Effects of Humor on Presence and Recall of Persuasive Messages

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Abstract

This investigation examined how exposure to a humorous persuasive message affects antecedents of presence, "the perceptual illusion of nonmediation," and how this sense of presence facilitates message recall. Fifty-eight participants in an experimental study viewed either a humorous or non-humorous version of an alcohol PSA and then completed measures of positive mood, perceived credibility, psychological reactance, presence, and message recall. As predicted by a model, positive mood related positively to perceived credibility and negatively to reactance. Increased perceived credibility was associated with greater feelings of presence, which negatively affected recognition memory. These findings suggest that, in some cases, presence may impede persuasive message recall, though not necessarily to the detriment of attitude change.

Effects of Humor on Presence and Recall of Persuasive Messages

The recent emergence of virtual reality and other immersive technologies has led many to consider how the concept of *presence*, "the perceptual illusion of nonmediation" (Lombard & Ditton. 1997), affects outcomes of media exposure. A substantial body of literature on presence has already accumulated, and though there have been some recent disagreements about the precise nature of the concept (Lee, 2004: David, 2004), most conceptualizations share the idea that presence is a psychological state involving some failure to acknowledge the role of technology in an experience ("Presence Explicated," 2000). Technology's ability to evoke presence is thought to depend largely on its capacity to focus a user's attention (Fontaine, 1992). Witmer and Singer (1998) contend that such focus leads users to become *involved* and *immersed* in media environments – two psychological states said to embody the essence of presence.

It is generally agreed upon that presence has multiple dimensions, the most prominent of which are *telepresence/spatial presence*, or feeling present *in* a media environment (Steuer, 1995), and *social presence*, or feeling present *with* a mediated other (Biocca, Harms, & Burgoon, 2003). Though interest in presence has primarily been driven by the emergence of new media technologies, the concept has considerable potential to advance understandings of traditional media, as well, since it addresses the complex differences in ways users experience media (Tamborini, 2000). As such, presence has the potential to inform the study of *any* mediated messages, including those communicated through non-interactive media such as television.

Despite substantial recent progress in our understanding of presence, much remains to be discovered about how the concept relates to prominent variables in the study of communication. Of central interest in the present investigation is the relationship

between presence and persuasive message variables. Does the experience of presence affect responses to persuasive communication? In their seminal explication of presence, Lombard and Ditton (1997) suggested that presence may enhance persuasion. Scholars have recently begun to investigate the relationship between presence and persuasion (e.g., Skalski & Tamborini, 2004; Li, Daugherty, & Biocca, 2003), but few have done this from the perspective of familiar variables in the persuasion literature.

This research examines how several common persuasive message variables— positive mood, message credibility, message reactance, and recognition memory—may influence presence and its impact on persuasion. An experiment manipulated exposure to humor in a persuasive public service announcement (PSA), and a model was tested inspecting the extent to which resulting positive mood influences credibility and reactance responses leading to presence and the subsequent recall of message content. The model advanced in his study predicts that positive mood increases message credibility and decreases message reactance. Perceived credibility is expected to increase presence. By contrast, psychological reactance is expected to decrease presence, both directly and indirectly through its capacity to reduce credibility. Finally, presence is predicted to influence the recall of message related beliefs. The hypothesized model is represented in Figure 1.

Humor and Presence

The relationship between humor and presence has received little attention, but there is reason to expect that humor may intensify feelings of being present in a media environment based on its potential to influence several antecedents of presence. The logic for the model is based on the simple premise that humor can facilitate positive mood. Two things are expected to result from this. First, positive mood is predicted to increase

perceived credibility. Second, in line with experimental research by Berkowitz (1973)

demonstrating that people in a good mood experience less psychological reactance, the

type of positive mood resulting from humor is predicted to reduce reactance.

In both cases, positive mood is held capable of distracting attention in a manner

that could reduce forms of cognitive elaboration that might influence credibility and

reactance. This reasoning is consistent with Slater's (2002) Extended ELM logic, wherein

he argues that the type of positive hedonic processing that arises from engrossing media

exposure is incompatible with counter-arguing and message elaboration. With less

elaboration, internally-generated challenges to message credibility should be fewer and,

as such, perceived credibility is predicted to increase. This is true particularly with

entertaining media where audience identification with media characters is likely to be

strong, in which case the persuasive benefits from argument strength become irrelevant

(Slater, 2002).[i] At the same time, we should expect reductions in counter-arguing to

inhibit psychological reactance almost by definition.

Positive mood's influence on presence continues from this point as a function of

perceived credibility and reactance. In simple terms, positive affect should draw receivers

into the experience and increase feelings of presence, whereas negative affect is expected

to push them away and decrease presence. This is relevant for the model paths leading

from both psychological reactance and perceived credibility to presence. The influence of

psychological reactance on presence occurs through two routes. The first is the direct

path from psychological reactance to presence, which is accounted for through an

understanding of negative mood, and by the message elaboration logic already advanced.

We construe psychological reactance as a form of negative message elaboration,

characterized by counter-arguing and a profusion of negative thoughts about message

attributes. Research on the frequency of source-related thoughts and presence in persuasive media settings demonstrates that diminished presence is associated with increased negative thoughts and decreased positive thoughts (Skalski, 2004), precisely the pattern expected when reactance is high. When reactance occurs, a person develops an intense single-mindedness in response to the feeling that freedoms are being threatened (Burgoon, Alvaro, Grandpre & Voloudakis, 2002), and this acts as a barrier against persuasion. Though such an "intense feeling" might seem consistent with being engrossed in a manner earlier identified as denoting presence, the engagement associated with increased psychological reactance should deter identification, not generate it. It should draw presence-inducing attention away from feeling with a message or source, and toward the elaboration of counter-arguments. This reasoning is consistent with Worchel and Brehm's (1970) account of how psychological reactance can explain change in message receivers away from an advocated position. The broader sensation of feeling "in" a location or "with" another should be minimized by the need to distance oneself from the person or message being resisted. Hence, reactance is expected to directly *detract* from presence.

The second route through which psychological reactance is expected to impede presence is indirect, through its influence on credibility. Burgoon et al. (2002) contend that psychological reactance theory provides a strong foundation for examining the persuasive influence of source credibility and other message variables applied in a public health context. They argue that reactance to a PSA is more likely in this context since receivers are liable to perceive an intent to persuade, perceptions expected to produce source and message derogation. White (1959) suggests that the apparent intent to persuade can be felt as a strong threat to freedom. Accordingly, psychological reactance

in persuasive health messages is predicted to reduce message credibility. However, certain message strategies can curtail feelings of authoritative control and reduce the likelihood that a "reject all authorities" heuristic will be used to generate such source derogation (Burgoon et al., 2002). One such strategy is humor, where diminished reactance and its associated influence on source credibility are anticipated from the positive mood humor creates.

Subsequent to this, credibility is expected to strengthen feelings of presence. The increased trust and liking generally associated with perceived credibility helps account for the expected influence of perceived credibility on presence. Trust and liking should reduce counter-arguing and the type of negative cognitive elaboration said earlier to interfere with presence. As such, the positive affect from perceived credibility is expected to facilitate feelings of presence; whereas, by contrast, reduced credibility should encourage receivers to distance themselves from a message or message provider. This logic is represented in the model through the direct positive path from credibility to presence.

Recent evidence supports the predicted link between presence and perceptions of credibility. Bracken (2003) found the *immersion* dimension of presence to be positively related to perceived source credibility. In a related study, Gunther (1992) found a positive association between *involvement* and source credibility. If these core dimensions of presence (Witmer & Singer, 1998) are associated with perceptions of source credibility, there is reason to expect that this will extend to perceived message credibility as well. In general, involvement and immersion should operate in the same manner regardless of whether they are associated with source or message attributes. Moreover, there is a

natural overlap between the two types of credibility. If a message is perceived as credible, this is likely due in part to perceptions of the credibility of the message source.

Presence and Recognition Memory

The final section of the model describes the influence of presence on the accurate and inaccurate recall of information in a persuasive message. The limited research on presence and recall is mixed. Kim and Biocca (1997) have argued that presence can increase accurate recall by minimizing distractions from the unmediated environment and focusing the receiver on the message. By contrast, Skalski (2004) found evidence that presence can promote inaccurate recall related to false receiver beliefs not contained in a persuasive message but commonly held as true, forms of misconceived recall often referred to as "typical belief false alarms." Skalski's research examined how presence can influence cognitive response to message features that distinguish memory along different dimensions of recall, and it forms the foundation for the predictions of our model.

Whereas a simple understanding of presence and persuasive message recall might lead one to predict that feeling *involved* and *immersed* in a message environment should facilitate message recall and related persuasive outcomes, close consideration of message processes expected in these circumstances produces a multifaceted set of predictions that varies as a function of message features and outcomes considered. We save examination of notably different outcome predictions for our discussion section. This study looks at humor-induced presence and three different elements of message recall: message hits, typical belief false alarms, and message relevant false alarms. Overall, humor-induced presence is expected to interfere with the accurate recall of information. Specifically, the model predicts the following: Presence will decrease message hits, or the accurate recognition of information contained in the persuasive message. Presence will increase

typical belief false alarms, or inaccurate recognition of commonly held false beliefs about the persuasion topic. Presence will increase message-related false alarms, or inaccurate recognition of information that is factual, but not contained in the persuasive message.

The rationale for the predicted paths is based on the research by Skalski (2004) and message elaboration logic (Slater, 2002). Skalski (2004) suggests that presence is strongly associated with heuristic processing for an attractive message source (but not an unattractive source). This is consistent with our basic belief that positive affect (but not negative affect) draws us into a media environment. Once drawn in, people tend to process heuristically. Our model represents this by showing that positive mood will induce positive perceptions of the message and its source (represented here in perceived credibility) and subsequently experienced presence. Since presence is expected to stimulate heuristic processing of the persuasive message, message recall is expected to vary as a function of these processes.

Whereas systematic processing is understood as the type of careful contemplation and message elaboration that might produce accurate recall of the information contained in a persuasive message, heuristic processing is expected to focus attention on peripheral message cues (Skalski, 2004), resulting in judgments that rely more on previously held knowledge and beliefs than the strength of the argument made. We reason that reliance on such beliefs along with the type of reduced message elaboration suggested by Slater (2002) should lead to recall errors that are consistent with those beliefs. This prediction is consistent with earlier research by Skalski (2004) and is represented in our model as a positive path from presence to typical belief false alarms. Though no prior research informs our predictions for the other two message recall outcomes, similar logic for these paths is based on our understanding of heuristic processing. Attention to heuristic cues

should fail to increase (and may even interfere with) accurate recall of the facts in the message. This is represented in the model as the negative path from presence to message hits and the positive path from presence to message-related false alarms.

Method

Overview

This study employed an experimental research design with a manipulation of humor. The measured variables in this study included positive mood, credibility, reactance, presence, and three types of recognition memory: hits, message-related false alarms, and typical belief false alarms. All variables were measured after participants watched one of two versions of a PSA on alcohol consumption (humorous or non-humorous) created for this research.

Participants.

Participants in the study were 58 students enrolled in an undergraduate media arts course. They were voluntary participants and did not receive credit. The sample was 81.4% male, and had a mean age of 20.8 years (SD=1.89). This sample was appropriate for the study as the heaviest consumption of alcohol on this campus is done by males under 21 years of age.

Procedures

Creation of the message. The PSAs produced for the research project were created to influence college students about the rate of alcohol consumption on campus. A game-show format was used with "Drinking Statistics" as the topic. The host asked three questions relating to normative drinking behaviors for students. In each case, one or two contestants answered incorrectly. For the humorous version of the PSA, sarcastic

chastising comments by the host were the primary source of humor. Each PSA was one minute in length.

Pretest. The two versions of the PSA were first pre-tested to determine if the spots were, in fact, significantly different in the positive mood they created. Before the pre-test, the spot was shown to a test group (N = 59) of communication students. The main feedback from those students indicated that the extremely fast pacing of the spot made it difficult to hear all the dialogue in one viewing. The rapid pace was intentional, as there was a fear the target audience might be sensitized to the spot after one viewing. After a second viewing, the students reported that they understood the dialogue more fully. For this reason, the PSA was shown twice in the pre-test. Presenting a message twice to the target audience is a common method in theater testing (Atkin, 2001). The scale used to measure positive mood is described below. The pre-testing indicated that the two spots were perceived as significantly different in the level of positive mood they created (t (40) = 2.39, p < .03), with the humorous tape (M = 4.48) scoring higher than the non-humorous tape (M = 3.82). In addition, the mean of the humorous tape was significantly above the mean of the mid-point of the positive-mood scale (t (21) = 2.3, p < .04). As a result, the pre-test was deemed successful, and the two tapes formed part of the stimulus materials in the main experiment.

Main Experiment. For the actual experiment, two different groups of respondents were employed. One group viewed the humorous version of the PSA twice, and then a 3-minute piece titled "Demystify Yoga" (also produced by a student). The other group viewed the non-humorous version twice, followed by the same 3-minute Yoga video which served as a distraction stimulus in order to achieve a more realistic memory measure in both conditions. After the 3-minute video both groups were given assessment

scales to measure presence, message credibility, positive mood, reactance, memory for the PSA, and demographic information.

Instrumentation. The measures of positive mood, credibility, and reactance were comprised of seven-point, Likert-type items on a scale ranging from "Very Strongly Disagree" to "Very Strongly Agree" and were scored such that higher scores indicated greater perceptions of the construct being measured (alternate measurement will be discussed in detail where necessary). Given that specific items were specified a priori to measure only one factor, confirmatory factor analysis was employed to test the measurement model (Hunter & Gerbing, 1982). The data were found to be consistent with the proposed factors. Internal consistency tests showed that the errors calculated between items measuring the same construct were within sampling error. Likewise, the parallelism test indicated that the errors calculated between items measuring different constructs also were within sampling error.

To measure presence, a pictorial Self-Assessment Manikin (SAM) scale was used. This measure (explained in more detail below) consisted of a series of five pictures representing a continuum from "low presence" to "high presence." Subjects were asked to circle the picture that best represented how they felt, and responses were scored such that pictures representing greater levels of presence were assigned higher numeric values. Thus, higher numbers represented greater perceptions of presence. Though SAM measures are new to presence research, recent validation work suggests that SAM presence scaling successfully taps some aspect of the construct (Schneider, Lang, Shin, and Bradley, 2004). See Table 1 for all variables means and standard deviations.

Measurement

Positive Mood. Six items were used to measure positive mood and are shown in Appendix A. Alpha reliability of this scale was .91.

Perceived Credibility. Seven items were used to measure perceived credibility and are shown in Appendix B. This scale achieved Alpha reliability of .87.

Reactance. Six items measured reactance. The 6 reactance items were adapted from the modified Hong Reactance Scale (Hong, 1996), and are shown in Appendix C. The reactance scale had an alpha reliability of .82

Presence. A SAM scale, adapted from Lang (1980) and ISPR: Presence Measurement (2000) was used to measure presence. This measure is shown in Appendix D. As illustrated, the scale consists of pictures showing a human figure getting closer and closer to a TV until being completely enveloped by the device. The picture of the figure completely in the device represents "highest level of presence" (scored "5"). Moving away from this endpoint, the remaining four items count downward to "lowest level of presence" (scored "1").

Memory Recognition. In addition to the Likert-type scales, there were 15 items intended to determine memory recognition (Appendix E). The items consisted of three types. Five items were facts presented in the PSA. In addition to items presented in the PSA, there were ten items not presented in the PSA. Five of these items were messages contained in the same campaign but not the PSA, called message-related false alarms, and five items were false assumptions that are typical beliefs about alcohol consumption on campus taken from a survey by the Institute for Social Science Research at Michigan State University (2002). Respondents were asked to identify whether or not these items actually were presented in the PSA. Items correctly identified that did, in fact, appear in the PSA were defined as "hits". Items incorrectly identified that did not appear in the

PSA were defined as "false alarms." Thus, two types of false alarms were possible: message- relevant and typical belief false alarms.

Results

Manipulation Check

The positive-mood scale was analyzed to perform a manipulation check that the two PSAs were significantly different the positive mood they created. In the main experiment, respondents viewing the humorous PSA scored higher on the positive-mood scale (M = 5.02) than those viewing the non-humorous PSA (M = 3.93) (t (55) = 3.4, p < .001). Thus, participants did perceive the two PSAs to be significantly different in terms of the positive mood they created.

Evaluation of Hypothesized Model

Path analysis was performed on the hypothesized model using the least squares method. This involves estimating the sizes of the model parameters and testing the overall model fit. Parameter size was estimated by regressing each endogenous variable onto its causal antecedent, and model fit was tested by comparing estimated parameter sizes to the reproduced correlations (see Hunter & Gerbing, 1982, for a complete description of this analysis procedure). In short, a model that is consistent with the data is one which (a) has substantial path coefficients, (b) has differences between parameter estimates and reproduced correlations (errors) that are no greater than what would be expected through sampling error, and (c) passes tests of overall model fit. Goodness of fit was initially indicated by a non-significant chi-square result. In addition, to address problems often apparent with sample sizes below 250, both the standardized root mean squared residual (SRMR) and Comparative Fit Index (CFI) were reported (Holbert &

Stephenson, 2002). SRMR values close to .08 and CFI values above .90 (Hu & Bentler, 1999) are considered representative of a well-fitting model. Since the impetus behind this research was to examine the effects of persuasion variables and presence on message recall, the first thing looked for in each model were substantial paths from positive mood to recognition memory. A model without a continuous path from positive mood to recognition memory is incapable of showing support for the logic underlying this study. The second two tests were performed only where evidence of an uninterrupted path was observed.

The results for the hypothesized model are shown in Figure 2, and the correlations used to test the model are shown in Table 1. The model shows that, while most observations were consistent with expectations, the predicted model did not meet the three criteria established to determine if the model was consistent with the data. Though it passed the test of overall model fit and had mostly significant path coefficients, the chain of significant links needed for the model to be supported was broken at the paths from perceived credibility to presence (path coeffiecint = .27, n.s.) and reactance to presence (path coefficient = -.11, n.s.), both of which were non-significant. Therefore, this model was rejected.

Although the hypothesized model failed to produce the type of evidence needed to conclude that the data provide a good overall fit, the outcomes observed show patterns in line with the underlying logic for the model. In this regard, we are hesitant to dismiss the hypothesized model as completely uninformative. Keeping in mind the problems endemic in the use of path analysis for testing non-hypothesized models, post-hoc analyses were conducted to test a revised model with a single change, the removal of the path from reactance to presence. This change was made because of the relative weakness

of this path compared to the other paths up to that point in the causal chain as well as the already established substantial relationship between reactance and perceived credibility (path coefficient = -.41). Furthermore, this new model was deemed to be consistent with the original study logic, since it would still include an indirect link from reactance to presence mediated by perceived credibility.

The slight change of removing the path from reactance to presence resulted in a much stronger overall model, as shown in Figure 3. The initiating path from humor to positive mood was significant, path coefficient = .44, P (.20 < ρ < .68) = .95, showing further support for a successful manipulation. Positive mood had a positive effect on perceived credibility (path coefficient = .55, P (.31 < ρ < .79) = .95 and a negative effect on reactance (path coefficient = -.46, P (-.72 < ρ < -.20) = .95), both as expected. Reactance related negatively to perceived credibility, with a path coefficient = -.40, P (-.68 < ρ < -.12) = .95, and perceived credibility had a positive effect on presence, with a path coefficient of .34, P (.08 < ρ < .60) = .95, again as expected. Though presence did not relate significantly to all three types of recognition memory measures, it had a significant, positive effect on typical belief false alarms, path coefficient = .30, P (.06 < ρ < .54) = .95. Thus, a significant, unbroken chain was established from the humor manipulation to message recall, consistent with the rationale for this study.

Furthermore, this model fared well on the second and third model evaluation tests. The differences between predicted and obtained correlations for all unconstrained bivariate relationships were examined, and none was significantly different than what would be expected through sampling error. Furthermore, this model passed the chi-square global test of goodness of fit, χ^2 (20) = 11.94, p = .918 and had values on the additional tests consistent with a well-fitting model. . The SRMR test was close to the recommended

.08, SRMR = .11, and the CFI was above .90, CFI = .94, both suggesting acceptable model fit. Thus, analysis of this model shows several substantial path coefficients, no significant errors, and passed global goodness of fit tests.

Discussion

This study set out to examine the effect of humor-induced presence on the recall of persuasive messages, and the processes leading to this outcome. In contrast to rudimentary conceptions of presence based on the simple notion that an increased sense of involvement with a message environment would unilaterally advance all aspects of information processing related to increased persuasive result, our study advanced a model based on the premise that presence effects will vary according to the message features and outcomes considered. The findings of our study on humor and the recall of message content was consistent with predictions that humor-induced presence can interfere with the accurate recall of information. In showing this, we hope to focus the attention of persuasion and presence researchers on the capacity of presence to impede recall, and the potential for this to hinder persuasive results. We discuss our findings both in terms of their implications for current understandings of the relationship between humor, presence, and persuasive message processing, as well as their implications for users of future presence-inducing technologies.

Humor-Induced Presence and Persuasive Recall

The implications of this study's findings can be understood on several levels. At the most basic level, the findings support a proposed model suggesting that humor affects reactance and perceived credibility in a manner that stimulates feelings of presence and alters the subsequent recall of persuasive messages. For the most part, the model was

supported and the findings were consistent with the study logic. In line with expectations, the use of humor in a PSA increased positive mood. Positive mood predicted diminished psychological reactance. It also predicted increased perceived credibility, both directly and indirectly through the negative influence of reactance on credibility. Subsequent to this, perceived credibility predicted heightened presence. And though reactance did not affect presence directly, as was expected, it did affect presence indirectly through its negative relationship with perceived credibility. Finally, presence increased one important type of recognition memory error, typical belief false alarms.

Support for our model is valuable for several reasons. First, it demonstrates the potential for humor in persuasive media messages to minimize psychological reactance, heighten perceived credibility, and promote feelings of presence associated with the message environment. These findings add to the growing literature on the antecedents of presence, and show the potential for presence to be stimulated by humor and its correlates. Notably, our study's indication that message factors can influence presence touches upon neglected areas of presence research, which has focused mostly on how presence is shaped by features of technology, such as vividness and interactivity. Our study suggests that contextual features which sway credibility and provoke psychological reactance, such as humor, can intercede in technology's ability to stimulate feelings of presence. When individuals feel positive mood in response to humor, psychological processes mitigating the experience of presence are minimized, allowing feelings of presence to increase.

In addition to this study's value in uncovering antecedents of presence, it also informs us about outcomes of presence, indicating that humor-induced presence can alter the recall of persuasive messages in predicable manners. Perhaps unexpectedly to some,

our findings suggest that presence did little to further the accurate recall of persuasive

arguments. Instead, presence was found to increase only typical belief false alarms, a

result of considerable concern to message producers by itself. Moreover, we should not

disregard completely the patterns observed for the other recall variables. Both were

consistent with the model's predictions that humor-induced presence would minimize the

systematic processing of message content and increase recall errors.[ii]

At a different level, the implications of this study can be considered in terms of

the logic underlying the model's predictions and a very practical question: Does presence

increase or decrease the effectiveness of persuasive messages? At the heart of this

discussion are issues concerning whether presence generally (and humor-induced

presence in particular) increases or decreases message elaboration. Slater's (2002) claim

that engaging media are incompatible with counter-arguing and message elaboration

conforms to beliefs that presence decreases message elaboration. Skalski's (2004)

observation that presence is positively associated with heuristic processing (for an

attractive source) also substantiates this notion. Although the present study does not

measure message elaboration directly, the findings are consistent with this view.

If presence does in fact decrease elaboration, the implications of this for the effect

of persuasive messages are substantial. Consider, for example, what this means for the

influence of strong and weak messages. If presence promotes message elaboration we

would expect persuasive outcomes to benefit from argument strength. By contrast, if

presence reduces message elaboration, argument strength should have little influence on

persuasive outcomes. Instead, greater influence should come from other attributes of the

message, receiver or the environment. Simple heuristics and prior beliefs should take on

greater import. Petty, Priester and Brinol (2002) assert that in situations where

elaboration is minimal, a variety of heuristic cues can influence attitude change without issue-relevant thinking. These heuristics include attributes of source credibility such as likeability and expertise, the consensus of others, and the mere number of arguments or length of a message. The influence of these heuristics is considered particularly important when people are unmotivated or unable to elaborate.

In this regard, we should note that the inaccurate recall of relevant false alarm and typical false alarms messages in our study does not mean that the intended persuasive influence of related information was necessarily mitigated. For example, although it is possible that typical belief false alarms might signify counter arguing with claims in the PSA (since they show overestimates of student alcohol consumption patterns in contrast with message claims), conceivably, these inaccuracies could denote recall distortions in line with the persuasive intent of the message. For example, if the facts erroneously recalled by the respondent are understood as consistent with the position set forth in the message, then an increase in typical belief false alarms might indicate greater acceptance of the advocated position. The message in our study tried to reduce drinking by conveying the fact that normative alcohol consumption rates were lower than what most respondents might think. Even if it was erroneous, participants' recall that the typical belief false alarms were contained in the message might not represent misinterpretation of the message's intent to reduce drinking. Instead, it might indicate inaccurate memory of how the message tried to reduce drinking, such as erroneously recalling the message claiming that too many students drink too much, too often, and too fast, often at tailgates, and they don't keep track of how much they drink while they do. All of these inaccuracies should work in favor of the message's persuasive intent, especially in the type of situation found here where reactance is low and credibility is high.

Though not directly addressed by these data, an argument can be made that the type of heuristic processing expected to accompany humor-induced presence is superior to alternative forms of systematic processing and message elaboration in its ability to produce attitude change, perhaps even under circumstances where recall accuracy is inhibited. Moreover, the superiority of this humor-induced processing should be found with the most challenging members of an audience, those who disagree with the message. Support for this argument can be derived from Slater's (2002) comparison of statistical and anecdotal evidence. Slater contends that statistical evidence is superior to anecdotal evidence for reinforcing the beliefs of those already inclined to believe a message; however, among those who disagree with the message, statistical evidence is used to generate counterarguments that can impede attitude change. In our case, statistical evidence is comparable to information whose influence is achieved through systematic processing and careful elaboration, whereas the effect of anecdotal evidence is attained through heuristic cues such as source credibility. As such, among those who disagree with the message, the heuristic processing expected with a humorous message should reduce psychological reactance and the elaboration of counterarguments. Though systematic attention and the accurate recall of persuasive message facts (such as those in this study) would be mitigated by humor and positive mood, any loss in persuasive effect resulting from reduced message recall should be matched, and perhaps superceded in persuasive effect, by the corresponding reduction in generated counterarguments.

If our speculation is true, we need to pay closer attention to how cognitive processes related to humor-induced presence can influence persuasion, and how these processes can be used to achieve persuasive goals. Burgoon et al. (2002) maintain that

psychological reactance theory is a valuable tool for understanding how source and message variables shape persuasive outcomes, and call for additional research to explain how the processes work and where they are most influential. Our study shows that reactance may play a key role in presence and message recall. It suggests the potential benefits of heuristic cues in messages designed to create humor-induced presence, and raises questions about the potential value of systematic message processing in an entertainment context.

Certainly, we do not argue that systematic processing works toward the detriment of persuasive effect under all circumstances. This would fly in the face of conventional wisdom and existing evidence, particularly evidence showing persuasive outcomes from strong arguments (Todorov, Chaiken, & Henderson, 2002). Instead, we suggest that benefits from systematic processing might typically be absent in message environments like those often found in media entertainment, and we question if presence can somehow restore these persuasive benefits in these environments. Slater (2002) suggests that engaging narrative (i.e., presence-inducing message content) can promote the systematic processing of message content without eliciting counterarguments when persuasive messages are seamlessly incorporated into narrative. According to this reasoning, counterarguing is inhibited when compelling storylines produce identification with characters, resulting in greater persuasive effect. Though no research on this topic exists to our knowledge, future efforts might determine this potential.

Implications for Future Research on Presence

This paper extends our understanding of the concept of presence by building on the burgeoning body of literature suggesting that presence may have positive effects on persuasive outcomes (Skalski & Tamborini, 2004; Grigorovici, 2003; Li, Daugherty, &

Biocca, 2002; Klein, 2001; Kim & Biocca, 1997). In particular, it answers Lombard and Ditton's (1997) call for research on media content and user characteristics facilitating presence, and points toward a more important role for presence in future persuasive media environments.

The effect of presence on persuasion should intensify in response to more vivid and interactive media forms. Recent research suggests that increases in media vividness (Skalski & Tamborini, 2004) and interactivity (Skalski, 2004) relate positively to attitude, intention, and other outcomes of persuasive message exposure. Media vividness, or the extent to which a medium envelops the senses (Steuer, 1995), can be increased through large screen sizes, high resolution imagery (as through HDTV), and surround sound. These and other presence-inducing formal features are becoming more common in the new media age. Similarly, the Internet, cell phones, video games, and other interactive technologies are making interacting with an environment or source the norm for many popular types of media experiences. Future research on how these types of interactive technologies are associated with message features such as humor and user characteristics such as reactance and credibility will help us better understand the potential for presence and persuasion in the 21st century. The capacity for presence to affect a multitude of media exposure outcomes is only beginning to be explored, and additional research on presence is vital to our understanding of new media technologies and the individuals who use them.

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Appendix A: Positive Mood Scale Items

Items on the positive mood scale included: I thought that the PSA was amusing. The messages in the PSA made me chuckle. I found myself smiling while watching the PSA. I did not think the PSA was humorous (reflected item). I felt that this PSA was entertaining. I was not amused by the messages in this PSA (reflected item).

Appendix B: Message Credibility Scale Items

Items on the credibility scale included: I felt that the message presented in the PSA was appropriate. I felt that the information presented in the PSA was effective. I felt that the message sender in the PSA was knowledgeable. I felt that the information presented in the PSA was thorough. I felt that the message sender in the PSA was credible. I felt that the message sender in the PSA was reliable. I felt that the characters in the PSA were dressed appropriately.

Appendix C: Reactance Scale Items

I felt resistance toward the PSA because it was designed to influence me. I was frustrated that the PSA suggested that I am unable to make free and independent choices. It made me angry that the PSA used students as characters to influence my behavior. I considered the advice from the PSA to be an intrusion. It irritated me when the PSA pointed things out that are obvious to me. Advice and recommendations from this PSA will induce me to do just the opposite.

Appendix D: Self-Assessment Manikin (SAM) Presence Scale
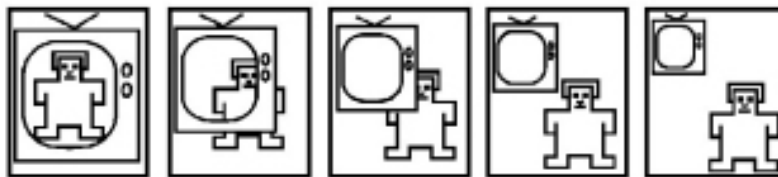
Appendix E: Recognition Memory Items.

Items that could serve as hits included: 2/3rds of MSU students drink moderately or not at all. Most MSU students drink 1 time per week or less. 6 out of 10 MSU students have 5 or fewer drinks when they party. 5 or fewer drinks is considered moderate drinking. 80% of MSU students drink moderately or not at all on football Saturdays.

Items that could serve as message relevant false alarms included: 9 out of 10 MSU students eat before drinking. 2/3rds of MSU students make plans with someone to watch out for them when partying. 80% of MSU students say they would help a friend who has been drinking too much. 2/3rds of MSU students track how many drinks they have when partying. Most MSU students think their peers drink more than they actually do.

Items that could serve as typical belief false alarms included: Less than half of MSU students track the number of drinks they consume. 9 out of 10 MSU students drink alcohol at tailgates. Half or more MSU students drink more than 5 drinks in one evening. Half or more of MSU students drink more than once a week. One third or more of MSU students drink more than one drink per hour.

Table 1

Correlations between, Means, Standard Deviations, and Range of Study Variables

|	1	2	3	4	5	6	7
1. Presence	--						
2. Positive Mood	.13	--					
3. Perceived Message Credibility	.32*	.65*	--				
4. Message Reactance	-.26*	-.40*	-.55*	--			
5. Recognition Memory Hits	-.20	.11	.00	-.06	--		
6. Typical Belief False Alarms	.30*	-.16	.02	-.01	-.21	--	
7. Message Relevant False Alarms	.16	.10	.12	-.04	-.13	.38*	--
M	2.95	4.49	4.28	3.15	.88	.10	.14
SD	1.01	1.32	1.07	1.02	.21	.18	.13
Range	1-5	1-7	1-7	1-7	0-1	0-1	0-1

* Significant at $p < .05$

Figure 1: Model of Hypothesized Relationships
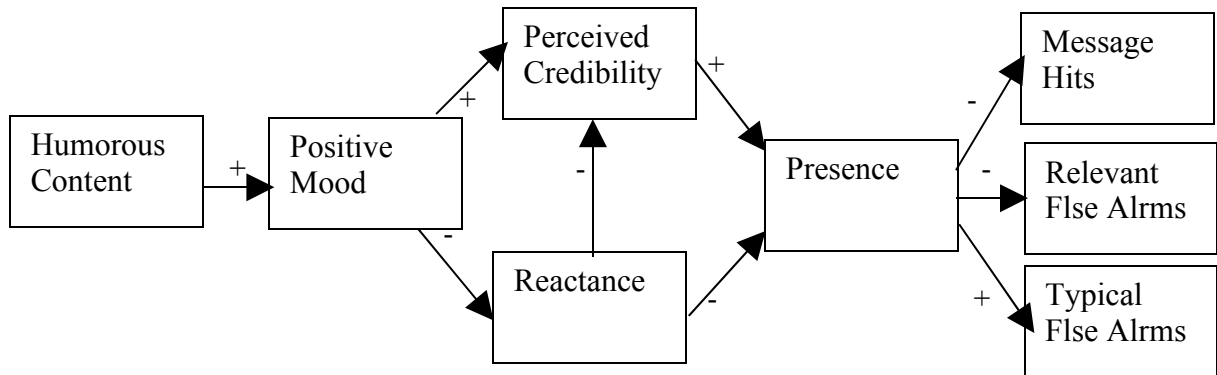
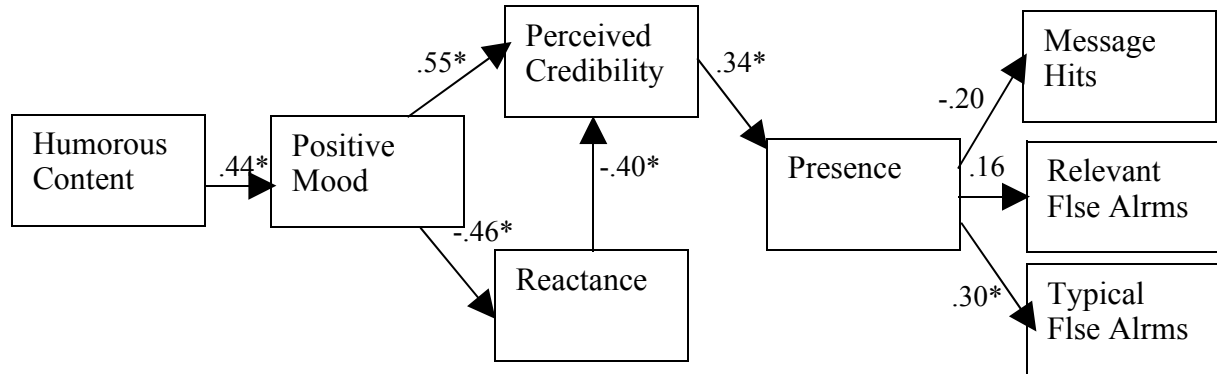Path signs show model predictions.

Figure 2: Results for Original Hypothesized Model

* = *p* < .05
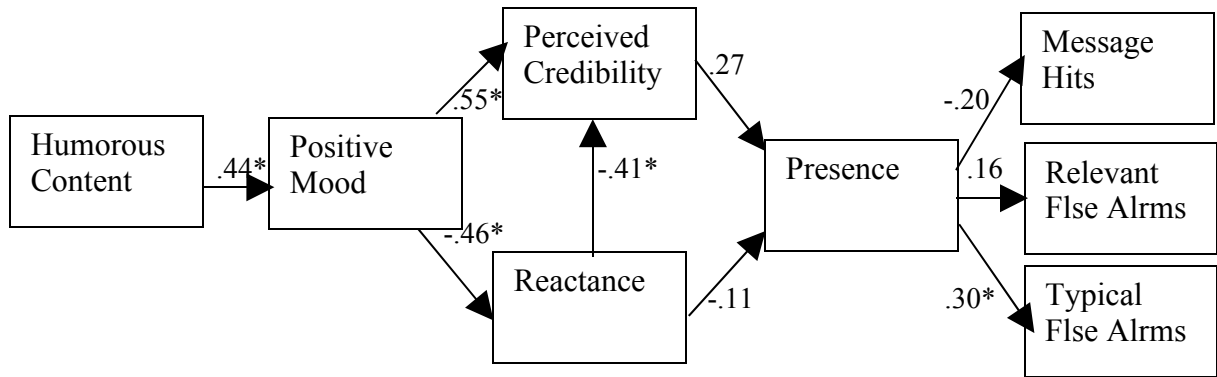
χ^2 (19) = 11.94, p = .888

Figure 3: Results for Revised Model

* = $p < .05$
χ^2 (20) = 11.94, p = .918

Endnotes

[i] Note: Slater (2002) also says that the traditional persuasive benefits of source credibility become irrelevant when entertainment strengthens audience identification with media characters. However, the type of traditional benefits from source credibility alluded to by Slater are more consistent with benefits derived from the type of systematic consideration of message attributes characterized by central-route processing, and not the type of heuristic benefit characteristic of peripheral-route processing we are discussing here.

[ii] Although the paths to message hits and message relevant false alarms failed to reach significance, it is worth noting that message hits for the sample as a whole was high (88%). Of course, this might indicate that presence did little to interfere with recall in this regard. Conversely, it is possible that our measure of presence's influence suffered from a ceiling effect. In this regard, the influence of humor-induced presence might have been limited in this study by the fact that only moderate levels of presence ($M = 2.95$, $SD = 1.01$ on a 1 to 5 scale) and positive mood ($M = 4.49$, $SD = 1.32$ on a 1 to 7 scale) were experienced by our participants. A stronger influence might be expected when presence-inducing experiences are greater.