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On a Scale of State Empathy During Message Processing

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*State empathy during message processing was conceptualized as a process where perception of the characters' state automatically activates the recipient's vicarious experience of their state, situation, and object, which automatically primes and generates the associated automatic and somatic responses that precede persuasion outcomes. It was proposed that there are three dimensions within state empathy: affective, cognitive, and associative empathy. A 12-item scale was developed as a measurement instrument. Confirmatory factor analyses of data from two samples, one of college students (*N = *289) and the other of the general public (*N = *189), showed that the scale was unidimensional on the second order. The scale exhibited good internal and external consistency, convergent, and discriminant validity. The scale also had good reliability. Implications for future research and health communication were discussed.*

Keywords: Confirmatory Factor Analysis; Construct Validity; Health Communication; Measurement; PSA; State Empathy

Emotional appeals have enjoyed wide applications in antidrug public health campaigns. In addition to some empirical evidence for their effectiveness (e.g., O'Keefe, 2000; Witte & Allen, 2000), researchers and practitioners alike have witnessed unintended message effects (see Cho & Salmon, 2007, for an analysis) such that they might fail to persuade, or even produce a boomerang effect (e.g., Fishbein, Hall-Jamieson, Zimmer, von Haeften, & Nabi, 2002; Grandpre, Alvario, Burgoon, Miller, & Hall, 2003). These unintended and undesirable outcomes probably have

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resulted from (a) emotions that the messages do not intend to elicit, (b) unfavorable cognitive responses such as discounting and counterarguing, and (c) target audience's not identifying with the campaign messages, including but not limited to perceptions that the messages are unbelievable, unimportant, or irrelevant (Viswanath & Finnegan, 2002).

Therefore, health campaigns and their messages must be structured to be accessible and identifiable to the target population, and must generate consistent responses and reduce unintended ones in order to create attitude and behavior change. Recent research suggests a potentially effective way to reduce unintended effects, and for the target audience to identify with the messages/campaigns is through the use of empathy-based messages (Bagozzi & Moore, 1994; Campbell & Babrow, 2004; Eisenberg, 2003). But before studies can be conducted to explore the utility of empathy-based messages, a clear conceptualization and a valid measurement of state empathy as responses to persuasive media messages are needed. As discussed later in this paper, existing efforts to operationalize state empathy during message processing has been problematic (a) regarding content validity and (b) establishing unidimensionality of the scale. The primary goals of this investigation are to validate a scale of state empathy as a response to health related television public service announcements (PSAs), and to explore the role of state empathy in the process of message processing and persuasion. First, the concept of state empathy during message processing will be explicated and operationalized. Second, data from two quasi-experimental studies will be analyzed to (a) establish the unidimensionality of a state empathy scale and (b) to assess its construct validity in a nomological network of external variables that might shed light on the role of state empathy in the process of persuasion and message effects.

State Empathy During Message Processing

State Versus Trait Empathy

Empathy has been widely studied in such disciplines as neuropsychology (see Decety & Jackson, 2006; Preston & de Waal, 2002, for reviews), communication (e.g., Campbell & Babrow, 2004; Stiff, Dillard, Somera, Kim, & Sleight, 1988), and counselling and social support (e.g., Lee, Brennan, & Daly, 2001). Approaches to the study of empathy in communication can be categorized along two dimensions: (1) *trait* versus *state* empathy and (2) empathy in message *production* versus *processing*, with substantially more attention to trait empathy in message production. A few scholars have explored state empathy in message processing (e.g., Bagozzi & Moore, 1994; Campbell & Babrow, 2004). On the other hand, there is a bias toward altruistic/helping behaviors in negatively valenced situations in the empathy literature (see Davis, 1994; Eisenberg, 2003, for reviews). This bias is reflected in the empathy dimensions identified in the literature such as empathetic concern and personal distress (e.g., Bagozzi & Moore, 1994; Campbell & Babrow, 2004; Stiff et al., 1988). There is merit in focusing on empathy in negative situations and altruistic behaviors across disciplines, since the function of empathy might lie in social bounding and

relationship development (e.g., Decety & Jackson, 2006), and that the ultimate base of empathy might be inclusive fitness and reciprocal altruism (de Waal, 2008; Preston & de Waal, 2002). Such a focus is only natural for studies in counselling and social support. However, in the case of state empathy that occurs during, and as part of the processing of persuasive messages that aim to change individuals' behavior for their *own* health and well-being, such dimensions of empathy are less relevant, if not invalid. Empathetic concern and personal distress are obviously irrelevant to state empathy in a positively valenced situation (e.g., Jabbi, Swart, & Keysers, 2007). Therefore, to understand empathy in the process of persuasion, it is imperative to explicate the construct of *state* empathy resulting from and as part of message processing.

State empathy, in general, can be defined as a process by which we understand others (Lazarus, 1991), and occurs when the attended perception of the object's state (automatically) activates "the subject's representations of the state, situation and object, and that activation of these representations automatically primes or generates the associated automatic and somatic responses, unless prohibited" (Preston & de Waal, 2002, p. 4). Researchers across disciplines agree that empathy is not a monolithic cognitive or affective function, and that the process refers to a number of closely related, but differentiated states of the mind. However, they do not concur on the content and number of dimensions of the activated representations and responses associated with them (see Decety & Lamm, 2006; de Waal, 2008; Preston & de Waal, 2002, for reviews). A clear and precise explication of state empathy during message processing, therefore, is needed before it is operationalized, and its role in persuasion explored. Such an explication should be applicable in both positively and negatively valenced situations and for message advocacies beyond altruistic/helping behaviors as well.

Core Dimensions of State Empathy in Message Processing

Researchers across disciplines tend to agree that the core dimensions of empathy consist of both affect and cognition (Bagozzi & Moore, 1994; Campbell & Babrow, 2004; Decety & Jackson, 2006; Decety & Lamm, 2006; Preston & de Waal, 2002). *Affective empathy* refers to the activation and experience of affective reactions to others' experiences and/or expressions of emotions. In other words, affective empathy involves the understanding and sharing of others' feelings (Decety & Jackson, 2006; Zillmann, 2006), at least at the gross affect (valence) level (Mehrabian & Epstein, 1972). It should be noted that affective empathy can be sharing both negative and positive affects, although the vast majority of studies in the literature focused on empathy in negatively valenced situations (e.g., when the observed object is in pain, suffering, and/or needs comfort). Affective empathy also can be sharing multiple emotions at the same time (Lazarus, 1991).

Cognitive empathy refers to perspective-taking and involves recognizing, comprehending, and adopting another person's point of view. Albeit distinct from each other, affective and cognitive empathy might be closely related and even intertwined

with each other. Taking another person's perspective by placing oneself psychologically in that person's circumstances (Lazarus, 1991) partly involves sharing the cognitive appraisals of the environment and the relational themes in the situation. There is evidence that cognitive appraisals and relational themes are causal antecedents of emotions (Smith & Lazarus, 1993). Such shared appraisals, therefore, tend to elicit shared emotions. As a matter of fact, the study of empathy must include both affective and cognitive dimensions. Shared affect without shared cognition would mean little more than mimicry. Similarly, shared cognition without shared affect would be sympathy, instead of empathy (Eisenberg & Miller, 1987; Goldie, 1999). Although sympathy might be a construct closely related to empathy since both lead to altruistic behaviors when the observed object is in a difficult/painful situation, they are conceptually different. Obviously they diverge when the observed object is in a positive and happy situation.

A third component, *associative empathy*, has received relatively less attention (Davis, 1994). This component in state empathy originates from the ultimate base of empathy (i.e., inclusive fitness and reciprocal altruism, Preston & de Waal, 2002) and is dictated by its function (i.e., social bounding and relationship development, Decety & Jackson, 2004). This associative component in state empathy can be labelled as identification (Campbell & Babrow, 2004; Chory-Assad & Cicchirillo, 2005; see also Decety & Jackson, 2006). Identification with the media message is a mechanism through which audience members experience reception and interpretation of the message from the inside, as if the events in the message were happening to them (Cohen, 2001, 2006). It can be individuals' vicarious experience of what the characters experience (in addition to affect and cognition) in a novel/play (e.g., Muslin, 1984) or some entertainment programming (e.g., Cohen, 2001, 2006). From the functional perspective, it is this dimension of empathy that facilitates social bounding and relationship development (Davis, 1994), and that links perception to action in the process of state empathy.

In summary, state empathy during message processing can be conceptualized as a process through which the recipients comprehend, process, and are influenced by persuasive media messages. As a perception-action process (Decety & Jackson, 2006; Decety & Lamm, 2006), state empathy occurs when the perception of the characters' state automatically activates the recipient's vicarious experience of their state, situation, and object; and that unless prohibited, such vicarious experience automatically primes and generates the associated automatic and somatic responses that precede message effects. The three key dimensions of state empathy are: affective, cognitive, and associative empathy. State empathy in message processing is not an all-or-nothing phenomenon (Preston & de Waal, 2002): There exist intermediate forms of state empathy in message processing between the extremes of mere empathic arousal and full comprehension and acceptance of the message and its advocacy.

Such an explication of state empathy differs from existing ones in the literature in that it excludes dimensions that are biased toward altruistic behavior and relevant in negative situations only (e.g., empathic concern), and factors that are considered

as prerequisites for state empathy (e.g., self-awareness and emotional regulation). In concept explication, one must consider *proper* range of meaning. Concepts must be of sufficient universality to encompass a substantial range of meaning, but if they are too broad they may not offer the precision that social science requires. Empathic concern is excluded because it is only relevant in negative situations and for altruistic behaviors. It becomes irrelevant when the situation is positive and involves one's own well-being. In other words, it is excluded for the sake of precision in range of meaning for state empathy during message processing.

Another dimension excluded in the current explication is verisimilitude (Campbell & Babrow, 2004). As a matter of fact, Campbell and Babrow (2004, p. 164) recognized it is a requisite for, rather than a component of empathic response to persuasive messages—if what is portrayed in the media message is perceived as realistic, empathic response is more likely; otherwise, state empathy is less likely to occur. It is more of a [perceived] message property, rather than a psychological state that mediates the message effects (O'Keefe, 2003). Consequently, verisimilitude should not be one of the content components of state empathy.

Operationalization of State Empathy During Message Processing

State empathy during message processing can be conceptualized as a process, with the following three dimensions: affective empathy, cognitive empathy, and associative empathy. Therefore, existing scales for state empathy (e.g., Bagozzi & Moore, 1994; Campbell & Babrow, 2004) or similar constructs (e.g., Cohen, 2001) are not optimal for the construct as explicated in this study because (a) they might have issues regarding content validity due to the fact that state empathy is explicated differently

Table 1 Items and Dimensions of the State Empathy Scale

Dimensions	Items
Affective Empathy	1. The character's emotions are genuine.
	2. I experienced the same emotions as the character when watching this message.
	3. I was in a similar emotional state as the character when watching this message.
	4. I can feel the character's emotions.
Cognitive Empathy	5. I can see the character's point of view.
	6. I recognize the character's situation.
	7. I can understand what the character was going through in the message.
	8. The character's reactions to the situation are understandable.
Associative Empathy	9. When watching the message, I was fully absorbed.
	10. I can relate to what the character was going through in the message.
	11. I can identify with the situation described in the message.
	12. I can identify with the characters in the message.

(for example, concern for the other is considered as one dimension in Campbell & Babrow, 2004; the authors also consider verisimilitude as a dimension despite recognizing it as a prerequisite for state empathy); (b) unidimensionality of the scale has not been established; and therefore (c) construct validity of the scale has not been vigorously tested. Given these limitations in existing scales, there is merit in developing and validating a new scale. Built upon items from existing scales, a new scale was developed to capture the three dimensions in state empathy as explicated in this paper. Table 1 presents the items in the scale and the corresponding subdimensions, which were on a 5-point Likert scale anchored at both poles (0 = "*not at all,*" and 4 = "*completely*").

Validation of the State Empathy Scale

There have been efforts to validate the existing scales by demonstrating relationships between empathic response and some external variables, both at the level of subdimensions and that of the whole scale (e.g., Bagozzi & Moore, 1994; Campbell & Babrow, 2004). Clearly, in the absence of evidence for the scale's (second order) unidimensionality, these tests were suspect. In addition to establishing the unidimensionality of the state empathy scale, this study attempted to provide tests of its construct validity by examining its behavior with (a) the behavioral inhibition system (*BIS*), which measures withdrawal motivation; (b) the behavioral activation system (*BAS*), which measures approach motivation (e.g., Thayer, 1989; Watson, Wiese, Vaidya, & Tellegen, 1999); (c) individual differences in dispositional capability to experience empathy (Davis, 1983; Stiff et al., 1988); (d) message features (e.g., empathy appeal vs. other), which can be causes of state empathy; and (e) perceived effectiveness, which can be considered as an outcome of state empathy since it is a causal antecedent and proximate measure for actual persuasion outcomes (Dillard, Shen, & Vail, 2007; Dillard, Weber, & Vail, 2007). These variables were considered informative in that they had the potential to shed light on state empathy during message processing in a conceptual arena—the study of persuasion and effectiveness of health messages.

Given that the function of empathy lies in altruism, social bounding, and relationship development, it is expected that state empathy is positively associated with BAS, which is approach motivation (H1), but not significantly associated with BIS, which is withdrawal motivation (H2). State empathy is also expected to be positively associated with individual differences in capability to experience trait empathy (H3). Since trait empathy is conceptually more proximate to state empathy, it is expected that the association between trait empathy and state empathy is significantly larger than that between state empathy and BAS (H4). In addition, sharing the characters' emotions and perspectives as well as identification with the message and characters should lead to enhanced perceived effectiveness (H5) (Kelman, 1961). Finally, provided that the scale is valid, individuals exposed to empathy messages should score higher on the scale than those exposed to other types of messages (H6).

Method

Stimuli Messages

Data were collected from two studies. Twenty television PSAs were used as stimuli messages in Study 1, of which ten were antismoking PSAs and the other ten were drunk driving ones. The stimuli messages in Study 2 were 12 antismoking PSAs. A team of three researchers rated a collection of television PSAs based on the following criteria: (1) if and to what degree a message portrays some characters' pain, suffering, and/or distress, since there is strong empirical evidence that individuals tend to be empathic toward others' pain, suffering, and distress (Decety & Jackson, 2006; Decety & Lamm, 2006; Preston & de Waal, 2002); (2) the perceived verisimilitude of the message, since it is a precedent of state empathy (Campbell & Babrow, 2004); and (3) if and to what degree a message is affect laded, since the presence of affect is the prerequisite of its sharing. The top five within each topic were selected as the high empathy messages, and the bottom five were considered the low empathy messages. The top four empathy-based antismoking PSAs in Study 1 were retained as stimuli messages in Study 2. Meanwhile, the same team also selected four antismoking PSAs that were judged to be fear appeals (based on perceived severity of dangers from smoking), and another four antismoking PSAs that were neither fear- nor empathy-arousing to be used as control messages in Study 2.

Study 1 was a 2 (topic: antismoking vs. drunk driving) by 2 (message type: high empathy vs. low empathy) by 5 (messages) mixed design, with topic and message type as between-subjects factors, and message as a within-subjects factor. It should be noted that the "experimental manipulation" in both studies was not aimed to establish causal inferences, but rather to induce variances in individuals' responses to the scale. Study 2 was 3 (message type: empathy vs. fear vs. control) by 4 (messages) mixed design, with message type as the between-, and message as the within-subjects factor. It should be noted that another purpose of Study 2 was to compare the persuasive effectiveness of empathy-based messages versus fear appeal messages. Not all data from Study 2 were reported in this paper.

Participants

Participants in Study 1 were 289 students (M age = 19.87, SD = 2.17) enrolled in introductory speech communication classes at the University of Georgia. Participation in the study either fulfilled their course requirement or earned them a small portion of extra credit. Among them, 117 (40.5%) were male and 172 (59.5%) were female. The sample was overwhelmingly White (82.4%). There were same proportions of African Americans (6.2%) and Asian Americans (6.2%). There was 1% Hispanic participants and 3.8% claimed to be members of "other" races. They were randomly assigned to one of the four conditions, and watched the five PSAs presented in a random order on a laptop computer.

Participants in Study 2 were 189 (M age = 34.99, SD = 13.03) adults recruited from the biggest flea market near Athens, GA, on weekends during late spring and

early summer. They received $30 for their participation. There were roughly equal numbers of males (49.7%) and females (50.3%). Among them, 67 (35.3%) were White, 97 (51.3%) were African Americans, 4 (2.1%) were of Asian descent, 14 (7.45%) were Hispanic, 7 (3.7%) either claimed to be members of "other" races or failed to disclose that information. They were randomly assigned to one of the three conditions, and watched the four PSAs presented in a random order on a laptop computer.

Procedure

Data collection took place in a temporary lab of nine laptop computers (on campus in Study 1, and within the flea market in Study 2), with the experimental conditions, the PSAs, and measurement instruments preprogrammed in MediaLab software. After the consent form was signed and dated, each participant was seated at a laptop with headphones. Computers were evenly spaced throughout the temporary lab such that the participants did not disturb one another when they were watching the PSAs or responding to the measurement instruments. All directions and measurement instruments were displayed on the computer monitor. After watching the first PSAs, each participant reported their emotional responses and listed (by typing) whatever thoughts came to their minds. After that, they responded to the 12-item state empathy scale and Dillard's perceived effectiveness scale. The same procedure was repeated for the other PSAs in the sequence one by one before they reported their demographic information and responded to the BIS/BAS scales (Carver & White, 1994) and the trait empathy scale (Stiff et al., 1988). The participants in Study 2 also reported their smoking behavior. The entire procedure took between 35 and 40 minutes in Study 1, and about 25–30 minutes in Study 2. The participants were thanked and their questions answered, if they had any, before they left the lab.

Measures

Not all the data are reported in this paper, for example, the emotional responses and the thought-listing data. Some measures were message-specific measures (e.g., items of the state empathy scale and perceived effectiveness) and measured multiple times. The individual difference variables were not repeated. Unless mentioned otherwise, all scales were found to be unidimensional through confirmatory factor analyses.

Behavioral inhibition and activation systems

BIS was measured by seven and BAS by thirteen Likert-type items using 5-point response scales (1 = *strongly disagree*, 5 = *strongly agree*). Evidence of the construct validity of the scales can be found in Carver and White (1994) and Campbell-Sills, Liverant, and Brown (2004). Sample items from the BIS scale include, "If I think something unpleasant is going to happen I usually get pretty worked up" and, "I worry about making mistakes." Sample items from the BAS scale include, "When I get something I want, I feel excited and energized" and, "When I want something

I usually go all-out to get it.'' Alpha reliability for BIS was .82 in Study 1 and .84 in Study 2. Reliability for BAS was .88 in Study 1 and .86 in Study 2. The correlation between BIS and BAS was $r = -.02$ (n.s.) in Study 1, but $r = .13$ ($p < .05$) in Study 2.

Trait empathy

Trait empathy was measured by the scale used in Stiff et al. (1988), except for the items for Communicative Responsiveness since they tend to focus on interpersonal and altruistic settings. Sample items include: ''Before I criticize somebody, I try to imagine how I would feel in their place''; ''I am often touched by the things that I see happen''; ''Other people's misfortune do not usually disturb me a great deal (reverse coded)''; and, ''The people around me have a great influence on my moods.'' The reliability for the scale was .74 in Study 1 and .82 in Study 2.

Perceived effectiveness

Perceived effectiveness was measured by nine 7-point semantic differential items. The items were the following words and their antonyms: convincing, believable, sensible, wise, right, biased, distorted, fair, and balanced. The alpha reliability for the scale ranged from .75 to .87 across the PSAs in Study 1, and .81 to .89 in Study 2.

Smoking behavior

In Study 2, smoking behavior was measured by two questions that asked the participants, ''In the past month, on how many days did you smoke cigarettes?'' and, ''On the days when you smoked, how many cigarettes did you smoke per day on average?'' An index for smoking behavior was created in two steps: 1) multiplying the scores of these two questions, then 2) taking the square root of the product in Step 1.

Results

Confirmatory Factor Analysis

Unless unidimensionality of the state empathy scale is established on the first order, evidence in support of its second-order unidimensionality needs to come from two sources: (1) a first-order oblique three-factor model should fit the data, and the correlations among the three factors should be similar (i.e., a simple factor structure); and (2) statistical equivalence has to be established between the first-order three-factor model and a second-order single-factor model. Because a factor model with three indicators is just-identified (i.e., $d.f. = 0$), the second-order single-factor model would have the same degrees of freedom and the exact model fit indices as the first-order oblique three-factor model. To test the statistical equivalence of the two, instrumental variables have to be introduced such that the two models would differ in degrees of freedom. All four external variables, namely, BIS, BAS, trait empathy, and perceived effectiveness, were entered in the confirmatory factor analyses together with the 12 items of the state empathy scale. These four external variables

gave eight degrees of freedom between the first-order oblique three-factor model ($d.f. = 87$) and the second-order single-factor model ($d.f. = 95$). With a sample size of 1,445 (Study 1) and 756 (Study 2) observations, these parameters led to a statistical power of well above .80 in testing the equivalence of the two-factor models (MacCallum, Browne, & Sugawara, 1996).

Data analysis strategy

Recall that the state empathy items, along with the measures of perceived effectiveness were message-specific and repeated five times in Study 1 and four times in Study 2. This meant that the observations were not independent of each other. Treating the observations as if they were independent was not an option. The option of two-level confirmatory factor analysis/structural equation modeling (Mels, 2004) takes care of the interdependence in the data structure, but might not be optimal because of its lack of parsimony. For example, the input data for a two-level confirmatory factor analysis would be a 60 by 60 matrix in Study 1 and 48 by 48 matrix in Study 2 for the state empathy items only. An alternative strategy is to average each of the message-specific repeated measures into one single index. For example, in Study 1, an index of perceived effectiveness would be created by averaging the perceived effectiveness of the five PSAs each participant watched. This resulted in 289 (Study 1) and 189 (Study 2) independent observations for the confirmatory factor analyses, but would lose some information, as well as statistical power due to the reduction in sample sizes. Data were analyzed in both strategies. The fit indices of the factor models and parameter estimates were very similar across these two data analyses strategies in both studies. Only the results from the second strategy were reported here for the sake of parsimony and clarity.

Input and model specifications

With message-specific repeated measures averaged into single indices, individuals' responses to the 12 state empathy items and the four external variables were submitted to LISREL 8.70 for confirmatory factor analyses. Table 2A presents the means, standard deviations, and correlation matrix of these 16 items from Study 1. Table 2B presents those from Study 2. A covariance matrix was constructed then used as input to LISREL, which estimated the parameters of the models using maximum likelihood procedures. In all models, the external variables were specified as single-indicator latent variables, following Bollen (1989). First, a first-order single-factor model was estimated, where all 12 state empathy items were specified to load on one latent factor. This latent factor and the four external variables were allowed to be associated with each other. Second, a first-order oblique three-factor model was estimated, where the three factors (i.e., affective, cognitive, and associative empathy) together with the four external variables were allowed to be associated with each other. Third, a second-order single-factor model was estimated, where only the second-order factor was allowed to be associated with the external variables, but not the three first-order factors. But association among the external variables were allowed.

Table 2A Means, Standard Deviations, and Correlation Matrix[1] of the State Empathy Items and External Variables (College Data, N = 289)

Item	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	2.75	.72	1.00															
2	1.60	.70	.53	1.00														
3	1.30	.74	.53	.81	1.00													
4	1.68	.83	.44	.59	.55	1.00												
5	2.38	.73	.38	.49	.38	.40	1.00											
6	2.42	.79	.38	.43	.34	.42	.69	1.00										
7	2.18	.83	.40	.48	.43	.48	.67	.68	1.00									
8	2.63	.77	.46	.47	.32	.49	.67	.70	.60	1.00								
9	2.42	.75	.30	.39	.27	.21	.32	.27	.20	.32	1.00							
10	1.66	.88	.31	.49	.47	.43	.52	.56	.53	.44	.52	1.00						
11	1.28	.86	.25	.44	.44	.44	.41	.44	.47	.34	.47	.77	1.00					
12	1.42	.88	.30	.48	.47	.50	.50	.45	.45	.38	.41	.76	.76	1.00				
13	5.44	.59	.30	.12	.07	.08	.20	.25	.14	.22	.14	.07	.06	.09	1.00			
14	3.70	.60	.06	.10	.11	−.01	.05	−.03	−.04	.08	.16	−.05	−.07	−.06	−.01	1.00		
15	3.73	.46	.06	.12	.08	.10	.15	.12	.12	.15	.11	.12	.10	.11	−.02	.02	1.00	
16	3.52	.38	.11	.27	.18	.20	.18	.12	.18	.18	.20	.23	.20	.22	.05	.31	.32	1.00

Item 13: perceived effectiveness; Item 14: BIS; Item 15: BAS; Item 16: Trait Empathy.
[1]Sex, age, and message topic were partialed out.

Criteria for evaluating the models

To evaluate the overall fit of the models to the data, four fit indices were considered. First, the Goodness of Fit Index (GFI) produces values ranging from 0 to 1, with values in excess of .90 indicating good fit. Second, the Comparative Fit Index (CFI) produces values ranging from 0 to 1, with values larger than .90 indicating good fit. Third, Browne and Cudeck (1993) contend that values of the Root Mean Square Error of Approximation (RMSEA) of .08 or lower indicate reasonable fit, though values of .06 or below should be preferred. Fourth, the Bayesian Information Criterion (BIC) is constructed such that negative values provide evidence of model fit, while positive BIC values suggest problematic model fit. Differences in BIC of 2 are thought to provide some evidence; 6 or more, strong evidence; and 10 or more, very strong evidence for the superiority of model with a more negative BIC value over another (Raftery, 1995).

Results

Table 3 presents the fit indices and comparisons of the three-factor models from the two samples. Figure 1 gives the standardized path coefficients for the second-order single-factor model (parameters for college student data on the left; those for adult data on the right). The external variables are not presented in the figure for the sake of clarity. The model fit indices showed that the first-order single-factor model did

Table 2B Means, Standard Deviations, and Correlation Matrix[1] of the State Empathy Items and External Variables (Adult Data, N = 189)

Item	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	2.49	.99	1.00															
2	2.02	1.18	.62	1.00														
3	1.95	1.21	.66	.69	1.00													
4	2.19	1.14	.41	.57	.59	1.00												
5	2.55	1.05	.39	.41	.31	.30	1.00											
6	2.50	1.09	.37	.42	.34	.43	.49	1.00										
7	2.51	1.08	.37	.35	.36	.34	.54	.40	1.00									
8	2.60	1.03	.40	.44	.33	.41	.49	.57	.54	1.00								
9	2.63	1.02	.44	.41	.32	.39	.44	.45	.47	.51	1.00							
10	2.32	1.19	.41	.43	.26	.29	.44	.39	.53	.69	.58	1.00						
11	1.93	1.28	.38	.37	.40	.39	.39	.37	.40	.33	.53	.73	1.00					
12	2.16	1.18	.44	.38	.32	.35	.40	.36	.36	.33	.60	.87	.78	1.00				
13	5.73	.70	.40	.28	.26	.12	.21	.24	.24	.19	.12	.22	.20	.10	1.00			
14	3.22	.66	.08	.12	.13	.10	.10	.07	.07	.10	.10	.19	.11	.06	.09	1.00		
15	3.52	.76	.15	.13	.18	.15	.18	.25	.20	.17	.24	.18	.23	.25	.17	.13	1.00	
16	3.50	.57	.19	.24	.22	.20	.27	.19	.26	.30	.21	.25	.21	.20	.32	.23	.45	1.00

Item 13: perceived effectiveness; Item 14: BIS; Item 15: BAS; Item 16: Trait Empathy.
[1]Sex, age, and smoking behavior were partialed out.

not fit the data in either study. With 98 degrees of freedom, the fit indices in Study 1 were: $\chi^2 = 995.61$, RMSEA =.18, GFI =.70, CFI =.81, and BIC = 434.63. Those from Study 2 were: $\chi^2 = 484.42$, RMSEA =.14, GFI =.76, CFI =.84, and BIC = − 29.27. On the other hand, with 87 degrees of freedom, the first-order oblique three-factor model was a good fit to the data. The fit indices in Study 1 were: $\chi^2 = 268.05$, RMSEA = .08, GFI = .90, CFI = .96, and BIC = − 224.93. Those in Study 2 were slightly worse and indicative of problematic fit: $\chi^2 = 258.77$, RMSEA = .09, GFI = .93, CFI = .88, and BIC = − 197.26. Additional evidence came from (a) the standardized factor loadings: The three factors had similar and reasonably high loadings on the indicators (ranging from .55 to .92, and similar within the same factor across the two samples, Figure 1); and (b) the substantive correlations among the three factors (ranging from .53 to .69), thereby providing clear indication of nonorthogonality.

The second-order single-factor model was nested within the oblique first-order three-factor model. Two sets of indices were used to evaluate the second-order model: (1) RMSEA, GFI, CFI, and BIC; and (2) the BIC difference between the oblique three-factor model and the second-order single-factor model. With 95 degrees of freedom, the absolute indices showed that the second-order single-factor model was also a good fit to the data. In Study 1, the indices were: $\chi^2 = 289.52$, RMSEA =.08, GFI =.90, CFI =.96, and BIC = − 248.79. In Study 2, the fit indices were: $\chi^2 = 265.72$,

RMSEA =.08, GFI =.88, CFI =.93, and BIC = − 232.24. The values for RMSEA, GFI, and CFI in Study 1 were the same for the second-order single-factor model as the first-order oblique three-factor model, but slightly better for the second-order single-factor model in Study 2. More importantly, the BIC difference was 23.86 in Study 1 and 34.98 in Study 2, both in favor of the second-order single-factor model. It should be noted that the absolute fit for the second-order model in Study 2 was indicative of problematic fit, particularly GFI, since it was below .90.

Together, these values indicated that the second-order single-factor model provided a plausible account of the data. The factor loadings of the three first-order factors on the second-order factor provided additional support: The factor loadings ranged from .72 to .92 between the two studies. These results provided evidence that the second-order single-factor model was adequate for the state empathy scale, and could be considered as statistically equivalent to the first-order oblique three-factor model.

Scale Reliability

Among the three first-order factors, the alpha reliability in the two studies was .83 and .91 for affective empathy, .91 and .86 for cognitive empathy, and .82 and .92 for associative empathy. The reliability for the whole scale was .93 in Study 1 and .92 in Study 2.

Table 3 Fit Indices and Model Comparisons of the State Empathy Scale

Data	Model	χ^2	d.f.	RMSEA[a]	CFI[b]	GFI[c]	BIC[d]	BIC Difference
College Data (N = 289)	First-Order Single-factor Model[e]	995.61	98	.18	.81	.70	434.63	
	First-Order Oblique Three-Factor Model[e]	268.05	87	.08	.96	.90	−224.93	
	Second-Order Single-Factor Model[e]	289.52	95	.08	.96	.90	−248.79	23.86
Adult Data (N = 189)	First-Order Single-Factor Model[e]	484.42	98	.14	.84	.76	−29.27	
	First-Order Oblique Three-Factor Model[e]	258.77	87	.09	.93	.88	−197.26	
	Second-Order Single-Factor Model[e]	265.72	.95	.08	.93	.88	−232.24	34.98

[a]Root Mean Squared Error Approximation. [b] Comparative Fit Index. [c] Goodness of Fit Index.
[d]Bayesian Information Criterion = $\chi^2 - \ln(N) \times$ d.f., where χ^2 is the Minimum Function Chi-square, N is the sample size, and d.f. is the degree of freedom of the model.
[e]The model includes the four external variables (BIS, BAS, trait empathy, and perceived effectiveness).

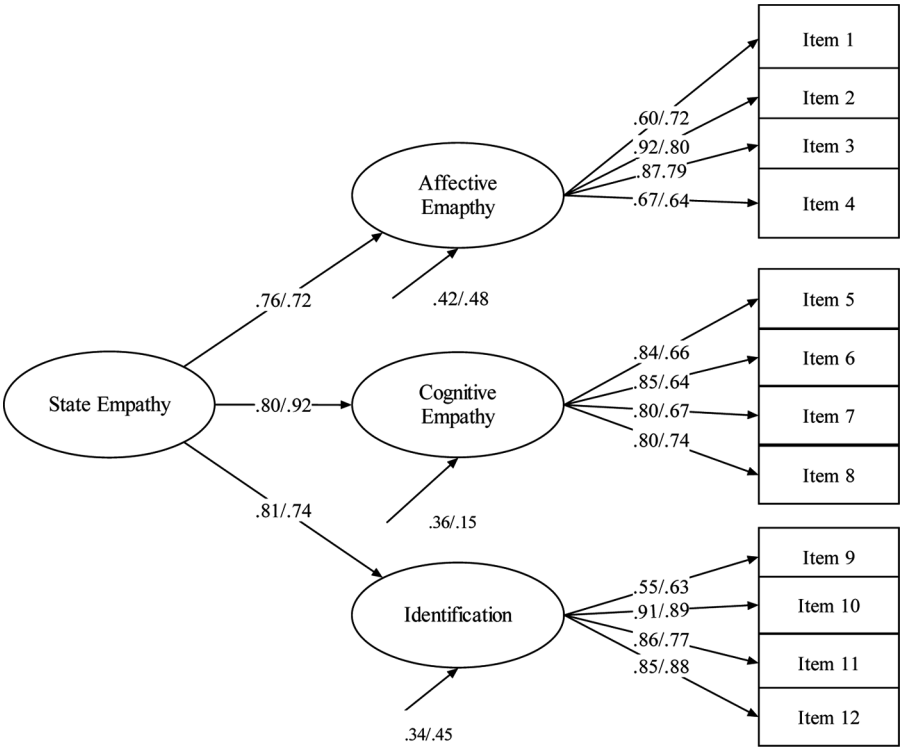


Figure 1 Standardized Parameter Estimates of the Second-Order Single-Factor Model for the State Empathy Scale.[a] *Note.* [a]Parameter estimates for the college student data on the left, parameter estimates for the adult data on the right.

Alpha if item deleted fell around .92 for each of the 12 items between the two studies. These results provided evidence that the 12-item state empathy scale was reliable.

Construct Validity

Four external variables, including approach/withdrawal motivations (BIS/BAS), a potential cause (trait empathy), and a potential outcome (perceived effectiveness) of state empathy during message processing, were used to assess the construct validity of the scale. Table 4 presents the associations between the first-order factors and the external variables and those between the second-order factor and the external variables. These associations demonstrated evidence for the construct validity of the state empathy scale.

BAS

A positive association was predicted between BAS and state empathy (H1). The associations between BAS and the first-order factors were all positive and significant at $p < .05$ in both studies (Table 4, Column 3): They ranged from .12 to .16 in Study 1 and from .18 to .26 in Study 2. The magnitude of the association between

Table 4 Scale Reliabilities and Correlations Between the State Empathy Factors and External Variables

Data	Factor	Perceived Effectiveness	BIS	BAS	Trait Empathy	Second-Order Factor	Affective Empathy	Cognitive Empathy	Associative Empathy
College Data (N = 289)	Second-Order Factor	.20**	.02	.17*	.30**	.92[a]			
	Affective Empathy	.14*	.10	.12*	.26**	.76***	.83[a]		
	Cognitive Empathy	.25**	.02	.16**	.20**	.80***	.61***	.91[a]	
	Associative Empathy	.09*	−.05	.13*	.25**	.81***	.61***	.65***	.82[a]
Adult Data (N = 189)	Second-Order Factor	.30**	.16*	.29**	.36**	.94[a]			
	Affective Empathy	.33**	.10*	.18*	.26**	.72***	.91[a]		
	Cognitive Empathy	.25**	.12*	.26**	.35**	.92***	.66***	.86[a]	
	Associative Empathy	.18*	.13*	.24**	.24**	.74***	.53***	.69***	.92[a]

[a]Alpha reliabilities.
*$p < .05$. **$p < .01$. ***$p < .001$.

the second-order factor and BAS was the biggest in each study (.17 in Study 1 and .29 in Study 2). These results provided support for H1. Comparison of the four coefficients within each study following the Cohen and Cohen procedure (1983, pp. 53–55) showed that they were not significantly different from each other, demonstrating a pattern of external parallelism.

BIS

A nonsignificant association was predicted between BIS and state empathy (H2). None of the associations between BIS and the three first-order factors reached significance at the $p < .05$ level in Study 1 (Table 4, Column 3): .10 for affective empathy, .02 for cognitive empathy, and −.05 for identification. The association between BIS and the second-order factor was also nonsignificant ($\beta = .02$, n.s.). H2 was supported in Study 1. These associations were positive and significant in Study 2, ranging from .10 to .16. Hence, H2 did not receive support in Study 2. Comparison of the four coefficients in each study following the Cohen and Cohen procedure (1983, pp. 53–55) showed that they were not significantly different from each other. These results also provide evidence for the scale's external consistency, but the evidence was less strong since the evidence for H2 was rather mixed.

Trait empathy

Trait empathy was expected to positively predict state empathy (H3). Its impacts on the three first-order factors were all positive and significant at the $p < .01$ level (Table 4, Column 4): ranging from .20 to .26 in Study 1 and from .24 to .35 in Study 2. The association between trait empathy and the second-order factor was the strongest of all within each study: .30 in Study 1 and .36 in Study 2. Therefore, H3 received support from the data. Comparison of the four coefficients following the Cohen and Cohen procedure (1983, pp. 53–55) showed that they were not significantly different from each other, which again demonstrated clear external parallelism.

Hypothesis 4 predicted that the association between trait empathy and state empathy will be significantly larger than that between BAS and state empathy. Comparison of the two coefficients (trait empathy vs. BAS with the second-order factor) following the Cohen and Cohen procedure (1983, pp. 53–55) showed that was indeed the case in both studies, providing support for the hypothesis.

Perceived effectiveness

State empathy was predicted to be positively associated with perceived effectiveness. The associations between the three first-order factors and perceived effectiveness were all positive and significant at least at the $p < .05$ level in both studies (Table 4, Column 1): ranging from .09 to .25 in Study 1 and from .18 to .33 in Study 2. The association between the second-order factor and perceived effectiveness was .20 in Study 1 and .30 in Study 2. Hence H5 also received support. Comparison of the four coefficients within each study following the Cohen and Cohen procedure

(1983, pp. 53–55) suggested they were significantly different from each other. Hence, no evidence for the scale's external parallelism.

Discriminant Validity

To assess the discriminant validity of the scale (H6), two-level models were estimated, using message condition (high vs. low empathy in Study 1, and empathy vs. non-empathy in Study 2) to predict state empathy, with individual at Level 2, and message at Level 1. In addition to age, sex, and trait empathy, message topic was entered as covariates in Study 1, while smoking behavior was the additional covariate in Study 2.

In Study 1, manipulation condition had a positive and significant effect: $\beta = .40$, $p < .001$. Participants in the high-empathy cells reported higher levels of state empathy ($M = 2.18$, s.e. $= .03$) than those in the low-empathy cells ($M = 1.77$, s.e. $= .03$). In Study 2, the fixed-effects estimate for message type was also positive and significant: $\beta = .50$, $p < .001$. Individuals in the empathy condition reported a higher level of state empathy ($M = 2.66$, s.e. $= .07$) than the other two conditions combined ($M = 2.16$, s.e. $= .06$). These results supported H6 and demonstrated discriminant validity of the scale.

Additionally, in Study 1, the fixed-effects parameter for message topic was also significant: $\beta = -.15$, $p < .05$, with drunk driving messages invoking stronger state empathy ($M = 2.06$, s.e. $= .03$) than the antismoking PSAs ($M = 1.88$, s.e. $= .03$). This was also consistent with the theory given that the negative consequences of drunk driving affect both the drunk driver and the victims and that the PSAs portrayed the sufferings of victims.

Discussion

Psychometric Properties of the State Empathy Scale

According to Hunter and Gerbing (1982), assessment of measurement instruments should be based on content validity, internal consistency and external consistency. It is argued that existing scales for state empathy are more or less problematic regarding these issues. With items adapted from existing scales and new items added, the state empathy scale not only exhibits good semantic correspondence with the construct, but also constitutes a reasonable sampling of that conceptual domain.

The primary method for examining relationships among the items has been factor analysis. Across data from a college student sample and an adult sample, confirmatory factor analyses led to the conclusion that a second-order single-factor model provided a good fit to the 12 state empathy items. This conclusion was based on a number of criteria. First, the correlations among the first-order factors were all positive and substantial. Second, such absolute fit indices as RMSEA, GFI, and CFI for the three-factor first-order model and the second-order model were almost identical to each other. Third, the BIC difference was larger than 10 and in favor of the second-order model. Finally, the three first-order factors exhibited good consistency in their relationships with external variables. This consistent pattern of parallelism

was notable with respect to the variables that are potential cause (trait empathy) and consequence (perceived effectiveness) of state empathy, and variables that have motivational properties (BIS and BAS).

Limitations & Directions for Future Research

This study possesses certain strengths and limitations. The scale was validated with samples selected from college students and the general public as well. Replication of the results demonstrated external validity of the findings. The fit indices for the obtained second-order single-factor model were somewhat problematic for the adult sample. It remains an empirical question if the scale functions differently in college versus adult populations; or the problem might have been due to the threats to internal validity from a field study (e.g., distractions at a flea market, computer literacy among the older adults). The fact that multiple professionally produced television PSAs on two topics (smoking and drunk driving) were employed also can be considered as a strength. The 12 items were developed to suit for both negatively and positively valenced situations. However, the PSAs on both topics were negatively valenced. Obviously, the evidence would have been much stronger if the PSAs had been on a variety of (health and nonhealth) topics, and if some positively valenced PSAs had been used as stimuli as well. It seems that the current study perpetuates the exact same bias the existing literature was criticized for earlier in the paper. On the other hand, it was considered a sound judgment to validate the scale in negatively valenced situations first where there has been overwhelming evidence for empathic arousal, before extending the research to positively valenced situations.

A related issue, as one of the reviewers pointed out, is that smoking and drunk driving are behaviors that have been regularly marketed in the media as being dangerous to others, rather than only harming the self. The PSAs were carefully selected such that there was a strong emphasis on self in each and every PSA: All the antismoking ones were unrelated to second-hand smoke, but emphasized dangers to oneself, and no character in the drunk driving PSAs was portrayed as the no-fault victim in the accident due to drunk driving. Moreover, the message advocacies were focused on self: not to smoke, or not to drink and drive (as compared to ''help other people''). What is going on in the media campaigns, however, could have constituted a threat to internal validity in the form of history (Shadish, Cook, & Campbell, 2002).

Second, the message-specific repeated measures boosted the cost-effectiveness of the study and might have been necessary, since the PSAs were 30 seconds in duration, and it might take a certain ''volume'' of message exposure for the patterns of message processing to be detectable. However, the repeated measures introduced interdependence in the data structure and potentially created ''false patterns'' in individuals' responses to the scale due to testing effect. The multilevel analyses in confirmatory factor analyses as well as in external parallelism testing produced very similar results compared to the analyses when the repeated measures were averaged into single indices. Therefore, such biases in the findings and conclusions due to the repeated measures were less likely.

Third, in addition to scale validation, this investigation also intended to explore the role of state empathy in the process of persuasion. Perceived effectiveness has been established to be a valid alternative measure to actual persuasion outcomes (Dillard, Shen, et al., 2007). Nevertheless, future studies that examine the behavior of state empathy in relation to attitude and behavior should enhance our understanding regarding the role of state empathy in persuasion and health communication.

Fourth, provided that state empathy is positively associated with persuasion, a valid and reliable scale on state empathy during message processing could be a useful tool for message pretesting in formative research. To maximize the utility of message-induced empathy in persuasion and public health campaigns, however, better understanding and more knowledge of the precursors of state empathy are needed. While trait empathy helps to segment the audience and message-tailoring, empathy-inducing message features are essential when it comes to message design. Campbell and Babrow (2004) suggested that messages have to be perceived as realistic for state empathy to be activated. More formative research is also needed to find out what kind of context and perspective might be easier for the audience members to recognize, understand, and share. In addition, better understanding of the antecedents of message-induced empathy also calls for more research on the content, stylistic, and production features of messages. Such knowledge can offer guidelines for message production, serve as coding schemes for judging the potential of a message to elicit state empathy, and become a useful tool in message selection and campaign planning.

Finally, despite the consensus that empathy is not a monolithic process, but involves multiple closely related dimensions, scholars differ upon the explication and actual operationalization of message-induced empathy (e.g., Bagozzi & Moore, 1994; Campbell & Babrow, 2004; the current study). Assessment of measurement instruments should be based on content validity, internal and external consistency (Hunter & Gerbing, 1982). The explication in this study differs notably from the existing ones regarding content domain. The appropriateness of such a conceptual domain, including face validity and content validity of the scale, is subject to public scrutiny and assessment. Despite the evidence for its scale validation, further evidence should come from studies that evaluate and directly compare the alternative scales (e.g., Campbell & Babrow, 2004), which should be the basis for scale selection in future studies.

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