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Self Generated Attitude Change: Some Effects of Time and Intolerance of Ambiguity on Attitude Polarization

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Abstract

Effects of opportunity for thought and individual differences in intolerance of ambiguity on attitude polarization were examined. It was expected that opportunity for thought and intolerance of ambiguity would have an interactive effect on attitude polarization. This hypothesis was not supported. There was, however, an unexpected interaction between intolerance of ambiguity and the order of events in this experiment. When individuals' self-awareness was heightened, individuals intolerant of ambiguity had attenuated attitudes; when individuals' self-awareness was lessened, individuals intolerant of ambiguity had polarized attitudes. Limitations of this study (e.g., self-report measure) and future directions (e.g., priming effects) for this research were also discussed.

During the 2004 presidential election, the people of the United States were divided on which candidate to vote for as president. President George W. Bush was campaigning for reelection and Senator John Kerry was campaigning to win the position of president. Some individuals favored President George W. Bush because he supported personal responsibility for social security. Other

individuals favored Senator John Kerry because he supported government responsibility for social security. Individuals' attitudes not only differed toward each candidate, but individuals' attitudes also varied in intensity (i.e., extremity). In some cases, individuals donated money in support of their party, whereas other individuals stood along busy roadways flashing signs in support of their party. Some individuals voted; others did not vote. Perhaps individuals' behavior during the election reflected their attitudes about each candidate. It may be possible that individuals who campaigned for their candidate or gave donations to a political party displayed more attitude extremity than individuals who simply voted or held private opinions.

How and why do individuals' attitudes become so extreme that individuals would spend valuable time campaigning or personally funding a political party? One explanation for these individuals' extreme attitudes is the influence of thought on attitudes. When individuals think about people, objects, events, or issues, initially positive attitudes may become more positive and initially negative attitudes may become more negative (e.g., Clary, Tesser, & Downing, 1978; Tesser & Conlee, 1975; Tesser & Sadler, 1973). This phenomenon is known as self-generated attitude change (see Tesser, Martin, & Mandolia, 1995, for a review). If, for example, Jesse Jackson, a human rights activist, makes a good impression with potential supporters, then those supporters will think positively about Jesse Jackson. The more these supporters think positively about Jesse Jackson, the more favorable their attitudes become toward Jesse Jackson.

Self-Generated Attitude Change

There are two processes underlying self-generated attitude change (Tesser 1978; Tesser et al., 1995). First, when individuals engage in thought, individuals may change their beliefs (e.g., Liberman & Chaiken, 1991; Tesser & Cowan, 1977; Valenti & Tesser, 1981). When asked to think about the 2004

presidential debate between Bush and Kerry, for example, individuals do not simply recall information about that event in a mechanical way. Thinking is a dynamic process meaning that when asked to recall information about the 2004 presidential debate, individuals often change what they believe to be true about that event.

During thought, individuals may change their beliefs so that these beliefs become consistent with individuals' original evaluation of those people, objects, events, or issues (Tesser, 1978; Tesser et al., 1995). Individuals can change their beliefs by: a) generating new attitude-consistent beliefs, b) reinterpreting inconsistent beliefs, and c) discounting inconsistent beliefs. Individuals creatively change recalled information to make consistent what they now know and what they initially believed.

Second, there is a connection between feelings and beliefs (e.g., Chaiken & Yates, 1985; Clary et al., 1978; Rhode, 2001). Individuals' feelings about the 2004 presidential debate are determined, in part, by beliefs those individuals hold about that event. When recalling information about the 2004 presidential debate, for example, individuals would probably feel favorably about John Kerry if they believe he possesses morals and has their best interest at heart. Because there is a connection between how individuals feel and what individuals believe, the affective portion of attitudes (i.e., feelings) and the cognitive portion (i.e., beliefs) of attitudes are dependent on each other to some extent.

In sum, attitudes depend on beliefs. When individuals think about their beliefs, individuals change their beliefs thereby making those beliefs evaluatively consistent with original beliefs about an attitude object (i.e., people, objects, events, or issues). As individuals reconstruct their beliefs about people, objects, events, or issues, individuals increase evaluative consistency in their beliefs. In turn, individuals make their attitudes extreme as a result of thought.

Generate Additional Information.
Individuals could produce evaluative

consistency in their beliefs by generating additional attitude-consistent beliefs. For example, Tesser and Cowan (1975) found that participants presented with a set of four adjectives describing a person generated more additional descriptions of a person than did participants presented with a set of eight adjectives describing a person. More importantly, as the number of set adjectives describing a person increased, the more difficult it became for participants to generate additional attitude-consistent adjectives. If individuals, for example, believe that Howard Dean is warm, caring, and compassionate, then those individuals may feel favorably toward Mr. Dean. Because those individuals feel favorably toward Mr. Dean, they may also believe that he is sensitive and forgiving. Although these individuals may not have actually seen Mr. Dean act in such a way, they may generate those new beliefs based on their initially favorable impression. Thus, these individuals have supported their initially favorable impression by generating additional favorable beliefs about Howard Dean. Other researchers have found that individuals generate attitude-consistent beliefs when given a chance to think about people, objects, events, or issues (e.g., Harton & Latane, 1997; Leone & Ensley, 1985).

Interpret Existing Information.
Individuals could also produce evaluative consistency in their beliefs by reinterpreting ambiguous information. For example, Tesser and Cowan (1977) presented participants with a group of three personality traits in which there also was either an ambiguous adjective (i.e., could be interpreted as either positive or negative depending on context) or an unambiguous adjective (i.e., could be interpreted as positive or negative regardless of context) as part of a description of a person. Participants were more likely to polarize their attitudes when presented with an ambiguous trait as part of a description than when presented with an unambiguous trait as part of a description. More importantly, participants reinterpreted ambiguous traits making those traits consistent with other traits describing a

person. Individuals, for example, may witness Howard Dean during a speech exchanging hostile words with John Ashcroft. Those individuals may interpret Mr. Dean's words as passionate rather than angry in order to preserve their favorable feelings about Howard Dean. Those individuals may feel more favorably toward Mr. Dean if they believe he is passionate rather than angry. Hence, those individuals reinterpret ambiguous information in order to preserve their favorable impression about Howard Dean. Other researchers have concluded that individuals reinterpret their beliefs about people, objects, events, or issues making those beliefs evaluatively consistent (Feather, 1967; Lord, Ross, Lepper, 1979; Lord, 1989).

Refute Inconsistent Information.

Individuals may also produce evaluative consistency in their beliefs by refuting inconsistent beliefs. For example, Chaiken and Yates (1985) identified participants as either high or low in structural consistency. Participants high in structural consistency are compelled to maintain consistency between affective (i.e., feelings) and cognitive (i.e., beliefs) components of their attitudes. Participants low in structural consistency are not compelled to maintain consistency between affective and cognitive components of their attitudes. These experimenters instructed participants to read essays by proponents or opponents of a relevant issue (i.e., capital punishment or censorship) and then to write essays on those issues. Participants high in structural consistency were more likely than participants low in structural consistency to refute and counter argue inconsistent information. More importantly, participants high in structural consistency more than participants low in structural consistency polarized their attitudes as a result of the connection between thoughts and feelings. Individuals, as in the previous example, may witness Howard Dean exchanging hostile words with John Ashcroft. These individuals could refute any of Howard Dean's actions that are inconsistent with their favorable beliefs about him. These individuals may feel favorably toward Mr. Dean if they

refute that Howard Dean is an angry man. In turn, these individuals can still maintain favorable beliefs about Howard Dean if they refute that Mr. Dean is an angry man. Thus, these individuals' beliefs remain consistent which results in favorable feelings toward Howard Dean. Other researchers concluded that individuals refute and counter argue attitude-inconsistent beliefs in order to maintain evaluative consistency in their beliefs (e.g. Kuhn & Lao, 1996; Plous, 1991; Pomerantz, Chaiken & Tordesillas, 1995).

Situational and Dispositional Factors

Although researchers found that when given opportunity for thought individuals polarize their attitudes, there may be situational and dispositional factors that are involved in individuals' ability to polarize their attitudes. Attitude polarization may be attenuated if individuals thoughts are constrained (e.g., Leone & Aronow, 1992; Leone, Minor, & Baltimore, 1983; Leone & Baldwin, 1983; Tesser, Leone, & Clary, 1978). Attitude attenuation occurs when individuals make their evaluation of an attitude object less extreme than their initial evaluation of that attitude object. Individuals may constrain their thoughts by responding to reality constraints or process constraints.

Individuals may implement reality constraints during thought when in the presence of people, objects, events, or issues (Tesser, 1976). A reality constraint occurs when individuals compare their beliefs concerning people, objects, events, or issues with the actual characteristics of those people, objects, events, or issues. Individuals, for example, may believe that smoking marijuana causes people to be violent and aggressive. Individuals in the presence of people intoxicated on marijuana displaying non-violent behavior are forced to reevaluate their beliefs concerning the effects of smoking marijuana. When confronted with the realities of people, objects, events, or issues during thought, individuals' beliefs about those people, objects, events, or issues may be influenced.

Researchers found that attitude attenuation occurs when in the presence of a reality constraint. Leone (1984), for example, found that participants asked to think about a feared object (i.e., snake) in the absence of that object polarized their attitudes more than did participants asked to think about a feared object (i.e., snake) in the presence of that object. In a case study by Rothbaum, Hodges, Kooper, Opdyke, Williford, and North (1995), a patient suffering from acrophobia (i.e., fear of heights) reported decreased anxiety and avoidance of heights after being exposed to a computerized, virtual simulation of varying degrees of heights. More importantly, that patient reported feeling less afraid of heights after being exposed to varying degrees of heights than he did before being exposed to heights varying degrees of heights.

In sum, when individuals are faced with a reality constraint, they may realize that some of their beliefs are inaccurate or illogical. When faced with a reality constraint, individuals may also realize that some of their feelings are exaggerated. If individuals abandon faulty beliefs, then attitude attenuation occurs.

Individuals' attitude polarization may also be reduced by process constraints. Process constraints are a way of manipulating thought such that individuals are forced to examine the derivation of their beliefs about people, objects, events or issues (Tesser et al., 1978). Individuals limited by process constraints are forced to think about thinking.

Individuals, as in the previous example, may believe that smoking marijuana causes people to be violent and aggressive. When those individuals are asked to reason why they believe smoking marijuana causes people to become aggressive, those individuals are forced to scrutinize the legitimacy of their beliefs concerning the aggressive effects of smoking marijuana. Some of those individuals may reason that smoking marijuana causes aggression because they felt out of control after smoking marijuana. Some of those individuals may believe that smoking marijuana leads to aggression because they saw an expert in the

media reporting about the aggressive effects of marijuana. Other individuals may think that marijuana causes people to become aggressive because they saw a movie (e.g., *Reefer Madness*) which portrayed characters smoking becoming aggressive after smoking marijuana.

Once those individuals identify why they believe that smoking marijuana causes aggression, they are able to question the legitimacy of those beliefs. After those individuals scrutinize the validity of their beliefs about the effects of smoking marijuana, some of those individuals may reason that not every person who smokes marijuana loses control. Individuals may reason that media reporters have biases and, therefore, begin to question the legitimacy of information acquired from those media reporters. Other individuals may reason that movie producers may exaggerate the effects of smoking marijuana to boost viewer interest. If these individuals identify faulty logic in their beliefs about the aggressive and violent effects of smoking marijuana, then those individuals may abandon those faulty beliefs. If individuals abandon faulty beliefs, then attitude attenuation occurs.

Researchers found that process constraints are effective in reversing the attitude polarization process. In a study by Tesser et al. (1978), for example, participants instructed to reason why they strongly feared public speaking reported less anxiety about public speaking than did participants not instructed to think about public speaking. Participants instructed to think under a process constraint found faulty logic in their beliefs about public speaking. In turn, these participants reduced their fear of public speaking. In a study by Leone and Baldwin (1983), participants asked to think in a constrained manner (i.e., process constraint) about a feared object (i.e., snake) displayed more approach behavior toward that feared object than did participants not asked to think in a constrained manner about a feared object. Those participants asked to scrutinize why they feared snakes, presumably, abandoned false beliefs concerning their fear of snakes.

In turn, those participants increased approach behavior toward that snake.

In sum, when individuals reevaluate their beliefs in terms of where those beliefs were derived, individuals may identify faulty reasoning (Tesser et al., 1978). When individuals scrutinize the validity of their beliefs, those individuals may also realize their beliefs are not plausible. If individuals abandon false beliefs, attitude attenuation occurs.

Attitude polarization may also be related to certain dispositional factors (i.e., personality differences). The way in which individuals think about people, objects, events, and issues, could moderate the attitude polarization process. Some individuals have styles of thinking in which these individuals make other beliefs consistent with their original beliefs concerning an attitude object (i.e., people, objects, event, and issues). Other individuals have certain styles of thinking in which these individuals do not make other beliefs consistent with their original beliefs concerning an attitude object. These personality differences could be differences in intolerance of ambiguity. How, then, might intolerance of ambiguity be related to self-generated attitude change?

Intolerance of Ambiguity

Intolerance of ambiguity, as defined by Budner (1962), is a tendency for individuals to perceive ambiguous situations as threatening. An ambiguous situation is one in which individuals cannot structure or organize an environment because of a lack of sufficient cues from that environment. Budner identified ambiguous situations as lacking familiar stimuli (i.e., unfamiliar situation), including multiple stimuli (i.e., complex situation), or including incongruent stimuli (i.e., insoluble situation). Individuals, for example, may watch newscasts concerning the war on terror. If these individuals watch a newscast concerning the war on terror on Fox Network and then watch a newscast concerning the war on terror on CNN, these individuals may receive conflicting newscasts concerning the war on terror. These

conflicting views concerning the war on terror is an example of an ambiguous situation. Individuals can either be intolerant of ambiguity or tolerant of ambiguity.

Individuals intolerant of ambiguity perceive ambiguous situations as threatening because these individuals need clear and consistent cues from their surroundings in order to organize and structure an environment (Budner, 1962). When confronted with an insoluble situation (i.e., incongruent cues), these individuals may not seek multiple solutions. When confronted with a complex situation (i.e., multiple cues), these individuals may not integrate multiple cues. When confronted with a novel situation (i.e., lack of familiar cues), these individuals may not connect unfamiliar cues with previously acquired knowledge. Individuals intolerant of ambiguity experience stress and react prematurely when presented with ambiguous stimuli. If possible, individuals intolerant of ambiguity seek situations that provide certainty or avoid ambiguous stimuli all together (Furnham, 1994).

Individuals tolerant of ambiguity, however, perceive ambiguous situations as desirable, interesting, and challenging because these individuals are able structure and organize their environment based on an array of unfamiliar stimuli (Budner, 1962). When confronted with an insoluble situation, individuals tolerant of ambiguity may work out multiple solutions. When confronted with a complex situation, these individuals may integrate multiple cues. When confronted with a novel situation, these individuals may connect unfamiliar cues with previously acquired knowledge. Individuals tolerant of ambiguity do not experience stress or react prematurely when presented with ambiguous stimuli. Individuals tolerant of ambiguity perceive ambiguous situations as desirable and challenging (Furnham, 1994).

Individuals who differ in intolerance of ambiguity also differ in the degree to which they prefer novel tasks versus familiar tasks (Furnham, 1995). Individuals intolerant of ambiguity prefer familiar tasks as opposed to novel tasks because a familiar task includes

sufficient, recognizable cues that allow these individuals to structure and organize that task. Individuals who engage in a familiar task know what to expect from that task and no new interpretation of cues is required to make sense of that task. In a study by Feather (1969), participants high in intolerance of ambiguity showed less preference for a novel task as opposed to a familiar task than did participants low in intolerance of ambiguity.

Individuals tolerant of ambiguity, however, prefer novel tasks as opposed to familiar tasks (Furnham, 1995). Individuals tolerant of ambiguity are able to interpret ambiguous cues because these individuals are able to structure a task that includes either familiar or unfamiliar cues. These individuals do not need an existing definitive interpretation of a task in order to understand how to complete that task. Ebling and Spear (1980), for example, found that individuals tolerant of ambiguity perform better on ambiguous tasks than do individuals intolerant of ambiguity. Although preference for a task is different from performance on a task, it is probable that because tolerant of ambiguity individuals prefer novel tasks they are likely to attend to novel tasks and therefore perform well on novel tasks. In general, researchers have found that participants intolerant of ambiguity more than participants tolerant of ambiguity have a lowered ability to cope with an ambiguous task (e.g., Sidanius, 1978).

Individuals who differ in intolerance of ambiguity also differ in the degree to which they form rigid categories of stimuli (e.g., people, objects, events, or issues). Individuals intolerant of ambiguity tend to form strict, fixed categories of stimuli (Bochner, 1965). These individuals, for example, may categorize people as either politically conservative or politically liberal. Although some people may hold politically moderate views (i.e., neither conservative nor liberal views), intolerant of ambiguity individuals are likely to categorize people with politically moderate views as either liberal or conservative because these intolerant of ambiguity individuals are unable

to cope with views that are inconsistent with politically conservative or liberal views. Intolerant of ambiguity individuals are likely to place all political views into one of two political categories (i.e., conservative or liberal) because these individuals formed rigid definitions of politically conservative and politically liberal people.

Individuals tolerant of ambiguity, however, do not tend to form strict, fixed categories of stimuli (Bochner, 1965). These individuals, for example, may also categorize people as either politically conservative or politically liberal. Tolerant of ambiguity individuals, however, are not likely to categorize all people as either politically conservative or liberal. These individuals recognize politically moderate views and are able to cope with views that are inconsistent with politically conservative and liberal views. Tolerant of ambiguity individuals are not likely to place people into specific political categories because these individuals have not formed rigid definitions of politically conservative or liberal people.

Individuals who differ in intolerance of ambiguity also differ in the degree to which they reject or accept unusual stimuli. Individuals intolerant of ambiguity tend to reject unusual or different stimuli (Bochner, 1965). These individuals, for example, may believe that all women are incapable of holding a position in the Federal Government. If these individuals learn of a woman who was elected into the House of Representatives, these individuals may attribute her success to something other than her abilities to represent her district.

Individuals tolerant of ambiguity, however, do not tend to reject unusual or different stimuli (Bochner, 1965). These individuals are not likely to believe that all women are incapable of holding a position in the Federal Government. Although there are more men than women holding a position in the Federal Government, these individuals can conceptualize that women holding a position in the Federal Government gained that position through similar means as men in that position. Thus, these individuals do not

reject the notion that women are just as capable as men of holding a position in the Federal Government.

Individual differences in intolerance of ambiguity are related to extreme attitudes. One example of an extreme attitude is prejudice. Prejudice is defined as an “an aversive or hostile attitude toward a person who belongs to a group, simply because he belongs to that group, and is therefore presumed to have questionable qualities ascribed to the group” (Allport, 1954, pg 7). Hassan and Khalique (1987) looked at intolerance of ambiguity and prejudiced attitudes toward women, caste-status, and religious affiliation. In general, participants who held prejudiced attitudes toward women also held prejudiced attitudes toward caste-status and religious affiliation. These researchers also found that participants who were high in intolerance of ambiguity reported more prejudiced attitudes overall than did participants who were low in intolerance of ambiguity.

Galbreath and Feinberg (1973) looked at the relationship between intolerance of ambiguity and attitudes toward employment of disabled persons. As predicted, intolerant of ambiguity participants reported more negative attitudes toward employment of disabled persons than did tolerant of ambiguity participants. More importantly, when exposed to both a highly ambiguous employment situation and a highly ambiguous employee description, intolerant of ambiguity participants more than tolerant of ambiguity participants reported negative attitudes toward employment of disabled persons. Feinberg (1971) also found that participants intolerant of ambiguity reported more negative attitudes toward disabled persons than did tolerant of ambiguity participants. Lal and Hassel (1998) and Dermer (1993) explain why these individuals intolerant of ambiguity hold negative attitudes toward disabled persons. These researchers found that individuals tolerant of ambiguity more than individuals intolerant of ambiguity considered additional information about a complex situation (e.g., highly ambiguous description of disabled

persons) to be useful when dealing with that complex situation.

Intolerance of ambiguity is also related to other extreme attitudes such as racism. Sadinuis (1977), for example, looked at the relationship between intolerance of ambiguity and socio-political ideology. Socio-political ideology was comprised of four separate components (i.e., racism, political-economic conservatism, sexual repression, and authoritarian aggression). Sadinuis found that racism was more strongly related to intolerance of ambiguity than were his other three components of socio-political ideology. In other words, racism was a function of increased intolerance of ambiguity.

As mentioned earlier in this paper, individuals can make their beliefs consistent by generating additional attitude consistent beliefs, reinterpreting attitude inconsistent beliefs, and discounting attitude inconsistent beliefs. Individual differences in intolerance of ambiguity are also related to two of the three microprocesses in the self generated attitude change model as proposed by Tesser (1978). Specifically, intolerance of ambiguity is related to reinterpretation of inconsistent beliefs and discounting of inconsistent beliefs.

Individuals engage in reinterpreting of beliefs when individuals make new beliefs about an attitude object consistent with their initial beliefs about that attitude object. Individuals, for example, may believe space exploration is necessary for the advancement of the human race. If these individuals are exposed to new information about efforts to expand space exploration, then these individuals are likely to reinterpret this new information so that it is consistent with their initial beliefs about space exploration. Reinterpreting inconsistent information, however, does not happen at the same rate for all individuals. Individuals intolerant of ambiguity are more likely than individuals tolerant of ambiguity to reinterpret information making new information consistent with initial beliefs. Feather (1967) found that participants intolerant of ambiguity biased their evaluations of religious syllogisms in a manner that was consistent

with their attitudes more than did participants tolerant of ambiguity. Feather concluded that participants' religious affiliation influenced evaluations of religious syllogisms made by intolerant of ambiguity individuals. Researchers have concluded that this information selectivity may be accounted for by biases in information processing (e.g., Lord, Ross, Lepper, 1979).

Individuals engage in discounting of beliefs when individuals refute or ignore beliefs about an attitude object that is inconsistent with their initial beliefs about that attitude object. Individuals, for example, may believe that the war on terror is vital to the safety of citizens in the United States. If these individuals are exposed to discrepant information about the war on terror, then these individuals are likely to retain only information that supports their attitudes about the war on terror. Discounting of inconsistent information, however, does not happen at the same rate for all individuals. Individuals intolerant of ambiguity tend to engage in discounting of inconsistent information more than do individuals tolerant of ambiguity. Feather (1969), for example, exposed participants to arguments for and against American intervention in Vietnam. Participants intolerant of ambiguity were more likely than participants tolerant of ambiguity to ignore information that was inconsistent with their initial attitude about American intervention in Vietnam and recalled information that was consistent with their initial attitude about American intervention in Vietnam. That is, individuals intolerant of ambiguity gave more attention to information that was consistent with their initial attitude than to information that was inconsistent with their initial attitude.

Hypotheses

Because individuals intolerant of ambiguity perceive an ambiguous situation as threatening, these individuals may try to reduce their anxiety when confronted by ambiguous situations by a) generating new attitude-consistent information about a situation in order to make that situation

unambiguous, b) reinterpreting inconsistent information about a situation in order to make that situation unambiguous, or c) discounting inconsistent information about a situation in order to make that situation unambiguous. Individuals tolerant of ambiguity, however, are not likely to engage in the aforementioned behaviors because these individuals process information about ambiguous situations differently than do intolerant of ambiguity individuals. If individuals process information about ambiguous situations differently, then this individual difference variable may moderate the extent to which individuals polarize their attitudes. The present study was designed to test the following hypotheses.

In general, it is expected that individuals will experience increased attitude polarization with an increased opportunity for thought. Individuals will not, however, polarize their attitudes at the same rate. This attitude polarization process will be moderated by individual differences in intolerance of ambiguity such that individuals intolerant of ambiguity will experience greater attitude polarization than will individuals tolerant of ambiguity. Last, individuals intolerant of ambiguity will experience greater attitude polarization with an increased opportunity for thought than will individuals tolerant of ambiguity regardless of thought opportunity condition. These hypotheses will be investigated in the following experiment.

Method

Participants

A total of 162 students were recruited from undergraduate psychology courses for a study titled "Individual Differences in Political, Social, and Campus Issues." By volunteering for this study, participants earned extra credit for a class. Other extra credit opportunities were offered so that students were not obligated to volunteer only for extra credit.

There were 103 females and 59 males involved in this study. Equal number of females and males were not necessary because sex of participants was not a

predictor variable in this study. A majority of this sample (71%) was Caucasian. Most participants in this study (79%) were between 18 and 21 years of age. The University of North Florida is uncharacteristic of most universities in that it has older, non-traditional students.

The experimenter excluded from analysis data of three participants because those participants failed to follow instructions. Participants were given a chance to ask questions before they signed a written informed consent. Participants were treated in accordance with the American Psychological Association Ethical Principles and Code of Conduct (American Psychological Association, 2003).

Procedure

A female experimenter greeted participants individually and informed them that this study was designed to assess attitudes towards various political, social, and campus issues. She also informed participants about any potential benefits and risks associated with their participation, reminded those participants of their right to withdraw from participation at anytime without penalty, and assured those participants their responses would remain confidential. Participants were given an opportunity to ask questions. Participants then signed a written informed consent form prior to completion of this study. The experimenter of this study interviewed participants on an individual basis.

The experimenter of this study counterbalanced the order in which participants completed interviews about their attitudes and completed the Intolerance of Ambiguity Scale (Budner, 1962). Half of these participants first completed the Intolerance of Ambiguity Scale and later completed an interview. The other half of these participants first completed an interview and later completed the Intolerance of Ambiguity Scale. The remaining description of this procedure section was organized as if participants first completed the interview

portion and later completed the Intolerance of Ambiguity Scale.

During the interview portion of this study, participants read a series of statements displayed on note cards. Participants were shown statements about a variety of political, social, and campus issues. Participants read a series of statements that were either positively worded (e.g., "Parking should be free for professors.") or negatively worded (e.g., "Gay men and lesbian women should not have the right to get married."). Order of statements was randomized.

After each issue was presented on a note card, participants verbally expressed their attitude by stating aloud a number on a 15-point, Likert-type scale. Endpoints of that scale were labeled *strongly agree* (+7) and *strongly disagree* (-7). Midpoint was labeled *neutral* (0). Other points on that scale were numbered to correspond to varying degrees of agreement or disagreement. Participants could choose a "+3" or "+4" to indicate *moderately favorable* attitudes. Participants could also choose a "-3" or "-4" to indicate *moderately unfavorable* attitudes. The experimenter used a separate coding sheet to record responses. Those responses were not available for participants viewing.

After participants expressed their attitudes towards each issue, the experimenter selected two issues for which participants expressed moderately positive attitudes (i.e., +4) and two issues for which participants expressed moderately negative attitudes (i.e., -4). Prior to viewing these note cards again, participants were randomly assigned to one of two conditions: low opportunity for thought (45 seconds) or high opportunity for thought (90 seconds).

The experimenter then told participants there were a few particular issues of interest. Half of these participants reread an issue for which they held moderately negative attitudes first and the other half of these participants reread an issue for which they held moderately positive attitudes first. The order in which participants reread each set of issues (i.e., positive or negative) was counterbalanced. Participants were then asked

by the experimenter to think about each issue they had just read. She asked participants to read one of these four issues of interest and to concentrate on that issue. She instructed participants to

Focus on this particular issue only. You may want to think about how you feel about the issue. You may want to think about your beliefs about the issue. Or you may want to think about important facts and arguments you know about the issue. Just think about the issue I am about to show you until I tell you to stop thinking about it (Leone, 1995).

The experimenter instructed participants to stop thinking once the allotted opportunity for thought was over. Participants were then asked by the experimenter to rate their attitudes about each issue again using the same 15-point scale as mentioned above. She told participants

Now that you have had the chance to think about this issue, I would like you to tell me once again how you feel about this issue. Sometimes people's attitudes change even over as short a period of time as this. You may or may not feel the same way about the issue. Using the scale in front of you, please indicate how you feel now about the issue (Leone, 1995).

The experimenter recorded participants' attitudes on a separate coding sheet. After participants finished rating their attitude, the same procedure was repeated for the remaining three issues. Participants were given either 45 seconds or 90 seconds of time for thought on all four issues.

Attitude polarization was scored such that higher scores were indicative of a greater tendency for attitude polarization (Leone, 1995). If an initially favorable attitude (i.e., +4, +5) became more favorable (i.e., +6, +7) after thought, then attitude change was assigned a score of "1". If an initially unfavorable attitude (i.e., -4, -5) became more unfavorable (i.e., -6, -7) after thought, then attitude change was also assigned a score of "1". If an initially favorable attitude (i.e., +5)

became less favorable (i.e., +4, -3) after thought, then attitude change was assigned a score of "-1". If an initially unfavorable attitude (i.e., -5) became more favorable (i.e., -4, +3) after thought then, attitude change was also assigned a score of "-1". If attitudes remained unchanged after thought, then attitude change was assigned a score of "0". The use of a trichotomous index is preferred over an algebraic index because a trichotomous index is proven to have greater validity and have less sensitivity to errors than an algebraic index (Tesser, 1978). Scores for all four issues were summed together.

Individual differences in intolerance of ambiguity were assessed using the 16-item Intolerance of Ambiguity Scale (Budner, 1962). Budner maintains that ambiguous situations are novel, complex, or insoluble. Budner wrote several items to assess individuals' perceived threat from novel situations (i.e., no familiar cues), complex situations (i.e., multitude of cues), and insoluble situations (i.e., different cues suggest different structures). Four items were designed to assess attitudes of perceived threat from novel situations, nine items were designed to assess attitudes of perceived threat from complex situations, and three items were designed to assess attitudes of perceived threat from insoluble situations.

Participants rated their degree of agreement or disagreement with each of the statements in that scale. Participants responded using a 5-point Likert-scale: *strongly agree*, *slightly agree*, *uncertain*, *slightly disagree*, and *strongly disagree*. Half of those statements were worded positively (e.g., "A good job is one where what is to be done and how it is to be done are always clear.") and half of those statements were worded negatively (e.g., "People who insist upon a yes or no answer just don't know how complicated things really are."). Responses to negatively worded items on that scale were reverse scored. Answers to items were scored such that high scores were indicative of greater intolerance of ambiguity and low scores were indicative of greater tolerance of ambiguity. Based on a median split of the full

range of scores, participants scoring above the median were classified as intolerant of ambiguity and participants scoring below the median were classified as tolerant of ambiguity.

In order to validate his Intolerance of Ambiguity Scale, Budner (1962) administered his scale to sixteen different samples. According to Robinson and Shaver (1973), internal consistency was determined by measuring Cronbach's alpha for scores from those sixteen different samples. The range of Cronbach's alpha for scores for these samples was from .39 to .62. In a separate study, Robinson and Shaver (1973) obtained a test-retest reliability of $r = .85$ for scores on this scale after a 2 to 4 week period. For scores in this study, Cronbach's alpha was .61.

Budner's Intolerance of Ambiguity Scale (1962) and three other intolerance of ambiguity scales (i.e., Norton's Multi-dimensional Scale [Norton, 1975], Rydell's Scale [Rydell & Rosen, 1966], and Walk Scale [O'Connor, 1952]) were administered to a single sample (Furnham, 1994). Scores on Norton's Multi-dimensional Scale, Rydell's Scale, and Walk's Scale were significantly correlated with scores on Budner's Intolerance of Ambiguity Scale. The correlation coefficient between scores on Budner's Intolerance of Ambiguity Scale and scores on Norton's Multi-dimensional Scale was, $r = .47, p < .05$. The correlation coefficient between scores on Budner's Intolerance of Ambiguity Scale and scores on Rydell's Scale was, $r = .57, p < .06$. The correlation coefficient between scores on Budner's Intolerance of Ambiguity Scale and scores on Walk's Scale was, $r = .44, p < .06$.

Finally, participants answered demographic questions about their sex, race (i.e., *Caucasian/White, Hispanic, African American/Black, Asian American, or Other*), political affiliation (*Democrat, Republican, or Independent*), and age (*18-22yrs, 23-27yrs, 28 yrs-32yrs, 33yrs-37yrs, 38 or more*). Participants were thanked for their time and given an opportunity to ask any questions. The experimenter of this study then dismissed her participants.

Results

Overview

This study was a 2 (ambiguity: tolerant versus intolerant) x 2 (opportunity for thought: 90 seconds versus 45 seconds) x 2 (order of presentation: personality measure then attitude measure versus attitude measure then personality measure) factorial design. Order of presentation was included in this analysis for exploratory purposes. Attitude polarization was the dependent variable in this study. Attitude polarization was calculated by summing scores for all four issues that participants rated a second time.

Main Analyses

It was expected that attitude polarization would be greater for individuals who had ample opportunity for thought (i.e., 90 seconds) than for individuals who had little opportunity for thought (i.e., 45 seconds). It was also expected that attitude polarization would be greater for individuals intolerant of ambiguity than for individuals tolerant of ambiguity. Dispositional factors (i.e., intolerance of ambiguity) and situational factors (i.e., opportunity for thought) were expected to have an interactive effect on attitude polarization such that individuals intolerant of ambiguity having ample opportunity for thought would experience greater attitude polarization than would individuals in any other condition.

Statistically, it was expected that there would be a main effect for opportunity for thought and a main effect for individual differences in intolerance of ambiguity. It was also expected that there would be a two-way statistical interaction between intolerance of ambiguity and opportunity for thought. Last, if there were an interactive effect of order of presentation, then there would be a statistical three-way interaction between opportunity for thought, individual differences in intolerance of ambiguity, and order of presentation.

A two-way ANOVA was conducted to determine if there was a main effect for opportunity for thought, a main effect for individual differences in intolerance of ambiguity, and an interaction between

opportunity for thought and individual differences in intolerance of ambiguity. There was not a statistically significant main effect for opportunity for thought or intolerance of ambiguity, both $F's < 1.00$. There also was not a statistically significant interaction between opportunity for thought and intolerance of ambiguity, $F < 1.00$. A three-way ANOVA was conducted with order of presentation as an exploratory variable to determine if there was an interaction between opportunity for thought, intolerance of ambiguity, and order of presentation. This three-way interaction was non-significant, $F < 1.00$.

Exploratory Analysis

There was, however, an unexpected marginally significant interaction between order of presentation and intolerance of ambiguity, $F(1, 152) = 3.06, p < .08$. In order to find the source of this interaction, a simple main effect analysis was conducted (i.e., two one-way ANOVAs). Participants' completion of the Intolerance of Ambiguity Scale then an attitude measure was assessed first and participants' completion of an attitude measure then the Intolerance of Ambiguity Scale was assessed second. Intolerance of ambiguity was the predictor variable and attitude polarization was the criterion variable. There was a significant difference between individual differences in intolerance of ambiguity when participants completed the Intolerance of Ambiguity Scale and then an attitude measure, $F(1, 81) = 3.66, p < .06$. Participants *tolerant* of ambiguity who first completed the Intolerance of Ambiguity Scale ($M = 0.74, SD = 1.89$) experienced greater attitude polarization than did participants *intolerant* of ambiguity who first completed the Intolerance of Ambiguity Scale ($M = -.06, SD = 1.81$). Participants *tolerant* of ambiguity ($M = .06, SD = 2.14$) and participants *intolerant* of ambiguity ($M = .39, SD = 2.06$) who first completed an interview, however, were equally likely to experience attitude polarization, $F < 1.00$.

Ancillary Analysis

During the thought manipulation procedure in this study, participants thought about issues that were given moderately favorable ratings (i.e., +4) and moderately unfavorable ratings (i.e., -4). The researcher in this study chose issues for which participants had moderately favorable or moderately unfavorable attitudes in order to prevent ceiling effects or floor effects. Moderately favorable ratings and moderately unfavorable ratings may be different for participants who experienced attitude polarization than for participants who did not experience attitude polarization. Moderately favorable ratings and moderately unfavorable ratings may also be different for participants intolerant of ambiguity and participants tolerant of ambiguity. Moderately favorable ratings and moderately unfavorable ratings may also be different for participants in the 45 second thought condition and participants in the 90 second thought condition.

In order to determine if there was a possible relationship between individuals' tendencies to be weak or strong in their initial ratings and other factors, I took the absolute value of all initial ratings and summed those values. Low scores were indicative of weak attitudes and high scores were indicative of strong attitudes. A possible range for scores on extremity of initial attitudes was a minimum of 0 and a maximum of 280. Actual range of scores on extremity of initial attitudes was a minimum of 78 and maximum of 258. A possible relationship between individuals' tendencies to be weak or strong in their initial ratings and attitude polarization (i.e., total trichotomous change) was examined.

First, there was no relationship between individuals' tendencies to be weak or strong in their initial ratings and overall attitude polarization, $r = -.01$. Second, there was no relationship between individuals' tendencies to be weak or strong in their initial ratings and individual differences in intolerance of ambiguity, $r = -.04$. Last, there was no relationship for participants' tendency to be weak or strong in their initial ratings and

to which thought condition these participants were randomly assigned, $r = -.16$. Although there were individual differences in extremity of initial attitudes, those differences were unrelated to attitude polarization, intolerance of ambiguity, or opportunity for thought condition.

Discussion

It was expected that, in general, individuals would experience increased attitude polarization with an increased opportunity for thought. It was also expected that individuals intolerant of ambiguity would experience more attitude polarization than would individuals tolerant of ambiguity. Last, it was expected that individuals intolerant of ambiguity would experience more attitude polarization with an increased opportunity for thought than would individuals tolerant of ambiguity with an increased opportunity for thought.

These hypotheses in this study were not supported. Individuals in the low opportunity for thought condition and individuals in the high opportunity for thought condition did not differ in amount of attitude polarization they experienced. Individuals tolerant of ambiguity and individuals intolerant of ambiguity did not differ in amount of attitude polarization they experienced. Regardless of thought condition, individuals intolerant of ambiguity and individuals tolerant of ambiguity did not differ in amount of attitude polarization experienced. In sum, results from this experiment were not consistent with hypotheses.

Plausible Alternative Explanations

In terms of the self generated attitude change construct, results from this study differ from results other researchers obtained (see Tesser, et al., 1995, for a review). One possible explanation for results obtained in this study may be due to the nature of thought manipulation. In other words, allocated times for the opportunity for thought manipulation may have been too long or too short. These two times may not have been adequate to see differences in attitude polarization. In some

studies, for example, researchers included increasing increments of opportunity for thought (e.g., Tesser & Conlee 1975). Tesser (1976), for example, instructed participants to think about an attitude object for 30, 60, 90, and 180 seconds. In other studies, researchers included a control condition during which participants were not given a chance for thought or were distracted from thought (e.g., Chaiken & Yates, 1985; Harton & Latane, 1997). Participants in this experiment were instructed to think about an assigned issue for either 45 seconds or 90 seconds. Other researchers, however, found attitude polarization when participants were given 45 versus 90 seconds of thought (e.g., Leone, 1996). Although this explanation (i.e., thought manipulation not adequate) is possible, this explanation may not be probable. Results from this study, therefore, may not be due to the nature of thought manipulation.

In this study, participants experienced more attitude attenuation than attitude polarization. Researchers have found that, when individuals compare their beliefs concerning people, objects, events, or issues with the actual characteristics of those people, objects, events, or issues (i.e., reality constraint), attitude attenuation occurred (e.g., Rothbaum, et al., 1995). Researchers have also found that when individuals are forced to examine the derivation of their beliefs about people, objects, events or issues (i.e., process constraint) attitude attenuation occurred (e.g., Leone & Baldwin, 1983). Perhaps there was an element of this procedure that inadvertently involved reality or process constraints. If participants think under reality constraints or processes constraints during thought about an assigned issue, then participants may experience attitude attenuation (e.g., Clary, et al., 1978).

In terms of the intolerance of ambiguity construct, results from this study differ from results other researchers obtained (e.g., Feather, 1969). In this study, participants completed Budner's Intolerance of Ambiguity Scale (1962). In other intolerance of ambiguity studies, participants completed other measures intolerance of

ambiguity. Examples of intolerance of ambiguity measures used in other studies include McDonald Scale (1970), Rydell-Rosen Scale (1966), and Norton's Scale (1975). Scores on these aforementioned measures of intolerance of ambiguity may be more valid than scores on Budner's Intolerance of Ambiguity Scale (see Furhnam, 1994 for a review). If scores on Budner's Intolerance of Ambiguity Scale are not valid, then there would not be an effect for intolerance of ambiguity on attitude polarization.

Although there are differences in validity for scores on Budner's Intolerance of Ambiguity Scale and scores on other measures of intolerance of ambiguity, this explanation (i.e., lack of validity for scores on Budner's Intolerance of Ambiguity Scale) may not be probable. Researchers have demonstrated that scores on Budner's Intolerance of Ambiguity Scale (1962) have test-retest reliability (see Robinson & Shaver, 1973). Researchers also demonstrated convergent validity with three other measures of intolerance of ambiguity (ref). Last, researchers demonstrated construct validity for Budner's Intolerance of Ambiguity Scale in that scores on this scale are related to other theoretically meaningful constructs such as prejudice and racism (e.g., Hassan & Khalique, 1987; Sidanius, 1978). Budner's Intolerance of Ambiguity Scale was selected for use in this study because it is the most cited and widely used intolerance of ambiguity scale. Results of intolerance of ambiguity on attitude polarization in this study, therefore, are not likely due to a lack of validity or reliability for scores on Budner's Intolerance of Ambiguity Scale.

Although researchers have demonstrated that scores on this scale are reliable and valid, perhaps intolerance of ambiguity is not related in a meaningful way to self generated attitude change. There may be other constructs, however, that are related to self generated attitude change. These other constructs may include need for cognition and dogmatism.

Need for cognition is the degree to which individuals engage in and enjoy effortful cognitive endeavors (Cacioppo & Petty, 1982). Individuals can either be high in need for cognition or low in need for cognition. Individuals high in need for cognition tend to engage in and enjoy effortful thought. These individuals "prefer complex to simple problems" (Cacioppo, Petty, & Kao, 1984). Individuals high in need for cognition also tend to scrutinize the merits of a message (i.e., central route) when determining their attitudes about an issue (Cacioppo & Petty, 1981). On the other hand, individuals low in need for cognition do not tend to engage in and enjoy effortful thought. These individuals "find little satisfaction in deliberating hard and for long hours" (Cacioppo et al., 1984). Individuals low in need for cognition also tend to rely on heuristics (i.e., peripheral route) such as source attractiveness or length of message when determining their attitudes about an issue (Cacioppo et al., 1981). Researchers found that, when given an opportunity for thought, individuals low in need for cognition polarize their attitudes more than do individuals high in need for cognition (cf., Lassiter & Apple, 1998; Lassiter, Apple, & Slaw, 1996; Leone, 1994; Leone & Ensley, 1986).

Dogmatism has been conceptualized in terms of differences in the nature of belief systems. Individuals use belief systems to understand their world around them and to protect themselves from potentially threatening information and ideas (Rokeach, 1960). Individuals can either be dogmatic or non-dogmatic. Dogmatic individuals' belief systems are characterized by a high degree of isolation. These individuals may compartmentalize or separate beliefs that other individuals would integrate. Dogmatic individuals avoid, ignore, or selectively forget attitude-discrepant information because these individuals find inconsistency of beliefs intolerable (e.g., Leone, 1989). On the other hand, non-dogmatic individuals' belief systems are characterized by a high degree of openness. These individuals can make

connections between beliefs that are logically related. Non-dogmatic individuals do not ignore, avoid, or selectively forget attitude-discrepant information because these individuals find inconsistency of beliefs tolerable (e.g., Leone, 1989). Researchers found that, when given an opportunity for thought, dogmatic individuals polarize their attitudes more than do non-dogmatic individuals (e.g., Leone, 1989; Leone, Taylor, & Adams, 1991).

Although there was no effect for self-generated attitude change and intolerance of ambiguity in this study, there was an unexpected interaction between order of presentation and intolerance of ambiguity. Participants intolerant of ambiguity were equally likely as participants tolerant of ambiguity to experience attitude polarization when asked to first complete an attitude measure and then complete Budner's Intolerance of Ambiguity Scale. Participants intolerant of ambiguity were more likely than participants tolerant of ambiguity to experience attitude attenuation when asked to first complete the Intolerance of Ambiguity Scale and then complete an attitude measure.

One possible explanation for this unexpected finding may be a priming effect (Srull & Wyer, 1980). A priming effect occurs when activating a schema increases accessibility for individuals to readily use that activated schema (Srull & Wyer, 1980). Individuals are likely to use schemas for which they have been primed because these schemas are accessible. When participants answer questions about themselves, participants' self-concepts become accessible (Wentura & Greve, 2005). When participants completed the Intolerance of Ambiguity Scale first, participants may have become aware of their tendency to be tolerant or intolerant of ambiguity. Participants who are intolerant of ambiguity have different self-concepts from participants who are tolerant of ambiguity. Participants who are made aware that they are intolerant of ambiguity may have incorporated into their self-concept that they are rigid and narrow minded. Participants who are made aware that they are tolerant of

ambiguity may have incorporated into their self-concept that they are indecisive and ambivalent. In turn, participants may feel uncomfortable by their self-concept.

Participants who were made aware of their tendency to be intolerant of ambiguity may have attempted to respond in ways that would disconfirm negative stereotypes (e.g., narrow-minded) about individuals intolerant of ambiguity. Participants who were made aware of their tendency to be tolerant of ambiguity may have attempted to respond in ways that would disconfirm negative stereotypes (e.g., ambivalent) about individuals tolerant of ambiguity. Researchers maintain that stereotype threat occurs when individuals are concerned with confirming a negative stereotype (e.g., African Americans as unintelligent) of a group to which these individuals belong (Steele & Aronson, 1995). Individuals who experience stereotype threat may try to disconfirm negative stereotypes about themselves (Steele & Aronson, 1995). These individuals, for example, may disengage from group norms in order to disconfirm a stereotype (Aronson, Blanton, & Cooper, 1995; Steele, 1997). If participants intolerant of ambiguity were made aware of the fact they were intolerant (i.e., rigid), then these participants may have responded in ways that would disconfirm the stereotype of intolerant individuals as rigid. In one condition, participants completed the Intolerance of Ambiguity Scale (Budner, 1962) first. As a result of being primed to think about their self-concept, participants may have become aware of the degree to which they are intolerant of ambiguity. Perhaps participants intolerant of ambiguity modified responses in an effort to appear more socially acceptable (i.e., adaptable) than socially unacceptable (i.e., rigid). If participants modified responses in an effort to appear socially desirable, then participants would experience attitude attenuation rather than attitude polarization.

Limitations of Current Thesis

One possible limitation in this study is the unknown validity of the opportunity for

thought manipulation. Although participants were instructed to think about a particular issue for either 45 seconds or 90 seconds, participants may not have been thinking about that assigned issue. Alternatively, participants were perhaps thinking about an issue when instructed to do so, but then may not have engaged in any of the self generated attitude change microprocesses (i.e., generate additional beliefs, reinterpret existing beliefs, or discount inconsistent beliefs). In other words, just because participants were instructed to think about an issue does not mean that these participants thought about that assigned issue. Also, participants may have thought about assigned issues but did not generate additional thoughts about those assigned issues, reinterpret existing thoughts about those assigned issues, or discount inconsistent thoughts about those assigned issues. If participants did not think about an assigned issue or did not engage in the self generated attitude change microprocesses when thinking about an assigned issue, then these participants would not experience attitude polarization.

A second possible limitation of this study may be the use of political, social, and campus issues. Researchers have shown that participants with well developed mental representations (i.e., schemas) experience more attitude polarization than do participants with poorly developed mental representations (e.g., Tesser & Leone, 1977). Participants may not have had well developed schemas for some or all of the issues used in this study. One example of an issue used in this study is "Euthanasia should be a legal, personal choice". Some of these participants, for example, may not be familiar with the concept of euthanasia. If participants do not have well developed schemas for these issues, then these participants are not able to engage in the self generated attitude change microprocesses.

A third possible limitation of this study is the use of self-report measures. Participants responded to a self-report measure when they rated their degree of agreement or disagreement toward each issue.

Participants also responded to a self-report measure during completion of Budner's Intolerance of Ambiguity Scale (1962). When participants respond to a self-report measure they are susceptible to certain response sets (e.g., social desirability or acquiescence responding).

Participants may attempt to respond in a socially desirable manner to statements about each issue as well as to items on the Intolerance of Ambiguity Scale (Budner, 1962). Participants engage in social desirability responding when they respond to statements in ways which makes them look good to themselves or others (Rosenberg, Nelson, & Vivekananthan, 1968). Participants, for example, may agree or disagree with an issue based on how these participants think most college students feel about that issue. If participants think that most college students hold negative attitudes toward a particular issue, then these participants may respond in a socially desirable fashion by indicating a negative attitude toward that particular issue. When participants respond in a socially desirable manner, researchers are not accurately measuring participants' attitudes.

Participants may also acquiesce with responses to statements about each issue as well as to items on the Intolerance of Ambiguity Scale (Budner, 1962). Participants engage in acquiescence responding when they agree with any statement that sounds reasonable (Zuckerman, Knee, Hodgins, & Miyake, 1995). Participants, for example, may agree that professors should not have to pay to park on campus because participants think that this statement sounds reasonable. When participants simply agree with a statement about an issue because it sounds reasonable, researchers are not accurately measuring participants' attitudes.

Future Directions

Researchers could include a manipulation check for the opportunity for thought manipulation. Researchers, in previous studies, have used illuminated lights as a means of instructing participants to think

about an attitude object (Tesser, 1976). Researchers could instruct participants to illuminate a light when thinking about an assigned issue. If participants are indicating they are thinking about an assigned issue by illuminating a light, then researchers know participants are engaging in thought. Although researchers can measure if participants are thinking about an assigned issue when participants illuminate a light, researchers cannot, however, use this manipulation check to measure what participants are thinking about during thought. If researchers want to measure what participants are thinking about during thought about an assigned issue, then researchers can instruct participants to write arguments or ideas concerning an attitude object (e.g., Lord, Ross, & Lepper, 1979; Pomerantz, Chaiken, & Tordesillas, 1995).

Researchers could also include several different measures of intolerance of ambiguity. Researchers could determine convergent validity if participants completed several intolerance of ambiguity scales. If researchers included different measures of intolerance of ambiguity, then researchers may have increased confidence with effects for intolerance of ambiguity on attitude polarization.

Researchers could also include other kinds of stimuli (e.g., paintings, fashion) for which participants think about during an opportunity for thought. In this study, the participants thought about political, social, or campus issues. These issues may have been too broad to get an effect for attitude polarization. Instead of measuring attitudes for a broad range of issues, researchers in future studies could measure attitudes about specific issues (e.g., “war on terror”).

Researchers could also include the use of priming effects with different personality variables such as dogmatism. Participants may access their self-concept if they become aware of certain personality characteristics (e.g., dogmatic). Once participants are primed with knowing their personality characteristics, researchers could then study if participants are susceptible to stereotype threat.

Researchers studying stereotype threat generally examine this effect with a specific group of people (e.g., Women or African Americans) for which stereotypes are salient. Although some researchers (e.g., Brown & Pinel, 2003) examined the effects of stereotype threat with individual difference variables (e.g., stigma consciousness), researchers have not examined stereotype threat with political affiliation. Although individuals who affiliate with different political agenda possess certain personality characteristics, these characteristics are not usually salient. Once individuals are made aware that they possess certain characteristics, individuals may become aware of stereotypes concerning these characteristics (e.g. liberals as bleeding-hearts, conservatives as “moral-order” elitists). If participants are made aware of certain personality characteristics (e.g., liberal vs. conservative), then researchers may find an effect for stereotype threat with personality variables.

Recall the opening paragraph. Individuals who favored conservative positions (e.g., personal responsibility) supported by President George W. Bush may have donated money to his political party. Individuals who favored liberal positions (e.g., social responsibility) supported by Senator John Kerry may have stood along busy roadways flashing signs in support of his party. If, however, conservative voters involved in Bush’s campaign were made aware of negative stereotypes of conservatives as insensitive to working-class citizens then these conservatives may try to disconfirm these negative stereotypes by voting against party lines. In turn, if liberal voters involved in Kerry’s campaign were made aware of negative stereotypes of liberals as financially irresponsible, then these liberals may try to disconfirm these negative stereotypes by voting against party lines. Understanding attitudes and the mechanisms of attitude change has broad, real world implications.

References

- Aronson, J., Blanton, H. & Cooper, J. (1995). When bad things happen to good feedback: Exacerbating the need for self-justification with self-affirmations. *Journal of Personality and Social Psychology*, 23(7), 684-692.
- Brown, R. P. & Pinel, E. C. (2003). Stigma on my mind: Individual differences in the experience of stereotype threat. *Journal of Experimental Social Psychology*, 39(6), 626-633.
- Budner, S. (1962). Intolerance of ambiguity as a personality variable. *Journal of Personality*, 30(1), 29-50.
- Cacioppo, J. T. & Petty, R. E. (1982). The need for cognition. *Journal of Personality and Social Psychology*, 42(1), 116-131.
- Cacioppo, J. T., Petty, R. E., Feinstein, J. A. & Jarvis, B. G. (1996). Dispositional differences in cognitive motivation: The life and times of individuals varying in need for cognition. *Psychological Bulletin*, 119, 197-253.
- Chaiken, S. & Yates, S. (1985). Affective-cognitive consistency and thought-induced attitude polarization. *Journal of Personality and Social Psychology*, 49(6), 1470-1481.
- Clary, E.G., Tesser, A. & Downing, L. L. (1978). Influence of a salient schema on thought-induced cognitive change. *Personality and Social Psychology Bulletin*, 4(1), 39-43.
- Feather, N. T. (1969). Preference for information in relation to consistency, novelty, intolerance of ambiguity, and dogmatism. *Australian Journal of Psychology*, 21(3), 235-249.
- Feather, N. T. (1967). Evaluation of religious and neutral arguments in religious and atheist student groups. *Australian Journal of Psychology*, 19(1), 3-13.
- Feather, N. T. (1969). Differentiation of arguments in relation to attitude, dogmatism and intolerance of ambiguity. *Australian Journal of Psychology*, 21(1), 21-28.
- Feinberg, L. B. (1971). Intolerance of ambiguity as a variable in attitudes toward the disabled. *Psychological Aspects of Disability*, 18(3), 117-121.
- Furnham, A. (1994). A content, correlational, and factor analytic study of four tolerance of ambiguity questionnaires. *Personality and Individual Differences*, 16(3), 403-410.
- Furnham, A. & Ribchester, T. (1995). Tolerance of ambiguity: A review of the concept, its measurements and applications. *Current Psychology*, 14(3), 179-199.
- Galbreath, J. & Feinberg, L. B. (1973). Ambiguity and attitudes toward employment of the disabled: A multidimensional study. *Rehabilitation Psychology*, 20(4), 165-174.
- Harton, H. C. & Latane, B. (1997). Information and thought-induced polarization: The mediating role of involvement in making attitudes extreme. *Journal of Social Behavior and Personality*, 12(2), 271-299.
- Hassan, M. K. & Khalique, A. (1987). A study of prejudice in Hindu and Muslim college students. *Psychologia*, 30, 80-84.

- Kuhn, D. & Lao, J. (1996). Effects of evidence on attitudes: Is polarization the norm? *Psychological Science*, 7(2), 115-120.
- Lal, M. & Hassel, L. (1998). The joint impact of environmental uncertainty and tolerance of ambiguity on top managers' perceptions of the usefulness of non-conventional management accounting information. *Scandinavian Journal of Management*, 14(3), 259-271.
- Lassiter, G. D., Apple, K. J. & Slaw, R. D. (1996). Need for cognition and thought-induced attitude polarization: Another look. *Journal of Social Behavior and Personality*, 11(4), 647-665.
- Lassiter, G. D. & Apple, K. J. (1998). Need for cognition and thought-induced attitude polarization: Examining possible demand characteristics. *Social Behavior and Personality*, 26(1), 99-104.
- Leone, C. (1984). Thought-induced change in phobic beliefs: Sometimes it helps, sometimes it hurts. *Journal of Clinical Psychology*, 40(1), 68-71.
- Leone, C. (1989). Self-generated attitude change: Some effects of thought and dogmatism on attitude polarization. *Personality and Individual Differences*, 10(12), 1243-1252.
- Leone, C. (1994). Opportunity for thought and differences in the need for cognition: A person by situation analysis of self-generated attitude change. *Personality and Individual Differences*, 17(4), 571-574.
- Leone, C. (1996). Thought, objectivism, and opinion extremity: Individual differences in attitude polarization and attenuation. *Personality and Individual Differences*, 21(3), 383-390.
- Leone, C. & Aronow, R. E. (1992). Thought, process constraints, and cognitive style: Individual differences in self-generated attitude reduction of fear. *Journal of Social and Clinical Psychology*, 11(4), 365-376.
- Leone, C. & Baldwin, R. T. (1983). Thought-induced changes in fear. Thinking sometimes makes it so. *Journal of Social and Clinical Psychology*, 1(3), 272-283.
- Leone, C. & Ensley. (1985). Self-generated attitude change: Another look at the effects of thought and cognitive schemata. *Representative Research in Social Psychology*, 15(1-2), 2-9.
- Leone, C. & Ensley, E. (1986). Self-generated attitude change: A person by situation analysis of attitude polarization and attenuation. *Journal of Research in Personality*, 20, 434-446.
- Leone, C. Minor, S. W. & Baltimore, M. L. (1983). A comparison of cognitive and performance-based treatment analogues: Constrained thought versus performance accomplishments. *Cognitive Therapy and Research*, 7(5), 445-454.
- Leone, C., Taylor, L. W. & Adams, K. C. (1991). Self-generated attitude change: Some effects of thought, dogmatism, and reality constraints. *Personality and Individual Differences*, 12(3), 233-240.

- Liberman, A. & Chaiken, S. (1991). Value conflict and thought-induced attitude change. *Journal of experimental Social Psychology, 27*, 203-216.
- Lord, C. G., Ross, L. & Lepper, M. R. (1979). Biased assimilation and attitude polarization: The effects of prior theories on subsequently considered evidence. *Journal of Personality and Social Psychology, 37*(11), 2098-2109.
- Lord, C. G. (1989). The "disappearance" in an age of relativism. *Personality and Social Psychology Bulletin, 15*(4), 513-518.
- Plous, S. (1991). Biases in the assimilation of technological breakdowns: Do accidents make us safer? *Journal of Applied Social Psychology, 21*, 1058-1082.
- Pomerantz, E. M., Chaiken, S. & Tordesillas, R. S. (1995). Attitude strength and the resistance process. *Journal of Personality and Social Psychology, 69*(3), 408-419.
- Robinson, J. P. & Shaver, P. R. (1973). *Measures of social psychological attitudes*. Oxford, England; University of Michigan: Institute for Social Research
- Rosenberg, S., Nelson, C. & Vivekananthan, P. S. (1968). A multidimensional approach to the structure of personality impressions. *Journal of Personality and Social Psychology, 9*(4), 283-294.
- Rothbaum, B. O., Hodges, L. F., Kooper, R., Opdyke, D., Williford, J. S. & North, M. (1995). Virtual reality graded exposure in the treatment of acrophobia: A case report. *Behavior Therapy, 26*, 547-554.
- Sidanius, J. (1978). Cognitive functioning and socio-political ideology: An exploration study. *Perpetual and Motor Skills, 46*, 515-530.
- Sidanius, J. (1978). Intolerance of ambiguity and socio-political ideology: A multidimensional analysis. *European Journal of Social Psychology, 8*, 215-235.
- Sinha, R. R. & Hassan, M. K. (1975). Some personality correlates of social prejudice. *Journal of Social and Economic Studies, 3*(2), 225-231.
- Srull, T. & Wyer, R. S. (1980). Category accessibility and social perception: Some implications for the study of person memory and interpersonal judgments. *Journal of Personality and Social Psychology, 38*(6), 841-856.
- Steele, C. M. (1997). A threat in the air: How stereotypes shape intellectual identity and performance. *American Psychologist, 52*(6), 613-629.
- Steele, C. M. & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology, 69*(5), 797-811.
- Tesser, A. (1976). Attitude polarization as a function of thought and reality constraints. *Journal of Research in Personality, 10*, 183-194.
- Tesser, A. (1978). Self-generated attitude change. In Berkowitz, L. (Series Ed.), *Advances in Experimental Social Psychology: Vol. 11*. (pp. 289-339). San Diego, CA: Academic Press.
- Tesser, A. & Conlee, M.C. (1975). Some effects of time and thought on attitude polarization. *Journal of Personality and Social Psychology, 31*(2), 262-270.

- Tesser, A. & Cowan, C. L. (1975). Thought and number of cognitions as determinants of attitude change. *Social Behavior and Personality*, 3(2), 165-173.
- Tesser, A. & Cowan, C. L. (1977). Some attitudinal and cognitive consequences of thought. *Journal of Research in Personality*, 11, 216-226.
- Tesser, A. & Leone, C. (1977). Cognitive Schemas and thought as determinants of attitude change. *Journal of Experimental Social Psychology*, 13(4), 340-356.
- Tesser, A., Leone, C. & Clary, E. G. (1978). Affect control: Process constraints versus catharsis. *Cognitive Therapy and Research*, 2(3), 265-274.
- Tesser, A., Martin, L. & Mandolia, M. (1995). The impact of thought on attitude extremity and attitude-behavior consistency. In Petty, R. & Krosnick, J. (Eds.), *Attitude Strength: Antecedents and Consequences: Vol. 4. Ohio State University Series on Attitudes and Persuasion* (pp. 73-92). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Valenti, A.C. & Tesser, A. (1981). On the mechanism of thought-induced attitude polarization. *Social Behavior and Personality*, 9(1), 17-22.
- Wentura, D. & Greve, W. (2005). Assessing the structure of self-concept: evidence for self-defensive processes by using a sentence priming task. *Self and Identity*, 4(3), 191-211.
- Zuckerman, M., Knee, C. R., Hodgins, H. S. & Miyake, K. (1995). Hypothesis confirmation: The joint effect of positive test strategy and acquiescence response set. *Journal of Personality and Social Psychology*, 68(1), 52-60.