

ORIGINAL ARTICLE

# The Effects of Argument Quality and Involvement Type on Attitude Formation and Attitude Change: A Test of Dual-Process and Social Judgment Predictions

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*Involvement has long been theoretically specified as a crucial factor determining the persuasive impact of messages. In social judgment theory, ego-involvement makes people more resistant to persuasion, whereas in dual-process models, high-involvement people are susceptible to persuasion when argument quality is high. It is argued that these disparate predictions might be reconciled by either different involvement types (i.e., value relevant vs. outcome relevant) or different attitude modification processes (i.e., attitude change vs. attitude formation). An experiment (N = 684) varying topic, position advocated, outcome relevance, and argument quality tested these moderators. The data were consistent with existence of two different types of involvement, but none of the theoretical predictions were consistent with the data. Instead, a main effect for argument quality had the largest impact on attitude change. Regardless of value-relevant involvement, outcome-relevant involvement, and attitude modification process, participants were more persuaded by high- rather than low-quality arguments, with boomerang effects observed for low-quality arguments. These findings highlight the importance of sound message design in persuasion.*

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Theory, empirical evidence, and common sense hold that one of the most important factors affecting persuasion is involvement. Several theoretical perspectives with substantial empirical support specify “involvement” as a key individual difference that affects the success or failure of a persuasive attempt. In dual-process models, the degree of involvement is considered to be a primary factor influencing the type of processing used to assess incoming messages and to determine the extent to which

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a message might be persuasive (e.g., Chaiken, Liberman, & Eagly, 1989; Petty & Cacioppo, 1986a). Alternatively, in social judgment theory (SJT) (Sherif, Sherif, & Nebergall, 1965), involvement is posited to have a main effect on attitude change such that the more involved a person is with an issue, the more that person will resist attitude change. This article attempts to reconcile dual-process and social judgment differences by testing two plausible moderators: involvement type (value relevant vs. outcome relevant) and process type (attitude change vs. attitude formation).

## Theoretical approaches

Dual-process models such as the Elaboration Likelihood Model (ELM) (Petty & Cacioppo, 1986b) and the Heuristic-Systematic Model (Chaiken et al., 1989) posit that high involvement motivates one to be more attuned to persuasive messages and to process the content of the message more actively, whereas SJT (Sherif & Hovland, 1961; Sherif et al., 1965) posits that high involvement inhibits acceptance of persuasive messages. Thus, under certain conditions, these two approaches make seemingly opposite predictions.

### Dual-process models

Dual-process models assume that there are two routes to persuasion: central/systematic or peripheral/heuristic (Chaiken et al., 1989; Petty & Cacioppo, 1986b). Motivation and ability are the two major factors that determine whether an individual engages in central/systematic or peripheral/heuristic processing of incoming messages. When an individual is motivated and able to process information, he or she is more likely to evaluate message quality rather than relying on peripheral/heuristic cues such as source attractiveness, message length, and so forth. Messages with strong arguments or high-quality evidence can therefore result in the successful persuasion of highly motivated persons and result in more lasting change (Petty & Cacioppo, 1979a). Petty and Cacioppo (1986b) define argument quality in terms of persuasive impact. Strong arguments are those that generate predominately positive thought in message recipients, and weak arguments are those that generate unfavorable thoughts.

One of the most important factors that affect one's motivational level is involvement. Petty and Cacioppo (1986b) use the term "issue involvement" or "personal relevance" to refer to the extent to which a message topic has personal meaning and important consequences. For matters that are personally relevant, an individual is motivated to process incoming messages centrally. High-involvement individuals evaluate the merits of the message and are persuaded if the arguments are strong enough to generate favorable thoughts about the message topic. Alternatively, if the argument quality is poor, highly involved message recipients will recognize the flaws in the message, generate antimessage thoughts, and ultimately reject the content advocated by the message. Low-involvement individuals, however, are less motivated and are more likely to process the message peripherally, basing their judgments on heuristics, and hence are less affected by argument quality and strength.

Thus, dual-process models predict a statistical interaction between involvement and argument strength on attitude change. Argument strength is predicted to have substantial and positive effects on persuasion when involvement is high but little impact on less-involved persons. Consistent with this prediction, several studies report an involvement by argument strength interaction of this general form (e.g., Johnson, 1994; Leippe & Elkin, 1987; Maio & Olson, 1995; Petty & Cacioppo, 1979b, 1981, 1984; Stiff, 1986; Stiff & Boster, 1987).

Based on the theoretical predictions of dual-process models and the findings summarized above, we advance the first of four rival hypotheses:

H1 (the dual-process hypothesis): Involvement and argument quality will interact to affect the degree of attitude change such that argument quality will have relatively greater and more positive effects under conditions of high rather than low involvement.

### Social judgment theory

SJT posits that for a specific topic, an individual has an attitudinal continuum that can be divided into three latitudes: acceptance, rejection, and noncommitment (Sherif & Hovland, 1961; Sherif et al., 1965; for review, see Granberg, 1982). These latitudes reflect ranges of positions along an attitude continuum, and affect how an incoming message will be judged and how likely a person is to be persuaded by a message. If the message is basically agreeable, the message is in the latitude of acceptance. A message that is objectionable is in the latitude of rejection. The latitude of noncommitment includes positions on a topic that are neither acceptable nor objectionable. If a message falls in the latitude of acceptance, persuasion is most likely to be successful. On the other hand, a message that advocates a position located in the latitude of rejection is most likely to fail. The width of these latitudes varies across individuals and attitude topics. For some people and some attitudes, the latitude of acceptance is relatively wide and the latitude of rejection is relatively small. For such people and attitudes, successful persuasion is more likely to occur. For other people and attitudes, however, persuasion is more likely to fail because they have a narrow latitude of acceptance and a wide latitude of rejection.

SJT specifies that ego-involvement is the most salient factor determining the widths of these latitudes (Sherif et al., 1965). As involvement increases, latitudes of acceptance and noncommitment shrink and the latitudes of rejection expand. Hence, as involvement increases, susceptibility to persuasive attempts should decrease concomitantly as a result of changes in the ranges of each type of latitudes. That is, attitude change should be more difficult to achieve for high- rather than low-involvement targets.

Based on the theoretical predictions of SJT and the findings summarized above, the second of four rival hypotheses is advanced:

H2 (the social judgment hypothesis): Involvement will have a direct effect on the degree of attitude change such that there will be a substantial negative correlation between

subject report involvement and the attitude change generated by a persuasive message.

### **Involvement types as a moderator**

Reviewing previous research reporting equivocal results and conducting meta-analysis on involvement studies, Johnson and Eagly (1989) argue that there are different types of involvement (i.e., value-relevant involvement [VRI], outcome-relevant involvement [ORI], and impression-relevant involvement), which influence different persuasive effects differently. The first two of these types are relevant here. VRI refers to the extent to which an attitude object is linked to closely held values and self-concept and thus is conceptually similar to the SJT concept of ego-involvement. As the name implies, ORI refers to the extent to which the attitude object is likely to affect a listener's currently important goals or outcomes. Johnson and Eagly observed that ORI is what is most typically manipulated in dual-process research.

Johnson and Eagly (1989) hold that these types of involvement are conceptually and empirically distinct and that social judgment research predictions and findings involve VRI involvement, whereas dual-process predictions and findings are limited to ORI. Consistent with this, Johnson and Eagly's meta-analysis found that involvement was negatively related to persuasion ( $d = -0.21$ ) but only for studies investigating VRI ( $d = -0.48$  for VRI,  $d = 0.02$  for ORI). They also report that involvement moderates the effects of argument quality as predicted by dual-process models, but these effects were substantially stronger for ORI than VRI. The results, however, were heterogeneous within involvement type, indicating the presence of a moderator.

These findings proved controversial, and the extent to which ORI and VRI reflect the same or different constructs has been the subject of subsequent scholarly debate. Petty and Cacioppo (1990) contend that the two types are functionally similar, that both types increase central/systematic processing as predicted by dual-process models, and that results showing they function differently are attributable to confounds. The Johnson and Eagly (1989) meta-analysis results, however, suggest otherwise as noted in Johnson and Eagly's (1990) reply. Maio and Olson (1995) report a substantial main effect for argument quality, and that the interaction predicted by dual-process models held only for those participants who self-reported as high in ORI. Cho and Boster (2005), too, report evidence that ORI and VRI are functionally different. Based on the findings of Cho and Boster, Johnson and Eagly (1989), and Maio and Olson, we specify a third rival hypothesis:

H3 (the different types of involvement hypothesis): VRI and ORI reflect two empirically distinct constructs.

To the extent that the data are consistent with the third hypothesis, a fourth rival hypothesis is advanced:

H4 (the Johnson and Eagly hypothesis): ORI and argument quality will interact to affect the degree of attitude change such that argument quality will have relatively greater

and more positive effects under conditions of high rather than low involvement, whereas VRI will have a direct effect on the degree of attitude change such that there will be a substantial negative correlation between subject-reported VRI and the attitude change generated by a persuasive message.

### **Attitude modification processes**

Although the sheer amount of research on attitudes and persuasion is enormous, relatively few studies have focused specifically on the similarities and differences between attitude formation and change processes. Relatively, more attention has been paid to investigation of attitude structure and attitude change than attitude formation.

Attitude formation is characterized as an individual's evaluation of an entity that he or she did not previously assess. When confronted with an object or issue an individual has not previously seen or heard, he or she may start evaluating it, forming a new attitude. Even when an individual has some familiarity with the object or issue, it is possible that he or she has not yet started an evaluation of the entity. On the other hand, attitude change is characterized as an individual altering his or her existing evaluations of an entity. Therefore, the concept of attitude change, as used here, assumes that an individual already has some type of preexisting attitudes, and any modification of previously held attitudes is attitude change.

The motivational factors that influence attitude change are likely to function differently from those that impact attitude formation. When presented with persuasive messages on a new matter, and the new matter appears to be important and relevant, people may be more motivated to process the persuasive message on the matter and do so in a less biased manner. On the other hand, as research on selective attention shows (e.g., Wheeler, 1974), after people establish their attitude on an entity, they may be decidedly unmotivated to process relevant but counterattitudinal persuasive messages, especially when they are highly ego-involved. In short, perhaps, high involvement is a facilitator for attitude formation but is an inhibitor of attitude change.

It is possible that the discrepant findings documented by Johnson and Eagly (1989) stem from studying different types of attitude modification, rather than (or in addition to) the inherently different types of involvement.<sup>1</sup> Researchers in the dual-process tradition have conducted experiments in which involvement is manipulated. Because involvement was experimentally induced, researchers could not use topics on which participants already had high- or low-involved attitudes. Because participants in the experiments never heard of or knew little about these topics, it is most likely that the participants did not have existing attitudes on these issues. Hence, it is reasonable to propose that dual-process research investigating involvement has been studying persuasion as attitude formation rather than attitude change. Alternatively, SJT research often recruited research participants based on preexisting attitudes or had participants self-report involvement on topics on which people vary in involvement. These methodologies involved the study of existing attitudes. Thus,

SJT research investigating involvement has studied persuasion as attitude change rather than attitude formation.

There are also reasons why attitude modification process (i.e., formation vs. change) might actually provide a more compelling explanation than different involvement types. First, as argued above, it makes sense that persuasive messages and involvement function differently in attitude formation and attitude change contexts. Second, Johnson (1994) reported that prior information about the attitude object is a moderator of dual-process effects. Specifically, dual-process findings were stronger under conditions of no prior information. Johnson's data might be interpreted as consistent with an attitude modification process explanation.

Given the above reasoning, a rival hypothesis is advanced:

H5 (the formation change hypothesis): Under conditions of no prior attitude (i.e., attitude formation), involvement and argument quality will interact to affect the degree of attitude change such that argument quality will have relatively greater and more positive effects under conditions of high rather than low involvement, whereas when previous attitudes exist (i.e., attitude change), involvement will have a direct effect on the degree of attitude change such that there will be a substantial negative correlation between subject-reported involvement and the attitude change generated by a persuasive message.

## Method

This experiment was designed to examine the effects of persuasive messages on attitude modification using multiple topics. Topics familiar and unfamiliar to the participants were chosen so both attitude formation and change could be assessed. Topics also varied in ORI and VRI. Different degrees of ORI and argument quality were induced, and participants' assessments of both ORI and VRI were measured.

### Participants

The participants in this study were 684 (249 or 36.4% men) undergraduates in a variety of undergraduate communication classes at Michigan State University. Ages ranged from 18 to 44 ( $M = 20.3$ ,  $SD = 2.20$ ). All participants received either extra credit or research credit in exchange for their participation. The procedures were Institutional Review Board (IRB) approved prior to data collection.

### Design

The study used a fully crossed 2 (high vs. low ORI) by 2 (strong vs. weak arguments) by 2 (pro vs. con position) by 3 (topic: green space on campus, banning cell phones from class, affirmative action) independent groups experimental design with initial attitude, postmessage attitude, ORI, VRI, attitude familiarity, and perceptions of position advocated by message as measured variables. Attitude change was the primary dependent measure.

Each participant was randomly assigned to 1 of 24 experimental conditions. Participants read a message advocating a position on one of three topics (adding more green space on campus, banning cell phones from classrooms, and using affirmative action in university admissions). These three topics were chosen to vary systematically in both familiarity and VRI. These topics were also chosen to vary outcome relevance so that they might or might not directly apply to the participants. Participants read either a message advocating or a message opposing the topic at hand.

For the six topic position combinations, half were high-ORI messages and half were low-ORI messages. ORI was experimentally induced by introducing the topic as an issue at either the host institution where the data were collected or as an issue at a geographically distant and somewhat dissimilar university (Northern Arizona University). Reference to one of the two institutions was made in the instructions to the preattitude measure, the instructions to the persuasive message, in the body of the message, in the instruction of the postattitude measure, and in both types of involvement ratings.

Additionally, approximately half of the participants read a strong argument, whereas the rest received a weak argument. The argument quality induction was developed by the current authors for the current experiment. Strong arguments were characterized by sound logic, valid reasons, and the presentation of data. Weak arguments consisted of assertions without support, and circular or vacuous arguments. Kernel messages were first constructed, and the arguments were systematically strengthened or weakened in an iterative process by substitution of strong or weak elements.<sup>2</sup> Message length was held approximately constant.

### Procedures

The data were collected either during regularly scheduled class times or in mass collections in classrooms shortly before or after classes. Participants first completed and signed an informed consent form listing the topic of study as “contemporary attitudes.” Participants then completed 1 of the 24 different versions of the experimental questionnaire. Participants were told that all answers were anonymous and that they should answer as honestly and accurately as possible.

The questionnaires began with a title listing the topic and the description “attitude survey.” Instructions were provided for each set of items. The first item was a single-item yes–no question asking if the participant had “thought about” the issue before.<sup>3</sup> Items addressing issue familiarity and preexisting attitudes followed. The participants turned the page and were then presented with a written message advocating a position on one of the topics. Postmessage attitude items, and items scaling perceived argument quality, position advocated by the message, ORI, VRI, and demographic questions followed in that order.

### Measures

All multiple-item measures were screened for positive contribution to scale reliability and for consistency with unidimensionality using confirmatory factor analysis.

Problematic items were discarded, and the remaining items were averaged as estimates of their respective constructions. The scales consisting of the retained items proved highly reliable with large, positive, and relatively flat interitem correlations. Items are presented in Appendix A.

Three semantic differential type items with 11-point (0–10, 10 indicating high familiarity) response formats addressed issue familiarity. When averaged, scores ranged from 0 to 10 with a mean of 4.35 ( $SD = 2.88$ ). The distribution was relatively flat. Cronbach's  $\alpha$  was .96.

Preexisting attitude was measured with four 7-point (e.g., 1 [*disfavor*] to 7 [*favor*]) semantic differential type items. One item was dropped because it proved problematic in the postmessage attitude measure. The scale average was flat but not skewed with  $M = 3.73$ ,  $SD = 1.83$ , and  $\alpha = .97$ . The same four items were used to assess postmessage attitude. The item dropped from the premessage scale was deleted for a deviation from unidimensionality in the internal structure of the scale. The average of the retained items was positively skewed and platokurtic with  $M = 3.79$ ,  $SD = 1.90$ , and  $\alpha = .98$ . When the pretest scores were subtracted from the posttest scores, the resulting attitude change scores ranged from +6 to -6 with  $M = 0.06$ ,  $SD = 1.59$ . The distribution was platokurtic but not skewed. The scoring was such that a positive value reflected change in the direction of message recommendation for the protopic messages, but a negative value reflected change in the direction of the message for the con-topic messages.

Perceptions of message quality were scaled as an induction check. The measure consisted of four Likert-type items with 7-point response formats (1–7, 7 indicating agreement). One item was deleted for a failure to contribute to scale reliability. When averaged, the remaining items exhibited a flat but not skewed distribution ( $M = 3.40$ ,  $SD = 1.79$ , and Cronbach's  $\alpha = .83$ ).

ORI and VRI were scaled with four Likert-type items, each with a 7-point response format (1–7, 7 indicating agreement). One item from each scale was deleted due to inconsistency with a unidimensional measurement model. The remaining items for each were averaged. The distributions for each were again flat but not skewed: ORI,  $M = 3.05$ ,  $SD = 1.85$ , and Cronbach's  $\alpha = .86$ ; and VRI,  $M = 3.43$ ,  $SD = 1.75$ , and Cronbach's  $\alpha = .88$ .

### Manipulation checks

The ORI induction was assessed with the full  $2$  (ORI level)  $\times 2$  (argument quality)  $\times 2$  (position)  $\times 3$  (topic) analysis of variance (ANOVA) with the ORI scores as the dependent measure. Participants reported higher levels of ORI in the high-ORI condition ( $M = 4.15$ ,  $SD = 1.69$ ) than in the low ( $M = 2.01$ ,  $SD = 1.32$ ),  $F(1, 660) = 357.37$ ,  $p < .001$ ,  $\eta^2 = .58$ .<sup>4</sup> These results suggest that the ORI manipulation was successful with the qualifications that, on average, only a moderate degree of ORI was generated in the high-involvement condition and that some differential manipulation strength across conditions was evident.

The argument quality induction was tested with the full  $2 \times 2 \times 2 \times 3$  ANOVA with the perceptions of argument strength as the dependent measure. Participants



reported that the strong arguments were perceived as higher in quality ( $M = 4.02$ ,  $SD = 1.75$ ) than the weak arguments ( $M = 2.80$ ,  $SD = 1.61$ ),  $F(1, 660) = 99.76$ ,  $p < .001$ ,  $\eta = .36$ .<sup>5</sup>

The three topics chosen were intended to vary in both attitude familiarity and VRI with both factors being lowest in the green space topic and highest for the affirmative action condition. Twenty-eight percent of the green space respondents reported having heard about that issue previously compared with 59% of the cell phone respondents and 90% of the affirmative action participants. All three conditions differed from one another at  $p < .001$ . The same order was evident with a four-way ANOVA with topic familiarity as the dependent measure: green space  $M = 2.71$  ( $SD = 2.41$ ), cell phones  $M = 3.84$  ( $SD = 2.65$ ), affirmative action  $M = 6.48$  ( $SD = 2.13$ );  $F(2, 660) = 148.88$ ,  $p < .001$ ,  $\eta = .55$ . No other effects were statistically significant. The four-way ANOVA with VRI also showed substantial and anticipated topic effects,  $F(2, 660) = 45.06$ ,  $p < .001$ ,  $\eta = .31$ . Both green space ( $M = 3.01$ ,  $SD = 1.64$ ) and cell phones ( $M = 3.04$ ,  $SD = 1.73$ ) were significantly lower (with Tukey's *b*) than affirmative action ( $M = 4.21$ ,  $SD = 1.62$ ). Thus, the three topics instilled statistically significant and substantial variation in both familiarity and VRI.<sup>6</sup>

## Results

### Hypothesis tests

The dual-process model hypothesis (H1) predicted that involvement and argument quality would interact to affect the degree of attitude change such that argument quality would have relatively greater and more positive effects under conditions of high rather than low involvement. Separate analyses were run for pro and con conditions because the meaning of the attitude change values depended upon the position advocated. Hence, 2 three-way (involvement by argument quality by topic) ANOVAs were run with the second serving as an internal replication of the first. For the protopic messages, all sources of variation were statistically significant except the hypothesized two-way involvement by argument quality interaction,  $F(1, 339) = 0.03$ ,  $p = .87$ ,  $\eta = .00$ . Because the three-way interaction (involvement by argument quality by topic) was statistically significant,  $F(2, 339) = 3.84$ ,  $p = .02$ ,  $\eta = .12$ , the two-way involvement by argument quality interaction was examined separately for each topic. Analyses showed that the two-way interaction was not statistically significant within specific topics. Null results for the anticipated two-way interaction were also obtained in the con-topic message conditions,  $F(1, 319) = 0.36$ ,  $p = .55$ ,  $\eta = .03$ . In both analyses, the main effect for argument quality was the largest source of explained variation.<sup>7</sup>

The social judgment hypothesis (H2) predicted that involvement would have a direct effect on the degree of attitude change such that there would be a substantial negative correlation between subject-reported involvement and the attitude change generated by the persuasive message. Again, analyses were run separately for pro and

con message conditions. Attitude change scores were regressed onto both ORI and VRI scores, and zero-order correlations were examined. In the pro message condition, attitude change was negatively correlated with ORI scores, unstandardized coefficient,  $b = -.19$ ,  $p < .05$ ,  $r(349) = -.17$ ,  $p < .05$ , but not VRI,  $b = .04$ ,  $p = .52$ ,  $r(349) = -.07$ ,  $p = .22$ . In the con message conditions, attitude change was neither associated with ORI,  $b = -.01$ ,  $r(329) = .00$ ,  $p = .91$ , nor VRI,  $b = .02$ ,  $r(329) = .02$ ,  $p = .67$ .

The main effect for induced involvement was statistically significant in the pro but not the con conditions: pro message,  $F(1, 339) = 14.21$ ,  $p < .001$ ,  $\eta = .17$ ; and con message,  $F(1, 319) = 0.35$ ,  $p = .55$ ,  $\eta = .01$ . For the protopic messages, participants were more persuaded in the low- ( $M = +0.28$ ,  $SD = 1.35$ ) rather than high- ( $M = -0.24$ ,  $SD = 1.48$ ) involvement conditions (for the con-topic messages, low involvement  $M = +0.02$ ,  $SD = 1.91$  and high involvement  $M = +0.09$ ,  $SD = 1.53$ ). The effect for induced involvement paralleled the effect observed for measured ORI. Although some statistically significant effects in the right direction were observed, those effects were small, did not replicate, and were for ORI rather than VRI. Therefore, the data were predominantly inconsistent with the social judgment prediction.

Hypothesis 3 predicted that ORI and VRI reflect two empirically distinct constructs. This hypothesis was tested in a variety of ways. The correlation between the two involvement scales was positive and substantial,  $r(682) = .51$ ,  $p < .001$ . Nevertheless, examination of the interitem correlations showed two clear internal consistency clusters suggesting two correlated but distinct factors (see Table 1). To further investigate this hypothesis, 2 two-way (topic by involvement induction) ANOVAs were conducted, one with the ORI scale and the other with the VRI scale as the dependent measure.

Consistent with Hypothesis 3, the involvement induction had a larger effect on the ORI scale,  $F(1, 678) = 362.95$ ,  $p < .001$ ,  $\eta = .58$ , than on the VRI scale,  $F(2, 678) = 43.82$ ,  $p < .001$ ,  $\eta = .31$ . On the other hand, topic accounted for more variance on the VRI scale,  $F(1, 678) = 103.91$ ,  $p < .001$ ,  $\eta = .34$ , than on the ORI scale,  $F(2, 678) = 5.04$ ,

**Table 1** Interitem Correlations for Outcome-Relevant (ORI) and Value-Relevant (VRI) Involvement

	ORI1	ORI2	ORI3	VRI1	VRI2	VRI3
ORI1	1.0	—	—	—	—	—
ORI2	.80	1.0	—	—	—	—
ORI3	.63	.63	1.0	—	—	—
VRI1	.40	.42	.37	1.0	—	—
VRI2	.43	.46	.39	.85	1.0	—
VRI3	.40	.40	.42	.63	.66	1.0
<i>M</i>	3.33	2.63	3.21	3.16	3.26	3.87
<i>SD</i>	2.26	1.84	2.15	1.88	1.89	2.10

*Note:* ORI = outcome-relevant involvement; VRI = value-relevant involvement.

$p < .01$ ,  $\eta = .10$ . These findings suggest that the two involvement scales were not parallel with respect to the topic and involvement inductions, and consequently, the two types of involvement were related but empirically distinct constructs. The data were therefore consistent with H3, Johnson and Eagly's (1989) distinction between ORI and VRI, and Cho and Boster's (2005) findings.

Hypothesis 4 (the Johnson and Eagly hypothesis) predicted that SJT effects would be observed for VRI, but the dual-process predictions would hold for ORI. The analyses reported for H2 above clearly showed that the data were not consistent with the first part of the hypothesis, and the results for H1 suggested that the data did not conform to the dual-process, ORI prediction. Thus, whereas the data were consistent with Johnson and Eagly's (1989) distinction between ORI and VRI, the data were not consistent with the argument that these involvement types function as specified by Johnson and Eagly.

The final hypothesis (H5, the formation change hypothesis) specified attitude modification process rather than involvement type as the moderator determining the conditions under which the predictions of each theory would hold. For the SJT predictions, the data were split both for position advocated (pro/con) and along the dichotomous familiarity item (see Footnote 4). As anticipated, in the protopic message conditions, statistically significant negative correlations were observed between involvement and attitude change when the topic was familiar but not when the topic was unfamiliar. These findings, however, were not statistically significant when controlling for the other type of involvement and were not replicated in the con message condition. The one significant regression coefficient in the con condition was observed for participants familiar with the issue. Therefore, the data were not consistent with Hypothesis 5. The relevant correlations and regression coefficients are presented in Table 2.

The dual-process predictions were retested on a subset of the participants who reported that they were unfamiliar with the topic ( $n = 271$ ). Again, the predicted two-way interaction was nonexistent; pro message  $F(1, 141) = 0.08$ ,  $p = .78$ ,  $\eta = .01$ ,

**Table 2** The Association Between Involvement Ratings and Attitude Change by Familiarity

	Pro Message		Con Message	
	Familiar	Unfamiliar	Familiar	Unfamiliar
VRI	—	—	—	—
<i>r</i>	-.18*	-.09	-.03	.07
$\beta$	-.09	.01	-.08	.19
ORI	—	—	—	—
<i>r</i>	-.21*	-.16	.08	-.16
$\beta$	-.16	-.16	.12	-.25*
<i>N</i>	192	145	190	125

Note: ORI = outcome-relevant involvement; VRI = value-relevant involvement.

\* $p < .05$ .

con message  $F(1, 121) = 0.01, p = .80, \eta = .00$ . Thus, the data were not consistent with Hypothesis 5.

### Argument strength

The data were explored for factors affecting attitude change in the current study with two 2 (argument quality)  $\times$  2 (involvement)  $\times$  3 (topic) ANOVAs, one for each of the two positions advocated. As noted above, the main effect for argument quality was the largest source of explained variation in both analyses:  $F(1, 339) = 60.53, p < .001, \eta = .35$  and  $F(1, 319) = 24.53, p < .001, \eta = .25$  for pro and con message conditions, respectively. In both cases, the strong arguments generated attitude change in the intended direction, whereas the weak arguments did not; strong arguments, protopic  $M = +0.55, SD = 1.12$ , weak arguments, protopic  $M = -0.49, SD = 1.53$ , strong arguments, con-topic  $M = -0.36, SD = 1.60$ , weak arguments, con-topic  $M = +0.49, SD = 1.75$ . A positive value in the protopic condition and negative value in the con-topic conditions reflected changes in the direction of message recommendations. Thus, in both cases, strong arguments resulted in change in the direction of the messages. For strong messages, one sample  $t$  tests comparing the values to zero change were statistically significant,  $t(174) = +6.54, p < .001$  and  $t(159) = +2.85, p = .005$  for pro and con messages, respectively. Alternatively, statistically significant boomerang was evident for weak arguments; one sample  $t$  tests,  $t(175) = -4.21, p < .001$  and  $t(170) = -3.67, p < .001$  for pro and con messages, respectively.

## Discussion

The goal of this study was to assess how recipient involvement affects message persuasiveness under different conditions. Recall that SJT specifies that an increase in ego-involvement should result in a corresponding decrease in attitude change. Alternatively, dual-process models like the ELM posit that involvement is a primary determinant of active (i.e., central or systematic) processing, and that high involvement should facilitate attitude change so long as the argument quality is strong.

Two proposed moderators were advanced in an attempt to reconcile these divergent predictions. First, as proposed by Johnson and Eagly (1989), the studies in the SJT and dual-process traditions may have been measuring or inducing different types of involvement, and the fact that they were studying different types of involvement might explain the differential findings from these two research traditions. Second, whether a message is targeting attitude formation or attempting to change a strongly held existing attitude might explain the differential findings in the dual-process and social judgment research traditions.

Hypotheses reflecting these issues were tested in the attitude change experiment reported here. The results were surprising and proved inconsistent with what might be predicted on the basis of existing theory and research lore.<sup>8</sup>

The data were first examined for consistency with the dual-process model prediction (H1) that induced involvement and argument quality would interact to affect

the degree of attitude change such that argument quality would have more positive effects under conditions of high rather than low involvement. There was no evidence of the predicted two-way interaction. Not only were the results not statistically significant but the effect sizes were also uniformly trivial and sometimes in the wrong direction. These nonfindings are made more credible because the current design provided an internal replication, and the lack of findings replicated. Further, although not reported in the results section above, the data were mined extensively for any evidence of dual-process findings. The current results provide no evidence whatsoever for the interaction between argument quality and involvement predicted by dual-process models.

Although the reasons for the failure of the dual-process predictions are unclear, some methodological explanations can be ruled out. First, the lack of findings cannot reasonably be attributed to inadequate or unreliable dependent measures. All measures, particularly the attitude scales, proved highly reliable, and substantial effects were observed for findings other than those specified by dual-process models. Second, the failure is not likely to be a result of low statistical power. The current study used a larger sample than is typical in the dual-process literature, and effects in the current results as small as 1% of the variance were statistically significant at well below the traditional  $p < .05$  standard. The statistical power to detect differences of  $r = .20$  or greater is .97 or greater. Further, the observed effect sizes for the predicted interactions were so small that if accurate, the results would likely still be nonsignificant with  $n = 1,000$  per cell. Third, the results are not likely to have resulted from weak or problematic experimental inductions. Both inductions produced statistically significant and substantial variation along the intended dimensions, with the involvement induction proving relatively stronger than the argument quality induction. The substantial and consistent main effects observed for argument quality suggest that the argument quality induction was sufficiently potent. Two post hoc induction checks bolster this claim (see Footnote 6). It might be argued that only moderate levels of involvement ( $M = 4.05$  on a 7-point scale) were generated in the high-involvement condition, and that this might explain the lack of findings because the design did not allow for sufficient levels of involvement for central-systematic processing. Such an argument, however, cannot reasonably account for the lack of dual-process findings because substantial argument quality effects were observed, and according to dual-process logic, such argument quality effects require central processing (Eagly & Chaiken, 1993). That is, the observation of substantial argument effects suggests that the level of induced involvement was indeed sufficient. Instead, the place where the current findings depart from the dual-process predictions is for low involvement, and the induction checks show that ORI was indeed low ( $M = 2.01$  on a 7-point scale) in the low-involvement condition. Finally, the results are not likely attributable to topic idiosyncrasies because multiple topics and internal replications were used. Thus, neither poor measurement, nor low statistical power, nor problematic inductions, nor idiosyncratic topics are likely to provide credible explanations for the failure of the dual-process predictions.

Notwithstanding the literature supporting the dual-model predictions, the current (non)findings are not unprecedented. Axsom, Yates, and Chaiken (1987) and Burnkrant and Howard (1984), too, failed to find the anticipated argument strength by involvement interaction and Johnson and Eagly's (1989) meta-analysis reports considerable variability in effects for the dual-process hypothesis. Close examination of Johnson (1994) shows a substantial main effect for argument quality similar to the current findings and only a marginally significant the dual-process interaction ( $p < .06$ ).

To further compare the current findings to previous research, an informal meta-analysis is presented in Table 3. When an outlying study (Leippe & Elkin, 1987) is removed, evidence of a statistically significant interaction of small to moderate size is observed (95% confidence interval,  $r = .13$  to  $.26$ ). This effect, however, is somewhat inflated because some studies finding no effects could not be included due to insufficient statistical reporting. Thus, the data from the current study alone should not be viewed as evidence justifying outright falsification of dual-process models. Instead, the current findings coupled with the results of previous studies provide evidence that dual-process findings are much more fragile and ephemeral than the research lore might lead one to believe.

The social judgment hypothesis (H2) predicted a direct and negative effect for involvement on the degree of attitude change. The data, although mixed, were somewhat and weakly consistent with this hypothesis. One of four correlations

**Table 3** Summary of Results from Previous Research

Study	Argument Quality Main Effect	Dual-Process Involvement Argument Interaction
Johnson (1994)	$F(1, 160) = 20.19, r = .34^*$	$F(1, 160) = 3.78, r = .15$
Leippe and Elkin (1987)	$F(1, 96) = 57.89, r = .61^{*a}$	$F(1, 96) = 68.87, r = .65^{*a}$
Maio and Olson (1995)	$F(1, 294) = 29.26, r = .30^*$	$F(1, 259) = 4.44, r = .13^*$
Petty and Cacioppo (1979b)	$F(1, 68) = 21.65, r = .49^*$	$F(1, 68) = 5.62, r = .28^*$
Petty and Cacioppo (1981)	$F(1, 223) = 35.41, r = .37^*$	$F(1, 223) = 13.04, r = .22^*$
Petty and Cacioppo (1984)	$F(1, 158) = 18.74, r = .33^*$	$F(1, 158) = 13.04, r = .28^*$
Weighted mean $r$	$r = .37^* \pm .073^b$	$r = .24^* \pm .118^c$
Outlier removed	$r = .34^* \pm .057^d$	$r = .19^* \pm .062^{d,e}$
95% Confidence Interval (CI)	$r = .287-.401$	$r = .131-.256$

*Note:* Axsom et al. (1987) and Burnkrant and Howard (1984) report statistically significant main effects for argument quality but nonsignificant involvement by argument quality interactions. These studies were not included above due to insufficient statistical reporting for the calculation of test statistics and effect sizes.

<sup>a</sup> Denotes a statistical outlier more than five standard errors deviant from the mean effect.

<sup>b</sup> The effects are heterogeneous,  $\chi^2(5) = 11.35, p < .05$ .

<sup>c</sup> The effects are heterogeneous,  $\chi^2(5) = 24.37, p < .001$ .

<sup>d</sup> The effects comprising these means are homogeneous.

<sup>e</sup> This estimate is for studies reporting statistically significant (or near significant) results.

\*  $p < .05$ .

was statistically significant, but that correlation was small ( $r = -.17$ ). Further, a main effect for induced involvement was observed in the protopic message condition with greater attitude change in the low- rather than the high-involvement condition. Thus, the social judgment prediction that involvement instills resistance to persuasion was evident in some conditions but not others. The findings were consistent with Johnson and Eagly (1989) who found substantial variability in involvement effects both within and across involvement types.

Johnson and Eagly (1989) argue that involvement types might explain why involvement functions differently in different studies. Hypothesis 3 predicted that ORI and VRI were empirically distinct, and Hypothesis 4 posited that dual-process predictions would hold for ORI whereas social judgment effects would work with VRI.

Consistent with Hypothesis 3, the current data provide clear and convincing evidence for the two different types of involvement. Items measuring each formed distinct, but correlated, factors. Further, as specified by Johnson and Eagly (1989), inducing involvement through an own school, distant school method resulted in substantial variation in ORI. Alternatively, varying topic impacted VRI. These data together with recent findings of Cho and Boster (2005) provide convincing evidence for related but qualitatively different types of involvement. Given that ORI and VRI function differently, these findings are inconsistent with Petty and Cacioppo's (1990) argument to the contrary.

The Johnson and Eagly hypothesis (H4), however, was inconsistent with the data. Because no evidence, conditional or otherwise, for dual-process predictions was obtained, the dual-process model predictions did not hold for ORI. As for SJT effects involving VRI rather than ORI, the exact opposite was evident in the current data. To the extent that the data were consistent with SJT predictions, it was ORI rather than VRI that appeared to be associated with resistance to persuasion. Both measured and induced ORI were negatively related to attitude change in the protopic message conditions. Direct effects for VRI, on the other hand, were variable. Thus, although evidence was obtained for two empirically distinct types of involvement, involvement type did not function as specified by Johnson and Eagly (1989) with respect to dual-process and SJT predictions.

The data were also inconsistent with the formation change hypothesis (H5). This hypothesis predicted dual-process effects on attitude formation and SJT effects for attitude change. The data were not consistent with the dual-process, attitude formation specification, for either the entire sample, or the subsample who were previously unfamiliar with the topic. The data did show statistically significant negative correlations between both types of involvement and attitude change when the participants were familiar with the topics in the protopic condition. These findings, however, did not replicate in the con-topic condition or hold when statistically controlling for the other type of involvement. Given that topics were initially both pro- and counterattitudinal, it is unclear why position advocated would be a moderator. More plausibly, given that the effect sizes were small, it is not surprising that they were unstable. Thus, whereas some evidence for the attitude modification

process hypothesis was obtained, the evidence is weak, inconsistent, and does not engender a great deal of confidence.

The strongest and most consistent findings involved the argument quality main effects. Although most of the significant effects in the study were variable, the strong argument messages were consistently more persuasive than the weak arguments across topics, position advocated, attitude modification process, and involvement. The findings are particularly impressive considering that the argument quality induction was not as potent as the involvement induction. Considering the effect sizes observed for argument quality on attitude change relative to the induction strength, the effects for argument quality are larger than they might appear.

A main effect for argument quality is not unusual. In the informal meta-analysis reported in Table 3, every study examined reported a statistically significant main effect for argument quality. With one outlier removed, the effects are uniformly moderate to large, with an across study weighted effect size of  $r = .34$ . Although given less attention in the literature, the main effect for argument quality is larger and more uniform than the involvement–argument strength interaction.

The argument strength results suggest that message content is indeed important, and perhaps more important than audience cognitive processing type. Persuasion practitioners are advised to carefully consider the content of messages and use logically sound arguments and reasonable evidence. In the current results, not only did strong arguments produce attitude in the direction advocated by the message but weak arguments also functioned as a discounting cue producing change away from message recommendations.

Boomerang findings are reported sporadically in the literature (e.g., Na, 1999; Paletz, Koon, Whitehead, & Hagens, 1972; Pfau & Loudon, 1994) but have proven difficult to predict and replicate. SJT predicts that boomerang is most likely to occur under conditions of high involvement and highly discrepant messages, whereas dual-process approaches would specify potential boomerang for weak messages and high involvement (Petty & Cacioppo, 1986b). Thus, finding boomerang across levels of involvement is inconsistent with both theoretical positions. Instead, it appears that at least under some conditions, weak messages are sufficient to create boomerang. Obviously, flawed arguments may generate counterarguments regardless of level of involvement, or flawed arguments could function both systematically and heuristically.

### Limitations and future research

Perhaps, the largest limitation of the current study was the complexity of design (cf., Smith, Levine, Lachlan, & Fediuk, 2002). This study used a four-way design so that a theoretically specified three-way interaction could be detected directly and replicated across topics and positions. The latter was done not only to vary involvement and familiarity but also to provide an internal replication and to enhance generality. Had the results come out just as expected in Hypotheses 1, 2, 4, or 5, this complexity might have proved more of a benefit than a limitation. But, given the failure of the



data to conform to a priori theoretical expectations, this complexity further masks an already obscure picture.

One area where complexity creates problems is with bleeding in experimental inductions. The manipulation checks verified that the inductions not only had the intended effects but they also document unintended effects. This ties into complexity in the following way. As the number of induced independent variables increase, it becomes increasingly difficult to hold everything else completely constant. Although there is evidence that the bleeding manipulations were mostly minor in statistical impact, they nevertheless make firm interpretation difficult, especially for moderated and post hoc findings. A second area where complexity makes findings more difficult to understand is the existence of higher order interactions where findings are not consistent across levels of other independent variables. In the current study, the position advocated induction was a substantial moderator that obscures the results.

A second limitation was the intentional confounding of initial opinion, topic familiarity, and involvement with topic. It was intended that this confound could be “teased apart” by measuring each of the first three variables, and in part this was accomplished. Had the data been more consistent with one of the rival hypotheses, this might not be so problematic. As it is, however, it is difficult to make sense of the topic effects other than merely noting that substantial topics effects existed.

Finally, the complete failure to observe the interaction between argument quality and involvement predicted by dual-process models might be seen as a limitation. Null findings, especially when counter to theoretically specified hypotheses, are unsettling and difficult to interpret. One wonders if the findings are a methodological artifact, if the hypothesis was tested in a context outside the boundaries of the theory, if the failure was just bad luck, or if the theoretical prediction might be misspecified. The reporting of data inconsistent with theoretical predictions, however, is essential for an accurate assessment of a theory or model. Nevertheless, the full meaning of such data only become clear as additional results are made public; thus, the short-term news value of such data is limited.

Given the theoretically murky nature of the current findings, future research might seek to do a series of simpler and more focused experiments. Rather than attempting to test all four rival hypotheses in the same design, it might be more profitable to do separate studies testing dual-process and social judgment effects. If theoretically specified effects can be reliably obtained, simple variations in procedures can probe the conditions that produce the effects or do not. Once those precise boundary conditions are known and can be replicated, further research can explore explanations for the phenomena.

## Conclusions

The primary conclusions can be summarized as follows. First, no evidence for the two-way interaction between argument quality and involvement predicted by dual

process was obtained. Second, limited evidence was found consistent with the social judgment prediction that involvement results in resistance to persuasion. Thus, the data were inconsistent with both dual-process and SJT predictions. Third, the data were consistent with ORI and VRI being related, but empirically distinct, types of involvement. Finally, the most important determinant of persuasion in the current study was argument quality. Strong arguments produced greater attitude change in the direction of message recommendations than weak arguments, which produced boomerang. These results present challenges to current thinking about how involvement and message characteristics affect attitude change, and it is hoped that future research will explore the interplay among involvement, argument quality, and attitude change and formation.

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### Notes

- 1 Johnson and Eagly (1989, 1990) recognize that study attributes are confounded with types of involvement in the literature. They conceptualize this issue primarily as one of prior knowledge rather than attitude modification (formation vs. change) process, but they do observe that ORI studies typically involve minimal prior attitudes. They suggest that this issue be tested in primary research, and this project was, in part, designed to answer this call.
- 2 The argument strength induction differs from that of Petty and Cacioppo (1986b) who define argument strength in terms of message impact on thoughts. Arguments are pretested, and those generating favorable thoughts are used as strong arguments. In the current research, argument quality was defined in terms of objective, pre-existing message features rather than recipient psychological states (cf., O'Keefe, 2003).
- 3 This item was used as the moderator in testing Hypothesis 5. It was reasoned that if participants had not thought about the issue before, then no prior attitude could reasonably be inferred. If participants did not have an attitude prior to participation in the study, but expressed one during the course of the study and subsequent to message exposure, then an attitude formation process was inferred.
- 4 Much smaller but statistically significant effects were observed for topic ( $\eta = .10$ ), topic by involvement ( $\eta = .16$ ), and the four-way interaction ( $\eta = .08$ ). As might be expected, the induction was stronger for banning cell phones ( $\eta = .68$ ) and green space ( $\eta = .66$ ) than for affirmative action ( $\eta = .39$ ).
- 5 The analysis also revealed statistically significant effects for position, topic, argument quality by position, argument quality by topic, and argument quality by involvement by topic. Of these, only the position ( $\eta = .31$ ) and argument quality by position interaction ( $\eta = .12$ ) were large enough for concern. The arguments favoring each topic were

generally rated as stronger than the arguments opposed to the topics. Further, the strong arguments were especially strong in the pro messages, whereas the weak arguments were weakest in the con arguments, with the argument induction being slightly stronger in the protopic conditions. These qualifications, however, were not evident in the post hoc induction checks. Additional post hoc checks were conducted. Thirty-seven additional participants rated the strong and weak arguments for each of the 12 topic and position combinations in a fully repeated design with the same scaling as the previously reported induction check. This time, all four items were retained, and reliabilities ranged from .86 to .94. The main effect for the induction was substantial,  $F(1, 35) = 122.06, p < .0001, \eta = .70$ . The means for the strong arguments ranged from 3.36 to 3.93 and the means for the weak arguments ranged from 1.83 to 2.17. The topic effect was small,  $F(5, 175) = 2.91, p < .02, \eta = .13$ , and topic did not interact with the argument quality induction,  $F(5, 175) = 1.22, p = .30, \eta = .07$ . The effect size for the argument strength induction was substantially larger and more uniform in the post hoc test than in the test involving the primary data. This is not surprising for several reasons. The instructions in the post hoc test (but not the main study) directed participants for focus on argument quality when initially reading the message(s). Second, the argument quality perception items immediately followed the induction in the post hoc study but were placed after the attitude items in the questionnaire in the main study. Finally, the use of a repeated measures design in the post hoc study made contrast effects possible. The strong and weak arguments were also examined by an independent expert. The expert was able to correctly identify the strong and weak arguments with 100% accuracy and to accurately identify the intended message features that comprised the induction. The expert also reported uniformity in message features across topics and positions.

- 6 Topic effects on initial agreement were assessed with the full four-way ANOVA. Topic had a substantial main effect,  $F(2, 660) = 53.94, p < .001, \eta = .37$ . Participants were initially most favorable toward adding more green space ( $M = 4.65, SD = 1.51$ ) followed by affirmative action ( $M = 3.44, SD = 1.75$ ) and banning cell phones ( $M = 3.07, SD = 1.85$ ). All three means differed significantly from each other (with Tukey's *b*) and no other statistically significant main effects or interactions were evident.
- 7 Hypothesis 1 was also tested with regression analyses with measured ORI, VRI, and familiarity variables and all possible interactions as predictors. No evidence for Hypothesis 1 was observed, and again argument quality was the only consistent predictor of attitude change. Thus, the data were decisively inconsistent with the dual-process model hypothesis.
- 8 Abelson (1995) draws a distinction between the research record and the research lore. The lore has a social element and consists of accepted research findings in a research community. It reflects the beliefs scholars hold about the nature of findings, and a finding enters the lore when it is presented as having been established and accepted by other scholars in research articles, literature reviews, and texts. Alternatively, the record refers to the available body of research findings on a topic. The lore is used here in a way consistent with Abelson's distinction, and the lore about the dual-process involvement–argument strength interaction may depart in important ways from the actual record. This possibility is discussed later in the discussion, and Table 3 reflects some of the record.

## References

- Abelson, R. P. (1995). *Statistics and principled argument*. Hillsdale, NJ: LEA.
- Axsom, D., Yates, S. M., & Chaiken, S. (1987). Audience response as a heuristic cue in persuasion. *Journal of Personality and Social Psychology*, *53*, 30–40.
- Burnkrant, R. E., & Howard, D. J. (1984). Effects of the use of introductory rhetorical questions versus statements on information processing. *Journal of Personality and Social Psychology*, *47*, 1218–1230.
- Chaiken, S., Liberman, A., & Eagly, A. H. (1989). Heuristic and systematic processing within and beyond the persuasion context. In J. S. Uleman & J. A. Bargh (Eds.), *Unintended thought: Limits of awareness, attention, and control* (pp. 212–252). New York: Guilford.
- Cho, H., & Boster, F. J. (2005). Development and validation of value-, outcome-, and impression-relevant involvement scales. *Communication Research*, *32*, 235–264.
- Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Fort Worth, TX: HBJ.
- Granberg, D. (1982). Social judgment theory. In M. Burgoon (Ed.), *Communication yearbook 6* (pp. 304–329). Beverly Hills, CA: Sage.
- Johnson, B. T. (1994). Effects of outcome-relevant involvement and prior information on persuasion. *Journal of Experimental Social Psychology*, *30*, 556–579.
- Johnson, B. T., & Eagly, A. H. (1989). Effects of involvement on persuasion: A meta-analysis. *Psychological Bulletin*, *106*, 290–314.
- Johnson, B. T., & Eagly, A. H. (1990). Involvement and persuasion: Types, traditions, and evidence. *Psychological Bulletin*, *107*, 375–384.
- Leippe, M. R., & Elkin, R. A. (1987). When motives clash: Issue involvement and response involvement as determinants of persuasion. *Journal of Personality and Social Psychology*, *52*, 269–278.
- Maio, G. R., & Olson, J. M. (1995). Involvement and persuasion: Evidence for different types of involvement. *Canadian Journal of Behavioural Science*, *27*, 64–78.
- Na, E. Y. (1999). Is biased processing of strong attitudes peripheral? An extension of dual process models of attitude change. *Psychological Reports*, *85*, 589–605.
- O’Keefe, D. J. (2003). Message properties, mediating states, and manipulation checks: Claims, evidence, and data analysis in experimental persuasive message effects research. *Communication Theory*, *13*, 251–274.
- Paletz, D. L., Koon, J., Whitehead, E., & Hagens, R. B. (1972). Selective exposure: The potential boomerang effect. *Journal of Communication*, *22*, 48–53.
- Petty, R. E., & Cacioppo, J. T. (1979a). Effects of forewarning of persuasive intent and involvement on cognitive responses and persuasion. *Personality and Social Psychology Bulletin*, *5*, 173–176.
- Petty, R. E., & Cacioppo, J. T. (1979b). Issue involvement can increase or decrease persuasion by enhancing message-relevant cognitive responses. *Journal of Personality and Social Psychology*, *37*, 1915–1926.
- Petty, R. E., & Cacioppo, J. T. (1981). Issue involvement as a moderator of the effects on attitude of advertising content and context. *Advances in Consumer Research*, *8*, 20–24.
- Petty, R. E., & Cacioppo, J. T. (1984). The effects of involvement on responses to argument quantity and quality: Central and peripheral routes to persuasion. *Journal of Personality and Social Psychology*, *46*, 69–81.

- Petty, R. E., & Cacioppo, J. T. (1986a). *Communication and persuasion: Central and peripheral routes to attitude change*. New York: Springer-Verlag.
- Petty, R. E., & Cacioppo, J. T. (1986b). The elaboration likelihood model of persuasion. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 19, pp. 123–205). San Diego, CA: Academic Press.
- Petty, R. E., & Cacioppo, J. T. (1990). Involvement and persuasion: Tradition versus integration. *Psychological Bulletin*, *107*, 367–374.
- Pfau, M., & Loudon, A. (1994). Effectiveness of adwatch formats in deflecting political attack ads. *Communication Research*, *21*, 325–341.
- Sherif, C. W., Sherif, M., & Nebergall, R. E. (1965). *Attitude and attitude change: The social judgment-involvement approach*. Philadelphia: Saunders.
- Sherif, M., & Hovland, C. I. (1961). *Social judgment: Assimilation and contrast effects in communication and attitude change*. New Haven, CT: Yale University Press.
- Smith, R. A., Levine, T. R., Lachlan, K. A., & Fediuk, T. A. (2002). The high cost of complexity in experimental design and data analysis: Type I and type II error rates in multiway ANOVA. *Human Communication Research*, *28*, 515–530.
- Stiff, J. B. (1986). Cognitive processing of persuasive message cues: A meta-analytic review of the effects of supporting information on attitudes. *Communication Monographs*, *53*, 75–89.
- Stiff, J. B., & Boster, F. J. (1987). Cognitive processing: Additional thoughts and a reply to Petty, Kasmer, Haugtvedt, and Cacioppo. *Communication Monographs*, *53*, 250–256.
- Wheless, L. R. (1974). The effects of attitude, credibility, and homophily on selective exposure to information. *Speech Monographs*, *41*, 329–338.

## Appendix A

### Measurement item wording

#### *Forced choice familiarity item*

Some people believe that \_\_\_\_\_. Is this an issue you have thought about before (circle one)?

Yes, I have thought about it before. No, this is not an issue I have thought about before.

#### *Scaled familiarity items*

Not at all familiar—Extremely familiar

Not at all informed—Extremely informed

Not at all aware—Extremely aware

#### *Attitude items*

Disagree—Agree

Disfavor—Favor

Reject—Accept

Oppose—Support\*

#### *Argument strength items*

The message made a strong argument for\_\_\_\_\_.

The message is poorly reasoned.\*

The message made a strong case for \_\_\_\_.

The message made a weak argument for \_\_\_\_.

*Previous opinion items*

Opposed—Supported

Disfavored—Favored

Rejected—Recommended

Disagreed—Agreed

*Outcome-relevant involvement items*

Now, consider the topic of \_\_\_\_ and how it might affect you. Please answer each of the following questions.

\_\_\_\_ would affect me personally.

\_\_\_\_ would have a big impact on my life.

\_\_\_\_ would not have important consequences for me.\*

\_\_\_\_ would have little effect on me personally.

*Value-relevant involvement items*

Next, please consider the topic of \_\_\_\_ and how it fits with your own values. Please answer each of the following questions.

\_\_\_\_ is an important issue to me.

\_\_\_\_ is an issue I care about.

To me, \_\_\_\_ is a trivial issue.\*

I really don't care about the issue of \_\_\_\_.

\* Discarded item.