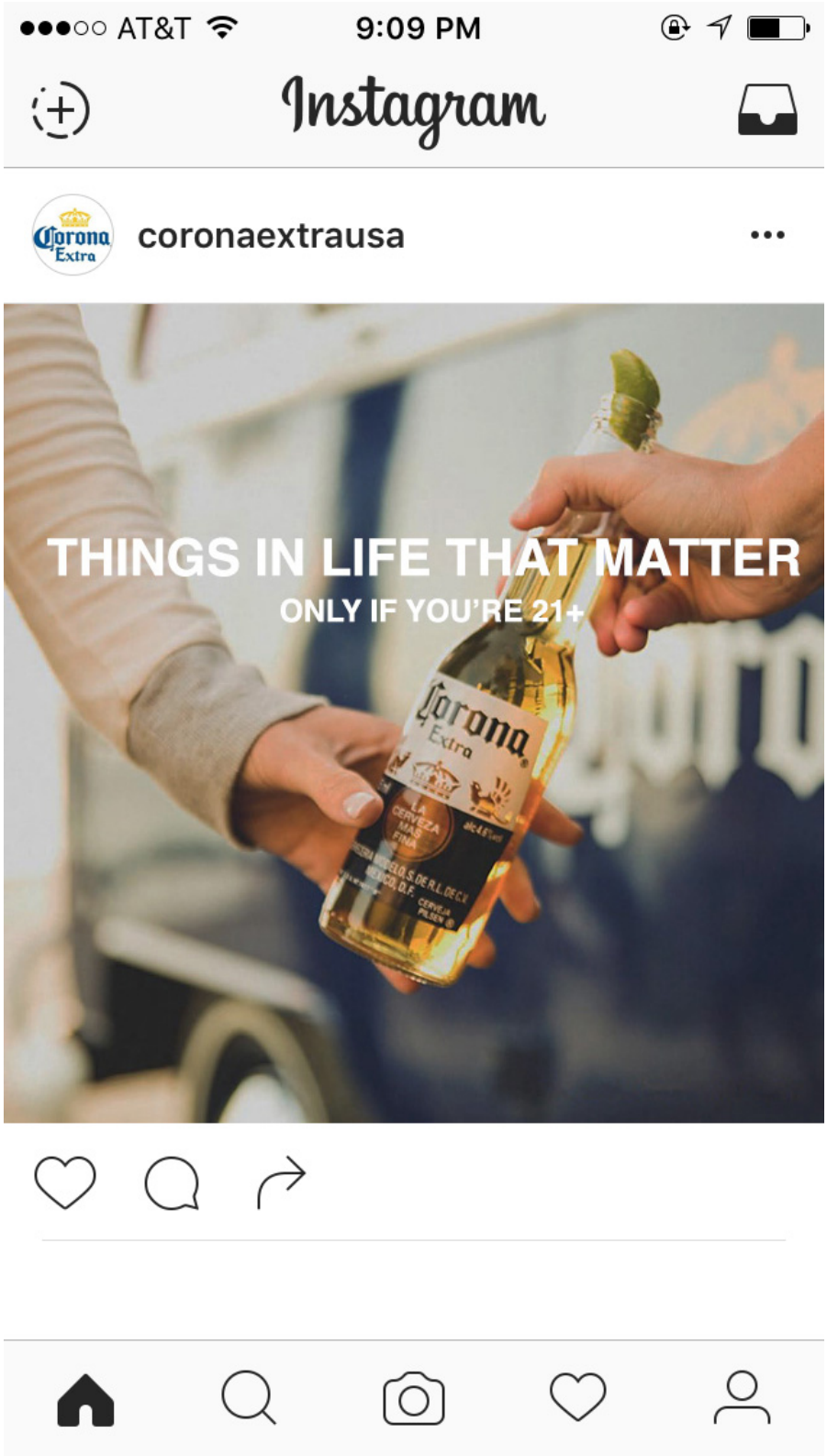


Figure 14 Corona Extra Ad with Conspicuous and Integrated Warning

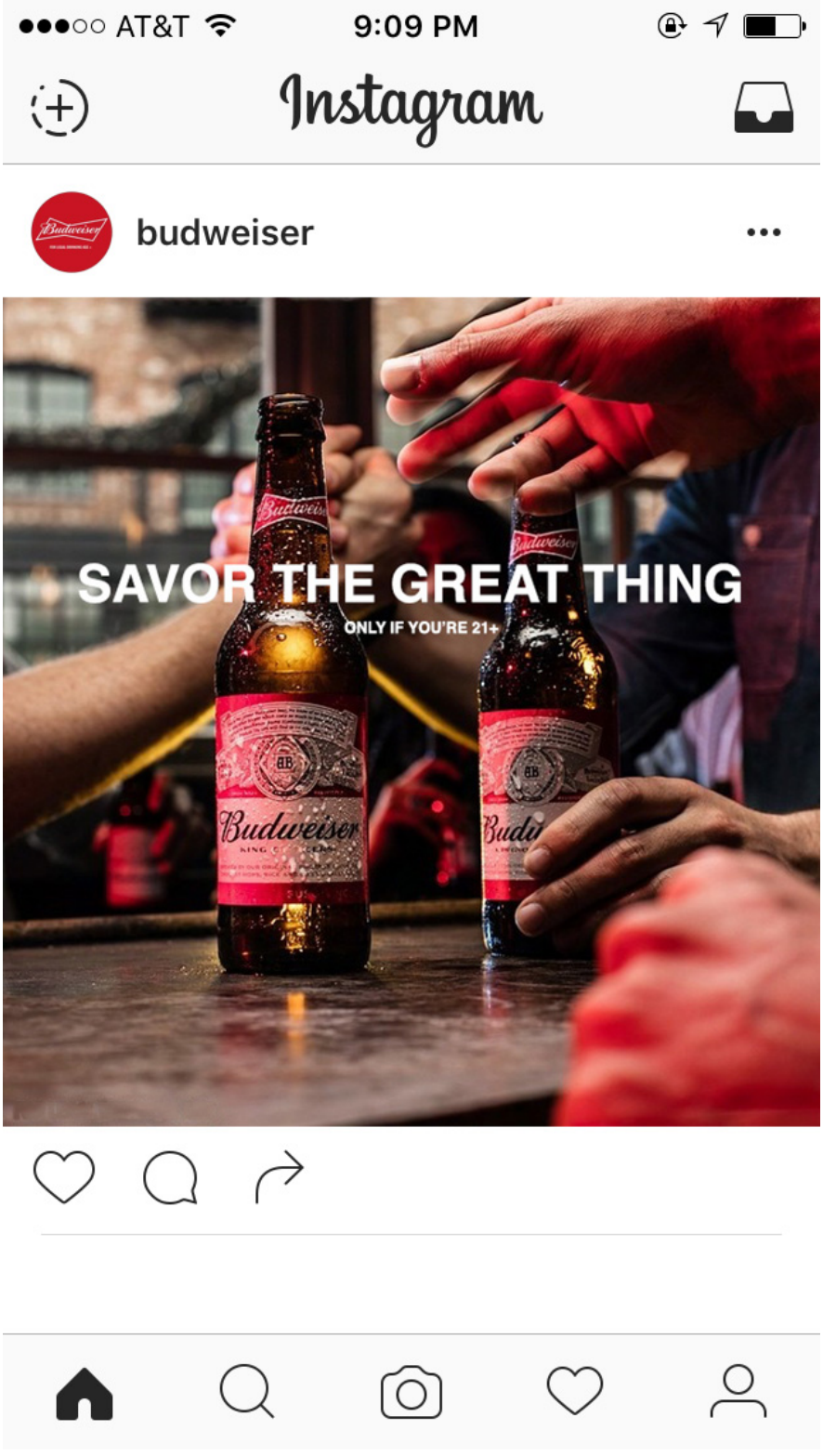


Figure 15 Budweiser Ad with Discreet Integrated Warning

Figure 16 Bud Light Ad with Discreet Integrated Warning

Figure 17 Corona Extra Ad with Discreet Integrated Warning

Figure 18 Budweiser Ad with Conspicuous Disintegrated Warning

Figure 19 Bud Light Ad with Conspicuous disintegrated Warning

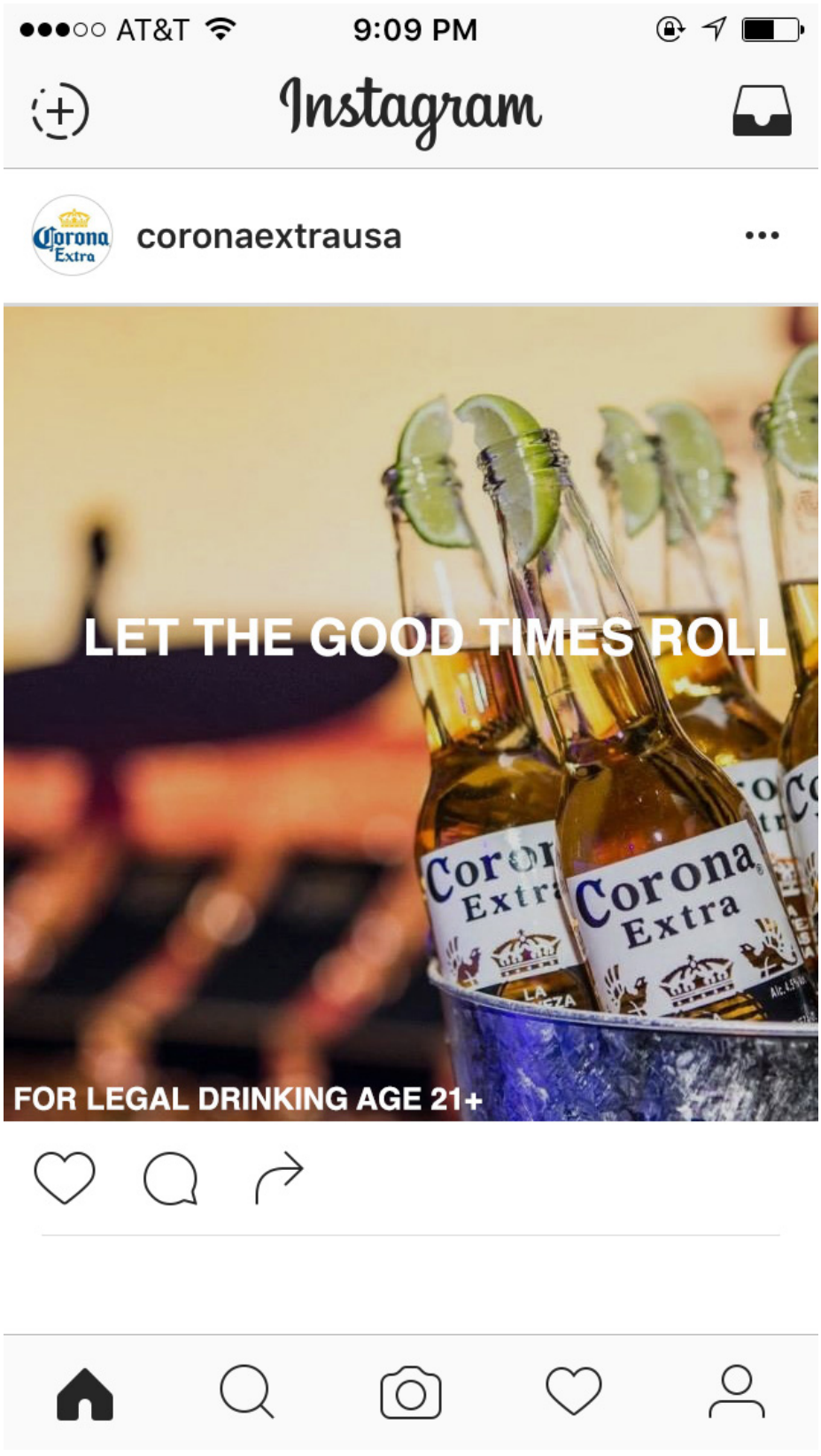


Figure 20 Corona Extra Ad with Conspicuous Disintegrated Warning

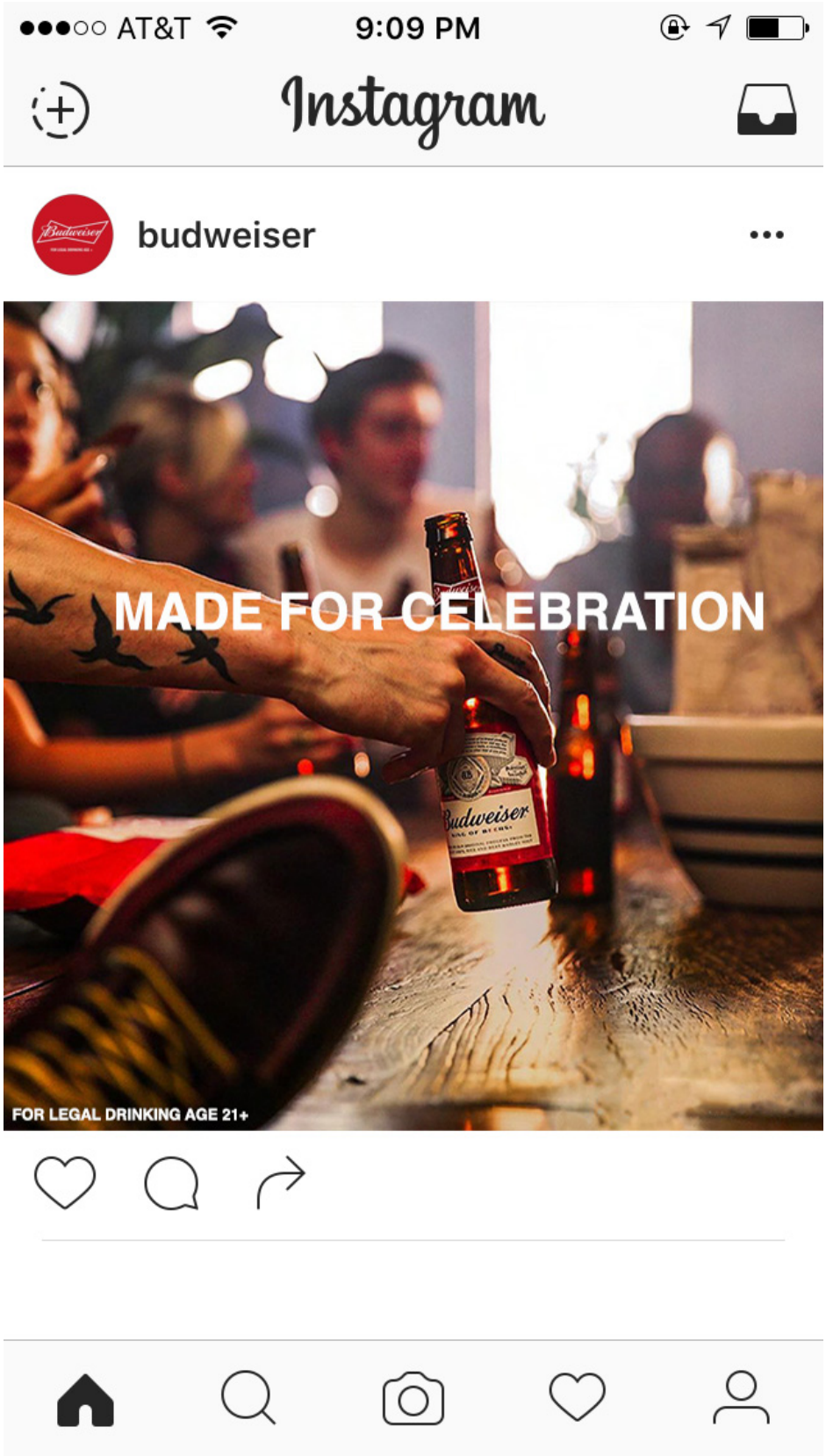


Figure 21 Budweiser Ad with Discreet Disintegrated Warning

Figure 22 Bud Light Ad with Discreet Disintegrated Warning

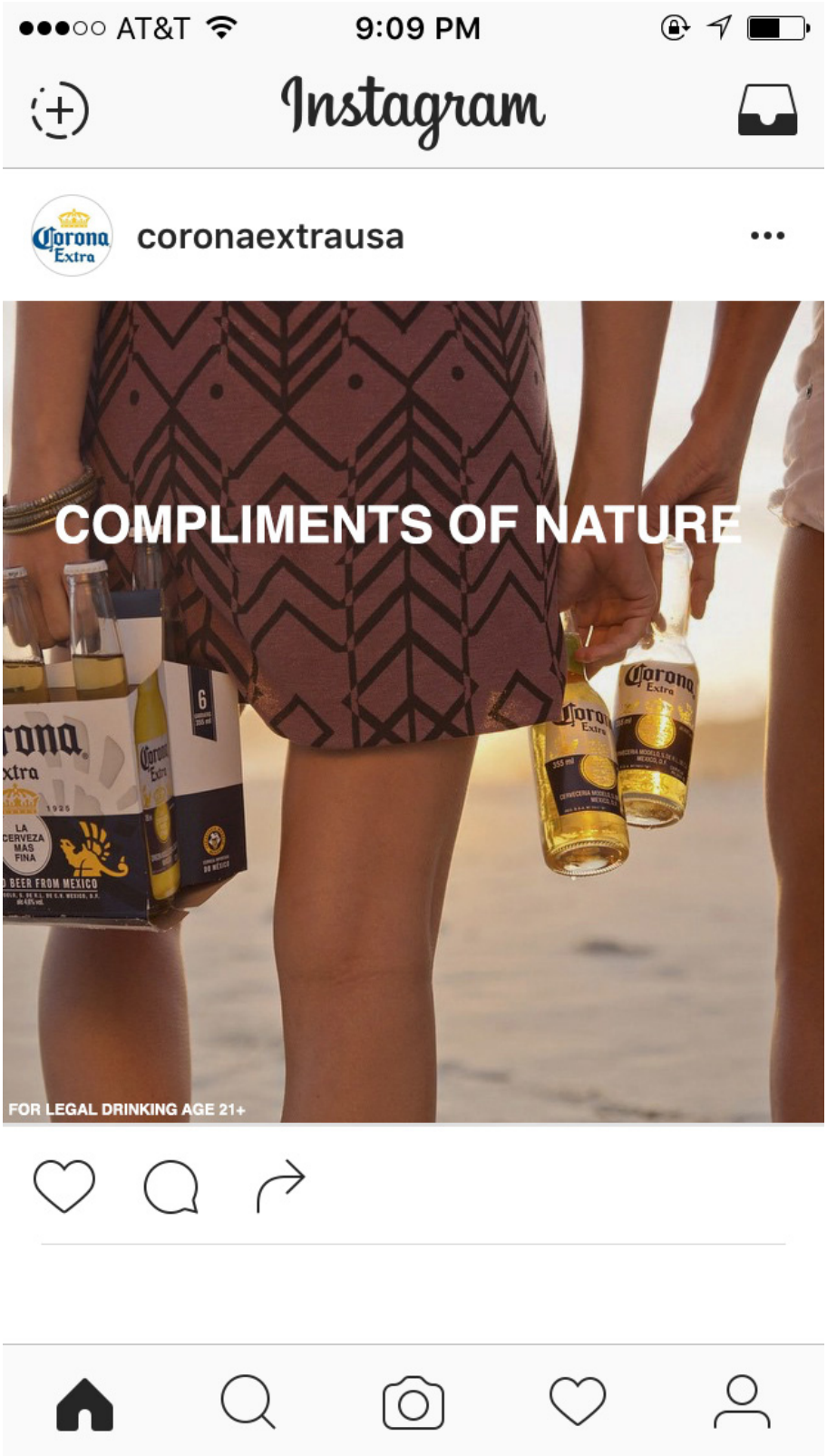


Figure 23 Corona Extra Ad with Discreet Disintegrated Warning

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