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Structure on Attitude Polarization

Ryan Gladding

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Self Generated Attitude Change

Effects of Thought and Personal Need for Structure on Attitude Polarization

People hold attitudes about a wide range of issues. People hold attitudes about issues ranging from toothpaste brands to foreign policies. One issue, for example, that has recently become salient in both the United States and Europe is illegal immigration. Consider two people sitting around discussing current affairs. One person mentions illegal immigration. The other person states that immigration is becoming a problem, but there are other things the government should worry about first. After a few minutes of thought, the gentleman that stated the government should worry about other things first blurts out that illegal immigration will be the downfall of this country! How could this person's attitudes become so extreme in such a short period of time?

When people are given an opportunity to think about an attitude object (e.g., persons, places, issues), their attitudes toward that attitude object tend to polarize (Tesser, 1978; Tesser, Martin & Mendolia, 1995). That is, attitudes that are initially favorable tend to become more favorable, whereas initially unfavorable attitudes tend to become more unfavorable. This phenomenon is referred to as self generated attitude change.

Sadler and Tesser (1973) first researched this process of self generated attitude change by playing participants a recording of either a "likeable partner" that complimented these participants or a "dislikable partner" that criticized these participants. Participants were then asked to either think about their partner or were distracted from thinking about their partner. When given an opportunity to think about their partner, participants in a "likeable partner" condition held more favorable attitudes about their partner than did those participants in a distraction condition. Similarly, when given an opportunity to think about their partner, participants in a "dislikeable partner" condition held more unfavorable attitudes about their partner than did those participants in a distraction condition.

Thought, Beliefs, and Feelings

Self generated attitude change would not be possible without assuming two major relationships. First, what a person thinks about an attitude object is related to what a person believes to be true about that same attitude object (Leone, 1984; Tesser, 1978; Tesser et al., 1995). Thought is a fluid process. During thought, people actively change what they believe to be true in a way that makes their beliefs increasingly consistent. Beliefs tend to become increasingly consistent as people generate new information, reinterpret ambiguous information, and discount questionable information. For example, a person may have negative beliefs about illegal immigration (e.g., drain on welfare, bunch of border jumpers). If this person has a coworker who happens to be an illegal immigrant, this person may change his beliefs about that coworker to make them more consistent with his negative beliefs about all illegal immigrants. This person may assume, for example, that this coworker is lazy because this person feels all illegal immigrants are lazy.

Second, what a person believes to be true about an attitude object is related to how that person feels about that attitude object (Leone, 1991; Leone & Aronow, 1992; Tesser, 1978). That is, how a person feels about an attitude object depends on that person's beliefs about that attitude object. If a person has negative beliefs (e.g., lazy, late) about an illegal immigrant coworker, it is likely this person will come to dislike that coworker. Similarly, if a person has positive beliefs

(e.g., good work ethic, always on time) about an illegal immigrant coworker, it is likely this person will come to like that coworker.

In order for attitudes to polarize, people must think. As people have more time to think about an attitude object, people's attitudes about an attitude object should become more extreme compared to people that have less time to think about an attitude object or people that are distracted from thinking about an attitude object. Tesser and Conlee (1975) found attitudes became increasingly extreme as participants opportunity for thought increased. There was a steady increase in polarization from 30 to 90 seconds of thought and a significantly greater increase in polarization from 90 to 180 seconds of thought. These results have been reproduced in other studies (e.g., Leone, 1989; Leone, 1994).

Generation, Reinterpretation, and Discounting

Attitude polarization occurs as beliefs become evaluatively consistent. There are three ways (i.e., micro-processes) people shape their thoughts to make their beliefs evaluatively consistent. Individuals differ in how and when they use these micro-processes (Tesser, 1978; Tesser et al., 1995). People may use one, two, or all three micro-processes. The degree to which each micro-process is used varies from person to person as well as from situation to situation.

First, people may generate new information that is consistent with their initial beliefs (e.g., Clary, Tesser & Downing, 1978; Tesser & Cowan, 1975). If a person holds initially negative beliefs about illegal immigration, asking that person about illegal immigration may cause them to generate additional beliefs (e.g., increasing local taxes, problems with Medicare) in support of that person's initial beliefs about illegal immigration.

Generation of new information has been demonstrated in a number of studies. In one study, participants were more capable of generating new beliefs about a person when there were fewer initial adjectives describing that person than were participants given a greater number of initial adjectives describing an attitude person (Tesser & Cowan, 1975). Given an opportunity for thought, participants given fewer adjectives describing a person also had more extreme attitudes about that person than did participants given a greater number of adjectives describing a person.

Second, people may reinterpret existing information to make it more consistent with their initial beliefs (Tesser & Cowan, 1977). For example, an illegal immigrant coworker begins yelling something across a factory. He may be yelling for any number of reasons (e.g., to warn someone of danger, responding to his boss). A person who holds an unfavorable attitude about illegal immigration might interpret that immigrant coworker's yelling to that coworker being a "rude Mexican." This person has interpreted an ambiguous behavior by that immigrant coworker in a way that is consistent with that person's initial beliefs. By reinterpreting this behavior to support his existing beliefs, his initially unfavorable attitude toward illegal immigration might be strengthened.

There is a greater chance of reinterpretation when a person is presented with ambiguous words than when a person is presented with unambiguous words (Tesser & Cowan, 1977). When presented with ambiguous adjectives among a set of unambiguous adjectives describing a likeable person, people interpreted ambiguous adjectives to make these ambiguous adjectives consistent with positive unambiguous adjectives. When presented with ambiguous adjectives among a set of unambiguous adjectives describing a dislikeable person, people interpreted ambiguous adjectives to make these ambiguous adjectives consistent with negative unambiguous adjectives.

Last, a person may discount information that is inconsistent with existing beliefs. Information that is inconsistent with initial beliefs may be suppressed or forgotten (Lord, 1989;

Miller, McHoskey, Bane & Dowd, 1993; Tesser, 1978). For example, suppose a person sees an illegal immigrant coworker help an old lady cross an intersection. If that person has a negative attitude about illegal immigrants, he may choose to ignore this good deed when thinking about illegal immigration because this new information is inconsistent with his initial attitude.

Lord, Ross, and Lepper (1979) conducted a study in which participants were either for or against the death penalty. Participants were asked to read two studies. One study was written in support of capital punishment and one study was written against capital punishment. Participants rated the study supporting their views about capital punishment as more accurate and convincing than the study not supporting their views about capital punishment. Participants discounted a majority of information from the non-supporting study. Participant's attitudes also strengthened as information inconsistent with participant's initial beliefs was discounted.

Moderators

Attitude attenuation may occur due to certain situational factors (Leone & Aronow, 1992; Leone & Baldwin, 1983; Tesser et al., 1995). In the presence of an attitude object, thoughts and beliefs about that attitude object are subject to comparison and review with that attitude object. People are able to regulate exaggeration of their beliefs when an attitude object (i.e., reality constraint) is present (Tesser, Leone & Clary, 1978). For example, two coworkers are standing around the water cooler discussing illegal immigration. Both coworkers' attitudes about illegal immigration are becoming increasingly unfavorable as they discuss this topic. Another coworker, who happens to be an illegal immigrant, walks by during their conversation. Both people consider this illegal immigrant coworker to be a friend and a genuinely good person. Realizing this immigrant coworker is a good person, these coworkers' unfavorable initial attitudes about illegal immigration may attenuate. In this case, this illegal immigrant coworker acted as a reality constraint, whereby these two coworkers that were talking around the water cooler were able to compare their attitudes about their friend with their faulty attitudes about illegal immigration.

Tesser (1976) demonstrated the effect of reality constraints on attitude polarization by having subjects critique pictures of paintings. Participants were then asked to think about these paintings with either pictures present in the room, were asked to think about those paintings absent from the room, or were distracted from thinking about those paintings altogether. Participants in the painting absent condition experienced greater attitude polarization than did participants in the painting present condition. Greater polarization occurred in both the painting absent condition and the painting present condition than the distraction condition. These results have been replicated (e.g., Leone & Baldwin, 1988; Leone, Minor, & Baltimore, 1983; Leone, Taylor, & Adams, 1990).

An attenuation effect may also occur when people examine the source of their beliefs (Tesser, 1978; Tesser et al., 1995). By examining their beliefs (i.e., process constraint), people may discover that the origin of those beliefs are unrealistic or are due to faulty reasoning (Leone, 1996; Leone & Aronow, 1992). If a person's beliefs are found to be faulty or illogical, that person may reassess or dismiss those beliefs. Tesser et al. (1978) conducted a study concerning fear of public speaking. Participants asked to focus on and explain their fears about speaking in public (i.e., process constraint) experienced less fear (i.e., attitude attenuation) when giving a brief speech than did participants in a control condition that did not discuss their fears of public speaking or participants in a thought condition (i.e., attitude polarization) that were asked to think about public speaking.

Schemas

People use mental representations when thinking about an attitude object (Tesser, 1978;

Tesser et al., 1995). Mental representations are structures of knowledge about an attitude object that a person accesses when thinking about that attitude object (Carlston & Smith, 1996). People use these mental representations to organize their beliefs. Mental representations (i.e., schemas) act as “blue-prints” or guidelines for thinking about an attitude object (e.g., Chaiken & Yates, 1985; Tesser & Leone, 1977).

Mental representations (or schemas) consist of three types of information: semantic information, episodic information, and affective information (Carlston & Smith, 1996). Semantic information consists of memories that have a verbal component. Semantic information includes facts and meanings. Episodic information consists of memories that have a sensory component. Episodic information includes sensory memories recorded from the perspective of the perceiver relating to that person’s own personal experiences. Affective information consists of memories that have an emotional component. Affective information includes any memory that evokes an emotional reaction. For example, a person may have a mental representation for illegal immigration. This mental representation may consist of semantic (e.g., immigrants are a drain on public resources), episodic (e.g., vision of an immigrant hopping a fence), and affective (e.g., thought of a hated immigrant neighbor) information.

People are able to organize and direct their thoughts through use of mental representations (Tesser, 1978; Tesser et al., 1995). People may use mental representations to fill in unavailable or missing information about an attitude object. People may use mental representations to reinterpret ambiguous information about an attitude object. People may use mental representations to filter out inconsistent or irrelevant information about an attitude object. Peoples’ use of mental representations results in consistent beliefs. Of course, people’s attitudes polarize as their beliefs increase in consistency (Millar & Tesser, 1986).

People use mental representations to help them recall relevant information (e.g., generation of beliefs) about an attitude object (Tesser, 1978; Tesser et al., 1995). When generating information, people tend to recall information that is consistent with their schema rather than information that is inconsistent with their schema (e.g., Clary, Tesser & Downing, 1978). For example, if a person meets an illegal immigrant for the first time, that person is likely to recall information that is consistent with his schema about illegal immigrants (e.g., drain on public resources) when forming an impression of that illegal immigrant. Clary, Tesser, and Downing (1978) found that when participants were given a description of a person such as an applicant for a salesperson position, participants recalled information they already possessed about a salesperson.

People use mental representations to interpret and give meaning to events (e.g., reinterpretation of beliefs) about an attitude object (Tesser, 1978; Tesser & Cowan, 1977). If a person is provided with information that is ambiguous with their preexisting schema, people tend to reinterpret that ambiguous information to make it consistent with that preexisting schema. For example, a person that has a negative stereotype about illegal immigrants passes by two drivers that had just been in an accident arguing on the side of the road. If one of those drivers appeared to be Mexican, that person would be inclined to attribute fault of that accident to that Mexican driver. Tesser and Danheiser (1978) found that participants informed they would be working with a partner were able to focus on positive attributes about their partner through use of a “cooperative relationship” schema. Participants informed they would be competing with a partner were able to focus on negative attributes about their partner through use of a “competitive relationship” schema.

People use mental representations to discount questionable information (Tesser, 1978;

Tesser et al., 1995). If people are presented with information or events that contradict their preexisting schemas, those people may ignore or repress that contradicting information. For example, a person's schema of illegal immigrants may include "illegal immigrants are lazy." If a person witnesses a coworker whom they believe to be an illegal immigrant working hard, that person may discount or ignore this situation when later thinking about illegal immigrants. Lord, Ross, and Lepper (1979) found that participants were likely to discount information about a study on capital punishment that did not support their views.

Schema complexity can be defined by number of dimensions (i.e., nodes of information) in a given schema (Millar & Tesser, 1986). A schema is considered increasingly complex as number of dimensions increases. For example, a person may have a complex schema of an illegal immigrant friend. When thinking of that friend, a person may recall a large amount of information including physical characteristics, personality traits, and other information consistent with personal experiences and beliefs of that person's friend. This person's schema will likely include detailed semantics, episodic, and affective information. However, a person may have a simple (i.e., less complex) schema when thinking about a group of illegal immigrants. When thinking about illegal immigrants as a group, he may think of general characteristics and beliefs about illegal immigrants, but this information may not be as detailed as when this person thinks of an individual immigrant. This person's schema of illegal immigrants as a group may include some semantic, episodic, and affective information, but this information will tend to lack depth and detail.

Schema complexity can also be characterized by schema structure (Millar & Tesser, 1986). Schema structure is characterized by correlation among independent dimensions (Chaiken & Yates, 1985). For example, a person's schema of an illegal immigrant may consist of political (e.g., sealing the borders) and economical (e.g., drain on resources) information about illegal immigrants. These dimensions (i.e., political and economical) may be correlated with one another. Therefore, when a person thinks about illegal immigrants, that person is likely to recall information from these related dimensions.

Schema complexity has been found to be a mediating factor of self generated attitude change (Tesser & Leone, 1977). Attitude polarization should increase as number of correlated dimensions increases (Millar & Tesser, 1986). As people recall information, they do so by accessing their schema about an attitude object. If independent dimensions of a schema of an attitude object are highly correlated, changes in information due to generation, reinterpretation, and discounting of information will be biased in such a way that is consistent with a person's initial attitude. For example, a person's schema of an illegal immigrant may include: doesn't pay taxes, rude, lazy, doesn't speak English. These dimensions of this person's illegal immigrant schema are correlated (they are all negative attributes). Therefore, attitude polarization would be expected when this person is thinking of illegal immigrants. Schema complexity has been demonstrated to be a mediating factor to self generated attitude change in a number of studies (e.g., Chaiken & Yates, 1985; Millar & Tesser, 1986; Tesser & Leone, 1977).

Tesser and Leone (1977) found that people's attitudes about individuals (i.e., complex schema) polarize more than their attitudes about groups (i.e., simple schema). In a study on schema structure and commitment, participants were given index cards containing four adjectives (Millar & Tesser, 1986). Participants were told those cards described either individuals or groups of people. Participants were asked to sort those cards representing individuals (or groups) into piles. Participants were able to sort cards into more piles using cards representing individuals than when using cards representing groups. Participants demonstrated

by their ability at card sorting that people have more developed ways of thinking (i.e., complex schemas) about individuals than about groups. Attitude polarization is more likely to occur when people think about individuals than when people think about groups (e.g., Tesser & Leone, 1977).

Individual Differences

People differ in many ways. One way in which people differ is how they organize their cognitive worlds. Differences in cognitive styles like dogmatism (Leone, 1989; Leone, Taylor & Adams, 1991), objectivism (Leone, 1995), and need for cognition (Lassiter et al., 1996; Leone & Ensley, 1986; Leone, 1994) have been found to have moderating effects on self generated attitude change.

Another cognitive style thought to moderate self generated attitude change is personal need for structure. Personal need for structure refers to individual differences in how people tend to structure their worlds into simplified and manageable forms (Neuberg & Newsom, 1993; Thompson, Naccarato, Parker, & Moskowitz, 2001). The Personal Need for Structure Scale is used to measure these individual differences (Thompson et al., 2001). Individual's high in personal need for structure prefer structure and clarity, whereas individual's low in personal need for structure tolerate lack of structure and clarity. Individuals differ in how they process and store information based on their personal need for structure.

People differ in how they generate additional information based on their personal need for structure. Individuals high in personal need for structure tend to gather information consistent with their pre-existing mental representations (Neuberg & Newsom, 1993). Therefore, when generating additional beliefs, it is likely that those beliefs will be consistent with initial beliefs. Conversely, individuals low in personal need for structure tend to gather all information relevant to their pre-existing mental representation. Therefore, when generating additional beliefs, it is likely that some beliefs will be consistent with initial beliefs and some beliefs will be inconsistent with initial beliefs.

People differ in how they deal with ambiguous information based on their personal need for structure. Individuals high in personal need for structure tend to interpret ambiguous information as being consistent with their pre-existing mental representations (Neuberg & Newsom, 1993). Individuals low in personal need for structure are less likely to interpret ambiguous information as being consistent with their pre-existing mental representations. By interpreting ambiguous information as consistent with initial beliefs, individuals high in personal need for structure should maintain relatively homogenous mental representations as compared to individuals low in personal need for structure.

People differ in how they discount inconsistent information based on their personal need for structure. Individuals high in personal need for structure are less likely to change their beliefs when new information is presented (Neuberg & Newsom, 1993). Individuals high in personal need for structure are more confident about initial judgments (i.e., stereotypes) than are individuals low in personal need for structure when presented with accurate information inconsistent with their initial judgment (Clow & Esses, 2005).

People rely on schemas when organizing and directing their thoughts (Tesser, 1978; Tesser et al., 1995). People differ in the complexity of these schemas. Compared to individuals low in personal need for structure, individuals high in personal need for structure are better able to understand their cognitive worlds while using less cognitive energy by organizing their worlds into well defined structures (Neuberg & Newsom, 1993). Compared to individual's low in personal need for structure, individual's high in personal need for structure tend to have

simple (i.e., homogeneous, well defined) knowledge structures. It then stands to reason that information within these knowledge structures are highly correlated. Neuberg and Newsom (1993) investigated this relationship between structure complexity and personal need for structure by having participants complete a card sorting task. Participants were to sort cards from one of four trait domains (e.g., colors, trait words) on how those cards relate to either elderly people or themselves. Individual's low in personal need for structure were able to form more complex associations between cards than were individual's high in personal need for structure.

Individual's high in personal need for structure are more likely to rely on stereotypes (Neuberg & Newsom, 1993; Schaller, Boyd, Yohannes, & O'Brien, 1995; Thompson et al., 2001) than individual's low in personal need for structure. Because individuals high in personal need for structure prefer structure as a means to simplifying their environment and reducing ambiguity, it is likely that high personal need for structure individuals would rely on these preconceived stereotypes when forming attitudes of individuals or groups. Neuberg and Newsom (1993) found that high personal need for structure individuals were more likely to use sex stereotypes than were low personal need for structure individuals. Furthermore, Smith and Gordon (1998) found that high personal need for structure held more negative attitudes toward homosexuality than did low personal need for structure individuals due to reliance on stereotypes. Connections between personal need for structure and reliance on stereotypes have been supported (e.g., Moskowitz, 1993; Schaller et al., 1995).

Hypotheses

Consistent with previous research (e.g., Leone & Ensley, 1985; Tesser, 1978), it is predicted that amount of time given for thought will influence attitude polarization. Attitudes should polarize as time for thought increases. Individuals should also access a greater number of consistent beliefs as opportunity for thought increases. Individual differences in personal need for structure should affect attitude polarization as well. It is predicted that attitudes of individuals high in personal need for structure should polarize, whereas attitudes of individuals low in personal need for structure should attenuate. Additionally, compared to individuals low in personal need for structure, individuals high in personal need for structure should access a greater number of consistent beliefs. Finally, an interaction between personal need for structure and opportunity for thought is expected. As opportunity for thought increases, individuals high in personal need for structure will polarize at a greater rate than individuals low in personal need for structure. Additionally, as opportunity for thought increases, individuals high in personal need for structure will generate consistent beliefs at a greater rate than individuals low in personal need for structure.

Method

Participants

A total of 159 undergraduate students at a northeast Florida university were recruited for a study of "Individual Differences in Opinions about International Issues." Students received extra-credit toward their grades in a psychology course in exchange for participation. Students were not obligated to participate as other opportunities for extra credit were available. Participants were required to be age 18 or older.

There were 32 males and 127 females in this sample. An equal number of male and female participants were not needed because sex was not a predictor variable for this study. Most participants (62.50%) were Caucasian. Most participants (82.24%) were between 18 and 22 years of age.

Participants signed a written informed consent document prior to participation.

Participants were given an opportunity to ask questions prior to signing an informed consent document. All participants completed both phases of this study. However, seven participants were omitted from data analysis due to either failure to follow instructions or unusual response sets (i.e., extreme or moderate initial attitudes). All participants were treated in accordance with Ethical Principles of Psychologists and Code of Conduct (American Psychological Association, 2002).

Procedure

A male experimenter interviewed individual participants. He first outlined the general purpose and procedures of this study to participants. He explained that this study was designed to assess individual's opinions about a number of international issues (e.g., illegal immigration). He also informed participants that participation in this study was completely voluntary, informed participants about any potential risks and benefits of participation, and reminded participants that they could quit at any time without penalty. He then assured participants that all information gathered from this study would remain confidential and told participants to feel free to say what they really think. Participants then read and signed an informed consent form. Participants were interviewed on an individual basis.

The experimenter then explained the procedure for the first part of this study. He told participants that he would show them a card with an issue on it. He told participants to read each card and verbally indicate how they felt about each issue using a 15-point Likert-type scale which he placed in front of participants. He explained to participants how to use this scale. He then illustrated using this scale with a hypothetical example.

Participants then read a series of 35 statements displayed on 7.3 by 13.3 centimeter note cards. Participants were shown statements about a number of international issues (e.g., "It is ok for U.S. companies to go overseas and perform activities that are illegal in the United States."). Issues were presented in a random order. Participants were given approximately 10 seconds to express their attitudes about each issue on a 15-point Likert-type scale. Endpoints of that scale were labeled *strongly agree* ("+7") and *strongly disagree* ("-7"). A midpoint was labeled *neutral* ("0") and intermediate points (i.e., "+4", "-4") were labeled as *moderately agree* ("+4") or *moderately disagree* ("-4"). Participants said aloud a number that corresponded best with their attitudes about each issue. The experimenter recorded participants' responses on a separate coding sheet. Participants did not have access to that coding sheet.

After participants expressed their attitudes on all 35 issues, the experimenter chose two issues for which participants expressed moderately favorable attitudes (i.e., ratings of +3, +4.) and two issues for which participants expressed moderately unfavorable attitudes (i.e., ratings of -3, -4). Participants were randomly assigned to one of two thought conditions: 30 seconds (low opportunity for thought) or 90 seconds (high opportunity for thought). The experimenter then indicated that he would like participants to collect their thoughts about a few issues in particular. Specifically, participants were instructed

I would like you to collect your thoughts about a few issues in particular. I will give you one issue at a time. Concentrate all your thoughts on this issue during the time I give you. You might want to think about how you feel about this issue. You might want to think about important facts about this issue. Or you might want to think about your own personal beliefs about this issue. Make sure to think about this issue until I tell you to stop (Leone, 1989).

The experimenter instructed participants to stop thinking once time (30 sec. or 90 sec.) had elapsed. He then asked participants to express their attitudes about that issue using the 15-

point scale provided. Specifically, participants were told

Now that you've had a chance to collect your thoughts, I'd like you to once again indicate how you feel. Sometimes people's feelings change even over as short a period of time as this. Of course, you may or may not feel the same way. Using the scale in front of you, just indicate how you feel now about this issue (Leone, 1989).

Participants expressed aloud their current feelings using the previously mentioned 15-point scale. The experimenter again recorded participant's responses on a separate coding sheet.

Thought-induced attitude polarization was scored such that higher scores indicated greater attitude polarization (Tesser, 1978). If initially favorable attitudes (i.e., +4) became more favorable (i.e., +5, +6, +7) after opportunity thought, then attitude polarization was assigned a score of "1." If initially unfavorable attitudes (i.e., -4) became more unfavorable (i.e., -5, -6, -7) after opportunity for thought, attitude polarization was again assigned a score of "1." If initially favorable attitudes (i.e., +4) became less favorable (e.g., +3, -1) after opportunity for thought, then attitude polarization was assigned a score of "-1." If initially unfavorable attitudes (i.e., -4) became more favorable (e.g., -3, +1) after opportunity for thought, then attitude polarization was again assigned a score of "-1." If no change in attitude occurred, then attitude polarization was scored a "0." Scores for re-ratings of attitudes for all four issues were then summed.

The experimenter then asked participants to list their beliefs about the statement they had just re-rated (see Cacioppo & Petty, 1981; Cacioppo, von Hippel, & Ernst, 1997 for a review of their Thought-Listing Technique). He first wrote the re-rated statement at the top of this response sheet. He then handed participants this response sheet to record their beliefs. Each response sheet was lined and numbered (1 to 12) to provide ample space for participants to record their beliefs.

The experimenter indicated that he would like participants to list any thought or feeling they had while thinking about that issue. He instructed participants to list only those thoughts and feelings they had about that issue during the time participants were given to think. He instructed participants to record only one thought or feeling per numbered line. He then provided participants a hypothetical example to illustrate how they were to record their responses. He instructed participants to ignore spelling, grammar, and punctuation. He indicated that more lines had been provided than may be necessary. He gave participants 5 minutes to record their beliefs. If participants appeared to be finished listing their beliefs before 5 minutes, he assured participants that they had more time if needed.

Once participants finished listing their beliefs about that issue, he asked participants to rate each thought or feeling they had listed. If a participant's belief was in support of that issue, participants were instructed to mark a "+" next to that belief. If a participant's belief did not support that issue, participants were instructed to mark a "-" next to that belief. If a participant's belief was neutral or did not pertain to that issue, participants were instructed to mark a "0" next to that belief. A hypothetical example was again given to illustrate this procedure. This entire process (i.e., thought, re-rating, belief listing, belief rating) was then repeated for each of the three remaining issues chosen by the experimenter.

Belief listing was scored by creating a belief consistency metric. If a participant had an initially favorable attitude (e.g., "+4") about an issue, then those beliefs participants marked with "+" were considered consistent. If a participant had an initially unfavorable attitude (e.g., "-4") about an issue, then those beliefs participants marked with "-" were considered consistent. For each issue, a proportion of consistent beliefs (number of consistent beliefs divided by number of total beliefs) was created to control for differences in ability to generate beliefs. Proportions of

consistent beliefs for all four issues were then added to form an overall belief consistency metric. Scores ranged from 0 to 4 with greater scores indicating greater belief consistency.

Individual differences in personal need for structure were assessed using the 12-item Personal Need for Structure Scale (Thompson et al., 2001). Participants rated how characteristic each statement of that scale was of themselves. Participants responded to each item using a 5-point Likert-type scale with options labeled: *extremely uncharacteristic*, *somewhat uncharacteristic*, *uncertain*, *somewhat characteristic*, and *extremely characteristic*. Eight of those items were positively worded (e.g., "I enjoy having a clear and structured mode of life.") and four of those items were negatively worded (e.g., "I'm not bothered by things that upset my daily routine.").

Responses to negatively worded items were reverse scored. Higher scores indicate a high personal need for structure whereas lower scores indicate a low personal need for structure. Scores on individual items were then summed. Classification as high in personal need for structure and low in personal need for structure was based on a median split of total scores. Those participants with total scores at or above the median split were classified as high in personal need for structure and those participants with total scores below the median split were classified as low in personal need for structure.

Thompson et al. (2001) administered their 12-item Personal Need for Structure Scale to a sample in a mass testing session in order to validate this scale. Analysis of scores from this sample yielded a Cronbach's alpha of .84. Furthermore, item-total correlations ranged from .58 to .60. In a separate study, Neuberg and Newsom (1993) tested internal consistency of scores on their 11-item Personal Need for Structure scale by administering that scale to six samples. Cronbach's alpha ranged from .76 to .85 across these samples.

In order to assess convergent and discriminate validity, Thompson et al.'s Personal Need for Structure Scale (2001) was administered along with a number of measures of other constructs to a single sample. These constructs included the Rigidity about Personal Habits Scale (Meresko, Rubin, Shantz, & Morrow, 1954), the Right-Wing Authoritarianism Scale (Altemeyer, 1988), the Beck Depression Inventory (Beck, Rush, Shaw, & Emery, 1979), and the Self-Consciousness Scale (Fenigstein, Scheier, & Buss, 1975). Thompson et al. expected a positive relationship between scores on the Personal Need for Structure Scale and scores on measures of authoritarianism, rigidity about personal habits, and depression. Thompson et al. expected to find little relationship between scores on the Personal Need for Structure Scale and scores on the Self-Consciousness Scale. The correlation coefficient between scores on the Personal Need for Structure Scale and scores on the Right-Wing Authoritarianism Scale was $r = .37$. The correlation coefficient between scores on the Personal Need for Structure Scale and scores on the Rigidity about Personal Habits Scale was $r = .64$. The correlation coefficient between scores on the Personal Need for Structure Scale and scores on the Beck Depression Inventory was $r = .29$. The correlation coefficient between Personal Need for Structure Scale and the Self-Consciousness Scale was $r = .14$.

Construct validity for personal need for structure has been demonstrated in a number of studies. Neuberg and Newsom (1993) found that persons high in personal need for structure have more content consistent (i.e., correlated information) schemas than do persons low in personal need for structure. Compared to persons low in personal need for structure, persons high in personal need for structure are more likely to rely on stereotypes. Clow and Esses (2005) found that persons high in need for structure tend to develop less accurate stereotypes than do persons low in need for structure indicating that cognitive styles play a role in stereotype development.

Hansen and Bartsch (2001) found that mere exposure to a stimulus increased the likeability of that stimulus by persons high in personal need for structure than by persons low in personal need for structure. Schaller, Boyd, Yohannes, and O'Brien (1995) found that persons high in need for structure were more likely than persons low in need for structure to form erroneous group stereotypes. In other words, reliance on stereotypes may lead to extreme attitudes when making social judgments.

After completing all phases of this study, participants completed demographic information including sex (i.e., *male, female*), age (i.e., *18-22 yrs, 23-27 yrs, 28-32 yrs, 33-37 yrs, 38 or more yrs*), race (i.e., *Caucasian/White, Hispanic, African American/Black, Asian American, Other*), and political affiliation (i.e., *Democrat, Independent, Republican*). The experimenter then explained the general purpose of this study and gave participants an opportunity to ask questions. The experimenter thanked participants for their time and then dismissed participants.

Results

Overview of Analyses

This study was a two 2 (opportunity for thought: 30 seconds versus 90 seconds) x 2 (personal need for structure: low versus high) factorial design. Attitude change and belief consistency were the dependant variables of interest in this study. Attitude change and belief consistency were each analyzed using a 2 (opportunity for thought) x 2 (personal need for structure) analysis of variance (ANOVA).

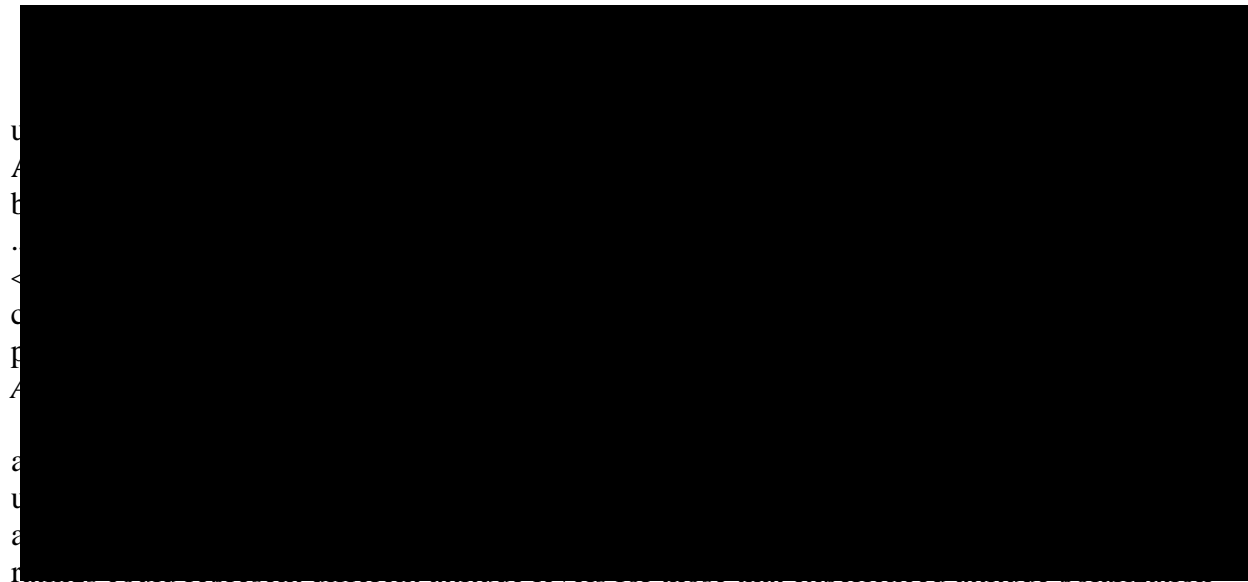
Main Analyses

Attitude Change. It was hypothesized that as the amount of time participants thought about an issue increased, their attitudes about that issue should become more polarized. In other words, a main effect was expected for opportunity for thought on attitude polarization. It was also hypothesized that personal need for structure would be a moderator variable for opportunity for thought on attitude polarization. Specifically, given a low opportunity for thought, high personal need for structure individuals' attitudes should polarize at a greater rate than should low personal need for structure individuals' attitudes. This difference in attitude change between individuals low in personal need for structure and individuals high in personal need for structure should become more pronounced when given a high opportunity for thought. If this hypothesis was supported, a two-way interaction between opportunity for thought and personal need for structure should occur.

Contrary to these hypotheses, no main effect was found for opportunity for thought on attitude polarization, $F(1, 151) < 1.00, p = .49$. A significant difference in attitude change was not found between individuals when given a high opportunity for thought ($M = -.12, SD = 1.73$) versus individuals given a low opportunity for thought ($M = .09, SD = 1.98$). There also was no reliable two-way interaction between opportunity for thought and personal need for structure $F(1, 151) < 1.00, p = .62$. Given a low opportunity for thought, attitudes of individuals high in personal need for structure tended to polarize ($M = .049, SD = 2.01$), whereas attitudes of individuals low in personal need for structure tended to attenuate ($M = -.31, SD = 1.34$). Conversely, given a high opportunity for thought, attitudes of individuals high in personal need for structure tended to attenuate ($M = -.08, SD = 1.99$), whereas attitudes of individuals low in personal need for structure tended to polarize ($M = .24, SD = 1.99$). However, these results were not statistically significant.

Belief Consistency. It was hypothesized that as the amount of time participants thought about an issue increased, consistency of their beliefs should increase. In other words, a main effect was expected for opportunity for thought on belief consistency. It was also hypothesized that personal need for structure would be a moderating variable for opportunity for thought on belief consistency. Given a low opportunity for thought, high personal need for structure individuals should produce consistent beliefs at a higher rate than should low personal need for structure individuals. This difference in belief consistency should increase as opportunity for thought increases. If this hypothesis was supported, a two-way interaction between opportunity for thought and personal need for structure should occur.

Contrary to these hypotheses, no main effect was found of opportunity for thought on belief consistency, $F(1, 151) < 1.00, p = .98$. A significant difference in belief consistency was not found between individuals given a high opportunity for thought ($M = 2.76, SD = .76$) versus individuals given a low opportunity for thought ($M = 2.77, SD = .81$). Though not statistically significant, a trend did begin to appear between opportunity for thought and personal need for structure. A marginally reliable two-way interaction was found between opportunity for thought and personal need for structure $F(1, 151) = 2.98, p < .10$. Given a low opportunity for thought, individuals high in personal need for structure tended to produce more consistent beliefs ($M = 2.85, SD = .83$) than did individuals low in personal need for structure ($M = 2.67, SD = .78$). Conversely, given a high opportunity for thought, individuals high in personal need for structure tended to produce less consistent beliefs ($M = 2.62, SD = .82$) than did individuals low in personal need for structure ($M = 2.88, SD = .70$).



compared to those that did not experience attitude polarization. These moderate attitude *ratings* may also represent different attitude levels for participants characterized as either high in personal need for structure or low in personal need for structure. Similarly, these moderate attitude ratings may also represent different attitude levels for participants in the low opportunity for thought condition than for participants in the high opportunity for thought condition.

Absolute values of initial ratings were summed to test for possible relationships between participants' interpretations of moderate attitude ratings and other possible factors. Initial ratings

of attitudes about all 35 international issues were summed to create an overall index of initial attitude extremity. Possible attitude extremity scores could range from a maximum of 245 to a minimum of 0. Actual scores ranged from 199 to 44.

First, a relationship between participants' tendencies to have weak initial attitude ratings or strong initial attitude ratings and attitude polarization was examined. No relationship was found between these two variables, $r = .18, p < .05$. Second, a relationship between participants' tendencies to give weak initial attitude ratings or strong initial attitude ratings and personal need for structure was examined. No relationship was found between these two variables, $r = -.01, p = .88$. Last, a relationship between participants' tendencies to have weak initial attitude ratings or strong initial attitude ratings and opportunity for thought was examined. No relationship was found between these two variables, $r = .04, p = .59$. Essentially, moderate attitude ratings (i.e., +4, -4) represented similar values to participants independent of condition. In other words, it is not likely that results from this study were due to measurement confounds.

Discussion

Recall our hypotheses. Consistent with existing research, it was predicted that as opportunity for thought increased, attitudes would become increasingly polarized and beliefs would become increasingly consistent. It was also predicted that attitudes of people high in personal need for structure would polarize, whereas attitudes of people low in personal need for structure would attenuate. Additionally, people high in personal need for structure should generate increasingly consistent beliefs, whereas people low in personal need for structure should generate fewer consistent beliefs. Last, it was predicted that attitudes of people high in personal need for structure would polarize more than attitudes of people low in personal need for structure as opportunity for thought increases. Likewise, people high in personal need for structure should generate consistent beliefs at a greater rate than people low in personal need for structure as opportunity for thought increases.

No support was found for any hypotheses in this study. People in a low opportunity for thought condition did not significantly differ from people in a high opportunity for thought condition in either attitude polarization or in belief consistency. People high in personal need for structure did not significantly differ from people low in personal need for structure in either attitude polarization or in belief consistency. Attitudes of people high in personal need for structure did not significantly differ from attitudes of people low in personal need for structure as opportunity for thought increased. Belief consistency did not significantly differ between people high in personal need for structure and people low in personal need for structure as opportunity for thought increased. A trend was beginning to appear between opportunity for thought and personal need for structure concerning belief consistency. However, this trend was in the opposite direction of our hypothesis. It was predicted that as opportunity for thought increased, people high in personal need for structure would generate consistent beliefs at a greater rate than would people low in personal need for structure. Contrary to this hypothesis, as opportunity for thought increased, people low in personal need for structure generated increasingly consistent beliefs, whereas people high in personal need for structure generated increasingly inconsistent beliefs.

Alternative Explanations

Support for the phenomenon of self generated attitude change spans an extensive body of research (see Tesser et al., 1995, for a review). Results from this study are inconsistent with existing research. This lack of support could be due to a number of reasons. A possible explanation for a lack of attitude polarization in people's attitudes during this study could be an

inadvertent introduction of “process” or “reality” constraints (Leone & Aronow, 1992; Leone et al., 1991). Recall that attitude attenuation may occur when people are forced to critically examine the derivation of their beliefs (i.e., process constraint) or when people are able to compare their attitudes with the presence of an attitude object (i.e., reality constraint). A lack of attitude polarization in this study was not likely due to process constraints or reality constraints, however. Participants were not asked to critically examine their beliefs about international issues during any part of the procedure of this study nor were any attitude objects present during this study.

Another possible explanation for a lack of attitude polarization in people’s attitudes during this study could be in the manipulation of thought itself. Using a 30 second versus a 90 second thought manipulation may not have been ideal for discovering differences in attitude polarization. Perhaps a greater difference in time could be used between a high opportunity for thought and low opportunity for thought condition. For example, in a study by Tesser and Conlee (1975), researchers found that there was a significant increase in attitude polarization when opportunity for thought was increased from 90 seconds to 180 seconds. Researchers in other studies have used thought versus distraction conditions in which participants were either given an opportunity to think about an attitude object or were distracted from thinking about an attitude object (e.g., Chaiken & Yates, 1985; Clary, Tesser, & Downing, 1978). Though this explanation is possible, it is not probable that results from this study are due to error in the thought manipulation procedure. Numerous studies have used similar increments of time to reproduce this self generated attitude change effect (e.g., Leone & Ensley, 1986; Tesser & Conlee, 1975).

Significant differences in attitude polarization were not found between people classified as high in personal need for structure and people classified as low in personal need for structure. Perhaps personal need for structure is not related to self generated attitude change. Other individual differences have been found to be related to self generated attitude change. Differences in cognitive styles like dogmatism (Leone, 1989; Leone et al., 1991), objectivism (Leone, 1995), and need for cognition (e.g., Lassiter et al., 1996; Leone, 1994; Leone & Ensley, 1986) have been found to have moderating effects on self generated attitude change.

Dogmatism refers to an individual difference in a way in which people compartmentalize their cognitive world to protect themselves from potentially upsetting concepts or ideas (Rokeach, 1960). People high in dogmatism tend to avoid information incongruent with their own ideas and find inconsistencies intolerable. People low in dogmatism are open to new thoughts and ideas and find inconsistencies tolerable. Due to their relatively homogenous schemas, people high in dogmatism show greater attitude polarization than do people low in dogmatism (e.g., Leone, 1989; Leone et al., 1991).

Objectivism refers to an individual difference in a persons’ tendency to base their beliefs on empirical rather than judgmental information (Leary, Shepperd, McNeil, Jenkins, & Barnes, 1986). Leone (1995) found that people high in objectivism experience greater attitude polarization than do people low in objectivism. When uncertain, objective people search for practical and factual information while placing value on logic and reasoning. Compared to subjective people, objective people will likely have more complex schemas about attitude objects. Objective people show more thought-induced attitude change than do subjective people because of these differences in schema complexity (Leone, 1995).

Need for cognition refers to peoples’ desire to think in an effortful way (Cacioppo & Petty, 1982). When told to think about an attitude object, people low in need for cognition show greater attitude polarization than do people high in need for cognition (Leone & Ensley, 1986).

People high in need for cognition enjoy effortful thought, whereas people low in need for cognition prefer thinking with as little effort as possible. People high in need for cognition will have multiple schemas for a given attitude object and will access each schema when asked to think about an attitude object (Leone & Ensley, 1986); people low in need for cognition will have fewer schemas for a given attitude object and may tune in a minimum amount of schemas when asked to think about an attitude object. By tuning in multiple schemas for a given attitude object, people high in need for cognition are more likely to create counterbalancing arguments; by creating counterbalancing arguments, people high in need for cognition will often experience attitude attenuation. Conversely, by tuning in fewer schemas for a given attitude object, people low in need for cognition are less likely to create counterbalancing arguments; through lack of creating counterbalancing arguments, people low in need for cognition will often experience attitude polarization.

In brief, individual differences in certain cognitive styles (e.g., need for cognition) have been found to moderate self generated attitude change. Perhaps personal need for structure is not relevant to self generated attitude change whereas these other individual differences are relevant. It is possible but not plausible that personal need for structure is not relevant. Researchers have found support for a relationship between personal need for structure and constructs (e.g., schema complexity, stereotyping) related to self generated attitude change (e.g., Neuberg & Newsom, 1993; Schaller et al., 1995).

A final possible explanation for not finding attitude polarization in this study may have to do with peoples' use of complex schemas. Unless people are exposed to or have familiarity with attitude objects, it is not likely people will have schemas about those attitude objects (McGuire, 1985). When given an opportunity to ask questions at the end of this study, participants often reported having difficulty thinking about international issues due to a lack of knowledge about many of these issues. If people have limited knowledge about international issues, it is unlikely that they will have schemas about these issues.

Recall that people use schemas as guidelines for thinking about attitude objects (e.g., Chaiken & Yates, 1985; Tesser & Leone, 1977). Peoples' attitudes depend on what they think and feel about an attitude object (Tesser, 1978; Tesser et al., 1995). For attitudes to polarize, people must have a complex schema about an attitude object (Leone & Ensley, 1985; Millar & Tesser, 1986). While thinking about an attitude object, people use their schemas about that attitude object to make their beliefs evaluatively consistent (Chaiken & Yates, 1985; Liberman & Chaiken, 1991).

People are able to make their beliefs evaluatively consistent by using schemas to generate relevant information (e.g., Clary et al., 1978). If people lack knowledge about an issue, they may find it difficult to generate new information in support of their initial attitude. For example, if a person is thinking about illegal immigration but cannot recall information about that issue (e.g., attributes of an illegal immigrant), it is unlikely that attitude polarization will occur.

People are able to make their beliefs evaluatively consistent by using schemas to reinterpret ambiguous information (e.g., Tesser & Cowan, 1977). If people lack knowledge about an issue, they may find it difficult to produce existing information to be reinterpreted. For example, if a person is thinking about an issue like illegal immigration but knows little information about that issue, that person may have difficulty reinterpreting ambiguous information (e.g., that one time that person saw an illegal immigrant helping another person even though that person believes that illegal immigrants don't help others) due to lack of information to be accessed. Attitude polarization is not likely to occur without reinterpretation of ambiguous

information.

People are able to make their beliefs evaluatively consistent by using schemas to discount questionable information (e.g., Lord et al., 1979). If people lack knowledge about an international issue, they are likely to ignore questionable information about that issue. For example, if someone is thinking about an issue like illegal immigration but only thinks of Mexicans when thinking about illegal immigrants while ignoring other illegal immigrants (e.g., Eastern Europeans), it is unlikely attitude polarization will occur.

Limitations

One possible limitation of this study is use of self-report measures. Participants were asked to verbally express their attitudes about a number of international issues. Actual changes in attitude were not observed. Other forms of attitude assessment, such as implicit association tests, may be better indicators of attitude change (e.g., Greenwald & Banaji, 1995; Greenwald, McGee, & Shwartz, 1998).

Another possible limitation of this study may be inconsistencies in participants' memory. When asked to list their beliefs about an issue, participants may not have been able to remember all beliefs they had accessed during opportunity for thought. Thinking is a dynamic process where people constantly change what they believe to be true (Tesser, 1978). Perhaps participants inadvertently reinterpreted their beliefs to make them more consistent while recalling their beliefs during the thought-listing procedure.

Another concern with self-report is social desirability (Paulhus, 2002). Participants were asked to report their attitudes about a number of international issues. Participants may have changed or omitted beliefs seen as socially undesirable while listing their beliefs. Participants may have manufactured socially desirable attitudes about some international issues that differ from their actual attitudes about these issues. For example, a person may have held a favorable attitude about an issue such as "Domestic violence should not be considered when determining a persons' immigration status." That person may have reported an unfavorable attitude when rating that issue because that attitude could be considered more socially desirable. Participants may also have reported having attitudes about certain issues to appear more intelligent to the researcher. Participants were instructed to report a "0" when they held an ambivalent attitude about an issue, had no opinion about an issue, or had no prior knowledge of an issue. Participants may have expressed attitudes about issues for which they had no knowledge of to avoid neutral (i.e., "0") responses. Attitude polarization would not be expected if participants were asked about an issue for which they had no prior knowledge.

Another possible limitation of this study could be the use of Thompson et al.'s 12-item Personal Need for Structure Scale (2001). Perhaps participants could have been primed by completing the Personal Need for Structure Scale such that their thought process was altered. Priming may occur when participants perform a task or experience something that leads to a recall of a particular attitude (Smith, 1998). Participants may have seen being either high in personal need for structure or low in personal need for structure as more socially desirable than the other. Therefore, if participants had completed the Personal Need for Structure Scale prior to thought manipulation, participants may have been primed to think about international issues in a manner similar to that of either high or low personal need for structure individuals. However, in this study, participants completed the Personal Need for Structure Scale after completing both thought procedure and belief-listing. Additionally, other researchers have used similar scales of cognitive styles while measuring attitude polarization and have obtained expected results (e.g., Lassiter et al., 1996; Leone, 1994; Leone, 1989).

Future Directions

Even though results of this study did not support existing research on self generated attitude change, there are still many possibilities and directions for future research. One plausible alternative explanation mentioned earlier was that people may not have had sufficient exposure to international issues to have schemas about those issues. Perhaps future researchers could use statements or issues for which college students would be expected to have complex schemas. For example, college students would be expected to have complex schemas about issues salient to them such as campus social and athletic issues.

Researchers in this study asked participants to list their beliefs about each international issue after re-rating that issue. This belief-listing procedure was used as a thought manipulation check. Researchers were able to determine that participants were actually thinking about each issue during opportunity for thought by having participants list their beliefs about each issue. However, it is difficult to determine if participants were thinking about each issue for the entire allotted time. Previous research has used an illuminated light as a means of cueing participants to think about an attitude object (Tesser, 1976). Perhaps future researchers could use a device where participants illuminate a light when thinking about an issue and dim that light when not thinking about an issue. Researchers may then be better able to determine how long participants are actually engaged in thought about an issue. Using both a light-illumination procedure and belief-listing procedure in unison would be ideal in validating the thought manipulation procedure.

Another future direction for research on self generated attitude change would be to further study the moderating effects of other individual differences on attitude polarization. It has already been discussed that other personality variables have been found to be related to self generated attitude change (i.e., dogmatism, need for cognition, and objectivism). In the future, researchers may want to take a closer look at interactions between these and other individual differences (e.g., need for closure, intolerance of ambiguity) to determine whether need for structure or one or more of these other variables that were responsible for the results found in this study.

Summary

Although results of this study did not support previous research on self generated attitude change, it is important to continue along this avenue of research because of possible real-world applications for this research. Research on self generated attitude change has led to applications in reducing fear (e.g., Leone & Aronow, 1992; Leone & Baldwin, 1983) as well as reducing bias in peoples' attitudes (e.g., Hall, Varca, & Fisher, 1985). During thought, people may become afraid and biased. Through continued research on self generated attitude change, new methods of fear reduction and prejudice reduction may be discovered.

Attitude bias can easily be seen in peoples' reactions to certain world events. For example, people were exposed to a constant barrage of information and images by the media after the events that transpired on September 11, 2001. Because of this constant exposure to information (e.g., graphic images, body counts), it is not hard to imagine that many peoples' attitudes of terrorists and Arabs in general would become more extreme. Anti-Islamic hate crimes rose sixteen-hundred percent in the year following the 9/11 attack (Federal Bureau of Investigation, 2003). Through research on self generated attitude change, psychologists may find ways to help people better cope with their fear and prejudices.