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TV advertising engagement as a state of immersion and presence

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ABSTRACT

Despite widespread theoretical and practical interest in advertising engagement, scholars and practitioners share little consensus as to what it is and how it can be measured. Guided by the theories of immersion and presence, this research investigates the experiential nature of advertising engagement in the television advertising context. Using survey data ($N = 1{,}115$ cases) on thirteen TV advertisements aired during two Super Bowl broadcasts, a definition of the construct is developed and a parsimonious, reliable and valid four-item scale for measuring experiential TV advertising engagement is produced. As conceptualized, TV advertising engagement is an experience independent of its antecedents and consequences, in which the viewer is psychologically immersed in and present with a TV advertisement. These conceptual dimensions are reflected in the four items of the produced scale.

1. Introduction

Engagement is one of the most widely used concepts in modern advertising. ComScore ARS, for example, conducted a decade-long study of audience diagnostics and reports that persuasiveness is highest in high advertising engagement conditions and that early and sustained advertising engagement is the best predictor of video advertisement effectiveness (Ziliak, 2011). The company concludes that advertising engagement is a necessary component of persuasion and is as important to the determination of advertising effectiveness as other metrics (e.g., brand relevance, linkage, and differentiation). Yet, despite its popularity and documented link to effectiveness, the concept remains ambiguous and unclear (Calder, Malthouse, & Schaedel, 2009) and "perhaps the least understood while simultaneously one of the most overused" constructs of advertising research (Gluck, 2012, p. 2). This conceptual underdevelopment results in a lack of clarity regarding the construct and its effectiveness, leading practitioners and theorists to often miscast the *consequences* of engagement as advertising engagement itself (Calder et al., 2009) or to conflate it with similar concepts, such as involvement or interactivity (Mollen & Wilson, 2010).

The Advertising Research Foundation (2006) defines advertising engagement as "turning on a prospect to a brand message enhanced by the surrounding context" (Wang, 2006, p. 355). This definition is widely cited and embraced, at least in terms of conceptual direction, because it covers a wide range of internal (i.e., psychological engagement) and external (i.e., behavioral engagement such as clicking) reactions to advertisements, and reflects the essence of what ad engagement is thought to be - the consumer experience of being *turned on*. However, as noted above, though broadly inclusive and directionally sound, the ARF definition is criticized as being too broad for practical applications in the measurement of advertising engagement (Calder et al., 2009). According to Calder and Malthouse (2008), the industry needs "not only to pin it down but also to determine how to measure it [engagement]" (p. 2).

Guided by the theories of immersion and presence, which are germane to the state of being *turned on* by mediated experiences, the current study builds on conceptual thinking and research to help fill theoretical and methodological gaps in the literature. Using the context of TV advertising, the study seeks to first, add theoretical clarity to the conceptual boundary of advertising engagement and second, advance research on the construct by producing a validated scale for measuring TV ad engagement.

Past research on advertising engagement has been mostly conceptual (Brodie, Hollebeek, Jurić, & Ilić, 2011), rather than empirical. In the few empirical studies, measures of advertising engagement are largely ad hoc (e.g., How engaging was it for you to process the advertisement? [Wang, 2006]) or comprised of proxy surrogates (e.g., click and viewing time for interactive ads) (Calder et al., 2009). The fuzziness of the construct's conceptualization results from the blanket use of the term engagement to indicate any committed reaction to marketing communications, such as advertising. However, because consumers exhibit many types of engagement-like or engagement-related reactions

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(psychological or behavioral) to attended marketing communications (e.g., ad, brand, and medium), making the claim that a universal measure of advertising engagement applies to all reactions and communication forms is misleading. Consequently, the theoretical validity of the construct and its past measurements in the extant literature are conceptually questionable and of limited applicability.

Because advertisements are delivered by specific media, and because different media offer different engagement experiences, the media context of advertising engagement should be specified in research to parse out engagement processes from general media effects. Therefore, this study focuses on TV advertising because, among all multisensory media, TV receives the largest share of advertising expenditures (39%, followed by digital [28.3%], Statistica, 2015) and is considered the most effective and efficient advertising medium (Lynch, 2015).

Focusing on the TV context, TV advertising engagement, or the act of being engaged, is conceptualized as an event, separate and independent of the act's antecedents and consequences, in which the viewer is mentally and concurrently immersed in and present with an encountered advertisement. As noted later, studies show that the experience of being connected to a message is linked to the feelings of immersion (i.e., perception of being in interaction with, included in, or enveloped by the mediated environment) and presence (i.e., perception of *being there*) in a mediated environment (Witmer & Singer, 1998). The expectation is that being psychologically engaged with a TV advertisement is a mental event of being connected to, related to, immersed in, and present with the advertisement.

2. Theoretical framework and hypotheses

2.1. Defining advertising engagement

Spielmann and Richard (2013) note that engagement, a construct developed to understand how communication works upon contact (Calder & Malthouse, 2005), is often confounded with a similar construct, *involvement*. The situation raises the question: Is engagement a different label for involvement, or are the two constructs conceptually different? In advertising, involvement is viewed as a state variable indicating ad-elicited arousal, interest, or drive levels (Peracchio & Meyers-Levy, 1997), or as a moderator (composed of attention and relevance) that influences attitude formation during ad-exposure (Laczniak & Muehling, 1993). Multi-dimensional views of involvement also exist. For example, Celuch and Slama (1998) state that ad involvement consists of affective (e.g., intimacy of ad) and cognitive (e.g., informativeness) dimensions. Spielmann and Richard's (2013) recent study introduces the second-order concept of *overall ad involvement*, composed of message, media, and creative involvement as first-order constructs. Thus, a relevant question for the present research is: Are any of the involvement constructs similar to what practitioners and academics refer to as *advertising engagement*?

As noted earlier, the emerging literature shows that the conceptual definition of advertising engagement is as varied as that of involvement. Consequently, when it is said, "a viewer is engaged with an advertisement," it is unclear what *being engaged* means. Is it represented by focal attention and felt relevance (Wang, 2006)? Is it the physical interactions with the advertisement, such as clicking (Gluck, 2012)? Or, is it reflective of the various elements of the advertisement itself (i.e., message and/or executional characteristics) or the medium of message delivery (Spielmann & Richard, 2013)? Though all of these perspectives are conceptually relevant, this research takes the position that none adequately represents the advertising engagement construct. For example, contextual relevance (Wang, 2006) might be related to *being engaged*; however, relevance and engagement are not equal. Table 1 presents some of the notable concepts and measures related to ad involvement and engagement.

Amidst the diverse views, Calder and Malthouse (2008) offer an especially interesting perspective on the character of advertising engagement. They argue that the antecedents (e.g., contextual relevance) and consequences (e.g., time spent on viewing) are separate and distinct from *being engaged* with an advertisement, and as such, should not be confused with the construct itself. They base their argument on the belief that if an advertisement is relevant and interesting (i.e., antecedents of engagement), the viewer is expected to feel engaged with that advertisement in the viewing environment (Calder & Malthouse, 2008).

In psychology, engagement is considered an approach (vs. avoidance) response to a stimulus, comprised of two experiences – hedonic and motivational (Higgins, 2006). The first is called *liking* (i.e., like → approach vs. dislike → avoid) and the latter *engagement* (i.e., engaging → approach vs. unengaging → avoid). Using this framework, Calder and Malthouse (2008) conceptualize media engagement as "the sum of motivational experiences consumers have with the media product" (p. 6) and suggest that it consists of intrinsic (i.e., the goal is media experience itself) and extrinsic (i.e., media experience as the means to achieve external goals) motivations. Though viewers might have both motivations, it is known that they do not actively seek out ads to satisfy extrinsic goals. Instead, if engagement with a TV ad occurs, it is more likely associated with intrinsic goals (i.e., experiencing mediated content). Studies of narrative elements in message processing describe this type of intrinsic experience as a convergent psychological process focusing on events occurring in the narrative story (Green & Brock, 2000).

Dictionary definitions of the word *engage* include descriptions such as "entangle," "entrap," "attract," "interlock," "bind," "involve," and "give/hold attention" (*Webster's Ninth New Collegiate Dictionary*, 1991). Even though these and other words may be applicable, herein *interlock* is adopted as the best verbal descriptor of the overall nature of *being engaged*: the word implies a two-way interaction wherein the TV viewer and the TV advertisement become locked together. Moreover, a key distinction between *involve* and *interlock* warrants attention: involvement is a trait condition (i.e., you are not involved if you lack prior topic interest) whereas interlock is a state condition (i.e., you can be engaged even if you lack prior topic interest). Though involvement is often viewed to represent some motivational factor, such as an a priori state or cognitive structure, *interlock* clearly and sufficiently describes advertising engagement – it powerfully conveys the organic integration of the TV viewer and the advertisement. From the perspective of communication theory, the interlocking experience between viewer and advertisement is reflected by two concepts, immersion and presence. *Immersion* is defined as the physical state of being enveloped by sensory information created by media (Slater & Wilbur, 1997). Metaphorically, immersion is described as the experience of being completely surrounded by another reality, similar to the feeling of being submerged in water (Murray, 1997). Highly immersive media environments are thought to lead to perceptions of *presence*, defined as the subjective feeling of *being there* (Biocca, 1997).

Research indicates that the concepts of immersion and presence operate across multiple mediated platforms, including print (Green & Brock, 2000), television (Reeves, 1978), video games, and virtual environments (Lee, 2004; Ahn et al., 2016). As such, these concepts are especially relevant to advertising engagement because they involve a depth continuum rather than a dichotomous state of existence or absence. Accordingly, the present study posits that immersion and presence are two necessary conditions for *being engaged*, wherein the TV viewer feels mentally *there* within an advertisement. Transportation is a similar construct involving narrative-based experiences that result in heightened enjoyment of entertainment (Green, Brock, & Kaufman, 2004), attitude change (Escalas, 2004), and favorable ad responses (Wang & Calder, 2009).

When developing a construct, consideration must also be given to whether the underlying dimensions are reflective or formative indicators of the latent construct (Diamantopoulos & Winklhofer, 2001). A

Table 1
Measures of advertising involvement and engagement.

Construct	Study	Definition	Measurement instruments	Limitations
Ad engagement	Rappaport (2007); Wang (2006)	Engaged in brands, brand messages, and their surroundings	Contextual relevance; utility; message involvement; emotional bonding.	Combination of antecedents (contextual relevance and utility) and consequences (message involvement and emotional bonding)
Ad transportation	Wang and Calder (2009)	Experience of narrative transportation, of being absorbed into the narrative.	I felt caught up in the content of the ad; Watching the ad was relaxing; My mind was only on the ad and not on other things; The ad improved my mood, made me feel happier; I lost myself in the content of the ad while watching it; I thought the ad was entertaining; The ad captured my attention.	Combines affective consequence (e.g., "The ad improved my mood, made me feel happier"); Limited applicability ("I thought the ad was entertaining" and "Watching the ad was relaxing").
Overall ad involvement	Spielmann and Richard (2013)	A second order construct composed of message, media, and creative involvement.	Message involvement (10 items: e.g., "important"); Media involvement (6 items: e.g., "paying attention to the content"); Creative involvement (4 items: e.g., "paying close attention to the ad as a piece of art")	Combination of antecedents (e.g., "important") and attention measures, which are necessary but not sufficient for engagement.
Affective ad involvement	Celuch and Slama (1998)	The emotional and value expressive content of a persuasive message.	Aspects of the ad were attractive to me; I felt as though I was right there in the ad; The ad was personal and intimate; I felt that the characters/people in the ad were acting out what I feel at times; I could personally relate to aspects of the ad; The ad portrayed the way people feel at times.	Combines antecedents (attractive, intimate); Limited applicability (characters/people in the commercial)
Cognitive ad involvement	Celuch and Slama (1998)	The functional information content of a persuasive message.	I learned information from the commercial; The commercial was informative; The commercial contained product-relevant information.	Combines antecedents ("contained product-relevant information"; "informative") and consequence ("learned information")
Ad message involvement	Laczniak and Muehling (1993); Lee (2000); Peracchio and Meyers-Levy (1997); Polyorat et al. (2007)	An individual, internal state of arousal, interest, or drive evoked by an ad.	Peracchio and Meyers-Levy (1997): Paid no attention/paid a lot of attention, not involved in the ad/very involved, and not interested/very interested; Laczniak and Muehling (1993): Attention (5 items) and relevance (10 items: important, meaningful, etc.)	Combines consequences ("involved," "interested"), antecedents ("important") and attention measure which are sufficient but not necessary for engagement.

construct is reflective if the causal direction flows from the construct to its indicators (Bollen & Lennox, 1991); that is, when items share a common theme (Rossiter, 2002), and are highly correlated with one another (Diamantopoulos & Siguaw, 2006). In the present study, advertising engagement is considered to be reflective, as the feelings of immersion and presence in a TV ad are conceived as working together, not separately from one another.

Given the preceding discussion, this study views TV advertising engagement as a mental event separate from its antecedents and consequences (both psychological and behavioral), and defines it as *the phenomenologically-based interlocking mental experience of being immersed and present in a TV advertisement*. Thus, amid the various mixed psychological and behavioral interactional views of engagement, this study first asks a question about the psychological dimension of TV advertising engagement:

RQ: Can TV advertising engagement be defined as the experience of being immersed and present in an advertisement?

2.2. Antecedents and consequences of advertising engagement

As noted, earlier conceptualizations confound antecedents and consequences of engagement with the psychological state of advertising engagement itself. As a result, this study views the construct of engagement as distinct from its antecedents (i.e., when or why people's minds switch on) and consequences (i.e., what happens after they are engaged). Following Zaichkowsky's (1986) conceptualization of involvement, which presents personal relevance as a critical element of the involvement construct and a primary antecedent of involvement in advertising context (Krugman, 1965), this study posits that the perception of personal relevance of a TV advertisement serves as an important motivator for ensuing engagement (Wang, 2006).

Therefore, contextual relevance is a primary antecedent of, rather than a part of, TV advertising engagement. Literature (e.g., Meyers-Levy & Malaviya, 1999) suggests there are three anteceding factors for processing an advertisement, comprised of recipient (e.g., personal relevance), message (e.g., complexity), and situational (e.g., constraints in time) factors. Among these, personal relevance (i.e., recipient factor) is closely related to the study of psychological advertising engagement because researchers have demonstrated that it is an essential driver of involvement (Petty & Cacioppo, 1981) and can impact the way people perceive stimuli (Claypool, Mackie, Garcia-Marques, Mcintosh, & Udall, 2004), especially advertising (Campbell & Wright, 2008). As relevance is defined as the extent to which consumers perceive an object to be self-related or instrumental for achieving personal values and goals (Celsi & Olson, 1988), advertisements relevant to the viewer's interest are more likely to be processed (Calder & Malthouse, 2008; Batra & Ray, 1986) than less relevant ads (Rieh, 2002). In neuroscience, personal relevance is viewed as an important endogenous control factor along with the exogenous (stimulus-driven) saliency factor for stimulating visuospatial attention. Likewise, increased attention and processing of visual stimuli can lead the viewers to feel enveloped by the sensory information and perception of presence (Slater & Wilbur, 1997).

H1. Contextual relevance positively influences TV advertising engagement.

The traditional Aad → Ab → PI relationship (Aad = attitude toward advertisement; Ab = attitude toward brand; PI = purchase intention; see MacKenzie & Lutz, 1989) suggests that increased advertising engagement results in strong brand engagement and other behavioral outcomes. In addition, literature suggests engagement drives message involvement (Greenwald & Leavitt, 1984; Wang, 2006), though some researchers often use engagement and message involvement interchangeably (Spielmann & Richard, 2013). However, the two concepts are not identical, but sequentially related (e.g., Greenwald & Leavitt, 1984). Therefore, the next hypotheses are posed to test the serial (i.e., direct and indirect) effects of TV advertising engagement on downstream response outcomes. The attitudinal effects examined are: attitude toward advertisement (Aad: "a predisposition to respond in a

favorable or unfavorable manner," MacKenzie & Lutz, 1989, p. 49) and attitude toward brand (Ab: "internal brand evaluation," Mitchell & Olson, 1981, p. 318). The behavioral effects examined are: curiosity (website visit and information seeking), word of mouth (ad and brand WOM), and purchase intention. The selection of the behavioral effects is based on literature suggesting advertisements that trigger consumer curiosity and generate favorable word of mouth should be considered effective (e.g., Rubinson, 2009; Thorbjørnsen, Ketelaar, Van't Riet, & Dahlén, 2015).

H2. Advertising engagement positively influences advertising involvement.

H3. Advertising engagement positively influences attitude toward advertisement (H3a), attitude toward brand (H3b) and behavioral responses (H3c).

Advertising engagement (as conceptualized herein) can additionally explain consumer behaviors beyond the extant construct of advertising involvement. As discussed previously, the present study follows the stream of research that distinguishes psychological engagement from message involvement (e.g., Wang, 2006), and views the two constructs as sequentially related (Greenwald & Leavitt, 1984). Given that the two are different (based on prior discussion for H2) but influence consumer behaviors (e.g., Spielmann & Richard, 2013), advertising engagement should exert its unique effect on consumer behaviors in addition to the effect of involvement. Thus, H4 is posited to test the contribution of advertising engagement independent of involvement.

H4. Advertising engagement explains behavioral responses in addition to the variance explained by advertising involvement.

The overarching model examined is presented in Fig. 1.

3. Methods

Churchill's (1979) scale development paradigm was generally followed. First, the literature and a free-association task were used to generate verbal descriptive items. The free-association task was completed by 39 students. Next, a group of experts evaluated the content validity of the generated items, and those content-validated items were then analyzed via Exploratory Factor Analysis (EFA) using a split-half of the sample. The EFA-purified items were then checked via Confirmatory Factor Analysis (CFA) using another split-half of the sample. Finally, the final scale was checked for reliability, validity, and generalizability.

3.1. Stimuli selection

Thirteen TV advertisements from the advertisement pools of the 2103 and 2014 Super Bowl broadcasts were selected for analyses (see Table 2). Six advertisements (i.e., Audi, Hyundai, M&M's, Budweiser, Best Buy, and Tide) were from the 2013 broadcast; seven (i.e., Hyundai, Audi, Jaguar, Budweiser, Chobani, AXE, and Cheerios) were from the 2014 broadcast. The selected advertisements were all of high production quality, similar in familiarity levels (in terms of ad recall), presented a range of appeals and themes, communicated brand-based stories, featured both high and low involvement products, and advertised hedonic and utilitarian product-types. Thus, the sample pool of ads was large enough to perform the necessary analytic techniques and diverse enough to enhance generalizability.

3.2. Generation of items

The literature on related constructs, such as absorption (e.g., "experience the story as if it were real": Jamieson, 2005, p. 137), identification (e.g., "While viewing program X, I felt as I was part of the action": Cohen, 2001, p. 256), as well as presence and immersion (e.g., "I felt caught up in the content of the ad": Wang & Calder, 2009, p. 554), was reviewed to generate items matching the definitional property of the study's construct. In some cases, some items of those scales were considered invalid for inclusion because they were either irrelevant (e.g., "I like to watch cloud shapes change in the sky" (in the absorption scale: Jamieson, 2005, p. 137), unrealistic (e.g., "I wander off into my own thoughts while doing a routine task and actually forget that I am doing the task, and then find a few minutes later that I have completed it," absorption scale, Jamieson, 2005, p. 138), or not broadly applicable (e.g., "I could feel the emotions character X portrayed," identification scale, Cohen, 2001, p, 265). Furthermore, although Wang and Calder's (2009) scale is specifically designed to measure ad-related feeling of transportation and reflects this study's conceptual definition, some of its items were not used because they represent engagement consequences, not the state of *being engaged* itself (e.g., "The ad improved my mood, made me feel happier.") or were narrowly applicable ("I thought the ad was

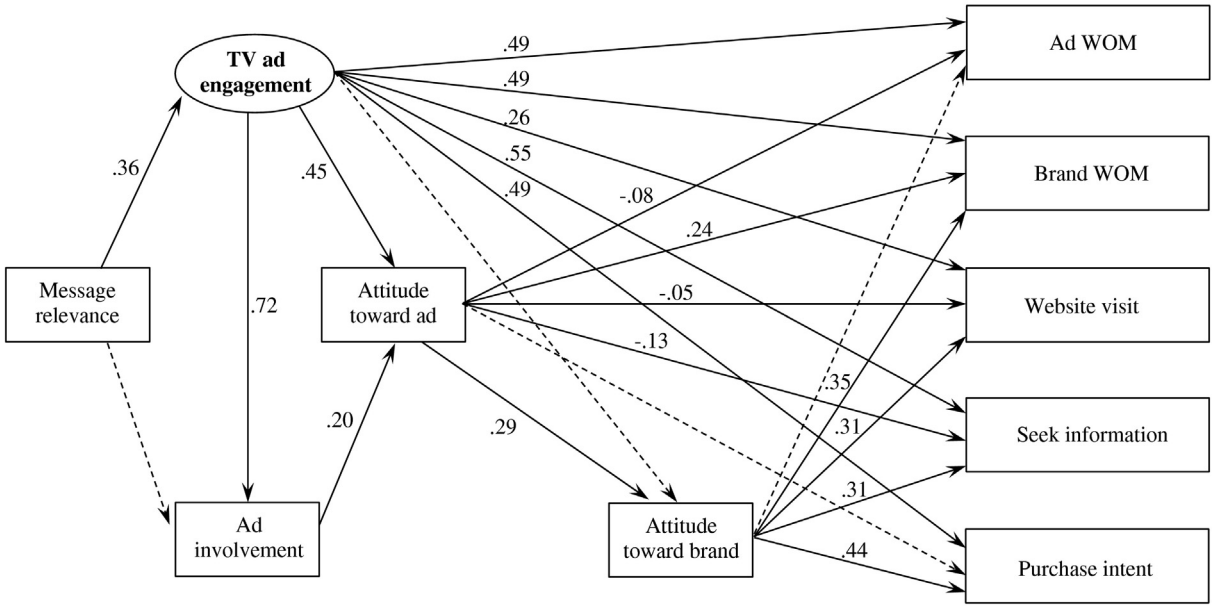

Fig. 1. Advertising engagement construct in a nomological network ($N = 573$).

Table 2
TV advertisements and advertising engagement scores.

Ad stimuli	PDI[a]		Product nature[b]		Advertising engagement	
	Mean	SD	Mean	SD	Mean	SD
Super Bowl 2013						
Budweiser "Horse and Trainer Reunited"	4.70	1.15	5.86	1.34	4.82	1.20
Audi "Prom"	5.97	0.08	3.16	1.67	4.69	1.13
Tide "Miracle Stain"	4.40	1.33	2.42	1.59	4.40	1.32
Best Buy "Asking Amy Poehler"	4.90	1.13	4.33	1.70	4.29	1.20
Hyundai "Kid Assembles Team"	6.00	0.97	2.92	1.57	3.85	1.22
M&M "Love Ballad"	4.67	1.05	6.01	1.18	3.90	1.15
Super Bowl 2014						
Budweiser "Puppy Love"	4.73	1.35	6.21	1.06	4.49	1.44
Hyundai "Sixth Sense"	6.13	0.70	2.38	1.51	4.60	1.32
AXE "Kiss for Peace"	4.47	1.40	1.87	1.02	4.09	1.48
Audi "Doberhuahua"	6.01	0.79	2.54	1.41	3.93	1.46
Cheerios "Gracie"	4.89	1.11	3.59	1.80	4.09	1.33
Jaguar "British Villains"	6.13	0.61	2.61	1.72	3.71	1.48
Chobani "How Matters"	4.21	1.09	3.78	1.69	3.64	1.41

Notes:
The ads are listed by the advertising engagement scores.
[a] Purchase-decision involvement (PDI) was measured on a 7-point scale (1 = Strongly disagree; 7 = Strongly agree).
[b] Product nature was measured on a 7-point scale (1 = Utilitarian; 7 = Hedonic).

entertaining.; Watching the ad was relaxing."). The two procedures generated eleven non-redundant engagement–like items. The items are presented in Table 3.

3.3. Content validity

Content validity was assessed to determine item representativeness using Lawshe's formula (1975). Fourteen advertising experts (i.e., university professors) were first given the construct definition and then asked to indicate the degree of each item's representativeness. Three items did not pass the Content Validity Ratio (CVR) test (i.e., <50% of judges classified the item as representative). The 8 items that passed the test (shown in Table 3) were used in the main data collection and analyses.

3.4. Data collection procedure

Two sets of data were collected by self-administered online surveys. The first set was collected from a convenience sample of students studying at a major southeastern state university ($n = 271$). The second set was collected from a convenience sample of adults using Amazon's Mechanical Turk (MTurk, www.mturk.com) ($n = 287$). The student data were collected in February 2013; the adult data were collected in February 2014. Though not representative of the U.S. population, the samples reflect audience diversity (61.9% female; 77.1% 18–34 years old and 22% 35–64 years old; 82.3% Caucasian, 5.6% African American, and 12.2% other ethnicity). As reported later, the structural properties of the final scale were compared to confirm the structural invariance across different participant characteristics.

Participants were asked to indicate their agreement with 7-point Likert measures of purchase-decision involvement (PDI), hedonic/utilitarian product nature, attitude toward brand, and familiarity with the brands featured in the advertisements. Following completion of the product-related tasks, the participants were shown two advertisements and asked to rate ad-familiarity, attitude toward ad, brand and product relevance, as well as the extent to which each of the 8 items represented their opinions. Information about additional variables was collected from the adult participants: attitude toward the advertised brands and the behavioral outcomes. Other information regarding previous ad exposure and fan-ship was also collected.

The items were randomly rotated for each TV advertisement, which resulted in 1116 cases (271 students × 2 ads; 287 adults × 2 ads). However, one participant completed half of the survey. Thus, 1115 cases (542 student cases and 573 adult cases) were used for data analyses.

4. Results

4.1. Exploratory factor analysis (EFA)

A principal component analysis with an oblique rotation method (i.e., Oblimin) was performed. The factor analysis, using one half ($n = 557$) of the pooled sample ($n = 1115$), determined that all eight items loaded to one factor and accounted for 58.43% of the total variance (See Table 3).

Table 3
Item purification procedure from expert interview, EFA and CFA.

Relevant Sources[d]	Items	Expert interview ($N = 14$) CVR[a] values	EFA ($N = 557$) EFA[b] loadings	CFA ($N = 558$) CFA loadings
Identification, immersion	1. While experiencing the ad, I felt as if I was part of the action.[c]	0.86	0.84	0.79
Free-assoc.	2. It made me feel connected to the product.[c]	0.57	0.79	0.74
Absorption, presence	3. I experienced the ad as if it were real.[c]	0.43	0.80	0.73
Absorption	4. After I experienced the ad, I still felt as if I was experiencing the ad.[c]	0.30	0.80	0.79
Absorption, presence	5. The ad was so vivid that it held my attention as a good movie or story does.	0.71	0.69	0.65
Absorption	6. The ad helped me recollect certain past experiences in my life with such clarity and vividness that it was like living them again or almost so.	0.43	0.74	0.73
Absorption	7. Some of my most vivid memories were called up by the ad.	0.57	0.73	0.71
Absorption	8. Thoughts and images came to me while experiencing the ad without the slightest effort on my part.	0.71	0.71	0.56
Absorption, immersion	9. While experiencing the ad, I felt as if my whole state of consciousness had somehow been temporarily altered.	−0.14 (removed)		
Absorption, immersion	10. When experiencing the ad, I "stepped outside" my usual self and experienced an entirely different state of being.	−0.14 (removed)		
Absorption	11. While experiencing the ad, I felt as if I were being lifted into the air.	−0.57 (removed)		

Notes:
[a] CVR (content validity ratio) = (nr − n/2)/(n/2), where nr = number of judges who agreed that the item was "representative," n = total number of judges.
[b] One factor (8 items; α = 0.91; 58.43% of variance explained).
[c] Final items retained after CFA. The four items, (1) While experiencing the ad, I felt as if I was part of the action, (2) It made me feel connected to the product, (3) I experienced the ad as if it were real, and (4) After I experienced the ad, I still felt as if I was experiencing the ad, form the produced TV Ad Engagement Scale.
[d] Absorption (Jamieson, 2005); Identification (Cohen, 2001); Immersion (Witmer & Singer, 1998); Presence (Witmer & Singer, 1998); Free-assoc.: Free-association pre-test.

4.2. Confirmatory factor analysis (CFA)

4.2.1. Initial specifications and modeling

Confirmatory Factor Analysis (CFA) of the factors generated in EFA was conducted on the other split-half sample ($n = 558$). Because the initial model fit was mediocre ($\chi^2 = 169.56$, $df = 20$, $\chi^2/df = 8.48$, TLI = 0.91, CFI = 0.93, RMSEA = 0.12, SRMR = 0.05), factor loadings (>|0.50|), as well as modification indices (MI > 4.0), were examined to locate sources of improvement. All loadings were in the acceptable range (0.56–0.79); however, four items had multiple MI values with other items, and therefore were dropped. For example, item #8 (see Table 3) had high MI values with the other four items (e.g., MI = 16.7 with item #6; MI = 88.70 with item #7).

The final four-item advertising engagement measurement model had a nearly perfect fit for the split-half-sample ($n = 558$; $\chi^2 = 0.03$, $df = 2$, TLI = 1.00, CFI = 1.00, RMSEA = 0.00, SRMR = 0.00) and the pooled sample ($n = 1115$; $\chi^2 = 1.70$, $df = 2$, TLI = 1.00, CFI = 1.00, RMSEA = 0.00, SRMR = 0.00). The convergent validity (loadings ranged from 0.74 to 0.84) of the construct was good, as was its reliability (Cronbach's alpha = 0.87).

4.2.2. Scale generalizability: Cross-condition stability checks

Equality of the structure was tested by participant characteristics (i.e., gender, age, education, and income), product types (i.e., hedonic vs. utilitarian; purchase-decision involvement), and viewing factors (i.e., fan-ship and previous ad exposure) of the pooled sample to determine potential meaning disparities across different variables. The purpose of these analyses was to detect whether the factor *structure*, rather than the statistical means, would be invariant across conditions, thus ensuring scale generalizability. Following Chen, Sousa, and West's (2005) guidelines, configural and metric invariance tests were performed. Results found that the model was invariant across varying conditions (configural invariance tests: for all tests, χ^2/df ranged 0.33–3.48, CFI ranged 0.99–1.00, and RMSEA ranged 0.00–0.07; metric invariance tests: for all tests, $\Delta\chi^2$ ranged 0.73–7.11 at $\Delta df = 3$) (See Appendix A for details).

4.2.3. Explanation of advertising engagement scale items

These results indicate that the final four items clearly and directly reflect TV advertising engagement as the psychological experience of being immersed in and present with a TV advertisement at contact (i.e., interlocked). The items of being *a part of the action*, feeling *real* and *connected*, and *still experiencing after experiencing* capture not just ad-vividness, but the feeling of being present in the mediated environment of the advertisement (i.e., consistent with the presence concept) (Lee, 2004). Additionally, the construct simultaneously takes into account the experiential nature of TV advertising engagement (i.e., "It made me feel connected to the product.") and its link to the brand idea; otherwise being engaged is "nothing more than a meaningless passing moment of stimulation" (Heath, 2009, p. 71). The composite advertising engagement scores for each of the study's TV advertisements are presented in Table 2.

4.3. Construct validity

Following confirmation of the measurement model, construct validity tests were performed using the adult ($N = 573$) and student sample data ($N = 542$).

4.3.1. Discriminant validity with related measures

Discriminant validity tests of the one-factor model were conducted on related measures: ad attention (i.e., "I paid attention to the ad."), ad message interest (i.e., "I was interested in the storyline."), ad message concentration (i.e., "I concentrated on the message in the ad.") and ad involvement (i.e., "The ad was involving."). Discriminant validity was assessed by comparing AVE (Average Variance Extracted) of the advertising engagement construct ($AVE_{ADULT} = 0.65$; $AVE_{STUDENT} = 0.57$) with the squared correlation between the construct and each variable (Fornell & Larcker, 1981). The construct was found to have discriminant validity with ad attention (Squared $r_{ADULT} = 0.01$; Squared $r_{STUDENT} = 0.14$), ad message interest (Squared $r_{ADULT} = 0.41$; Squared $r_{STUDENT} = 0.43$), ad message concentration (Squared $r_{ADULT} = 0.18$; Squared $r_{STUDENT} = 0.34$), and ad involvement (Squared $r_{ADULT} = 0.50$; Squared $r_{STUDENT} = 0.41$).

4.3.2. Criterion validity: concurrent and predictive

Correlation between the study's four-item scale and the single-item ad-hoc engagement measure by Wang (2006) was examined to test concurrent validity. A significant correlation was found between the one item, "The ad was engaging," and the study's four-item scale ($r_{ADULT} = 0.61$, $p < 0.001$; $r_{STUDENT} = 0.61$; $p < 0.001$). Additionally, criterion validity was tested to determine whether message relevance (MR, i.e., contextual relevance) (H1) predicted the ad engagement scale. The model indicated a significant influence of message relevance on the TV advertising engagement scale (AE, hereafter) ($\beta_{ADULT} = 0.36$, $p < 0.001$; $\beta_{STUDENT} = 0.29$; $p < 0.001$; there was no significant difference between two samples, $\Delta\chi^2 = 0.4$ [$\Delta df = 1$]). Thus, H1 was supported.

Separate models were estimated to test the scale's predictive validity on ad involvement (AI: Wang, 2006) (H2), attitude toward ad (Aad) (H3a), and attitude toward brand (Ab) (H3b), respectively. The tests found that AE significantly predicted Aad ($\beta_{ADULT} = 0.59$; $p < 0.001$; $\beta_{STUDENT} = 0.66$; $p < 0.001$), AI ($\beta_{ADULT} = 0.80$; $p < 0.001$; $\beta_{STUDENT} = 0.81$; $p < 0.001$) and Ab ($\beta_{ADULT} = 0.08$, $p = 0.09$ [marginal]; $\beta_{STUDENT} = 0.15$; $p < 0.001$). No significant differences were found between two samples ($\Delta\chi^2 = 0$–2.4 [$\Delta df = 1$]). Therefore, H2, H3a and b were supported.

4.3.3. Incremental validity

A hierarchical regression was conducted to test H4 and to determine whether AE significantly added explanatory power beyond similar variables. The adult data were used because behavioral responses were not measured among the student participants. In the first block, each of the five response variables was regressed on the single-item measures of advertising involvement ("The ad was involving.") and advertising engagement ("The ad was engaging."). Then, AE was entered in the second block as an additional independent variable. AE was found to explain significantly more variances (all R-square changes were significant and ranged 0.09–0.16) than when it was not included in the model for all five dependent variables.

Hierarchical regression was also used to determine how the study's AE scale performed relative to advertising message involvement (Lee, 2000; Peracchio & Meyers-Levy, 1997; Polyorat, Alden, & Kim, 2007) and affective advertising involvement (Celuch & Slama, 1998). Significant R-square changes were found (ranged 0.04–0.09), which support the incremental validity of the AE scale. Additionally, AE overpowered and nullified all involvement measures except one (ad involvement → ad WOM [$\beta = 0.24$, $p < 0.05$]). Overall, the results (shown in Table 4) support H4 and demonstrate the stronger predictive power of AE on consumer behaviors relative to advertising involvement measures.

4.3.4. Nomological validity

A model was created using the tested variables of H2, H3a, H3b and other variables (i.e., behavioral responses to examine H3c) to test nomological validity, using the adult data. Except for AE, composite scores (Aad and Ab) and single-item measures (MR, AI, and all consumer response variables) were used. The initial model was a saturated model (i.e., all theoretically meaningful paths were estimated); however, the model's fit was poor ($\chi^2 = 1066.19$, $df = 52$, TLI = 0.71, CFI = 0.81, RMSEA = 0.19, SRMR = 0.09) due to potential multicollinearity among variables. *Re*-specifications were made based on modification indices (note: none of the study's scale items was re-specified): five

Table 4
Incremental validity: Hierarchical regression and fsQCA necessity analysis results ($N = 573$).

Single-item scales vs. ad engagement scale		Seek info.		Website visit		Ad WOM		Brand WOM		Purchase intent	
		β	R^2	β	R^2	β	R^2	β	R^2	β	R^2
Model 1	The ad was involving.	0.43[a]	0.19	0.45[a]	0.19	0.33[a]	0.29	0.47[a]	0.23	0.39[a]	0.14
	The ad was engaging.	.00[b]		−.02[b]		0.26[a]		.02[b]		−.01[b]	
Model 2	The ad was involving.	0.19[a]	0.35	0.20[a]	0.35	0.13[a]	0.40	0.26[a]	0.35	0.20[a]	0.23
	The ad was engaging.	−0.16[a]		−0.18[a]		0.13[a]		−0.13[a]		−0.14[a]	
	Ad Engagement	0.55[a]		0.55[a]		0.45[a]		0.48[a]		0.41[a]	
	R^2 Change		0.16[a]		0.16[a]		0.11[a]		0.12[a]		0.09[a]
fsQCA necessity analyses (model 1 vs. model 2)	Consist.	97 vs. 0.96		0.98 vs. 0.96		0.98 vs. 0.96		0.98 vs. 0.97		0.97 vs. 0.95	
	Coverage	0.46 vs. 0.51		0.45 vs. 0.49		0.60 vs. 0.66		0.47 vs. 0.52		0.51 vs. 0.55	

Other multi−item scales vs. ad engagement scale		Seek info.		Website visit		Ad WOM		Brand WOM		Purchase intent	
		β	R^2	β	R^2	β	R^2	β	R^2	β	R^2
Model 1	Ad involvement	.04[b]	0.25	.05[b]	0.24	0.29[a]	0.37	0.14[a]	0.25	.06[b]	0.19
	Affective ad involvement	0.47[a]		0.46[a]		0.38[a]		0.39[a]		0.40[a]	
Model 2	Ad involvement	−.03[b]	0.33	−.03[b]	0.33	0.24[a]	0.41	.07[b]	0.33	−.01[b]	0.22
	Affective ad involvement	.05[b]		.02[b]		.08[b]		−.03[b]		.14[b]	
	Ad engagement	0.55[a]		0.57[a]		0.39[a]		0.55[a]		0.34[a]	
	R^2 Change		0.08[a]		0.09[a]		0.04[a]		0.08[a]		0.03[a]
fsQCA necessity analyses (model 1 vs. model 2)	Consist.	0.98 vs. 0.97		0.98 vs. 0.98		0.98 vs. 0.97		0.98 vs. 0.98		0.98 vs. 0.97	
	Coverage	0.46 vs. 0.50		0.45 vs. 0.48		0.60 vs. 0.65		0.47 vs. 0.51		0.51 vs. 0.54	

Notes:
Collinearity statistics for all analyses: tolerance (ranged 0.25–0.55), VIF (ranged 1.80–3.98).
Multi-item scales used: ad involvement (Peracchio & Meyers-Levy, 1997); affective ad involvement (Celuch & Slama, 1998); ad engagement (this study).
Consist. = Consistency.
WOM = Word of mouth.
[a] denotes $p < 0.05$.
[b] denotes $p > 0.05$.

correlations were specified between MR and the error terms of Ab and four behavior variables (*tell a friend about brand*, *purchase product*, *go on the website*, and *seek out information*); and all five behavior variables were specified to be correlated. In all, a total of fifteen correlations were additionally specified in the model. As a result, the model was stable and fit the data well ($\chi^2 = 176.82$, $df = 37$, TLI = 0.94, CFI = 0.97, RMSEA = 0.08, SRMR = 0.05).

The initial model (M_1) was compared with two alternative models (M_2 and M_3) to find the best valid nomological network of variables. The alternatives were made more parsimonious than M_1 by dropping five paths from Aad to the behavior variables (M_2) and by excluding additional five paths from AE to the behavior variables (M_3). Chi-square difference test showed M_1 ($\chi^2 = 176.82$, $df = 37$) was better than the alternative models (M_2: $\chi^2 = 248.48$, $df = 42$ [$\Delta\chi^2 = 71.66$]; M_3: $\chi^2 = 553.30$, $df = 47$ [$\Delta\chi^2 = 376.48$]). Therefore, M_1 was selected to examine the nomological validity of the AE scale.

As shown in Fig. 1, AE scale played significant roles in the M_1 model.[1] Notably, AE fully mediated the MR's effect on AI (indirect effect = 0.26, $p < 0.05$; direct effect = −0.001, $p > 0.05$). AE also exerted indirect influence on Aad through AI (indirect effect = 0.15, $p < 0.05$) as well as direct influence on Aad (direct effect = 0.45, $p < 0.05$; partial mediation) (number of bootstrap samples = 2000). The direct effects of AE on the five behavior variables were also significant (i.e., another evidence to support H3c), and as shown in Fig. 1, the total effects of AE on all of the behavior-related variables were strong and significant.

Notably, Aad had slightly negative direct effects on three variables (ad WOM, website visit, and seek information; all $p < 0.05$). Though the effect sizes are small, these results indicate that Aad without Ab is more weakly predictive of behavior.

4.3.5. Additional verification: fsQCA

Fuzzy-set qualitative comparative analysis (fsQCA), a tool to test for asymmetric relationships between causal conditions and outcomes (Woodside, 2013), was used to test the combinatory effects of the independent variables on the behaviors to complement the outcomes tested in the nomological validity model. The algorithm uses the logical minimization process to determine the different combinations of causal conditions leading to an outcome (Ragin, 2014).

A set of causal conditions (i.e., independent variables: MR, AE, AI, Aad, and Ab) and outcomes (i.e., dependent variables: ad WOM, brand WOM, website visit, seek information, and purchase intent – one outcome per analysis) were entered into the Fuzzy Truth Table Algorithm. A calibration was done to rescale the study's 7-point Likert data to the 0–1 range for table entry. By setting the cross-over point at 4, the full membership threshold at 6, and the non-membership threshold at 2, the fsQCA software recoded the original responses as follows: 1 → 0.01, 2 → 0.05, 3 → 0.18, 4 → 0.5, 5 → 0.82, 6 → 0.95, 7 → 0.99.

The Standard Analyses determined that the solutions (i.e., combinations of causal conditions) including AE for the five behaviors were the best-balanced with the highest consistency and coverage values. Of the three solution types (i.e., complex, intermediate, and parsimonious), parsimonious solutions were either comparable or better than the other solutions; all parsimonious solutions included AE (best solutions: AE only for ad WOM [raw/unique coverage = 0.75/0.75, consistency = 0.81]; MR × AE × Ab for brand WOM [raw/unique coverage = 0.69/0.69, consistency = 0.81]; MR × AE for website visit [raw/unique coverage = 0.69/0.69, consistency = 0.76]; MR × AE for seek info [raw/unique coverage = 0.71/0.71, consistency = 0.80]; MR × AE × Ab for purchase intent [raw/unique coverage = 0.67/0.52, consistency = 0.85]).

5. Conclusions and discussion

5.1. Conclusions

The proposed conceptualization of the construct is affirmed: TV advertising engagement as an event in which the viewer is psychologically and concurrently immersed in and present with a TV advertisement.

[1] Per an anonymous reviewer, the same model was tested using a new sample ($N = 248$ cases; from 124 university students from different majors). The results demonstrated the AE construct was invariant between the two samples (configural: $\chi 2/df = 0.60$, CFI = 1.00, TLI = 1.00, and RMSEA = 0.00; metric: $\Delta\chi^2 = 0.5$, $\Delta df = 4$) and showed the same pattern of factor loadings and other parameters between the samples (configural invariance: $\chi^2/df = 2.33$, CFI = 99, TLI = 0.96, and RMSEA = 0.05). Results of the data are available upon request.

Table 5
TV advertising engagement scale items

Items (Cronbach's Alpha = .87)	CFA Loadings
• While experiencing the ad, I felt as if I was part of the action.	.84
• It made me feel connected to the product.	.74
• I experienced the ad as if it were real.	.80
• After I experienced the ad, I still felt as if I was experiencing the ad.	.76

Notes:
- Pooled sample (N = 1115) is used.

The construct, as conceived and measured, is independent of its antecedents and consequences, and fully and strongly mediates the effect of message relevance on advertising involvement. The produced four-item scale (shown in Table 5) is structurally invariant across different people, product types, and viewing conditions, thereby demonstrating (1) scale stability; (2) a high level of reliability based on Cronbach's alpha and composite reliability; and (3) strong validity in terms of its unique relations to other traditional advertising response variables. The take away is that the scale provides researchers a theoretically sound instrument for studying TV advertising engagement, and practitioners with a useful tool to gauge the stopping and holding power of TV advertisements.

5.2. Discussion

Given the theoretical and practical interest in advertising engagement, the general objectives of this research are to first, conceptualize and define the construct within the context of TV advertising and second, to develop a reliable and valid scale to measure TV advertising engagement. Grounded in the theories of immersion and presence, the effort produced a distinct and useful definition of the construct and a parsimonious, reliable, and valid four-item scale, with sufficient discriminant, criterion, incremental and nomological validity.

As noted earlier, past research on how and to what extent an advertisement engages people is largely a fragmented affair. These findings regarding the construct and the related four-item scale reflect earlier research discourse, but more systematically encompass the immersed and present experiential nature of engagement within the specific context of TV advertising. Studies demonstrate that psychologically simulating the self to assume a character role in a presented story leads individuals to feel as if they are present in that story (Escalas, 2004; Green & Brock, 2000). Accordingly, two of the scale's items incorporate such an experience. The perception of being immersed and present as a character in an advertisement is captured by the items on feeling "part of action" (i.e., immersion-related) and experiencing the ad "as if it were real" (i.e., presence-related). Together with the item, "After I experienced the ad, I still felt as if I was experiencing the ad," which reflects the sense of experiential carry-over and duration of presence, the items capture the persistent sense of self-immersion in the TV ad.

The findings also speak to the important relationship between communication and the consumer. Advertising success relies on the connection between the advertised object and the consumer because advertisements, by nature, are created with specific target audiences in mind, and if these audiences feel little or no connection with the advertised object, high levels of advertising engagement are difficult to achieve. Accordingly, the item, "It made me feel connected to the product," reflects the degree to which individuals feel connected to the advertised object during contact. Research on resonance (Gerbner, Gross, Morgan, & Signorielli, 1980) indicates that the connection intensity between personal and mediated experiences amplifies TV effects. Similarly, the perceived connection between self and object is an important part of ad engagement.

Despite theoretical and practical value, the findings should be interpreted as suggestive rather than conclusive due to limitations such as sample representativeness, advertising context, and laboratory setting. Therefore, additional research is required to more fully understand TV advertising engagement specifically and advertising engagement generally.

Building on this research, future studies should reexamine the scale among more representative samples of consumers. Additionally, studies should be conducted in natural settings to determine the ecological validity of the current findings, and behavioral advertising engagement should be investigated simultaneously in conjunction with other forms of psychological engagement. For example, relationships between these engagement-types could be simultaneously studied using interactive video ads featuring clickable measurement overlays. Of special importance, the produced scale should be examined across various media such as social and mobile platforms to determine its applicability beyond TV. Earlier studies report that electronic media advertising generates emotional involvement while print advertising generates cognitive activities (Chaudhuri & Buck, 1995). Such response variation suggests that investigating similarities and differences in the produced scale across media may be meaningful.

At this juncture, advertising engagement and its role is an important, yet understudied, subject. This study, despite its limitations, advances extant knowledge and provides an empirical foundation upon which future research should build.

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Appendix A. Model invariance tests across different conditions.

	χ^2	*df*	χ^2/df	*TLI*	*CFI*	*RMSEA*	*SRMR*	Model comparison	$\Delta\chi^2$	Δdf
Age (n_{YOUNG} = 756; n_{OLD} = 359)										
Model 1: configural invariance	3.76	4	0.94	1.00	1.00	0.00	0.01			
Model 2: metric invariance (factor loading)	7.31	7	1.04	1.00	1.00	0.01	0.01	2 vs. 1	3.55	3
Gender (n_{MALE} = 425; n_{FEMALE} = 690)										
Model 1: configural	3.17	4	0.79	1.00	1.00	0.00	0.01			
Model 2: metric invariance (factor loading)	10.28	7	1.47	1.00	1.00	0.02	0.01	2 vs. 1	7.11	3
Product nature ($n_{UTILITARIAN}$ = 603; $n_{HEDONIC}$ = 512)										
Model 1: configural	4.21	4	1.05	1.00	1.00	0.01	0.01			
Model 2: metric invariance (factor loading)	8.03	7	1.15	1.00	1.00	0.01	0.01	2 vs. 1	3.81	3
Purchase-decision involvement (n_{HIGH} = 788; n_{LOW} = 327)										
Model 1: configural	10.60	4	2.65	1.00	1.00	0.04	0.01			
Model 2: metric invariance (factor loading)	13.10	7	1.87	1.00	1.00	0.03	0.01	2 vs. 1	2.50	3
Pre-exposure to ad (n_{YES} = 213; n_{NO} = 360)[a]										

(*continued*)

	χ^2	*df*	χ^2/df	*TLI*	*CFI*	*RMSEA*	*SRMR*	Model comparison	$\Delta\chi^2$	Δdf
Model 1: configural	3.73	4	0.93	1.00	1.00	0.00	0.01			
Model 2: metric invariance (factor loading)	6.36	7	0.91	1.00	1.00	0.00	0.02	2 vs. 1	2.64	3
Fan vs. non-fan ($n_{FAN} = 116$; $n_{NONFAN} = 233$)[a]										
Model 1: configural	9.42	4	2.36	0.98	0.99	0.06	0.02			
Model 2: metric invariance (factor loading)	11.03	7	1.58	0.99	0.99	0.04	0.03	2 vs. 1	1.61	3
Education ($n_{LOW} = 272$; $n_{HIGH} = 301$)[a]										
Model 1: configural	13.94	4	3.48	0.98	990	0.07	0.02			
Model 2: metric invariance (factor loading)	14.66	7	2.10	0.99	0.99	0.04	0.02	2 vs. 1	0.73	3
Income ($n_{LOW} = 264$; $n_{HIGH} = 309$)[a]										
Model 1: configural	1.31	4	0.33	1.01	1.00	0.00	0.00			
Model 2: metric invariance (factor loading)	2.51	7	0.36	1.01	1.00	0.00	0.01	2 vs. 1	1.20	3
Data collection method ($n_{COLLEGE} = 542$; $n_{MTURK} = 573$)										
Model 1: configural	3.07	4	0.77	1.00	1.00	0.00	0.00			
Model 2: metric invariance (factor loading)	9.12	7	1.30	1.00	1.00	0.02	0.02	2 vs. 1	6.05	3

Notes:
All $\Delta\chi^2$ tests were not significant.
[a] Questions were asked only to MTurk research participants.

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