A Meta Analytic Review of Effects of Involvement with Entertainment Media

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Abstract

Various theoretical perspectives hypothesize that different types of audience involvement facilitate media effects. However, few empirical studies have directly compared the relative predictive power of these, supposedly distinct, modes of involvement. To this end, a meta-analysis of 36 studies involving 8404 participants compared the effects of four principal types of media-involvement: (1) perceived similarity; (2) perspective-taking; (3) parasocial interactions; and (4) transportation. The findings of the meta-analysis suggest that media involvement is a better predictor of media effects than media exposure, per-se. Furthermore, controlling for various possible confounding variables, transportation and perspective taking were found to have the greatest effect, whereas parasocial interactions have the smallest effect. These findings have implications for both media effects research and for theories of media involvement.
A Meta Analytic Review of the Effects of Involvement with Entertainment Media

Popular forms of entertainment including, novels, movies, soap operas and television sitcoms can potentially impact audience’s beliefs, self-perceptions, attitudes and behaviors (cf., Moyer-Gusé, 2008). These consequences have led social activists and scholars to raise concerns regarding the potentially negative effects of mainstream media in domains such as violence (Bushman & Anderson, 2001) and risky sexual behavior (Wright, Donnerstein, & Malamuth, forthcoming).

With growing awareness of these possible media effects, media producers and communication researchers have collaboratively developed education-entertainment messages specifically designed to promote health behaviors and to reinforce pro-social attitudes. For instance, radio soap opera programs aired in South Africa, India and South America enhanced awareness of HIV/AIDS, encouraged adult education, promoted family planning practices and delegitimized domestic violence (Papa, et al., 2000; Singhal & Rogers, 1999). In the U.S., non-profit organizations such as Hollywood, Health & Society (http://www.learcenter.org/html/projects/?cm=hhhs) have advised media professionals how to responsibly portray health related issues embedded in the storylines of popular television shows, and have even given out awards to recognize television entertainment programs that promote educational health messages.

To explain the power of entertainment media, theories, such as social cognitive theory (SCT; Bandura, 2001) and theories of narrative persuasion (Moyer-Gusé, 2008; Slater & Rouner, 2002) have suggested that the effects of exposure to media entertainment on audience’s attitudes and behaviors are mediated by audience’s involvement with both the narrative and the protagonists. Despite this shared assertion, these theories diverge in their views of the specific modes of
involvement that serve as the primary vehicle of media effects. Ample studies generated by these theories have examined the effects of different types of involvement with entertainment messages in a wide range of contexts. The current meta-analysis synthesizes the mounting body of research on the effects of entertainment media by organizing the existing knowledge base from the last two decades. This synthesis evaluates the theoretical advances of media involvement and offers conclusions that extend beyond the scope of each individual study.

**Aim 1: Revealing involvement’s effects across contexts.** Studies examining media involvement differ widely in their choice of samples, operational definitions of involvement variables and use of disparate media stimuli. Adding to this diversity, dependent variables have included beliefs, attitudes, behavioral intentions and actual behaviors, encompassing domains that range from eating disorders to support for policies to stereotyping. Thus, the current meta-analysis aims to estimate the mean size of the relations between involvement with entertainment media and the effects of exposure on particular attitudes, knowledge gain and behavioral intentions, and to compare these relations to the effects of exposure.

**Aim 2: Crystallizing theoretical constructs.** Despite attempts to add clarity to the field of media involvement (e.g., Cohen, 2001; Giles, 2002; Moyer-Gusé, 2008) this area of research continues to suffer from the “jingle-jangle fallacy,” which, unfortunately, has been a long standing malady in many social and psychological sciences (Kelley, 1927). The “jingle fallacy” represents usage of the same term to refer to several, distinct, psychological processes. For instance, the label “identification” is commonly applied to both empathy and perceived similarity. Conversely, “jangle fallacy” describes the use of different terms to represent the same theoretical construct. For example, “identification” and “homophily” are both used by scholars to refer to the concept of perceived similarity.
The prevalence of such terminological imprecision is not surprising given the fact that media involvement has been studied across multiple disciplines that build on different research traditions and employ unique terminologies. However, the “jingle-jangle fallacy” makes it extremely difficult to develop a coherent taxonomy of modes of involvement and to specify the mechanisms by which each of these involvement processes contributes to the generation of media effects. Differences in terminology may further create a false appearance of inconsistencies in the literature, or, on the contrary, mask the existence of contradictions in the existing research thereby reducing the ability of research consumers to draw valid conclusion across studies. The current meta-analysis empirically builds on past theoretical efforts (e.g., Cohen, 2001; Moyer-Guse, 2009) to crystallize the scope and effectiveness of different, albeit related, theoretical constructs. To this end, the meta-analysis reveals the average relationship between each mode of involvement and media exposure outcomes.

Comparisons between different types of involvement provide an opportunity to test the predictive power of different theories that capitalize on some types of involvement more than on others. Most studies are rooted in a single theoretical paradigm and incorporate only a few of these involvement variables in their investigation. Thus, such studies cannot provide a direct comparison between the predictions made by the different theories. A meta-analysis overcomes this limitation and promises to advance our theoretical understanding of the operating mechanisms that drive media effects.

**Modes of Involvement and Effects of Entertainment Media**

Given the inconsistency in the use of terminology in the field of media involvement, it is crucial to provide a concrete conceptualization of the various modes of entertainment involvement and their hypothesized role in media effects.
**Perceived similarity.** Perception of similarity between oneself and another person, in the case of media – between the media consumer and a character or a media figure – is termed homophily (Eyal & Rubin, 2003). Importantly, this concept does not refer to the extent to which a person possess shared characteristics with the media character but rather homophily is concerned with the person’s subjective experience of oneself and the character.

Perceived similarity can be conceptualized as resemblance on a specific dimension, such as a single trait that the individual possesses (e.g., aggression). Alternatively, homophily can be conceptualized in a broader sense, as perceived similarity across multiple domains (e.g., overall personality). Another concept closely related to homophily is termed “wishful identification.” This concept refers to perceived similarity between the qualities represented by the character and the viewer’s ideal (rather than actual) self-concept (Cohen, 2001). In other words, wishful identification emphasizes the similarity between the character and the message recipient’s aspirations and desires rather than the extent to which the character resembles the message recipient’s present state.

Social cognitive theory (SCT; Bandura, 2001) asserts that homophily catalyzes media effects in three distinct ways. First, perceived similarity between the observer and the model is hypothesized to make the message more relevant to the viewer and, thus, increase the observer’s attention to the message. Indeed, studies have shown that television viewers selectively attend to programs that feature characters with whom they share demographic characteristics (cf., Stroman, 1984). It is logical to assume that subjective perception of similarity (and not solely objective resemblance) facilitates attention in a similar manner. Subsequently, by fostering attention to the message, homophily promotes learning from the model (Bandura, 2001).

Second, following the logic of SCT, perceived similarity increases the likelihood that the
observer will apply the learned knowledge and reenact the observed behaviors. This process occurs due to modification of one’s sense of self-efficacy. Finally, perceived similarity is an important component of interpersonal attraction and serves as foundation for more profound relationships (cf. Fehr, 2000). Accordingly, perceived similarity can function as the first link in a cascade of psychological processes, giving rise to deeper emotional involvement with the character (Eyal & Rubin, 2003). These more profound modes of involvement, in turn, further elicit media effects. Thus, it can be suggested that homophily has both direct and indirect effects on learning and attitude change.

**Empathy / perspective taking.** In a process that has been labeled as “identification” by some media scholars (Cohen, 2001; 2006; Giles, 2002), individuals temporarily suspend their self-concept and metaphorically step into the character’s shoes. Thereby, message recipients “become the character” and adopt the character’s point of view (Cohen, 2006). This experience involves both cognitive and affective processes (e.g., favoring the character’s position and sharing the character’s feelings).

From a SCT perspective, empathy/perspective taking is theorized to be a motivational factor that enhances attention and message persuasiveness (Slater & Rouner, 2002). However, this mode of involvement is hypothesized to be a much more powerful experience than homophily because in empathy/perspective taking the audience members vicariously experience the events that happen to the character. As a result, message recipients cognitively rehearse the learned information and integrate it in their own self-concept, making the learned behavior more likely to be reenacted in the future.

Finally, as can be derived from the elaboration likelihood model of persuasion (ELM; Petty & Cacioppo, 1986), empathy/perspective taking is hypothesized to reduce counter-arguing with
the message, since, by definition, in this process audience members accept the character’s position and experience the narrative from that standpoint. In other words, not only does perspective-taking facilitate learning but it also reduces audience’s ability to resist persuasion, thereby enhancing media effects.

**Parasocial relationships (PSR) and parsocial interactions (PSI).** While in the process of empathy/perspective taking audience members “become” the character, in PSI viewers interact with the character as with another individual and form pseudo-relationships with him or her (Cohen, 2001; Gilles, 2002). Such PSR appear to be largely based on the same relational mental models that organize and manage real-life interpersonal relationships (Tukachinsky, 2010).

Consequently, it has been hypothesized that PSR can lead to media effects in ways similar to interpersonal influences occurring in real-life. First, in the context of persuasion, liking of and attraction to the source of the message can facilitate persuasion (Tedeschi, Schlenker & Lindskold, 1972/2008). Thus, it was hypothesized that PSR with media characters will reduce audience’s reactance to the message, leading to greater persuasive effects (Moyer-Guse, 2008). In line with this hypothesis, studies have shown that PSI with media figures enhance source credibility and compliance (Rubin & Step, 2000).

A second, unique way in which PSR can influence viewers is by reducing stereotypes towards out-group members. According to the contact hypothesis, inter-group stereotypes could be reduced by having direct, positive relationship with a typical out-group member (Pettigrew, 1998). It is suggested that since PSR resemble interpersonal relationships, exposure to and involvement with out-group media figures can constitute a sufficient intergroup contact that will lead to improvement of out-group perceptions (Schiappa, Gregg, & Hewes, 2005).

**Transportation.** Stories allow individuals to accomplish an imaginary journey in which
they forget about the actual world and become engrossed in the world depicted in the narrative (Green & Brock, 2002). In this process, the recipients of the message generate mental imagery and become absorbed in the narrative. This concept is closely related to the notion of presence, wherein media consumers naturally perceive the media-based world, forgetting about its mediated status (Lee, 2004; Steuer, 1992).

Transportation makes both direct and indirect contributions to persuasion. First, although it is possible for character involvement to enhance transportation, transportation can also serve as the means for character identification, allowing viewers to develop empathic concern towards the protagonist (Cohen, 2006). In such a case, transportation can lead to media effects by allowing viewers to take on the character’s perspective, vicariously rehearse the message and increase attention to character-related information.

Second, transportation in and of itself can contribute to persuasion. When engrossed in the narrative, message recipients temporarily forget their real life knowledge and compromise their ability to counter-argue with the message. Several studies have supported this assertion, showing that highly transported individuals cannot effectively detect flaws embedded in the story (e.g., Green & Brock, 2000). Third, transportation involves creation of vivid mental imagery that, in terms of theories of dual processes of persuasion (e.g., ELM), constitutes pro-message biased elaboration that promotes persuasion (Rouner & Slater, 2002). Finally, mental imagery can enhance emotional responses to the message. Persuasion studies have demonstrated that vividness and emotions can, in turn, facilitate retention of information and magnify persuasion effects (Taylor & Thompson, 1982).

Taken together, there is considerable overlap between the various modes of involvement and the mechanisms through which they are theorized to impact the audience. The present study
explores the role of these modes of involvement in entertainment media effects. First, the overall effect of involvement with and exposure to entertainment media are estimated. While different theories emphasize different types of involvement, it is generally agreed upon that it is not media exposure per-se, but more complex forms of involvement with the message that lead to media effects. Thus, it is hypothesized that:

H1: In examining the relations between media consumption, involvement and outcomes, the mean effect size of media involvement will be greater than the mean effect size of media exposure.

This effect can be even more dramatic when the outcome variables concern attitudinal or behavioral change rather than mere knowledge gain. It is plausible that factual learning can be accomplished with relatively little involvement, whereas changes in attitudes or in behavioral intentions require incorporation of this knowledge into a more rigid and resistant to change structure. Involvement with media content may constitute a more effective vehicle for producing these effects. Hence, it is hypothesized that:

H2a: Media exposure will have a greater effect on knowledge-related outcomes than on attitudinal or behavioral outcomes.

H2b: Media involvement will have a greater effect on attitudinal, behavioral and knowledge-related outcomes.

Finally, it is possible to distinguish between different forms of involvement. For example, similarity is conceptualized as a precursor of media effects to the extent that it fortifies more meaningful types of involvement. Conceptually, it is possible to regard the various modes of involvement along a continuum. On the one end of the continuum one can place perceived similarity – a relatively superficial type of media involvement in which a person subjectively
experiences the character as resembling oneself. A slightly deeper level relating to the characters is PSR, engaging in imaginary interactions or friendship with the media personae. Both of these types of involvement can increase attention to and liking of the message, thereby producing media effects.

However, viewers can become even further involved with the message through empathy and transportation. These states are conceptualized as all-consuming, since viewers temporarily suspend their real life knowledge and self perceptions and accept the reality presented by the character and the storyline. As a result, audience’s ability to resist the message becomes compromised, and they are more likely to accept the message. It is, therefore, reasonable to suggest that the more intense modes of involvement will result in larger effects than the more superficial modes of involvement:

H3: The mean effect size of transportation and identification will be greater than the mean effect size of PSR and similarity.

**Media Involvement Effects across Contexts**

It is also important to examine the extent to which the effects vary across different contexts such as audience characteristics, types of messages, media modality and the research design.

**Audience-level differences.** Persuasion and learning theories do not consider individual differences among audience members in the effects of involvement with entertainment media. In fact, theories of education entertainment were developed using data from college students in the U.S., Canada, and Western Europe whereas many education entertainment interventions are implemented in other cultures (e.g., Papa et al., 2000). There is a presumption that the effect of involvement is a universal psychological process applicable to a wide range of audience members. Although audience members may become involved with different media content based
on factors such as relevancy (Cohen & Ribak, 2003), once members become involved with media, they are hypothesized to experience increased attention, reduced counterarguing, and cognitive association between the content and one’s self concept. Accordingly, theory does not predict differences between disparate social groups in the effects of involvement on outcomes.

**Types of exposures.** The type of exposure (i.e., single exposure versus long-term exposure) may influence the relationship between media involvement and outcomes, but it is not certain which type of exposure produces more pronounced effects. Experimental studies examining the effects of a single media exposure in a controlled laboratory setting have the potential to improve internal validity and eliminate extraneous variables. From a SCT perspective, repeated exposure to messages and long-term involvement with characters promote modeling effects more than single-media exposure. These studies, however, employ survey and quasi-experimental designs more susceptible to external factors, which can attenuate the correlation between involvement and outcomes.

**Types of Stimuli.** There has been some controversy about the relative effectiveness of written narratives versus audiovisual stimuli, such as television and film (Green & Brock, 2002). Some argue that written narratives are more engaging because reading is a self-paced activity requiring greater attention and imagination. The result of the greater attention and imagination dedicated to reading written narratives may lead to greater outcomes from involvement. Conversely, others maintain that audiovisual media provide audiences with greater sensory stimulation, which, in turn, eases mental simulation and enhances media effects. Further, few theories discuss the effectiveness of entertainment messages in different content areas (e.g., health topics, political and social issues), which may influence the relationship between...
involvement and outcomes. In the absence of sound theoretical rationale for a directional hypothesis, a research question is posed:

**RQ1:** To what extent do audience characteristics (students vs. non-students), exposure types (single exposure vs. repeated exposure), the stimuli used (written vs. audiovisual), and content areas (health vs. social/political), moderate the relationship between involvement and outcomes?

**Method**

**Selection of Studies**

**Literature search.** Studies included in the meta-analysis were obtained through two main sources. First, an extensive search of the relevant datasets (Medline, PsycLIT/PsychAbstracts, Social Sciences Index, Communication and Mass Media Abstracts and ProQuest) was conducted. This search encompassed journal publications, doctoral dissertations and master’s theses in a wide range of disciplines as well as conference papers in communication. The search was performed using the following search terms: education entertainment, edutainment, and combinations of the terms: absorption, affinity, attraction, empathy, engagement, homophily, involvement, identification, modeling, narrative, transportation, parasocial relation*, parasocial interact*, perceived similarity, perspective taking, each combined with the terms attitude, character, entertainment, media effect*, and persuasion. Additionally, review articles (e.g., Moyer-Guse, 2009), book chapters (Cohen, 2006) and introduction section of relevant empirical studies and were examined to identify additional references.

**Inclusion criteria.** To be included in the meta-analysis, a study had to meet all of the following criteria: it had to report a (1) quantitative relationship between (2) homophily, transportation, PSR or perspective taking with at least one (3) behavioral, intentional, attitudinal,
or knowledge-gain outcome variable. The media stimulus used in the study had to be (4) an entertainment media outlet (i.e., not media campaigns or video games).

On the basis of these criteria, studies on the effects of campaigns and commercials or studies that only examined effects of exposure to a message but did not measure involvement were not included in the meta-analysis. Seven studies were excluded since they did not employ quantitative measures of involvement and outcomes but instead used in-depth interviews or a qualitative analysis of audience’s letters (e.g., Papa et al., 2000). Eight studies were eliminated because their measures of involvement or outcomes did not correspond with the variables of interest. For instance, some studies did not assess specific involvement modes but rather used a composite measure of affinity with the program that included perceived realism, enjoyment and liking of the television show (e.g., Elkamel, 1998).

Studies assessing self-proclaimed media effects rather than a correlation between the outcome with media exposure and involvement were eliminated from the sample (e.g., Farr et al., 2005). Finally, three studies were excluded because they examined PSR with media personae (e.g., a baseball player [Brown, Basil & Bocarnea, 2003]) with whom individuals could form relationships not only through entertainment media programming but also through commercial campaigns and news.

As a result of these inclusion and exclusions criteria, 33 publications that reported findings from studies on 43 independent samples were initially considered for the meta-analysis. However, 18 studies did not report information in ways that allow computation of compatible effect sizes (e.g., some studies reported multiple regression coefficients, controlling for various background variables). In all of these instances, the first authors were emailed with a request to provide the missing information. The authors of two thirds of the studies kindly provided
correlation matrixes for the meta-analyses. In two instances, information that was missing in the journal publication was obtained from a dissertation and from a conference paper as these sources more fully reported the data needed for the meta-analysis. As a result, 26 of the originally identified research reports, comprising 36 studies, were included in the meta-analysis. Together, these studies report the effects of media involvement in 8404 participants. Table 1 presents the summary of the characteristics of the coded studies.

**Coding of Studies**

The studies were coded for two general classes of variables: the relationship between media exposure and outcomes and the relationship between media involvement and outcomes. Each study could be coded for multiple outcomes and involvement effects, and these correlations were later collapsed across outcome or modes of involvement to create different contrasts. For instance, a study that reported effects of transportation and empathy on attitudes and behavioral intentions would be coded four times. However, to compare the effects of different modes of involvement, the relations between each involvement measure and all the outcomes within the same study were pooled creating an average effect size of each involvement type and overall outcomes. These effect sizes were then compared to each other.

To explore the effects of involvement on different outcome variables, the effects of involvement variables on each type of outcome (attitudes versus behavioral intentions) were aggregated across measures of perceived similarity, PSR, transportation and empathy/perspective taking. In addition to effect sizes based on correlations, study characteristics including sample, topic of message, type of stimulus and information about the research design were coded.

**Effects of exposure.** The effect of media exposure on attitudinal, behavioral or cognitive outcomes was obtained from studies that reported one of the following statistics: a correlation
between exposure and outcome variables; a measurement of outcome variables before and after media exposure allowing one to compute within group pre and post difference; or a between-group comparison between a media exposure group and a no-exposure control. Given the focus of the studies on effects of media involvement rather than effects of media exposure, the design of many of the studies (46%) did not allow computation of exposure effects. Such studies varied levels of involvement but did not include different levels of exposure to the media stimulus, and also did not assess the outcome variable prior to media exposure.

**Effects of modes of involvement.** The effects of perceived similarity, PSR, empathy/perspective taking and transportation on attitudinal, behavioral or cognitive outcomes were computed for each type of involvement separately. The types of involvement were defined in line with the taxonomy of involvement discussed in the Introduction:

1. **Perceived similarity** was defined as a subjective perception of similarity between the audience member and the character along any domain, including the person’s ideal self. This category also included single-item-measures that asked participants to report the degree to which they identified with the character. 2. **PSR** involves a sense of interaction or interpersonal relationship between the viewer and the character. 3. **Empathy** was conceptualized as a sense of being the character, feeling for the character or taking on the character’s cognitive and affective perspective. 4. **Transportation** was defined as becoming absorbed in the storyline and developing story-related mental imagery. These definitions, rather than the labels employed by the authors of the coded studies, were used to code the involvement variables. Thus, for example, two studies that used a measure labeled “identification” could be coded differently (e.g., as perceived similarity or as empathy), depending on their actual operationalization.

Finally, several studies employed measures of involvement that were not clearly
distinguishable from both empathy and transportation. For instance, the items “I felt emotionally involved in this storyline” (Morgan, Movius & Cody, 2009) connote both emotional engagement with the characters (empathy) and mental imagery (transportation). Given that these measures conceptually overlap with variables of interest in the meta-analysis they cannot be reliably classified as either empathy or transportation, a new category of general emotional involvement was created.

**Outcome variable type.** Following Hovland’s classic categorization of responses to persuasion (cf. Dillard, 1993), outcome variables were divided into three main types: cognitions, attitudes and behaviors. For the purpose of this study, **cognitions** were defined as factual knowledge and beliefs. For example, measures of study participants’ beliefs about their susceptibility to HIV and their knowledge about the effects of binge drinking are coded as cognitions. **Attitudes**, on the other hand, refer to affective responses, evaluations and judgments (Fazio, 1986), and, thus, encompass subjective views and values. Accordingly, in the current meta-analysis, while perceptions of condom’s effectiveness in HIV prevention was coded as a cognitive outcome, evaluations of condom use as favorable or having negative affective response to HIV-carriers constituted a measure of attitudes. In the current meta-analysis, attitudes also encompassed self-perceptions such as sense of self-efficacy and self-esteem. Finally, **behavioral outcomes** refer to participants’ self reported behavior, as well as precursors of behavior (Ajzen, 1991) such as willingness, agreement or verbalized intention to engage in certain behaviors.

**Topic.** The content area of the study was coded as related to health (e.g., organ donation, cancer) or political and social issues (e.g., capital punishment, stereotypes).

**Design.** Each study was coded for the type of media exposure employed in the study design. The coding distinguished between three categories of design. First, a **single lab exposure**
category included studies in which participants were exposed to a particular media stimulus (e.g., a clip or a story) followed by post-test outcome measurement. **Multiple exposure** studies included quasi-experimental and cross-sectional surveys in which participants had long-term exposure to a specific show (e.g., a comparison between viewers and non-viewers of an EE soap opera). Finally, **general media exposure** was a category that included survey-based studies that examined overall consumption of entertainment media or genre of shows, rather than any specific program.

**Stimulus type.** The medium was coded to control for its potential impact on the audience’s involvement due to the medium’s pace and amount of sensory stimulation (Green & Brock, 2002). The two categories included: (1) **print** (i.e., written narratives) and (2) **audiovisual/audio** (TV programs, films, and radio programs).

**Population.** The participants of the original studies were coded as students, general population in Western countries, general population in non-Western countries or special populations in Western countries (e.g., children or members of a specific ethnic group).

**Publication.** Studies were coded based on their source. **Published** studies included peer reviewed journal articles, whereas the **unpublished** category included conference papers and proceedings, dissertations, or other sources (e.g., non-academic reports).

**Coding Reliability**

To establish coding reliability, six published reports (producing 20 correlations) were coded by two individuals – the author of the study and an additional coder – one of two graduate students who completed a graduate course in meta-analysis and received individual training in coding studies included in the present meta-analysis. Studies utilized for inter-coder reliability computations were selected by dividing the pool of articles into strata, to guarantee that the
sample represents the full range of types of variables and analyses. Across all coding categories, coders’ agreement rate was above 92%. Disagreements were distributed evenly across all categories such that there was no more than one instance of disagreement in each category. All instances of unreliability were resolved by the author.

**Analysis**

Media effects extracted from the original studies were transformed into a common matrix. Since media exposure, media involvement and media effects can be conceptualized as continuous variables, the matrix utilized in the study was Pearson’s $r$ correlation. Given that the population of effect sizes does not distribute normally (Card, 2011), the analyses were conducted after the $r$ correlations were first converted into Fischer’s $Z_r$. However, since Fischer’s $Z_r$ is not a standardized coefficient, it cannot be easily interpreted, and, thus, the results of the meta-analyses are reported after $Z_r$ were transformed back into the $r$ coefficient.

Following the most current standards in meta-analysis (Card, 2011; Schmidt, 2010; Schmidt, Le & Oh, 2009), correlations and their standard errors were adjusted for unreliability of the measures used in the original studies. These corrections were based on the reliability reported in the original studies. When a single item was used, or when reliability was not reported, a mean Cronbach’s alpha (based on other studies in the meta-analysis) was used as a reliability estimate. In one instance, the authors of the original manuscript stated that the effects were not significant but did not specify the exact effect size. In this single instance, a conservative, lower bound estimate of effect size (.00) was assumed.

Both fixed and random effect models are reported in the meta-analysis. Fixed effects were used as a basis for comparison between effect sizes. Effect sizes were clustered into groups based on their levels of a moderating variable, and a series of Hedge’s $Q$-tests of heterogeneity
was used to explore the heterogeneity between and within these groups of studies. Such an analysis provides a test of significance of differences between groups of effect sizes using the logic of ANOVA tests (Card, 2011).

However, for the interpretation of individual effects (rather than testing the significance of differences of effects), random effect models were used. Unlike fixed effect models which assume that the only source of variance in effect sizes is sampling error, random effect models account for residual heterogeneity not explained by the moderators (Schmidt, 2010). Furthermore, the use of random effect models allows generalization beyond the specific data set examined in the meta-analysis. Thus, while fixed effect models provide an accurate description of the particular studies included in the meta-analysis, random effects can be used to draw theoretical conclusions that go beyond the studies included in the analysis (Card, 2011).

**Results**

**H1: Effects of Involvement versus Exposure**

Various theories suggest that complex psychological processes that occur during media consumption underlie the effects of entertainment media. Thus, involvement is seen as a more proximal predictor of effects than exposure, and it was, therefore, hypothesized that media involvement will serve as a better predictor of media effects than exposure, by itself. To compare between exposure and involvement, effects of different types of involvement and outcomes were aggregated within each study such that each sample was represented by one coefficient for the effects of involvement and one for the effects of exposure.

Hedges’ $Q$ test was conducted to examine the heterogeneity between and within effects of involvement and exposure. In line with H1, involvement with media had a greater mean effect than exposure to the media. A mean effect size using a random effects model was computed
separately for each involvement and exposure variable. While involvement with media had, on average, a medium-strong correlation with viewing outcomes \((r = .26, p < .001, SE = .03, CI = .19 - .32)\), the mean effect size of exposure to the media was significantly smaller \((r = .19, p < .001, SE = .05, CI = .10 - .29)\) \((Q_{\text{between}}(1) = 845.19, p < .001)\).

**H2: Outcome Type as a Moderator of Involvement and Exposure**

Hedge’s Q-test revealed a significant amount of heterogeneity in effects of involvement \((Q(34) = 225.86, p < .001)\) and exposure \((Q(16) = 225.87, p < .001)\). To examine the possible moderation effect of outcome type (knowledge gain, attitudinal or behavioral outcomes), the effect sizes of involvement and exposure were computed for each type of outcome separately. Since a single study could include more than one type of outcome measures, the same study would be coded multiple times, contributing effect sizes to more than one group. For instance, Wilkin et al (2007) examined the effects of viewers’ perceived similarity with characters on two types of outcomes: viewers’ intention to perform a mammogram; and acquisition of knowledge about possible cancer treatments. To examine the difference between media effects on knowledge gain and behavioral intention, this study was coded twice so that the same sample contributed to the mean effect size of both types of outcomes.

The analysis revealed that involvement had a significantly larger effect on behavioral outcomes (i.e., self-reported behaviors or intention to engage in a behavior of interest) \((r = .31, p < .001, SE = .02)\) than on knowledge/beliefs and attitudes \((r = .13, p < .001, SE = .04, Q_{\text{between}}(1) = 13.86, p < .001,\) and \(r = .23, p < .001, SE = .01, Q_{\text{between}}(1) = 11.46, p < .001\) respectively). The difference between the effects of involvement on attitudes and knowledge/beliefs was significant \((Q_{\text{between}}(1) = 4.27, p < .05)\).

The opposite pattern of results emerged when examining the effects of exposure on various
outcomes. Media exposure had, on average, a weak effect on behavioral ($r = .12, p < .001, SE = .02$) and attitudinal ($r = .12, p < .001, SE = .02$) outcomes ($Q_{between(1)} = .15, p > .10$). However, media exposure had a considerable effect on knowledge and beliefs ($r = .34, p < .001, SE = .03$). This effect was significantly greater than the effects of exposure on attitudes ($Q_{between(1)} = 37.06, p < .001$) and on behaviors ($Q_{between(1)} = 32.64, p < .001$).

Overall, these findings supported the hypothesis that media involvement is a better predictor of media effects than media exposure, per se. This conclusion was found to be particularly true in the context of media effects on attitudes and behaviors. Media exposure, however, was found to be a powerful predictor of cognitive effects in the realm of beliefs and knowledge acquisition, even by comparison to the effects of media involvement.

**H3: Comparison between Modes of Involvement**

Theories of learning and persuasion underscore the importance of different modes of involvement in predicting media effects. While some theoretical perspectives stress the role of transportation (Green & Brock, 2002) others put emphasis on viewers’ similarity to and interactions with the characters (Sood, 2002) and viewers’ ability to take the character’s perspective (Cohen, 2001). Thus, it was important to examine the predictive power of these distinct modes of involvement.

Again, several studies included in the meta-analysis incorporated measures of more than one type of involvement. Thus, as in the previous analysis, a single study could contribute to more than one mean effect size. Table 2 represents both fixed and random effects ($r$) of each mode of involvement and the confidence interval for each effect. The confidence intervals of the fixed effects of parasocial relationships do no overlap with confidence intervals of any other type of involvement, indicating that they are significantly weaker. However, contrary to H3, no
significant differences between empathy and transportation \((Q(1)=1.80, p>.10)\), empathy and perceived similarity \((Q(1)=1.35, p>.10)\) or transportation and perceived similarity \((Q(1)=.05, p>.10)\) were found.

**Q1: Moderating Study Characteristics**

A meta-regression predicting the impact of involvement on outcome variables by study characteristics was used to examine the possible moderating factors. A meta-regression was used because it allows to estimate the unique moderating effect of each study characteristic controlling for other study features. For example, experimental studies are mostly conducted on college student samples, whereas surveys are employed in both for student and non-student sample studies, making it particularly important to assess the moderating effect of each characteristic while controlling for other potential moderators.

For each study characteristic, the average effect size \((r)\), confidence interval and test of significance \((Z)\) are reported in Table 3. The results of the meta-regression revealed no significant differences in the effect of involvement with audio-visual stimuli \((r=.25)\) and print stimuli \((r=.28)\) on outcomes. There is a non-significant trend \((Z=1.35, p<.10)\) suggesting that studies using student samples tend to find stronger effects \((r=.30)\) than studies conducted on non-student samples \((r=.24)\). Notably, studies on health-related topics found, on average, greater effect of media involvement on outcomes \((r=.34)\), compared with studies on social and political issues \((r=.20)\). Finally, single lab exposure studies and studies that examined overall media exposure rather than exposure to particular shows yielded higher effects of involvement on outcomes \((.29 \text{ and } .30\) respectively) compared to studies that examined long term or repeated exposure to the same entertainment program \((r=.21)\).

**Publication Bias**
Given the difficulties associated with publishing non-significant findings, any review of the literature is at risk of overestimating the true effect size between the variables of interest. However, unlike other forms of literature synthesis, meta-analyses provide several procedures that allow estimating the robustness of the results of the meta-analysis and the analysis’ susceptibility to publication bias.

First, it is possible to estimate the difference in effect sizes reported in published and unpublished studies (i.e., conference papers and dissertations) included in the meta-analysis. The mean fixed effect size of involvement in unpublished studies included in the analysis was not significantly different from the mean effect size in published studies ($r=.24, p<.001$ vs. $r=.32, p<.001, Q_{between}(1)=2.56, p=.12$). Furthermore, since large samples provide greater statistical power to detect even weak effects, studies with small samples might be published only if they found large effects, while large-scale studies will be likely to be published even if they find small effects. In other words, publication bias can be manifested as a negative correlation between effect size and sample size.

To examine this possibility, a meta-regression analysis was used. Results indicate that the sample size in the original studies was positively correlated with the effect they report ($r=.27, p<.001$). Said differently, contrary to what would be expected with publication bias, studies with larger samples, tended to report greater effects between involvement and outcomes. Together, these two methods suggest no evidence of publication bias.

Finally, Orwin’s (1983) fail-safe number computation procedure reveals that 45 studies that found no relations between involvement and outcomes are needed to reduce the mean effect size to .10, and 126 such studies are needed to reduce the mean effect to .05. Although there are no consensual guidelines for determining a sufficient fail-safe number, the relationship between
involvement and persuasion seems to be satisfying and robust.

**Discussion**

The present meta-analysis explored the effect of exposure to and involvement with entertainment media across a wide range of contexts. The findings of the analysis supported the widely accepted notion that media effects occur through media involvement rather than directly through exposure. On the average, effects of exposure to media are medium-small, consistent with the findings of meta-analyses on media effects, in general (e.g., Emmers-Sommer & Allen, 1999; Shanahan & Morgan, 1999). By comparison, the effects of involvement were significantly larger, leaning toward what is conventionally considered to be a medium-large effect (Cohen, 1988). Furthermore, media involvement seems to be particularly consequential in contexts in which media exposure falls short. While media exposure does predict acquisition of knowledge and beliefs, only involvement seems to make a more fundamental impact on people’s behavioral intentions and behaviors. These findings highlight the utility of the contemporaneous shift from studying media exposure towards exploring media involvement. Hence, research on the antecedents of media involvement cannot be understated. However, while some work in this area has been conducted (cf., Schiappa, Allen, & Gregg, 2006) many questions about the potentially unique precursors of involvement have been understudied. For instance, while the current meta-analysis shows no significant differences in the impact of involvement with print and audiovisual media, it is possible that various media facilitate involvement in different ways. While print media is self-paced and allows more time for reflection and requires active construction of mental imagery, film and television provide viewers with ready-made, vivid, imagery. Thus, different aspects of the medium facilitate involvement in each case.

Although the meta-analysis was successful in demonstrating the clear advantage of
involvement over exposure, the differences between involvement types is less apparent. Several efforts have been made to conceptualize and organize various types of audience’s involvement as distinct psychological processes (e.g., Cohen, 2001; Busselle & Bilandzic, 2009). This notion is, however, somewhat challenged by the empirical interdependence between many of these involvement variables (e.g., Eyal & Rubin, 2003). Although it seems feasible that for some modes of involvement might occur independently of others (e.g., Cohen & Talor, 2008), it is unclear to what extent the non-parsimonious taxonomy of involvement is theoretically (and practically) useful in explaining and predicting media effects. Evaluation of the validity of these taxonomies is even more challenging due to the “jingle-jangle fallacy”, wherein scholars misuse labels of these theoretical constructs. The current meta-analysis aimed to empirically compare supposedly distinct modes of involvement. The findings suggest that, with the exception of PSR, all modes of involvement and equally are indistinguishable in their strength of association with outcome variables. The lack of significant differences between similarity and other modes of involvement is particularly surprising given the fact that perceived similarity is theoretically cast as a superficial level of involvement, a precursor of other modes of involvement such as PSR and perspective taking.

While the magnitude of the effects is equivalent across different media involvement types, it is theoretically possible that the effects are achieved in different ways. Future studies will be well served to test the differential mechanisms of media effects proposed by different models of involvement in a way that very few studies have previously done (e.g., Guse-Moyer & Nabi, 2010). For instance, it is plausible that although empathy and transportation lead to the same outcomes, the process by which they achieve these outcomes may be different. Experimental studies could manipulate each of these involvement modes and examine different mediators of
these effects, such as viewer’s counter-arguing and self-concept change.

Next, it is important to examine how these findings generalize to real-life media consumption, where all the types of media involvement are highly correlated with each other. In this context, the findings of the current meta-analysis are alarming, showing that the very appealing theories of media involvement can be reduced into more parsimonious, yet equally empirically sound models. The lack of differences between empathy and transportation begs the question: are these findings due to a methodological shortcoming or to a theoretical misconception. This query opens two directions for future research. First, there is a need to develop more refined measures with higher discriminant and predictive validity. Second, in the theoretical realm, it is crucial to specify empirically falsifiable hypotheses that can provide a litmus test of the ontological status of specific types of media involvement.

Finally, as in any individual study, the current meta-analysis is not without its limitations. The sample size was sufficient for the analyses presented in the current manuscript, however, further segmentation of the studies into subgroups would result in samples that are too small (less than three or four studies) to make reliable comparisons. Thus, it was not feasible to explore higher level interactions such as those between type of outcome (behavioral, attitudinal etc) and the types of involvement together moderating the effects of media involvement.

Similarly, very few studies reported long-term effects of media exposure. It is plausible that although many media involvement types do not differ in the short-term, some may have a more long-lasting effect than others. It is also important to note that in the current meta-analysis, the findings form a single sample could contribute to more than one effect size. Thus, comparisons between related effect sizes reduced the chances of finding significant differences.

Despite these limitations, the current meta-analysis identifies important patterns of effects of
media involvement across various contexts, samples and outcomes, and within an interdisciplinary methodological and conceptual diversity. Through an empirical synthesis of this burgeoning area of media research, the present study not only makes an important guiding step towards organizing the literature but it also directs attention to theoretical and methodological challenges that call for further development and investigation.
References

* Manuscripts included in the meta-analysis


*Green, M. C. (2004). Transportation into narrative worlds: The role of prior knowledge and perceived realism. Discourse Processes, 38(2), 247-266.


### Table 1

Description of studies included in the meta-analysis and effects of involvement and exposure (Fischer’s $Z_r$ adjusted for unreliability of measures and SE in parentheses)

<table>
<thead>
<tr>
<th>Topic</th>
<th>Method</th>
<th>Sample</th>
<th>Stimulus</th>
<th>N</th>
<th>Involvement variable</th>
<th>Exposure effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitudes and behavioral intentions, organ donation</td>
<td>CSS</td>
<td>Korean adults</td>
<td><em>Open Your Eyes</em> (reality TV)</td>
<td>1500</td>
<td>Empathy</td>
<td>Yes</td>
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<tr>
<td>Attitudes towards social issues</td>
<td>PP</td>
<td>U.S. UGS</td>
<td>Films (comedy, action, si-fi)</td>
<td>162</td>
<td>Transportation</td>
<td>Yes</td>
</tr>
<tr>
<td>Attitudes towards gender equality</td>
<td>CSS</td>
<td>Indian adults</td>
<td><em>Hum Log</em> (TV soap)</td>
<td>1170</td>
<td>PSR</td>
<td>Yes</td>
</tr>
<tr>
<td>Stereotypes of men (attitudes)</td>
<td>P</td>
<td>U.S. UGS</td>
<td><em>Rescue Me</em> (TV drama)</td>
<td>413</td>
<td>Empathy, transportation</td>
<td></td>
</tr>
<tr>
<td>Attitudes towards victims (indep. film)</td>
<td>P</td>
<td>German UGS</td>
<td><em>Law &amp; Order</em></td>
<td>211</td>
<td>Empathy, transportation</td>
<td></td>
</tr>
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<td>Attitudes towards victims (TV crime)</td>
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<td><em>Third Watch</em></td>
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<td>Attitudes towards victims (crime drama)</td>
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<td>Canada, U.S.</td>
<td>Short stories and movie clips</td>
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<td>Story-consistent attitudes</td>
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<td><em>Die Hard</em> (action movie)</td>
<td>110</td>
<td>Transportation</td>
<td></td>
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<td>Implicit attitudes towards smoking and behavioral intentions</td>
<td>PPC</td>
<td>UGS Canada, U.S.</td>
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<td>26</td>
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<td>Topic</td>
<td>Method</td>
<td>Sample</td>
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<tr>
<td>de Graaf et al (2009)</td>
<td>Attitudes towards mental illness and policies</td>
<td>P</td>
<td>Netherland</td>
<td>Story</td>
<td>15</td>
<td>Empathy, transportation, emotion</td>
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<td>Green &amp; Brock (2000)</td>
<td>Attitudes towards just word &amp; violence</td>
<td>P</td>
<td>U.S. UGS</td>
<td>Murder at the Mall (story)</td>
<td>90</td>
<td>Transportation</td>
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<td>U.S. UGS</td>
<td>Two were Left (story)</td>
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<tr>
<td>Study4</td>
<td>friendship and values towards gays</td>
<td>P</td>
<td>U.S. UGS</td>
<td>Just as I Am (story)</td>
<td>15</td>
<td>Transportation</td>
</tr>
<tr>
<td>Harrison (1997)</td>
<td>Eating disorders (attitudes, behaviors)</td>
<td>CSS</td>
<td>U.S. female</td>
<td>Popular shows</td>
<td>23</td>
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<td>Hoffner &amp; Cohen (2009)</td>
<td>Attitudes towards individuals with OCD</td>
<td>CSS</td>
<td>Fans, U.S.</td>
<td>Monk (TV)</td>
<td>14</td>
<td>PSR</td>
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<tr>
<td>Lee et al. (2005)</td>
<td>Beliefs and intentions about HIV prevention</td>
<td>CSS</td>
<td>Ethiopian</td>
<td>Journey of Life (radio EE soap)</td>
<td>12</td>
<td>Similarity, emotional</td>
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<tr>
<td>Moyer-Guse &amp; Nabi (2008)</td>
<td>Beliefs and intentions about safe sex</td>
<td>PPC</td>
<td>U.S. UGS</td>
<td>The OC (TV drama)</td>
<td>36</td>
<td>Similarity, PSR, empathy, transportation</td>
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<table>
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<th>Topic</th>
<th>Method</th>
<th>Sample</th>
<th>Stimulus</th>
<th>N</th>
<th>Involvement variables</th>
<th>Exposure effect</th>
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<td>Knowledge and attitudes towards individuals with mental disorders</td>
<td>PPC</td>
<td>U.S. UGS</td>
<td><em>Angel Baby</em> (movie, drama)</td>
<td>165</td>
<td>Empathy</td>
<td>Yes</td>
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<td>Attitudes towards capital punishment</td>
<td>PC</td>
<td>U.S. UGS</td>
<td><em>Law &amp; Order</em> (TV crime)</td>
<td>50</td>
<td>Similarity, transportation</td>
<td></td>
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<td>Attitudes towards gays</td>
<td>PC</td>
<td>U.S. UGS</td>
<td><em>West Wing</em> (TV drama)</td>
<td>69</td>
<td>Similarity, transportation</td>
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<tr>
<td>Attitudes towards gays</td>
<td>PP</td>
<td>U.S. UGS</td>
<td><em>5 Feet Under</em> (TV drama)</td>
<td>174</td>
<td>Similarity, empathy</td>
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<td>U.S. UGS</td>
<td><em>Queer Eye</em> (Reality TV)</td>
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<td>U.S. UGS</td>
<td><em>Dress to Kill</em> (Comedy TV)</td>
<td>160</td>
<td>Similarity, empathy</td>
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<tr>
<td>Knowledge about sex, eating disorders, drinking</td>
<td>PP</td>
<td>U.S. UGS</td>
<td><em>Law &amp; Order, Party of 5, Grey’s Anatomy</em> (TV drama &amp; crime)</td>
<td>157</td>
<td>transportation</td>
<td>Yes</td>
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<tr>
<td>Attitudes towards capital punishment</td>
<td>P</td>
<td>U.S. UGS</td>
<td><em>Law &amp; Order</em> (TV crime)</td>
<td>83</td>
<td>Similarity, empathy</td>
<td></td>
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<tr>
<td>Attitudes towards gay marriage</td>
<td>P</td>
<td>U.S. UGS</td>
<td><em>If These Walls Could</em></td>
<td>91</td>
<td>Similarity, empathy</td>
<td></td>
</tr>
<tr>
<td>Intention and self efficacy to prevent HIV</td>
<td>CSS</td>
<td>Ethiopian over age 15</td>
<td><em>Journey of Life</em> (EE radio soap)</td>
<td>254</td>
<td>Similarity, emotional</td>
<td></td>
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Table 1 – continued

<table>
<thead>
<tr>
<th>Study Details</th>
<th>Topic</th>
<th>Method</th>
<th>Sample</th>
<th>Stimulus</th>
<th>N</th>
<th>Involvement variables</th>
<th>Exposure effect</th>
</tr>
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<tbody>
<tr>
<td>Ward (2002)</td>
<td>Beliefs and attitudes towards gender roles and sexuality</td>
<td>CSS</td>
<td>U.S. UGS.</td>
<td>Popular characters</td>
<td>259</td>
<td>Similarity</td>
<td>Yes</td>
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</tbody>
</table>

Notes:

\[ a \] Lower bound estimate, \[ b \] conservative estimation of effect size, UGS – undergraduate students, CSS – cross sectional survey, PP – pre-post test, P – post-test only, PC – post-test with control group, PPC – pre-post test with control group

Table 2

Fixed and random effects of media involvement on outcome variables (standardized $r$)
<table>
<thead>
<tr>
<th></th>
<th>Random effect</th>
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<tr>
<td></td>
<td>r Lower C.I.</td>
<td>Upper C.I.</td>
<td>r Lower C.I.</td>
<td>Upper C.I.</td>
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<tr>
<td>Exposure</td>
<td>.19 .29 .10</td>
<td></td>
<td>.15 .16 .13</td>
<td></td>
</tr>
<tr>
<td>Involvement total</td>
<td>.26 .32 .19</td>
<td></td>
<td>.23 .24 .21</td>
<td></td>
</tr>
<tr>
<td>Perceived similarity</td>
<td>.31 .41 .20</td>
<td></td>
<td>.28 .33 .24</td>
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</tr>
<tr>
<td>PSR</td>
<td>.22 .43 .00</td>
<td></td>
<td>.09 .14 .04</td>
<td></td>
</tr>
<tr>
<td>Empathy/perspective taking</td>
<td>.25 .39 .10</td>
<td></td>
<td>.32 .35 .28</td>
<td></td>
</tr>
<tr>
<td>Transportation</td>
<td>.28 .39 .17</td>
<td></td>
<td>.28 .32 .23</td>
<td></td>
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<tr>
<td>Emotional involvement</td>
<td>.22 .46 -.05</td>
<td></td>
<td>.22 .32 .11</td>
<td></td>
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</table>
Table 3

Correlations between different overall involvement with outcome variables, residualized for study characteristics

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SE</th>
<th>SE</th>
<th>Zr</th>
<th>r</th>
<th>C.I.</th>
<th>C.I.</th>
<th>Z \textsuperscript{a}</th>
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<tr>
<td>Constant</td>
<td>.27</td>
<td>.06</td>
<td>.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Audio-visual stimulus</td>
<td>-0.02</td>
<td>0.06</td>
<td>0.02</td>
<td>0.26</td>
<td>0.25</td>
<td>.26</td>
<td>.30</td>
<td>-0.64</td>
</tr>
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<td>Print stimulus</td>
<td>-0.02</td>
<td>0.06</td>
<td>0.02</td>
<td>0.29</td>
<td>0.28</td>
<td>.23</td>
<td>.38</td>
<td>-0.64</td>
</tr>
<tr>
<td>Student sample</td>
<td>0.03</td>
<td>0.06</td>
<td>0.02</td>
<td>0.31</td>
<td>0.30</td>
<td>.28</td>
<td>.32</td>
<td>1.35#</td>
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<tr>
<td>Non-student sample</td>
<td>-0.03</td>
<td>0.06</td>
<td>0.02</td>
<td>0.24</td>
<td>0.24</td>
<td>.21</td>
<td>.26</td>
<td>-1.35#</td>
</tr>
<tr>
<td>Health related topic</td>
<td>0.08</td>
<td>0.04</td>
<td>0.02</td>
<td>0.35</td>
<td>0.34</td>
<td>.32</td>
<td>.35</td>
<td>4.91***</td>
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<tr>
<td>Social/political topic</td>
<td>-0.08</td>
<td>0.04</td>
<td>0.02</td>
<td>0.20</td>
<td>0.20</td>
<td>.18</td>
<td>.21</td>
<td>-4.91***</td>
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<td>Multiple exposure</td>
<td>-0.06</td>
<td>0.06</td>
<td>0.02</td>
<td>0.21</td>
<td>0.21</td>
<td>.19</td>
<td>.23</td>
<td>-2.41**</td>
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<tr>
<td>Single lab exposure</td>
<td>0.02</td>
<td>0.08</td>
<td>0.04</td>
<td>0.30</td>
<td>0.29</td>
<td>.26</td>
<td>.32</td>
<td>0.71</td>
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<td>Overall media exposure</td>
<td>0.03</td>
<td>0.08</td>
<td>0.04</td>
<td>0.31</td>
<td>0.30</td>
<td>.27</td>
<td>.33</td>
<td>0.96</td>
</tr>
</tbody>
</table>

Notes

SS regression = 343.82, SS residual = 156.23, MS regression=57.30, MS residual=5.39, df=35, $R^2=.69$

\textsuperscript{a} Significance of difference between the correlation and the mean effect of involvement

\# $p<.10$, *$p<.05$, **$p<.01$, ***$p<.001$