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Thinking about consistency: Perceived amount of thought as an antecedent for inter-attitudinal consistency

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Perceived amount of thought as an antecedent for inter-attitudinal consistency

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ABSTRACT

Inter-attitude structure is concerned with how attitudes are connected in memory in a coherent and consistent manner. Domain expertise and issue importance are sources of inter-attitudinal consistency. High levels of issue-relevant thought may also contribute to consistency. Guided by research that shows the importance of the distinction between perceived amount of thought and actual amount of thought in predicting attitude outcomes, the present work attempted to provide evidence of subjective elaboration as an antecedent of Inter-Attitude Consistency independent of objective amount of thought, and as a mediating factor of the effect of thought on consistency. The project also sought evidence of the spreading of this effect from the target attitudes to issues similar and dissimilar to the target issues. Data collected was not consistent with predictions. Results, discussion, and exploratory analyses are presented.

Keywords: Elaboration; Metacognition; Inter-Attitude Consistency

CHAPTER 1. THINKING ABOUT CONSISTENCY: PERCEIVED AMOUNT OF THOUGHT AS A NEW ANTECEDENT FOR INTER-ATTITUDINAL CONSISTENCY

People tend to prefer consistency, and it serves as a significant motivator of people's thoughts and behavior (see Cialdini, 2001, for discussion; see Allgeier, Byrne, Brooks, & Revnes, 1979, for empirical evidence). They comfortably follow the same daily routine, and may not even notice until something disrupts it. People also tend to prefer consistency within themselves. Either consciously or unconsciously, people notice when they behave inconsistently across situations, or when what they report is inconsistent with the way they actually feel (Heider, 1958). One area where consistency has only begun to be studied is in the area of inter-attitudinal consistency (IAC).

In this project, my aim was to advance what we know about inter-attitudinal consistency, examining potential explanations for its origins and applying concepts from multi-process theories of attitude change, as a first step towards studying IAC's consequences on behavior. Specifically, this project examined the effects of perceived amount of thought on people's IAC.

Attitudes and Intra-Attitude Components and Structure

Attitudes are summary evaluations about an object that consist of affective reactions, behavioral responses, and beliefs (Hovland & Rosenberg, 1960). Breckler (1984) used factor analysis and found that each of these three components are distinct from one another, but come together to form attitudes. The evaluations vary along two key dimensions: Valence (the direction of the evaluation, positive or negative) and Extremity (how far away from neutral the evaluation is). Attitudes are made up of a variety of features, beyond the affective, cognitive, and behavioral components. One such component is attitude strength, which describes how influential the attitude is in determining future thoughts and behavior (Krosnick & Petty, 1995).

Stronger attitudes are more consequential and more resistant to change. The above components are generally thought of as intra-attitude structure.

Inter-attitudinal Structure

The current project sought to examine another type of attitude structure — inter-attitudinal structure. As opposed to examining the connections between the different components related to one attitude object (such as the connections between the attitude and its affective, behavioral, and cognitive components), inter-attitudinal structure focuses on the links between attitudes toward related attitude objects, and the degree to which these evaluations are consistent (Eagly & Chaiken, 1993, 1998; Judd & Krosnick, 1989). Attitudes can be linked for any number of reasons. For example, two attitudes can be related to a similar value (Bernard, Maio, & Olson, 2003; Blankenship, Wegener, & Murray, 2012), or sense of moral concerns (Koleva, Graham, Iyer, Ditto, & Haidt, 2012), or simply because one perceives them to be similar (Judd, Drake, Downing, & Krosnick, 1991). These linkages go on to form an inter-attitudinal structure or attitude system. Consistency refers to the similarity of reported attitudes with previously held beliefs about how these attitudes or issues are related. These beliefs about the relationships among attitudes and issues are referred to as implicational relations (IRs). This refers to an attitude towards one issue implying one's attitude towards another. Whatever the reason for the connection between the attitudes, attitudes are consistent if the reported attitudes match this perceived implicational relationship between them (e.g., Lavine, Thomsen, & Gonzales, 1997).

For example, consider attitudes towards universal healthcare and stricter gun control laws. A person who holds a negative implicational relation between these attitudes would infer that one's attitude towards gun control would be negative if his attitude was positive toward universal healthcare. In this case, the positive attitude towards one issue *implied* a negative

attitude toward the other. If the IR was positive, then the valances of the two attitudes are implied to match (either both positive or both negative). The attitudes are deemed consistent if the person's reported attitudes match this implicational relation. Attitudes are defined operationally as consistent with each other if attitudes linked by a positive association are both similarly valenced (both objects are evaluated positively or negatively), or if attitudes linked by a negative association are oppositely valenced. For example: if I believe that one who supports common-sense gun laws should also support abortion rights, and I support both issues, then my attitudes are consistent. Theories of cognitive consistency (e.g., cognitive dissonance; Festinger, 1957; balance theory; Heider, 1958) propose that individuals are motivated for various reasons to hold consistent attitudes. These studies also show that inconsistency is not merely a product of lack of attention or random responding. Participants in these studies were able to attend to their own consistencies, leading to the observed effects. While these experiments demonstrated inconsistencies of attitudes with behaviors, dissonance or inconsistency can exist between any two "elements" (Festinger, 1957). I am focusing on inconsistencies between two attitudes, and between the evaluation in memory and the way someone reports the attitudes (discussed in Festinger & Carlsmith, 1959). As an example of inter-attitude inconsistency in the real world, consider people's attitudes towards abortion rights and capital punishment. One might take the perspective that abortion and capital punishment both involve the taking of a life, and thus both the performing of abortions and the death penalty are morally wrong. At the same time, this individual may report being in favor of abortion rights and being against capital punishment (a common set of beliefs for the average liberal). These attitudes would be considered inconsistent, as the individual's reported attitudes show a negative relation, but the internal structure (moral structure in this case) implies a positive relation.

Moreover, Judd, Drake, Downing, and Krosnick (1991) also show a spreading activation effect: activating one attitude leads to facilitated activation of other, structurally linked attitudes, potentially as a result of people's motivation to hold consistent attitudes. They demonstrated that, similar to repeated reporting of an attitude leading to increased polarization of evaluations, reporting an attitude towards an object can polarize evaluations of structurally/semantically linked attitudes.

Of most importance to the current project is the construct of IAC and its correlates and outcomes. Judd and Krosnick (1989) define two commonly studied antecedents of this consistency: an individual's level of expertise in the topic, and the relative importance or centrality of the attitudes. Taking into account that much of the research in this area is done using politicians and political issues as attitude objects, those high in knowledge are able to more efficiently organize attitudes around ideological lines, leading to greater likelihood of consistent attitudes. This is potentially due to experts having thought more about political issues than do novices, and this increased amount of thought about the same issues leads to the integration of the issues in to more coherent, ideologically organized schema (Fiske, Lau, & Smith, 1990). Similarly, when an issue or attitude is central or important to the self, it is more likely to be activated when similar attitude objects are presented, increasing the likelihood of the attitudes being rated consistently (Judd et al., 1991).

The majority of research attempts to measure consistency using between-individual correlations (Judd & Krosnick, 1989). This way of measuring consistency is ideal when individuals possess the same or similar implicational relationships among the issues at hand. Implicational relationships refer to an individual's perceived relationship between evaluations of two or more attitude objects. For example, if I believe that people who are in favor of common-

sense gun laws are also in favor of abortion rights, then I hold a positive implicational relationship between those two issues. If I believe that people who are in favor of abortion rights, are also against the death penalty, then I hold a negative implicational relationship between these two issues. These correlational methods were better used to compare people high in political knowledge, as those high in political knowledge are more likely to have similar organizational structures of these attitudes, and any differences in the correlations between reported attitudes between participants would be from differences in consistency. For novices, if individuals' held implicational relationships among issues are not the same, then low correlations between individuals cannot be solely attributed to lower consistency. Lavine et al. (1997), in an attempt to design methods that could examine IAC in novices, proposed that a lack of political knowledge does not beget a lack of underlying structure, but that the underlying structure and implicational relations may not match political ideologies. Therefore, a within-participants constructed measure of consistency, taking into account the individual's unique combinations of implicational relations (measured by asking participants to predict a person's stance on an issue while only knowing the person's stance on a related one), would be able to better measure consistency in those low in knowledge. Lavine et al. proposed a balance-based measure of structural consistency, one calculated by combining the valence of participants' attitudes towards various political issues with reports of the implicational relationships between them. This method would theoretically produce a more stable measure that is less dependent on the level of expertise of the individual.

In their further discussions of the implicational relationships between attitude objects, Lavine et al. (1997) proposed a new possible correlate to consistency: the strength of the implicational relationship between political issues. They posited that stronger implicational

relationships would be more accessible both at the time of reporting said relationships, and at the time of reporting attitudes towards each issue, thereby leading to increased consistency. Consider the example from before with universal healthcare and gun laws as the issues. If the implicational relationship between the two is stronger, then thinking about one issue is more likely to activate this implicational relation as well as thoughts about the other issue, leading to greater consistency. Thinking about the issues is theorized to strengthen the implicational relation, similar to the effects of thought on links between the components of a single attitude.

Information Processing: Elaboration, Persuasion, and Attitude Change

Another area of research that involves attitude strength, expertise, and thought is Elaboration. Elaboration, the extent to which one processes given information and how that information is then used, is often discussed in attitudes and persuasion literature and was originally studied in the context of dual- and multi-process models of information processing, and recently research has explored the structural and metacognitive aspects of elaboration.

Multi-process theories propose the existence of two general systems of information processing: one more automatic/less thoughtful, and one more effortful/controlled. Strack and Deutsch (2004) describe two systems, reflective and impulsive, being the more controlled and automatic systems respectively. These systems are capable of running in tandem, but the impulsive system is always engaged, faster, and requires less cognitive effort. The systems also utilize different types of connections between elements or steps in the system pathways. The reflective system is connected via semantic relations, while the impulsive is connected via associative links. Key to the concept of multi-process theories, these systems do not necessarily operate completely independent of one another, that information processing lies on a spectrum of

automatic to controlled processes, and that the same element or information can have the same effect on attitudes through different processes in different situations (Petty & Wegener, 1998)

The path a person takes through the systems, or which system one relies on, can be affected by various factors. For example: distraction during message processing can change the way information is processed (Petty, Wells, & Brock, 1976). Different motivations can bias the information that is taken in from the environment and recalled when making decisions.

As stated above, attitudes research focuses on the amount of thought when distinguishing between among paths on this continuum of processing. This difference in thought leads to downstream consequences relevant to the strength of the attitude. An example of multi-process models is the Elaboration-Likelihood Model (ELM; Cacioppo & Petty, 1984), with a central route that requires more effort/thought and a peripheral route that is more automatic. The central route uses information about the target itself (central information), while the peripheral route uses other external information as cues to how one should respond (peripheral cues). The central route requires people to be able to, or be more motivated to, *elaborate* on the information, or think more about it. These models explore the different circumstances in which different types of information are processed, how much processing occurs, and how these differences are reflected in changes in attitudes and future decisions. Petty, Cacioppo, and Schumann (1983) and Petty, Cacioppo, and Goldman (1981) found that the quality of arguments in a counter-attitudinal passage had a greater impact on attitudes when participants were highly involved in the subject at hand, but argument quality had less of an impact when participants were less involved. The current research is focused on the central, or thoughtful, path and relevant processes, as the current project compared groups that either wrote thoughts or did not, and the current project did not make any comparisons or focus on any processes that involved peripheral processing.

Most relevant to the current research is the effect of amount of elaboration on the consequences of attitudes themselves. Attitudes formed/changed under higher elaboration conditions (lower cognitive load, higher need for cognition, etc.) are stronger, more resistant to change, and better able to predict future intentions/behaviors (Brinol & Petty, 2015; Haugtvedt & Petty, 1992). More thought/processing leads to stronger attitudes, which leads to increased resistance to persuasive attempts and better ability to predict future behaviors and decisions.

One can apply this to Lavine et al.'s (1997) discussion of the importance of the strength of implicational relations in IAC. Lavine et al. discussed that thinking about the political issues would activate not only the associated evaluations and reactions to the issues themselves, but could potentially also activate the implicational relations between them (participants' perceived relationships between the favoring or opposing of issues) and make the connections more accessible. This activation as one thinks about the issues would then strengthen the implicational relationships, similar to repeated activation strengthening the links between an object and the associated evaluation (Fazio, 1995). These strengthened implicational relationships are then more likely to become activated in subsequent tasks designed to measure people's implicational relationships between issues, which leads to an increase in consistency. A similar model was tested in Lavine et al.'s paper, where they found that participants randomly assigned to list thoughts about target political issues exhibited higher levels of consistency than those who listed thoughts about television programs (irrelevant to the target issues).

As seen above, the amount one has elaborated on an issue can serve as a property of an attitude, and has consequences on downstream attitude constructs, like strength and consistency (Petty, Haugtvedt, & Smith, 1995). Recent work has highlighted two different aspects of

elaboration: structural and metacognitive. The following two paragraphs will briefly outline this distinction.

Structural components refer to aspects of the attitude involved in the objective content of the attitude, the way it was formed and maintained, and connections between it and other attitude structures (See, Petty, & Fabrigar, 2008; Barden & Petty, 2008; see also Bassili, 1996). An example of a structurally measured component includes the actual knowledge tied to the attitude (Wood, Kallgren, & Preisler, 1985). Metacognitive components involve participants' subjective perceptions of their attitudes and attitude structures. An example is measures of participants' subjective knowledge of a subject: simply asking them how informed they are on a topic (Davidson, Yantis, Norwood, & Montano, 1985). This distinction is both methodological and theoretical. Different measures can be used to examine a construct, such as amount of thought, more structurally (counting number of listed thoughts) or more metacognitively (asking participants to report how deeply they thought). Some components lend themselves more closely to structural measures (like accessibility), while others are more often measured metacognitively (like some antecedents of attitude strength, such as attitude certainty and importance).

Until recently, the distinction between these components was not attended to: at times they were used interchangeably (Wegener, Downing, Krosnick, & Petty, 1995). However, structural and metacognitive measures of the same construct tend to differ in their ability to predict different outcomes. Using the cognitive versus affective basis of attitudes as an example, See, Petty, and Fabrigar (2013) incorporated two measures of whether participants' evaluations were based in affect or cognitions: one calculated from relations between participants' attitudes and their needs for cognition and affect (structural) and one computed using participants' subjective responses to questions asking whether they rely more on beliefs or emotions when

making evaluations. In addition to their finding that the metacognitive and structural measures did not correlate strongly (in Study 1: r = -.002), they found that the metacognitive measure better predicted interest in reading paragraphs with either affective or cognitive information, while the structural measure better predicted the efficiency in reading the passage.

Barden and Petty (2008) took a similar approach in theorizing about the distinctions between metacognitive and structural properties of elaboration. Through a series of studies, they demonstrated that participants' perceived amount of thought mediated the relationship between objective amount of thought (measured by coding and counting relevant thoughts) and attitude certainty (an antecedent of attitude strength). Further, they showed that when perceived elaboration was manipulated independent of actual amount of thought, the actual amount of thought did not differ between groups, and hence did not predict attitude certainty or behavioral intentions, but perceived thought did.

These studies show the power of people's perceptions of more structural/objective components of thought/elaboration above and beyond the power of objective amount of thought, and the importance of looking at perceived thought separate from objective thought. So far, I have presented literature showing that elaboration leads to strength outcomes (Petty et al., 1995), and that perceived elaboration is a significant determinant of strength, independent of objective thought. Relating this back to consistency, literature has indirectly related IAC to attitude strength (Heider, 1958; Festinger & Carlsmith, 1959). This suggests that thought may be related in some way to IAC. This is what was tested by Lavine et al. (1997).

Elaboration and Consistency

As mentioned above, Lavine et al. (1997) manipulated amount of thought by randomly assigning participants to list thoughts about a set of target political issues (thought-relevant

condition) or about a list of TV programs (thought-irrelevant condition). Thus, inclusion of thought conditions examined, indirectly, the effect of issue-relevant elaboration on IAC (via a measure of implicational relations), hypothesizing that thinking about a set of issues would lead to stronger/more accessible implicational relationships between the issues (e.g., increasing participants' perceptions of the relationships between the issues). These stronger implicational relations would then be more accessible to participants during subsequent tasks asking participants to report on these relationships. These predictions were consistent with the framework laid out by Petty et al. (1995), in which increased elaboration is associated with increased strength of the attitude, but Lavine et al. extended this concept to the strength of the relationship between attitudes/objects. In their study, Lavine et al. found that thought increased participants' IAC based on the measure of consistency and their political knowledge. Novices showed a difference between thought groups on the balance-based consistency measure, but not in the ideology-based one. The reverse pattern was found for the political experts. The authors concluded that thinking about the issues increased the consistency in both groups: the novices' thought about the issues strengthened their held implicational relationships among the issues, and the experts' thought about the issues did the same but more specifically strengthened the ideological organization of the attitudes.

Present Research

Lavine et al. (1997) proposed that increased thought about objects was an antecedent of the consistency of one's attitudes towards those objects, but measures of the amount of thought/elaboration were not included in those studies. This leaves room to narrow in on questions about what it is about elaboration that leads to increased consistency. One such line of questioning focuses on the types of elaboration (perceived vs objective). Lavine et al. shows,

without directly measuring it, the effects of objective amount of thought on consistency. Previous literature has also shown that perceived amount of thought is significantly related to variables that are theoretically related to consistency, such as attitude accessibility (Blankenship et al., 2015) and attitude certainty (Barden & Petty, 2008). In sum, elaboration has been shown to lead to increased strength of attitudes (Petty et al., 1995), perceived thought has been shown to act like objective thought in terms of its downstream consequences and to be a driving force in relations that involve objective thought (Barden & Petty, 2008), and elaboration on target issues has effects on the IAC of those issues (Lavine et al., 1997). Following this line of thought, there is space in the theory of IAC where perceived amount of thought can serve as an antecedent of IAC independent of objective amount of thought.

As IAC involves connections between attitudes towards different objects, another line of questions involves the spreading of the effects of thought on consistency. Judd et al. (1991) found that the activation of one attitude leads to the facilitation of activation of other, structurally linked attitudes. With this in mind, it is possible that this spreading of activation due to thinking about objects involves the activation of not only the attitude, but the activation of the links between the attitudes, which would in turn affect evaluative consistency. An interesting point in this line examines whether it is thought itself or thought specifically about the objects that can account for increases in evaluative consistency. In other words, do the effects spread to similar and dissimilar objects (meaning that global thought is more important), or does it only extend to similar objects (meaning that it is the thinking about the specific objects that counts)?

So far, I have broadly discussed the areas of attitudes research involved with inter-attitudinal structure and consistency, elaboration, and the distinction between metacognitive and structural components of elaboration. Research has shown that expertise, importance/centrality

of the attitudes, and thought about the target objects all contribute to inter-attitude consistency. In this project, my goal was to address unanswered questions involving types of thought/elaboration as origins of inter-attitudinal consistency. In testing these, I attempted to expand upon previous literature in the following ways:

First, this I aimed to expand upon the work of Lavine et al. (1997) by measuring participants' perceived amount of thought and testing the possible mediating effects of the perceived amount of thought on the relationship between a thought manipulation and IAC, motivated by Barden's and Petty's (2008) work. I manipulated whether or not participants are thinking about the target issues and measuring their inter-attitudinal consistency, similar to the Lavine et al. paper.

I also attempted to extend previous work by testing whether the effect of thought on IAC extends beyond the issues used in the thought manipulation, focusing on whether the effect extends to issues similar to but not included in the thought manipulation, and even further by looking at if it extends to issues dissimilar to those in the thought task, drawing inspiration from Judd et al. (1991). To this end, participants in both thought groups reported IAC for three groups of issues: the issues in the thought task, issues similar to those in the thought task, and issues dissimilar to those in the thought task.

I proposed two hypotheses:

H_{1A}. Participants' perceived amount of thought about the target issues will drive the relationship between objective amount of thought and inter-attitudinal consistency. Specifically, I predicted that participants randomly assigned to write about target issues would have higher levels of inter-attitudinal consistency than the group that did not write about the issues. This

serves as a conceptual replication of Lavine et al.'s (1997) study described earlier, and as a necessary first step before being able to test the next part of the hypothesis.

H_{1B}. Participants' perceived amount of thought/processing will significantly mediate the relationship between the thought manipulation and IAC. This hypothesis was tested using PROCESS (Hayes, 2013) to examine the relationship between thought condition and IAC, and examine the potential mediating effect of perceived amount of thought. If the indirect effect is significant and the direct path is not, that would be evidence that objective amount of elaboration (as manipulated in this study) is a determinant of consistency through its effect on perceived elaboration. If, in the above situation, the direct path from thought condition to IAC remains significant, this is evidence that at least some, but not all, of the ability of objective elaboration to determine consistency is through its effect on perceived amount of thought.

Thus, this project has the potential to put forth two contributions to literature: initial evidence of a new antecedent for inter-attitudinal consistency, and that this perceived thought at least partially drives the results found by Lavine et al. (1997).

H_2. In terms of spreading effects of amount of thought, I predicted a significant interaction between thought condition and issue group on the participants' IACs. Specifically, I predicted that differences between the two thought conditions will be significant for the target issues and the similar issues, and not significant for the dissimilar issues. The thought condition would lead to increased consistency among the issues in the target group and among the issues in the target-similar group, but will not lead to increased consistency in the dissimilar group. As per Judd et al. (1991), writing about the target issues will activate thoughts about other, similar issues including those in the second group, as similar objects are linked in memory. This will

lead to stronger implicational relations between those issues. Writing about the target issues will not activate thoughts about the dissimilar issues, as they are less likely to be linked in memory.

An attempt was made to account for the possibility that earlier responses to the implicational relations task would increase the amount of thought and processing of the issues, inflating the consistencies of later-reported relations, by randomizing the order in which the issue groups were presented to the participants in the implicational relationships task.

Pilot Studies

The Pilot studies served to assist in the selection of issues that would be included in the three separate groups: five issues included in the thought manipulation, five issues in the "relevant/similar" group, and five in the "dissimilar" group. The results were used to inform the methods for the present research.

Pilot 1. The first pilot collected from participants (n = 67) similarity ratings for all possible pairs of 11 political issues (55 total unique pairs), using a 7-point scale from "1=*Very Dissimilar*" to "7=*Very Similar*." The issues included were Voter ID Laws, Same-Sex Marriage, Stem-Cell research, Capital Punishment, Drug testing to qualify for welfare, Immigration Laws, Universal Healthcare, Raising the minimum legal drinking age (MLDA), Gun Control, Abortion Rights, and a tax on Soda. A variety of different techniques were used to attempt to create two five-issue groups: the thought-manipulation group and the "similar" group. The goal was to minimize the similarities among the issues included in the thought manipulation group (to show that the thought manipulation covers a range of political issues and the issues need to be similar in order to test the related hypotheses), and maximize the similarities between the issues in the thought manipulation group and the issues in the "similar" group. After obtaining the mean similarity scores for the pairs, these similarities were subjected to Multi-Dimensional Scaling

(ALSCAL), extracting two dimensions. Through a combination of intuition and looking at the produced dimension loadings, the issues were assigned to their respective groups. The average similarity within-group (from the similarities among the issues included in the thought manipulation group) and the average between-group (from the similarities between the issues in the thought manipulation group and the issues in the "similar" group) were then conducted and compared. The mean within-group similarity was 2.99 (*SD* = 0.20) on a scale from one to seven, with higher scores indicating higher similarity. The mean between-groups similarity was 3.63 (*SD* = 0.42) on the same scale. The issues in the thought manipulation group include Voter ID Laws, Same-Sex Marriage, Stem-Cell research, Capital Punishment, and Drug testing to qualify for welfare, while the "similar" group included Immigration Laws, Universal Healthcare, Raising the MLDA, Gun Control, and Abortion Rights.

Pilot 2. This pilot was meant to help select the issues that would appear in the "dissimilar" group. Participants were asked for similarities between the issues in the thought manipulation group and eight new issues using the same scale and analyses as the first pilot: "Increasing Use of Coal and other Fossil Fuels," "Increasing research on Nuclear Energy," "Reducing the size of National Parks," "Animal Testing," "Electric Vehicles (EVs)," "Increased Fracking for Oil," "Human-Made Climate Change," and "Genetically Modified Organisms (GMOs)." After analyzing pairwise similarities between the issues chosen in Pilot 1 to be in the thought condition and the new issues, with the goal of choosing the items that were rated least similar to the thought-group. The issues chosen were: Electric Vehicles (EVs), Increasing Use of Coal and other Fossil Fuels, Increasing Research on Nuclear Energy, Reducing the size of National Parks, and Animal Testing.

CHAPTER 2. METHOD

Participants

336 students were recruited from introductory psychology classes. The sample was comprised of approximately 59% female, with a mean age of 19.06 years old. Using G*power (Faul, Erdfelder, Buchner, & Lang, 2009), I conducted an a priori power analysis to determine the sample size needed to detect the 2 x 3 mixed ANOVA interaction, with a small effect size (f = 0.1) and a small correlation among the within-subjects levels (r = 0.1). According to the analysis, collecting 300 participants should be sufficient to find the 2 x 3 interaction effect with a power of at least 0.8.

Power analyses using Mplus (Muthén & Muthén, 2019) report that a sample size between 250 and 300 should be sufficient to detect significant effects in all paths, as well as the indirect effect, with a power of at least .8. To calculate the needed effect size, I simulated the proposed mediation model by using effect sizes from the literature, and estimating new proposed paths (see Figure 1). The direct path from condition to IAC was taken from Lavine et al. (1997) (d = .54), the path from condition to perceived thought was taken from Barden and Petty (2008), and the path from perceived thought was estimated to be r = .2, a small to medium effect size. These proposed sample sizes are larger than those used in the Lavine et al. (1997) (n's = 112 and 169) and Barden and Petty (2008) papers (n's ranging from 81 to 214). This discrepancy is due to the power analysis accounting for the test of the previously unexamined perceived elaboration-to-IAC path, which is presumed to be a small effect.

Honesty and attention check items were included in the survey participants took in order to check for attention to the tasks and for random responding. No participants were excluded from analyses due to failure of attention check items.

Design

The study design was a 2 (Thought Condition: writing vs. not writing) x 3 (Issue group: thought manipulation issues vs. manipulation-similar issues vs. manipulation-dissimilar issues) mixed-design, with the thought condition as a between-groups factor and issue group as a within-group factor. Participants in the writing group were asked to list three thoughts towards each of five political issues, whereas participants in the no-writing group were not. The dependent variable was the proportion of participants' attitudes that are consistent with their perceptions of the structural relationships between the attitudes (Balance-based Inter-attitudinal Consistency; Lavine et al., 1997).

Procedure

All of the materials were administered through MediaLab (Jarvis, 2014). All participants were given the opportunity to give their informed consent before participating in the study. Participants were presented with the target political issues one at a time (randomized order between participants). Participants in the writing group were first asked to provide their attitude toward the issue, and then list their thoughts towards the issue. Participants in the no-writing group were simply asked for their attitude. Participants in both groups then provided a measure of how much they perceived they thought about the issue (i.e., perceived thought measure), before moving on to the next issue. After reporting their reactions toward the target issues, participants then responded to a global perceived thought measure, a measure of their implicational relationships for all pairs of issues in the target group, as well as for all the pairs of issues within the similar and dissimilar groups, and answer a few questions designed to test political knowledge. After these, all participants responded to demographics questions, a funnel debriefing, and questions about the honesty of their responses, and then were dismissed.

Materials

Independent Variables.

Thought Manipulation. Participants were randomly assigned to one of two levels of the thought manipulation: one group was asked to list three reactions to each of the five issues in the thought manipulation group of issues, while the other group did not write anything. This manipulation was adapted from the one used by Lavine et al. (1997). An a priori exclusion criteria based on failure to list any thoughts when instructed did not lead to exclusion of any participants

Issue Groups. The within-group factor was the issue group. All participants provided attitudes towards and implicational relations between issues in each of the three groups: the issues in the thought manipulation task, issues rated to be similar to the issues in the thought task, and issues rated to be dissimilar to those in the thought task (see Table 1 in Appendix A).

Measured Variables. All participants indicated how much they perceive they thought about the issues in the thought task using Perceived Elaboration items adapted from Barden and Petty (2008). There were two items per issue (see Appendix B). There was also an item asking the participants to indicate more globally how much they perceived they thought during the task, adapted from the same items from Barden and Petty's work, though the focus was on the perceived thought about each individual item. One of the main goals of this study was to examine the mediating effect of perceived elaboration on the relationship between amount of thought and inter-attitudinal consistency. With these items, we could achieve this as well as explore if the perceived amount of thought specifically about the target issues has predictive power above and beyond that of the perceived amount of more general thought.

Dependent Variable. The main dependent variable for this study was a measure of balance-based inter-attitudinal consistency, adapted from Lavine et al. (1997). This measure was calculated by finding the proportion of participants' attitudes towards issues that are consistent with their perceived structural relationship between the issues. This measure was chosen as it is a more valid measure than the correlation methods when the sample contains participants who are not knowledgeable about political ideology. Previous measures utilizing correlations were unable to explain differences in consistency between novices and between novices and experts, as the correlational designs relied on the participants having the same organizational structure in memory for the target objects (Judd & Krosnick, 1989). This measure of inter-attitudinal consistency attempts to account for the possibility that different individuals may utilize different implicational relationships amongst the issues being presented by directly asking participants for their implicational relationships.

I followed the same procedure used by Lavine et al. (1997). Participants reported their attitudes towards all of the issues on a scale ranging from -2 to +2 (the valences of these attitudes are the important aspect for this measure. They also provided perceived implicational relationships for pairs of issues within the respective groups (thought task, similar, and dissimilar). This task presented an unnamed person (Person X) to the participants, and said that person X favors issue Y. The participants were then asked if they believed person X would favor/oppose issue Z, given the attitude toward issue Y. This measure aims to assess the structure of participants' attitudes. The responses were coded as -1 = *oppose* and 1 = *favor*. The participants saw an implicational relations item for each pair of issues within the respective groups (with five items in each of three groups, this becomes 10 pairs in each group for a total of 30 pairs overall). These implicational relationship items provided a direction of the relationship

between the issues in the pair (positive if participants report that Person X would be in favor/oppose both issues in the pair, negative if the participant reports that Person X would be in favor of one issue and oppose the other). The direction of the relationship was then compared to the valences of the attitudes reported earlier. For each pair of issues, it was determined if the participants' attitudes are consistent with their perceived relationship between the issues by multiplying the response to the IR item for each pair by the product of the two attitude responses to the pair of issues. The valence of this final product indicates the consistency of that particular pair of attitudes, with a positive product indicating that the reported attitudes were consistent with the reported IR, and a negative product indicating that the attitudes were inconsistent. The final score was calculated by finding the proportion of the pairs that were consistent, separated into three separate scores by issue group.

Covariates. Participants also responded to a short five-item political knowledge measure. This measure was used to test and possibly control for the effects of the level of political knowledge held by the participants, as Lavine et al. (1997) found that participants' inter-attitudinal consistencies were less affected by thought when the participants were high in political knowledge (referred to as "experts" in their paper).

Ancillary Measures. In addition to the above, reaction times for all measures were recorded for various exploratory purposes involving the structural nature of IAC and the implicational relationship measure. Objective amount of thought for participants in the writing group was calculated by correlating the participants' expressed attitudes and the favorability of the thoughts listed for each of the issues (Wegener et al., 1995). This was done for exploratory purposes, for the informing of future studies, and in the informing of potential manipulations of objective thought that are appropriate in the given paradigm. All participants also reported their

attitudes towards all of the issues on a four-point scale from "*Strongly against*" to "*Strongly in favor*." This measure can be used to explore possible effects of variations of attitude valence or extremity on their consistency, though I have no a priori predictions about these effects, as well as contributing to the developing of a manipulation of objective thought.

CHAPTER 3. RESULTS

Main Analyses

First, descriptive statistics and analyses of variance (ANOVAs) were used to examine the possible influences of the demographics of the sample. None of the demographics significantly predicted any of the outcomes of interest (*ps* > .11). I then proceeded to create the measures of subjective thought and IAC as laid out in the methods section. The measures of item specific subjective thought all significantly correlated with each other, and so were combined, with a Cronbach's α = .83. The global subjective thought item strongly correlated with the combined item-specific subjective thought item ($r = .69$, $p < .001$) so they were averaged to create a single measure of subjective thought about the issues throughout the participants' prescribed task (Cronbach's α = .85). Analyses were run separately using the final combined measure and the average from the item-specific measures, but there were no significant differences in estimates, confidence intervals, or interpretations. Statistics and estimates reported are from analyses using the final combined measure of subjective thought.

The first set of hypotheses were tested using Model 4 (single mediator) of Hayes' PROCESS software (Hayes, 2017) macro for SPSS. The results of this analysis can be seen in Figure 1. I break down the analyses step by step here. For these analyses, and for those involved with Hypothesis 2, analyses were run both with and without controlling for political expertise, a factor identified by Lavine et al. (1997) as needing controlled for. As results and interpretations did not significantly differ, all analyses that include thought condition as a predictor of IAC include political expertise as a covariate in the model.

As expected, thought condition significantly predicted subjective thought, such that participants given the chance to list their thoughts about the issues reported greater subjective

thought (b = 0.59, SE = 0.12, t(329) = 4.88, p < .001, 95% CI [0.35, 0.83]). The means for the different conditions on subjective thought were 4.41 (SD = 1.15) and 5.03 (SD = 1.06) for the no writing and writing conditions, respectively. Contrary to predictions, and to past literature, thought condition did not significantly predict IAC (b = 0.04, SE = 0.02, t(329) = 1.81 p = .07, 95% CI [-0.003, 0.08]). Once the combined subjective thought measure was added to the model as a mediator, subjective thought did not significantly predict IAC (b = -0.01, SE = 0.01, t(329) = -0.84, p = .40, 95% CI [-0.03, 0.01]), and thought condition did not significantly predict IAC after accounting for the effect of subjective thought (b = 0.04, SE = 0.02, t(329) = 1.97 p = .05, 95% CI [0.00, .08]). Bootstrapped sampling procedure was used to estimate the coefficient and confidence interval for the indirect effect (ab = -0.005, $SE_{Bootstraped}$ = 0.01, 95% CI [-.02, .01]). The presence of zero in the confidence interval implies that the indirect effect of condition on IAC is not significant, which is consistent with the other results (Hayes, 2017).

Hypothesis 2 was tested using a 2(Thought Condition: writing vs. no-writing) x 3(Issue group: thought manipulation issues vs. manipulation-similar issues vs. manipulation-dissimilar issues) mixed design ANOVA, with the thought condition as the between-subjects factor and the issue group as the within-subjects factor. A visualization of this analysis can be seen in Figure 2.

As was seen in the mediation analyses, the main effect of condition on IAC was non-significant (F[1, 328] = 0.91 p = .34, η^2 = .003). There was a significant main effect of issue group (F[2, 656] = 21.15, p < .001, partial η^2 = .06). Pairwise comparisons revealed that attitudes were more consistent in the target-dissimilar group than in the target and target-similar groups (Ms = .67, .58, and .59 respectively, Bonferroni corrected ps < .001). The IACs in the target and target-similar groups did not significantly differ (corrected p = 1.0). Contrary to predictions, this main effect was not qualified by the interaction (F[2, 656] = 0.97 p = .38, η^2 = .003).

Exploratory Analyses

Exploratory analyses on reaction times for the IR task were performed to inform future research in this area. As IAC and IR are thought to be structural components of attitudes, one explanation for the effect of thought on IAC found in literature is through the increase in the accessibility of the relations among attitudes. One way this could present itself is through quicker reaction times (RTs) for responses to the IR task items for participants in the thought condition. To test for this, the RTs for the IR tasks were log transformed (to reduce the skewness of the distribution of latencies, according to the practices in the field as described in Fazio, 1990), averaged by issue group, then run as the outcome in the same 2 x 3 mixed ANOVA as was previously used. A visual representation of the results can be seen in Figure 3. Similar to the hypothesis involving IAC as the outcome, I would predict that RTs would be shorter for those who completed the writing task, and that RTs would be shorter for IR tasks involving issues in the target group.

What I found was not entirely consistent with this prediction. The main effect of thought condition was not significant ($F[1,328] = 2.76$, $p = .10$, $\eta^2 = .01$). The main effect of issue group was significant ($F[2,656] = 5.45$, $p = .004$, $\eta^2 = .02$). Pairwise comparisons revealed that the difference between the target group and the target similar group was significant (*Ms* = 3.75 and 3.77, respectively, corrected $p = .005$).

CHAPTER 4. DISCUSSION

The results of the project were not as predicted. Of most surprise was the lack of statistical significance of the effect of thought on IAC, though there are potential explanations for why the effect was not found to be significant in this study. The effect size for objective thought on IAC was much smaller than that found by Lavine et al. (d = 0.20 vs 0.54). As I used their estimate to conduct a power analysis, it is possible that the test for the effect was underpowered. It is also important to keep in mind the procedural differences between the present study and that of Lavine et al. The original study was published in 1997, approximately twenty-three years ago at the writing of this paper. They collected data on paper, while I collected my data on computers. They used an irrelevant thought comparison group, while I used a no-thought group. It is possible that the way people organize their thoughts about these issues has changed over the last twenty-three years. It is also possible that there is a difference between writing and typing in students' engagement in the task, leading to a weaker effect of the thought manipulation. Before I can test for any potential mechanisms or moderators, I first need to be able to reliably find the base effect of thought on IAC.

In addition to the lack of evidence for an effect of thought on IAC directly, the data also provide no evidence of subjective thought as an antecedent of IAC independent of objective thought. As IAC and IRs can be considered structural parts of attitudes, perceived amount of thought may not serve as a plausible antecedent of IAC (for discussion of the different predictive abilities of metacognitive and structural measures, see See et al., 2013). Future studies should manipulate subjective thought to test for this. By manipulating subjective amount of thought about the target issues independent of objective amount of thought, a more accurate measure of the relationship between subjective thought and IAC can be tested.

There was also no evidence that the effect of objective thought on IAC spreads to similar issues through semantic connections between issues. As above, this could be due to a lack of power, as the effect sizes of the effects were much smaller than anticipated. It cannot be overlooked that there is a potential flaw in the design of the issue groups. All of the issues in the "dissimilar" group are environment-related. This common theme connecting all of the issues in one group likely could have led to the unexpected and relatively high IAC scores for this issue group (for discussion of attitudes connected by similar values, see Blankenship et al., 2012). It is possible that the connections between issues that share a common theme are already salient regardless of the amount of thought, hence the high degree of IAC. On the other hand, the connections between issues in the target and similar groups, not being connected by a clear common theme, may be less salient or effectively non-existent. In this case, thinking about the issues may not be enough to strengthen the connection if the connections are weak enough that they are not activated during the thought task.

Regarding the exploratory analyses using the response times as the outcome of the 2 x 3 design, results provided some information to assist in moving this area forward. The lack of main effect of thought group is concerning but expected given the results from the other analyses. The lack of difference between the target group and dissimilar group could also be expected, this is most likely a factor of the pre-existing similarities within the dissimilar group discussed above. More research is required to explore the structural nature of IRs in memory.

Currently, the thoughts in the thought condition are being coded in order to use them to create a measure of objective thought. This measure will then be used to run all main analyses again, but only with the participants in the thought condition. These analyses will look at the

different abilities of objective and perceived amount of thought to predict IAC and the reaction times.

CHAPTER 5. FUTURE DIRECTIONS

Because I failed to find evidence for the effect of thought on IAC, more research is necessary to break down this effect. Before I can test for potential moderators, mediators, or mechanisms, I first need to have a reliable way to find the effect. My next round of studies will focus solely on this, with the goal of finding the materials and circumstances in which the effect of thought on IAC is reliable, and explore why the effect may not be consistent across designs and materials. I am currently designing a study that removes the similar and dissimilar groups and changing the "no-thought" control to an "irrelevant-thought" control. This idea is supported by a comparison of the means I found with those found by Lavine et al. (1997). The mean IAC of my thought group is almost identical to that of Lavine's et al. in the study I used for the a priori power analysis (experiment 1, p. 741), *Ms* = .59 and .58 respectively. The control group means are not similar, with my control group producing a larger mean than that of Lavine's et al., *Ms* = .56 and .39 respectively. This shows the potential for a difference in effect based on the type of control group, my no-thought design vs Lavine's et al. irrelevant-thought design, and justifies future studies using the irrelevant-thought design. One potential issue with this design is in the future incorporation of a measure of subjective thought. Because the design is assigning participants to two separate sets of objects, but the subjective thought is focused only on the relevant issues, the groups cannot be compared on average levels of subjective thought. So while this study would provide an additional test of the effect of objective amount of thought on IAC, this design is unable to incorporate measures of subjective amount of thought.

A possible solution calls for changes to the manipulation. Once it has been determined that there is an effect of thought on IAC, studies can be performed that broaden this effect of thought into an effect of processing. The effect of thought on IAC is likely due to the thought

leading to processing of information about the issues (in the case of this project, processing self-generated thoughts). The manipulation can be modified to reflect this, utilizing manipulations found in other areas of attitudes literature, such as distraction. For example, all participants would write thoughts about the issues, but half would be randomly assigned to perform audio multitasking activities, reducing their ability to process information as they write their thoughts (Wegener et al., 2010). This way, both groups would be given the same information about the same issues, with the difference being the amount that the information was processed. With past evidence and discussion that IAC and IRs may behave similarly to measures of attitude strength (Lavine et al., 1997), those who process information about the issues more, or process the information better, should show higher levels of consistency.

Continuing with the focus on the base effect of thought on IAC, I also plan to examine possible attitude structures that contribute to the effect. Lavine et al. (1997) did not propose theory as to the connections between the issues they chose for their manipulation, and did not distinguish between the possibilities of thought about the issues creating new connections or strengthening connections that are already present in memory. In addition to the study mentioned previously, I am developing a study to pilot the issues again, to look at the possible differences and similarities between the issues that may be a factor in the effect of thought on IAC. I will be asking participants to identify the value that most closely relates to each issue, as values have been shown to act as superordinate structures of attitudes (for discussion, see; and Bernard et al., 2003; Blankenship et al., 2012). It is possible that the effect of thought on IAC can be maximized if the issues in the thought manipulation already share connections (through a similar value, in this case) and are not already highly consistent. These new pilots will potentially help in the creation of new thought manipulation target groups for future studies. It is important to this area

of literature to explore the conditions in which this effect is reliable, and the possible reasons for differences in the effect across studies.

Once I have found a reliable effect of thought on IAC, then I can begin investigating the mechanisms and moderators of interest. As stated above, one direction is to manipulate subjective thought to test if objective thought overpowers effect of subjective thought on IAC, or if subjective thought serves as a better predictor of the IR confidence measure reported in Judd et al. (1991) and Wegener et al. (1995). This potential study would take a similar form to those conducted by See et al. (2013) investigating the structural and meta-bases of attitudes differentially predicting read speed vs interest. Subjective thought can be manipulated using a bogus feedback paradigm. After participants complete a thought task about the target issues, the participants would be told that they had listed fewer (or more) thoughts than the average amount listed by the other participants (for an example of this manipulation, see Barden & Petty, 2008). Analyses could then be run predicting IAC and Judd's et al. (1991) confidence measure from objective amount of thought and perceived amount of thought.

In conclusion, this project did not find evidence to support my predictions of subjective amount of thought as an antecedent of IAC, of objective thought as contributing to IAC, or of the spreading activation effect of thought on IAC (likely because of the lack of the base effect of thought on IAC and the issue with the already-salient connections in the dissimilar issue group). Does this mean that the effect is truly a null effect? I do not believe there is enough evidence to conclude that the effect is not there, but that differences in design, materials, or both lead to different degrees of effect (for an example of differences in design contributing to failed replications, see Luttrel, Petty, & Xu, 2017). Luttrel, Petty, and Xu (2017) discuss aspects of replications that can lead to failures to replicate, including design elements such as differences in

manipulations and dependent measures. Moving forward, it would be good to also refer to Brandt's et al. (2014) "Replication Recipe" to ensure that future replication attempts are close replications when they are meant to be to be.

Future work will first focus on the base effect of thought on IAC by reverting the thought manipulation as well as investigating the different ways issues can be connected in memory. Once established, the ideas of subjective amount of thought as predictor of IAC can be studied. It is important to the field to conduct these process heavy studies pushing forward our understanding of inter-attitude structure, as an understanding of the internal consequences and mechanisms is necessary to inform future work on various potential real-world applications. It is also important to conduct these studies to establish the existence and reliability of effects, so as to not waste time and resources on potential real-world applications of an effect that does not actually exist.

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APPENDIX A. TABLES AND FIGURES

Table 1

Issues included in each thought group

Issue Group		
Target Issues	**Similar**	**Dissimilar**
Voter Identification Laws	Immigration Laws	Electric Vehicles (EVs)
Same-Sex Marriage	Universal Healthcare	Use of Coal and Fossil Fuels
Stem Cell Research	Raising Minimum Legal Drinking Age	Increasing research into Nuclear Energy
Capital Punishment (i.e., the death penalty)	Gun Control	Reducing Size of National Parks
Drug Testing for Welfare Recipients	Abortion Rights	Animal Testing

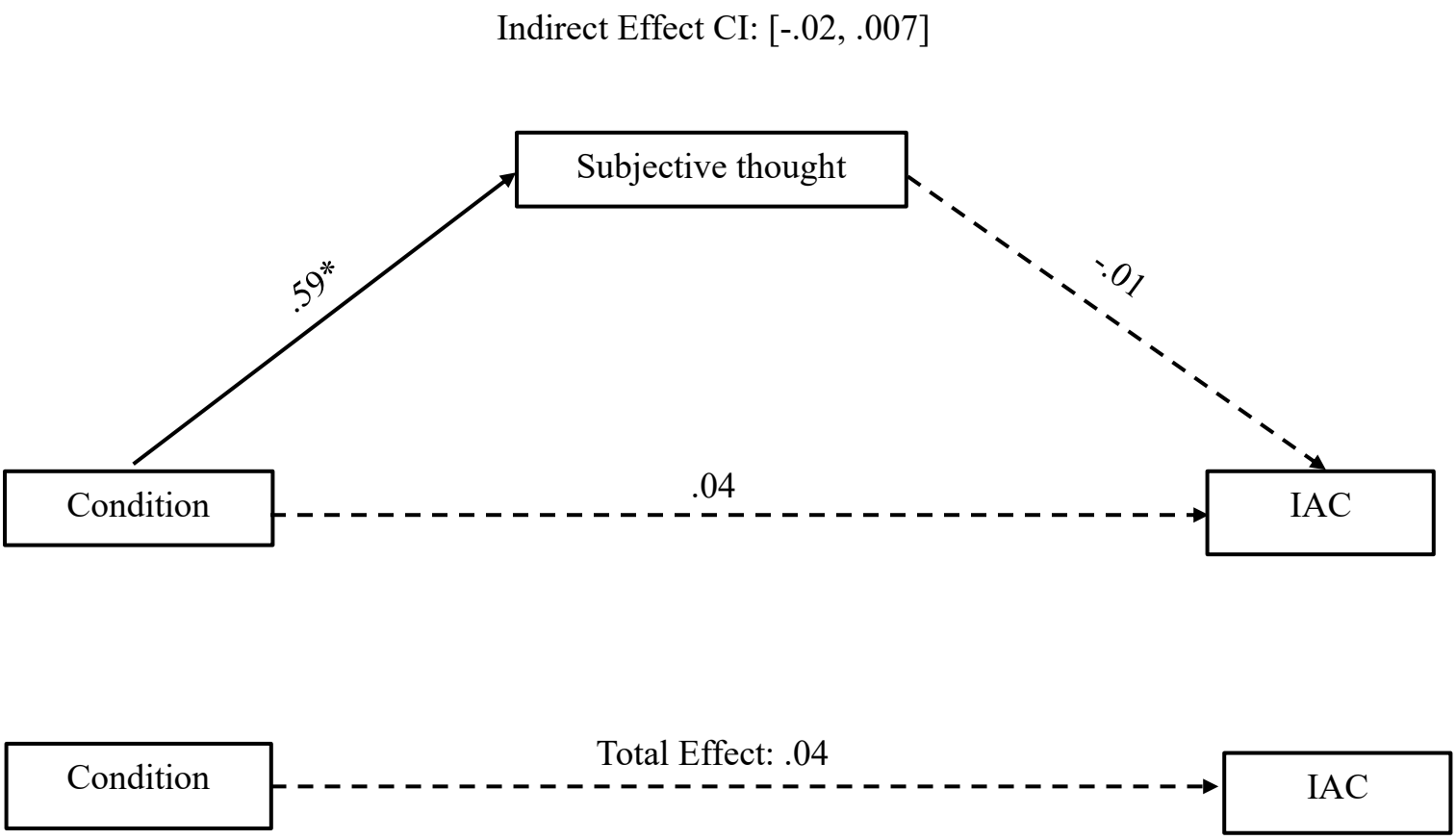

Figure 1: Mediation model. "*" denotes significant path.

Condition is coded such that high thought=1, no thought=0.

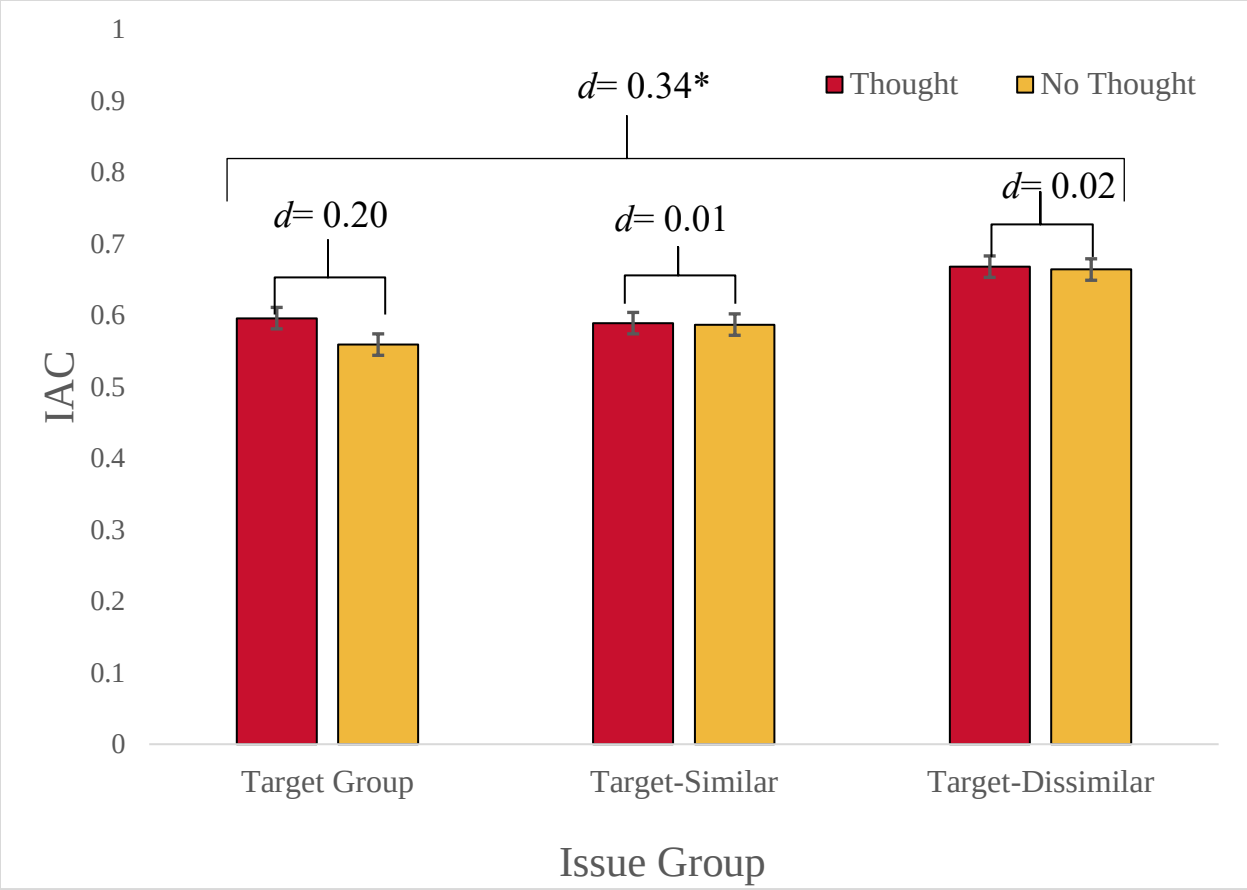

Figure 2. 2 x 3 Mixed ANOVA Results with IAC as criterion. Significant main effect of Issue Group: $F(2, 656) = 21.15$, $p < .001$, $\eta^2 = .06$. Interaction: ns

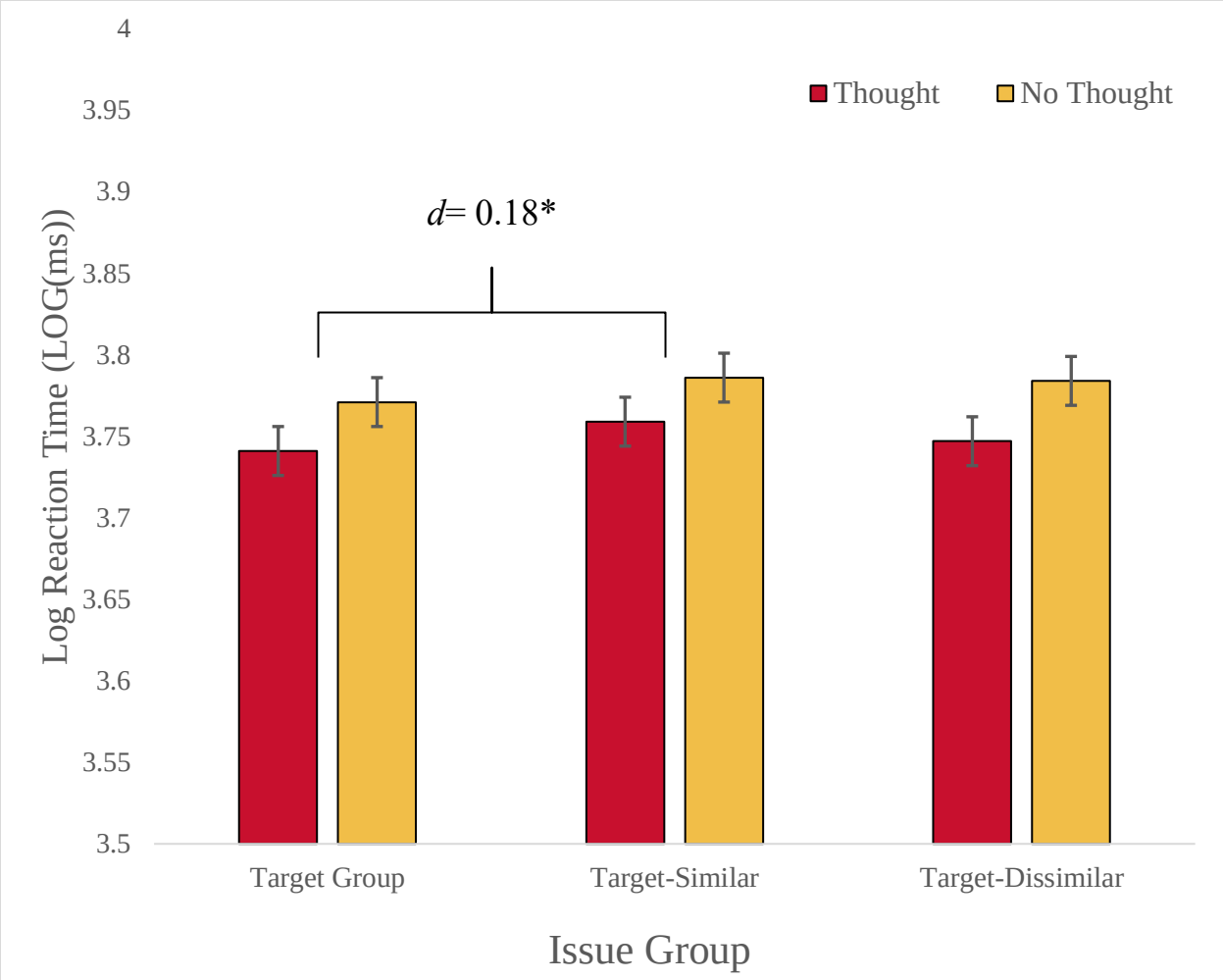

Figure 3. 2 x 3 Mixed ANOVA Results with Log-transformed reaction times as criterion. Significant main effect of Issue Group: $F(2, 656) = 5.45$, $p = .004$, $\eta^2 = .016$. Interaction: ns

APPENDIX B. MEASURES AND MANIPULATIONS

Independent Variable: Thought Manipulation:

Introductory instructions for no-writing group.

The purpose of this study is to create an inventory of ISU students' opinions towards various political issues. In this opinion inventory task, you will be shown a set of political issues. After seeing each issue, you will be asked about your reactions (i.e. your opinions) towards the issues.

Introductory instructions for writing group.

The purpose of this study is to create an inventory of ISU students' opinions towards various political issues. In this opinion inventory task, you will be shown a set of political issues. After seeing each issue, you will be asked about your reactions (i.e. *your thoughts and opinions*) towards the issues.

Writing Instructions for the writing group. The wording of the second paragraph will be the same for each issue; the first paragraph, and heading, will change.

(issue)

The next issue is (insert issue here). Please think about your reactions, thoughts, and feelings towards the issue of (issue). Please use the boxes below to write your thoughts.

Please list one thought per box, then press the enter key to advance to the next box for a new thought. There are four (4) boxes to list up to four (4) thoughts, but you are not required to use all of them.

Attitude items for Target group (part of manipulation task). All will be on a scale from 1= *Oppose* to 4= *in Favor*

1. The next issue is VOTER IDENTIFICATION LAWS. Voter ID Laws refer to those that require voters to present government-issued identification to be able to cast a vote. Please indicate your evaluations on the scale provided.

2. The next issue is SAME-SEX MARRIAGE. Same-Sex Marriage refers to the ability of individuals to marry whoever they wish, regardless of the sex of the partner. Please indicate your evaluations on the scale provided.

3. The next issue is STEM CELL RESEARCH. Stem-Cell research refers to using federal funding to the study of Human Embryonic Stem Cells. Please indicate your evaluations on the scale provided.

4. The next issue is CAPITAL PUNISHMENT. Capital Punishment, more commonly known as the "death penalty", refers to whether or not courts can sentence someone to death. Please indicate your evaluations on the scale provided.

5. The next issue is DRUG TESTING FOR WELFARE RECIPIENTS. Drug-testing for Welfare Recipients refers to recipients of Welfare being required to submit to drug-testing in order to qualify for future/continuing aid. Please indicate your evaluations on the scale provided.

Issue-Specific wording for the writing task instructions.

1. Please think about your reactions, thoughts, and feelings towards the issue of Voter ID laws. Please use the boxes below to write your thoughts.

2. Please think about your reactions, thoughts, and feelings towards the issue of Same-Sex Marriage. Please use the boxes below to write your thoughts.

3. Please think about your reactions, thoughts, and feelings towards the issue of Stem Cell Research. Please use the boxes below to write your thoughts.

4. Please think about your reactions, thoughts, and feelings towards the issue of Capital Punishment (i.e. the Death Penalty). Please use the boxes below to write your thoughts.

5. Please think about your reactions, thoughts, and feelings towards the issue of Drug Testing for Welfare Recipients. Please use the boxes below to write your thoughts.

Issue-Specific Perceived Thought. Similarly worded items will be on the same scale, listed below the first example of each.

1. To what extent did you think a lot about your attitude towards Voter ID Laws during the reaction task?

1	2	3	4	5	6	7
A little						A lot

2. To what extent did you take the time you needed to consider your attitude towards Voter ID Laws during the reaction task?

1	2	3	4	5	6	7
Not at all						Definitely

1. To what extent did you think a lot about your attitude towards Same-Sex Marriage during the reaction task?

2. To what extent did you take the time you needed to consider your attitude towards Same-Sex Marriage during the reaction task?

1. To what extent did you think a lot about your attitude towards Stem Cell Research during the reaction task?

2. To what extent did you take the time you needed to consider your attitude towards Stem Cell Research during the reaction task?

1. To what extent did you think a lot about your attitude towards Capital Punishment (i.e. the Death Penalty) during the reaction task?

2. To what extent did you take the time you needed to consider your attitude towards Capital Punishment (i.e. the Death Penalty) during the reaction task?

1. To what extent did you think a lot about your attitude towards Drug Testing for Welfare Recipients during the reaction task?

2. To what extent did you take the time you needed to consider your attitude towards Drug Testing for Welfare Recipients during the reaction task?

Additional Measured Variable:

Global Subjective elaboration Items:

While completing the Opinion Inventory (i.e. all of the reaction tasks), to what extent did you think a lot about your opinions toward the issues?

Seven-point scale from 1=*a little* to 7=*a lot*

While completing the Opinion Inventory (i.e. all of the reaction tasks), to what extent did you take the time you needed to consider your attitude towards the issues?

Seven-point scale from 1= *not at all* to 7=*definitely*

Dependent Variable Creation: Attitudes for non-target group issues

Instructions/transition.

In this section, we will be asking for your evaluations of another set of political issues.

Target-Similar Group.

1. The next issue is IMMIGRATION LAWS. Immigration Laws refer to laws that make it harder for people to immigrate to this country. Please indicate your evaluations on the scale provided.

2. The next issue is UNIVERSAL HEALTHCARE. Universal Healthcare refers to single-payer, government-funded healthcare options, as an alternative to private healthcare. Please indicate your evaluations on the scale provided.

3. The next issue is RAISING THE MINIMUM LEGAL DRINKING AGE. Raising the minimum drinking age refers to changing the minimum legal age from 21 to 25. Please indicate your evaluations on the scale provided.

4. The next issue is GUN CONTROL. Gun control refers to laws that require background checks, limit clip sizes, ban bump stocks, and ban civilians from owning certain military firearms. Please indicate your evaluations on the scale provided.

5. The next issue is ABORTION RIGHTS. Supporting Abortion rights refers to supporting a woman's right to choose to abort her pregnancy. Please indicate your evaluations on the scale provided.

Target-Dissimilar Group.

1. The next issue is ELECTRIC VEHICLES (EVs). Electric Vehicles refers to increasing research on improving technology related to electrically powered cars and other forms of transportation. Please indicate your evaluations on the scale provided.

2. The next issue is USE of COAL AND FOSSIL FUELS. This issue refers to continuing to use coal and other fossil fuels, and not looking at other, renewable forms of energy. Please indicate your evaluations on the scale provided.

3. The next issue is INCREASING RESEARCH INTO NUCLEAR ENERGY. This issue refers to increasing funding into nuclear technology to make it safer, more reliable, and produce more energy. Please indicate your evaluations on the scale provided.

4. The next issue is REDUCING THE SIZE OF NATIONAL PARKS. This issue refers to the federal government reducing the total size of national parks, allocating the lands to other various purposes. Please indicate your evaluations on the scale provided.

5. The next issue is ANIMAL TESTING. Animal testing refers to the use of animals to test various products before marketing the products to humans. Please indicate your evaluations on the scale provided.

Dependent Variable: Implicational Relationships Measure

Instructions:

In this section, you will be shown the opinion of Person X on a particular issue. Given Person X's opinion, you will be asked if Person X would favor or oppose a second issue. For example: 'If person X is in favor of the idea that humans are responsible for climate change, would Person X favor or oppose Affirmative Action?' Please indicate your response on the scale provided. Please mark 'Favor' or 'Oppose'.

Items. All items ask the participants to respond either *Favor* or *Oppose*.

Target Issues.

1. If Person X Favors VOTER ID LAWS, would Person X favor or oppose SAME-SEX MARRIAGE?

2. If Person X Favors VOTER ID LAWS, would Person X favor or oppose STEM CELL RESEARCH?

3. If Person X Favors VOTER ID LAWS, would Person X favor or oppose CAPITAL PUNISHMENT (i.e. the Death Penalty)?

4. If Person X Favors VOTER ID LAWS, would Person X favor or oppose DRUG TESTING FOR WELFARE RECIPIENTS?

5. If Person X Favors SAME-SEX MARRIAGE, would Person X favor or oppose STEM CELL RESEARCH?

6. If Person X Favors SAME-SEX MARRIAGE, would Person X favor or oppose CAPITAL PUNISHMENT (i.e. the Death Penalty)?

7. If Person X Favors SAME-SEX MARRIAGE, would Person X favor or oppose DRUG TESTING FOR WELFARE RECIPIENTS?

8. If Person X Favors STEM CELL RESEARCH, would Person X favor or oppose CAPITAL PUNISHMENT (i.e. the Death Penalty)?

9. If Person X Favors STEM CELL RESEARCH, would Person X favor or oppose DRUG TESTING FOR WELFARE RECIPIENTS?

10. If Person X Favors CAPITAL PUNISHMENT (i.e. the Death Penalty), would Person X favor or oppose DRUG TESTING FOR WELFARE RECIPIENTS?

Target-Similar Issues.

1. If Person X Favors IMMIGRATION LAWS, would Person X favor or oppose UNIVERSAL HEALTHCARE?

2. If Person X Favors IMMIGRATION LAWS, would Person X favor or oppose RAISING THE MINIMUM LEGAL DRINKING AGE?

3. If Person X Favors IMMIGRATION LAWS, would Person X favor or oppose GUN CONTROL?

4. If Person X Favors IMMIGRATION LAWS, would Person X favor or oppose ABORTION RIGHTS?

5. If Person X Favors UNIVERSAL HEALTHCARE, would Person X favor or oppose RAISING THE MINIMUM LEGAL DRINKING AGE?

6. If Person X Favors UNIVERSAL HEALTHCARE, would Person X favor or oppose GUN CONTROL?

7. If Person X Favors UNIVERSAL HEALTHCARE, would Person X favor or oppose ABORTION RIGHTS?

8. If Person X Favors RAISING THE MINIMUM LEGAL DRINKING AGE, would Person X favor or oppose GUN CONTROL?

9. If Person X Favors RAISING THE MINIMUM LEGAL DRINKING AGE, would Person X favor or oppose ABORTION RIGHTS?

10. If Person X Favors GUN CONTROL, would Person X favor or oppose ABORTION RIGHTS?

Target-Dissimilar Issues.

1. If Person X Favors ELECTRIC VEHICLES (EVs), would Person X favor or oppose USE of COAL AND FOSSIL FUELS?

2. If Person X Favors ELECTRIC VEHICLES (EVs), would Person X favor or oppose REDUCING THE SIZE OF NATIONAL PARKS?

3. If Person X Favors ELECTRIC VEHICLES (EVs), would Person X favor or oppose INCREASING RESEARCH INTO NUCLEAR ENERGY?

4. If Person X Favors ELECTRIC VEHICLES (EVs), would Person X favor or oppose ANIMAL TESTING?

5. If Person X Favors REDUCING THE SIZE OF NATIONAL PARKS, would Person X favor or oppose USE of COAL AND FOSSIL FUELS?

6. If Person X Favors REDUCING THE SIZE OF NATIONAL PARKS, would Person X favor or oppose INCREASING RESEARCH INTO NUCLEAR ENERGY?

7. If Person X Favors REDUCING THE SIZE OF NATIONAL PARKS, would Person X favor or oppose ANIMAL TESTING?

8. If Person X Favors USE of COAL AND FOSSIL FUELS, would Person X favor or oppose INCREASING RESEARCH INTO NUCLEAR ENERGY?

9. If Person X Favors USE of COAL AND FOSSIL FUELS, would Person X favor or oppose ANIMAL TESTING?

10. If Person X Favors INCREASING RESEARCH INTO NUCLEAR ENERGY, would Person X favor or oppose ANIMAL TESTING?

Covariates

Political Knowledge. The next few questions are meant to quickly assess your political knowledge.

1. What job or political office is currently held by Mitch McConnell?

Speaker of the House Senate Majority Leader Vice President Attorney General

2. Whose responsibility is it to determine whether or not a law is constitutional: The President, Congress, or the Supreme Court?

3. How much of a majority is required for the U.S. Senate and House to overturn a presidential veto?

3/4 2/5 2/3 51%

4. Which party currently has the most members in the House of Representatives?

Democratic Republican

5. It is generally believed that one of the parties is more conservative than the other at the national level. Which party is more conservative?

Democratic Republican

Demographics, Debriefing questions, and Attention checks

Demographics. We would like to know a little about you for our records. Please keep in mind this information will be kept confidential.

1. What is your gender?
    a. Male
    b. Female
    c. Other
2. What is your class standing?
    a. Freshman
    b. Sophomore
    c. Junior
    d. Senior
    e. Other
3. What is your age?
    _____
4. What is your race or ethnicity?
    a. Asian or Pacific Islander
    b. Black/African American
    c. White/European American
    d. Hispanic/Latinx
    e. Mixed race
    f. Other
5. Is English your first language?
    Yes No

Debriefing Questionnaire. You are now finished with the study. Before you leave, we would like you to answer some questions about the study. Please give your honest answers.

1. What were your impressions of the study?

_____

2. What do you think the experimenters were trying to do with this study?

_____

3. Do you have anything else you would like to add?

_____

Honesty Checks.

1. How distracted were you while completing the study?

1	2	3	4	5
Not at all distracted				Very distracted

2. How seriously did you take this survey?

1	2	3	4	5
not at all seriously – skimmed through everything or responded at random				Very seriously – paid attention to all of the prompts and answered all the questions

3. Are the responses you provided a reflection of your true beliefs and opinions?

1	2
No	Yes

4. Lastly, it is vital to our study that we only include responses from people that devoted their full attention to this study. Otherwise, the efforts of many people (the researchers and other participants) could be wasted. In your honest opinion, should the researchers use your data in this study?

1	2
No	Yes

APPENDIX C. IRB APPROVAL LETTER

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office for Responsible Research
Vice President for Research
2420 Lincoln Way, Suite 202
Ames, Iowa 50014
515 294-4566

Date: 10/14/2019

To: Tyler Knaplund Kevin Blankenship, PhD

From: Office for Responsible Research

Title: **Political Opinions Survey**

IRB ID: **19-496**

Submission Type: Initial Submission **Exemption Date:** 10/14/2019

The project referenced above has been declared exempt from most requirements of the human subject protections regulations as described in 45 CFR 46.104 or 21 CFR 56.104 because it meets the following federal requirements for exemption:

2018 - 2 (i): Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) when the information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects.
2018 - 3 (i.A): Research involving benign behavioral interventions in conjunction with the collection of information from an adult subject through verbal or written responses or audiovisual recording when the subject prospectively agrees to the intervention and information collection and the information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects. - 3 (ii) If research involves deception, it is prospectively authorized by the subject.

The determination of exemption means that:

- **You do not need to submit an application for continuing review. Instead, you will receive a request for a brief status update every three years. The status update is intended to verify that the study is still ongoing.**

You must carry out the research as described in the IRB application. Review by IRB staff is required prior to implementing modifications that may change the exempt status of the research. In general, review is required for any *modifications to the research procedures* (e.g., method of data collection, nature or scope of information to be collected, nature or duration of behavioral interventions, use of deception, etc.), any change in *privacy or confidentiality protections*, modifications that result in the *inclusion of participants from*