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Attitude Change and Need for Cognition: Individual Differences in Perceptions of Groups

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ATTITUDE CHANGE AND NEED FOR COGNITION: INDIVIDUAL DIFFRENCES IN PERCEPTIONS OF GROUPS

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Abstract

It was hypothesized that attitudes will become most polarized when individuals have an opportunity for thought about a group for which they "tune in" a well-developed schema that is consistent with initial information. This process should be greater for low need than high need for cognition thinkers. Participants were given different opportunities for thought about either freedom fighters or rebel insurgents. Initial information was either consistent or inconsistent with group descriptors. Participants completed the Need for Cognition Scale. These hypotheses were partially supported. Attitudes were more polarized when participants tuned in a schema that was consistent with initial information. Limitations of this investigation (e.g., no manipulation checks) and future directions (e.g., direct assessment of schemas) are discussed.

On early morning September 11, 2001, you slowly move around your house preparing for the day ahead. You sit down with a cup of coffee to watch the morning news. You flip on your television and stop dead in your tracks. What is going on? Did they just say that an airplane flew into the North Tower of the World Trade Center? It was just a freak accident. What was that? Right before your eyes, another airplane flies directly into the South Tower. Your pulse quickens as you try to comprehend what just happened. Minutes later, you watch as the Twin Towers collapse crushing thousands of human beings under a mass of steel, concrete, and flames.

Now, no matter which channel you turn to, all that you see is footage of destruction. The Pentagon is in flames, both of the Twin Towers have collapsed, and another plane crashed down in a Pennsylvania field. What is that news anchor saying? Middle Eastern male terrorists are responsible for highjacking and crashing all of these planes. Why would they want to do something that horrible to us? By eleven o'clock, you watch in stunned disbelief as our government closes all airspace surrounding the United States. These Middle Eastern terrorists just committed the deadliest attack on American soil since the December 1941 attack on Pearl Harbor by the Japanese.

How did you feel when you read about these events? Were you thoughtful, sad, angry, or depressed? Have you ever glanced at a group of Middle Eastern individuals and wondered if, perhaps, they too were secretly involved in a terrorist plot against the United States? Now that you reminisced about September 11th, you may notice that the longer you think about these events, the stronger your emotions about these events (i.e., September 11th attacks) become. Many researchers (e.g., Tesser, 1978) have conducted studies in which participants affect their own feelings about an attitude object (i.e., a person, place, or thing) just by thinking about that object.

Self-Generated Attitude Change

Mere thought about an attitude object (i.e., a person, place, or thing) is sufficient to produce self-generated attitude change (for literature reviews, see Tesser, 1978, and Tesser, Martin & Mendolia, 1995). The phenomenon of self-generated attitude change occurs when individuals experience attitude polarization following an opportunity for thought. During this process of attitude polarization, individuals' initially favorable attitudes become more favorable or initially unfavorable attitudes become more unfavorable. In sum, individuals may change their attitudes simply as a result of thought.

In a study on impression formation, for example, Sadler and Tesser (1973) asked participants to evaluate either a likeable or dislikeable research partner. Once they made an initial evaluation of their partners, participants were either asked to think about their partners or were distracted from thinking about their partners. During a second evaluation of their partners, participants who were asked to think about their partners evaluated likeable partners more positively and evaluated dislikeable partners more negatively than participants who were distracted from thinking about their partner. Thus, individuals experience attitude polarization after engaging in thought.

How do changes in individuals' attitudes occur? There are two processes involved in self-generated attitude change (Tesser, 1978; Tesser et al., 1995). First, when individuals think about an attitude object, they tend to modify their beliefs in order to make beliefs about that attitude object consistent with one another (e.g., Chaiken & Yates, 1985; Leone, 1984). Second, individuals tend to have feelings (i.e., attitudes) about an attitude object based on current beliefs these individuals hold about that attitude object (e.g., Leone, 1991; Leone & Aronow, 1992; Liberman & Chaiken, 1991). That is, individuals make their beliefs consistent through thought and, in turn, base their feelings on those consistent beliefs. These processes are a foundation for self-generated attitude change.

When individuals engage in thought, they can modify the evaluative consistency of their attitude-related beliefs (Tesser, 1978; Tesser et al., 1995). Evaluative consistency is consistency along a good-bad dimension (Liberman & Chaiken, 1991). That is, if individuals believe that something is bad, then they may modify their beliefs in order to maintain their negative evaluation. If individuals believe that something is good, then they may modify their beliefs in order to maintain their positive evaluation. Individuals maintain evaluative consistency when they think about an attitude object (i.e., person, place, or thing) by generating additional information consistent with other beliefs held about that object (Tesser & Cowan, 1975), reinterpreting otherwise ambiguous information to become consistent with beliefs held about that object (Tesser & Cowan, 1977), or discounting information that is inconsistent with beliefs held about that object (Lord, 1989; Lord, Ross, & Lepper, 1979; Miller, McHoskey, Bane, & Dowd, 1993). If an experimenter, for instance, describes a group of people to a participant as warm, intelligent, and hard-working, then that participant may also generate additional belief-consistent thoughts such as diligent, strong, and kind. If an experimenter introduces to that participant another group trait (e.g., selfish) and this new trait is not consistent with other beliefs held by that participant concerning such a group, then one of two reactions could occur. This participant could attempt to reinterpret the trait selfish to mean that this group being described is absorbed in work duties and enjoys receiving credit for achievements. This participant could also attempt to discard the trait selfish all together because that trait does not fit in with his or her beliefs concerning this group. In other words, individuals tend to maintain information that is evaluatively consistent with their initial beliefs about an attitude object and discard or reinterpret information that is evaluatively inconsistent with their initial beliefs about an attitude object.

In sum, individuals are able to modify via thought the evaluative consistency of their

beliefs about an attitude object and use those beliefs as a basis for their feelings (i.e., attitudes). The longer these individuals spend thinking about an attitude object, the more likely they are to experience attitude polarization (see Tesser, 1978, and Tesser et al., 1995, for review of the literature). Individuals showed evidence of experiencing thought-belief and belief-feeling processes during self-generated attitude change while thinking about research partners (e.g., Sadler & Tesser, 1973), fashions and football (e.g., Leone & Tesser, 1977), capital punishment (e.g., Chaiken & Yates, 1985), and political issues (e.g., Leone, 1994).

Role of schemas. When provided with an opportunity for thought, why do individuals tend to experience attitude polarization rather than some other type of attitude change? Changes in beliefs brought about during thought are not random but are instead based on individuals' cognitive schemata (Leone & Ensley, 1985, 1986; Tesser & Leone, 1977). A cognitive schema is "a cognitive structure that represents knowledge about a concept or type of stimulus, including its attributes and the relations among the attributes" (Fiske & Taylor, 1991, p. 91). In essence, a schema is a "naïve theory" held by an individual concerning an attitude object (Leone & Ensley, 1985; Tesser & Leone, 1977). When individuals think about an attitude object, they may access stored knowledge (i.e., cognitive schemas) about that particular attitude object (Tesser & Leone, 1977).

How do individuals develop these naïve theories (i.e., schemas) about a particular attitude object? Some individuals may rely upon outside sources such as news media. Media coverage of the September 11th attacks on the World Trade Center in New York may be an example of individuals' reliance upon outside sources in developing cognitive schemas. For many weeks following the September 11th attacks, individuals viewed images of both Middle Eastern airline highjackers and destruction of the World Trade Center. Individuals viewing these images from outside sources (i.e., news media) may create their own Middle Eastern terrorist schema because of this repeated association between ethnicity of September 11th highjackers and destruction of the World Trade Center.

Individuals may use their schemas as sources of attitude-related beliefs (e.g., generation of additional beliefs) as well as rules (e.g., reinterpretation and discounting of beliefs) for processing attitude relevant ideas (Tesser, 1978; Tesser et al., 1995). In other words, individuals may use their schemas to determine what information they can deduce (i.e., generation of beliefs), what information they can substitute (i.e., reinterpretation of beliefs), and what information they can ignore (i.e., discounting of beliefs) about a particular attitude object. Suppose, for example, an experimenter initially exposed participants to a group of people described as imaginative, loyal, and skilled. After exposure to this group, participants may generate other traits such as diligent, strong, and kind to go along with their initial beliefs about this group. This generation of additional beliefs may result from participants accessing a particular schema they hold concerning a group of people who are imaginative, loyal, and skilled.

After participants form their initial impression of an imaginative, loyal, and skilled group of people, an experimenter could then define that group of people as terrorists. Because this label of terrorists is most likely inconsistent with the current cognitive schema being used by these participants, they must choose between two possible options. First, participants may find ways to incorporate this terrorist label into their schema by reinterpreting initial traits (i.e., imaginative, loyal, skilled) to mean that this group is passionate about their cause and fights for their ideals. Second, participants may discount this terrorist label because that label does not fit into their current cognitive schema about this group. By using a particular cognitive schema, individuals may generate additional beliefs, reinterpret ambiguous beliefs, or discount inconsistent beliefs.

Not everyone holds similar schemas concerning an attitude object such as terrorism. Therefore, individuals may interpret terrorism differently based on their level of knowledge (e.g., well-informed vs. less-informed) concerning terrorism. Individuals who possess well-developed schemas should also have a greater potential for cognitive change than individuals who have less-developed schemas (Tesser, 1978; Tesser et al., 1995). That is, individuals with well-developed schemas should generate additional beliefs, reinterpret ambiguous beliefs, and discount inconsistent beliefs more readily than individuals with less-developed schemas. Individuals, for example, who closely watch the United State's progress in the War on Terrorism since September 11, 2001 via electronic media (i.e., news and internet) or paper media (i.e., newspapers and magazines) may possess better developed schemas of terrorism than individuals who do not closely watch the United State's progress in the War on Terrorism since September 11, 2001. Individuals who think about an attitude object using a well-developed schema tend to experience greater attitude polarization than individuals using a less-developed schema (e.g., Leone & Ensley, 1985; Millar & Tesser, 1986; Tesser & Leone, 1977). Thus, individuals' attitudes concerning terrorism could be affected by which type of schema (i.e., well-developed vs. less-developed) they currently hold about terrorism.

Individuals may use different schemas to think about the same attitude object (Tesser, 1978; Tesser et al., 1995). Individuals using different schemas to think about an attitude object may experience different attitudes about that attitude object. Therefore, thought-induced attitude polarization is dependent upon the nature of a schema an individual "tunes in" for an attitude object (e.g., Clary, Tesser & Downing, 1978; Tesser & Danheizer, 1978). Tesser and Danheiser (1978), for example, asked participants to evaluate likeable and dislikeable partners. Participants who were told they would cooperate with these partners evaluated both likeable and dislikeable partners more favorably than did participants who were told they would compete with these partners. Thus, individuals who believed they needed to cooperate with their partners tuned in positive schemas for both likeable and dislikeable partners, whereas individuals who believed they needed to compete with their partners tuned in negative schemas for both likeable and dislikeable partners. An experimenter, for example, shows a group of college students the article title "Terrorists Bomb Train Station in Switzerland". It is possible that during thought those college students may tune in different schemas about terrorists depending on those students own personal views on terrorism. When tuning in different schemas about terrorists, some college students may access an unfavorable schema and think about extremists who purposefully target innocent civilians in an attempt to terrorize the world, whereas other students may access a favorable schema and think about revolutionaries who fight for a cause using any means possible. Because these college students may tune in different schemas about that same attitude object (i.e., terrorists), these students may experience differences in attitude polarization depending which "tuned in" schema they use.

Attitude attenuation. Attitude polarization is not, however, the only result of increased thought (Leone & Aronow, 1992; Leone & Baldwin, 1983). Another result of increased thought individuals may experience is attitude attenuation. During attitude attenuation, individuals abandon their beliefs about an attitude object thus causing an attenuation (i.e., weakening) of attitudes supported by those abandoned beliefs (Leone, 1996; Tesser, 1978). Individuals may experience attitude attenuation due to situational factors (i.e., cognitive constraints) and/or individual factors (i.e., cognitive styles).

Individuals may experience attitude attenuation due to situational factors such as cognitive constraints. Individuals are likely to experience attitude attenuation when they are presented with cognitive constraints prior to engaging in thought (Leone & Aronow, 1992;

Leone & Baldwin, 1983; Tesser, Leone, & Clary, 1978). There are two types of cognitive constraints: reality constraints and process constraints.

Individuals presented with reality constraints (i.e., presence of an attitude object during thought) may find that some of their beliefs are contradictory with reality (Leone, 1984; Leone, Taylor, & Adams, 1991; Tesser, 1976). Individuals who engage in thought in the presence of an attitude object must determine if their beliefs about that attitude object are accurate (Leone et al., 1991). Please recall an earlier example of college students who are initially exposed to the article title "Terrorists Bomb Train Station in Switzerland". Suppose these college students are asked to read this article title and then think about that title in an unconstrained manner. If, as a result of unconstrained thought, these college students activate a schema concerning all terrorists being of Middle Eastern descent, then these students may have polarized attitudes toward individuals of Middle Eastern descent. In order to introduce a reality constraint to those college students' thought processes, an experimenter could familiarize these students with a community of Middle Eastern individuals living within the United States who actively advocate peace. Learning about a community of peaceful Middle Eastern individuals could introduce a "reality" to these college students that not all individuals of Middle Eastern descent support violence. This "reality" may serve as a constraint to those college students' thoughts. When these college students begin thinking in a constrained manner, they may be more likely to experience attitude attenuation rather than attitude polarization. Attitude attenuation may occur because those college students discount their belief that all people of Middle Eastern descent are terrorists.

Individuals presented with process constraints (i.e., critically examining a derivation of beliefs during thought) often discover that some of their beliefs are derived from illogical processes or poor inferences (Leone, 1996; Leone & Aronow, 1992; Tesser, 1978). Please recall an earlier example of an experimenter initially exposing college students to the article title "Terrorists Bomb Train Station in Switzerland" and then giving these college students an opportunity to think about that article in an unconstrained manner. As a result, those college students could experience attitude polarization if they activate a schema based on beliefs that all terrorists are individuals of Middle Eastern descent. As a process constraint to these college students' thoughts, an experimenter could ask these students to explain their beliefs about this article. By thinking about and then explicitly verbalizing their reasoning about the article "Terrorists Bomb Train Station in Switzerland", those students may notice illogical beliefs (e.g., not all terrorists are individuals of Middle Eastern descent) they are using in their thought processes. Once those students recognize their illogical beliefs, those students may discount their illogical beliefs. Those students may experience attitude attenuation because they have constrained their illogical beliefs during thought. Individuals can reduce (i.e., attenuate) effects of unconstrained thought on their beliefs when those individuals have process constraints introduced to their thinking (Leone & Aronow, 1992; Tesser et al., 1995).

Individuals may experience attitude polarization due to individual differences in ways these individuals think about an attitude object (i.e., person, place, or thing). No two individuals think exactly alike. Therefore, each individual will think about an attitude object in a different way. There are many individual differences in thought processing including dogmatism, objectivism, and need for cognition.

Dogmatism is referred to as "differences in the nature of belief systems which individuals use to simultaneously serve as a need to understand the social world and a need to protect themselves from potentially threatening ideas" (Rokeach, 1960, p. 146). That is, individuals use their beliefs in order to understand their social world (i.e., people, places, and events) in a non-threatening

manner. Individuals may be dogmatic or non-dogmatic. Dogmatic individuals are characterized by a high degree of isolation in their beliefs (Rokeach, 1960). Non-dogmatic individuals are characterized by a high degree of openness in their beliefs (Rokeach, 1960). In terms of attitude polarization, dogmatic individuals may be more likely than non-dogmatic individuals to experience attitude polarization (Leone, 1989).

Objectivism is referred to as a "tendency to base one's judgments and beliefs on empirical information and rational considerations" (Leary, Shepperd, McNeil, Jenkins, & Barnes, 1986, p. 33). That is, some individuals tend to use objective bases when forming their opinions and to value both reason and logic over intuition when making judgments (Leone, 1996). Individuals may be objective or non-objective. Objective individuals tend to seek out empirical information when they are uncertain and process that information in a rational fashion (Leary et al., 1986). Non-objective individuals tend to rely on personal intuition when they are uncertain and process information in a subjective fashion (Leary et al., 1986). In terms of attitude polarization, objective individuals may be more likely than non-objective individuals to experience attitude polarization as opportunity for thought increases (Leone, 1996).

Need for Cognition

Need for cognition is defined as differences in "people's tendency to engage in and enjoy effortful cognitive activity" (Cacioppo & Petty, 1982, p. 116). That is, individuals vary in their level of motivation to engage in and enjoy effortful thinking about a particular attitude object (i.e., person, place, or thing). Individuals both high and low in need for cognition strive to understand their world, but they gain this understanding through different means (Cacioppo & Petty, 1982, 1984; Cacioppo, Petty, Kao, & Rodriguez, 1986).

Individuals high in need for cognition are motivated to engage in effortful thought. Individuals high in need for cognition could be labeled "chronic cognizers" (i.e., motivated thinkers) because these individuals enjoy thinking when given an opportunity (Cacioppo, Petty, Feinstein, & Jarvis, 1996). Individuals high in need for cognition tend to seek out additional information as well as reflect upon information they currently possess in order to understand relationships, people, and events (Cacioppo et al., 1996). An experimenter, for example, may show participants high in need for cognition a news story concerning Secretary of State Condoleezza Rice discussing Osama Bin Laden as a terrorist leader targeting American citizens. This experimenter may then ask these participants for their opinions about this news story. During thought, these individuals may recall past occurrences such as the Central Intelligence Agency of the United States covertly supporting Bin Laden and his troops against Soviet invasion of Afghanistan. Rather than accepting this news story as the only source of information about Bin Laden, individuals high in need for cognition may recall additional related information in order to further understand this relationship between the United States and Osama Bin Ladin.

In contrast to individuals high in need for cognition, individuals low in need for cognition are not motivated to engage in effortful thought. Individuals low in need for cognition could be labeled "cognitive misers" (i.e., unmotivated thinkers) because these individuals only think when absolutely necessary (Cacioppo et al., 1996). Individuals low in need for cognition tend to rely upon others (i.e., experts), heuristics (i.e., stereotypes), or social comparisons (e.g., similar others) to understand relationships, people, and events (Cacioppo et al., 1996). An experimenter, for example, may show participants low in need for cognition a news story concerning Secretary of State Condoleezza Rice discussing Osama Bin Ladin as a terrorist leader targeting American citizens. This experimenter may then ask these participants for their opinion about this news story. During thought, these individuals may consider Condoleezza Rice an expert on

terrorism and agree with her that Bin Ladin is indeed a terrorist leader who targets American citizens. Rather than engaging in further thought about this information, individuals low in need for cognition may simply accept this information as valid because an expert presented this information.

Individuals who differ in need for cognition also vary in amounts of information they are able to recall. Researchers have shown that individuals high in need for cognition are better able than are individuals low in need for cognition to recall information to which those individuals are exposed (e.g., Cacioppo, Petty, & Morris, 1983). Cacioppo and his colleagues instructed participants to read articles containing either six strong or six weak arguments in favor of comprehensive college graduation exams. Regardless of argument quality (i.e., strong vs. weak arguments), participants high in need for cognition recalled nearly two thirds of all arguments whereas participants low in need for cognition recalled roughly half of all arguments. Other researchers have replicated these findings that individuals high in need for cognition recall more information than do individuals low in need for cognition (e.g., Lassiter, Briggs, & Bowman, 1991; Meyers-Levy & Peracchio, 1992).

Individuals who differ in need for cognition also vary in their use of routes to persuasion. Individuals high in need for cognition tend to use a central (i.e., systematic) route in order to think about a particular task, whereas individuals low in need for cognition tend to use a peripheral (i.e., superficial) route in order to think about a particular task (Cacioppo et al., 1996). In other words, high need for cognition individuals will elaborate on a task during thought thereby using a central route to persuasion, whereas low need for cognition individuals will only engage in superficial thought about a task thereby using a peripheral route to persuasion. This systematic versus superficial thought processing is a foundation for other differences between individuals high in need for cognition and individuals low in need for cognition.

For example, individuals who differ in need for cognition vary in their responsiveness to argument quality. Researchers have shown that individuals (i.e., high need for cognition) who think about and elaborate upon persuasive arguments tend to base their attitudes on argument quality more so than do individuals (i.e., low need for cognition) who think about those persuasive arguments in a superficial manner (e.g., Cacioppo et al., 1983; Petty, Wells, & Brock, 1976). Cacioppo et al. (1983) conducted research in which participants read a persuasive message containing either four strong arguments or four weak arguments. These researchers found that individuals high in need for cognition based their attitudes about that message on the quality (i.e., strong vs. weak) of those arguments more often than did individuals low in need for cognition. Other researchers have replicated these findings in which individuals high in need for cognition more so than individuals low in need for cognition base their attitudes toward persuasive messages on argument quality (e.g., Axsom, Yates, & Chaiken, 1987; Haugtvedt & Petty, 1992; Priester & Petty, 1995).

Individuals who differ in need for cognition also vary in their responsiveness to peripheral cues (i.e., superficial information). According to researchers utilizing the elaboration likelihood model (e.g., Cialdini, Petty, & Caccioppo, 1981) and the heuristic-systematic model (e.g., Chaiken, Liberman, & Eagly, 1989), if individuals are unmotivated or unable to think in a thorough manner about information within a persuasive message, then those individuals may be influenced by peripheral cues within that message. Because individuals high in need for cognition are motivated to think about information thoroughly, they should be less susceptible to peripheral cues than should individuals low in need for cognition. Individuals low in need for cognition, more so than individuals high in need for cognition, show evidence of influence from peripheral cues in research

studies involving expertise and attractiveness of message source (e.g., Petty, Cacioppo, & Goldman, 1981), number of arguments contained within a message (e.g., Petty & Cacioppo, 1984), and merely stating number of arguments to be given (e.g., Chaiken, Axsom, & Yates, 1987; Haugtvedt et al., 1992).

Individuals who differ in need for cognition also vary in number of thoughts generated during cognitive tasks. Several researchers have reported that individuals high in need for cognition generate additional thoughts that are relevant to their cognitive tasks more so than do individuals low in need for cognition (e.g., Axsom et al., 1987; Haugtvedt et al., 1992). Not all researchers, however, have reached similar conclusions about thought generation from individuals high in need for cognition. Some researchers maintain that individuals do not display differences in need for cognition by means of listing overall number of task-relevant thoughts but rather by generating thoughts that reflect overall argument quality (e.g., Bodenhausen, 1988; Priester & Petty, 1995). These researchers maintain that individuals high in need for cognition not only generate a greater number of thoughts than do individuals low in need for cognition but also generate thoughts which are reflective of argument quality.

Individuals who differ in need for cognition also vary in connections of beliefs with judgments. In other words, if individuals make carefully considered judgments, then those judgments should reflect the beliefs held by those individuals (Cacioppo et al., 1996). Several researchers have found that individuals high in need for cognition more so than individuals low in need for cognition form judgments that are based on those individuals' beliefs (e.g., Haugtvedt et al., 1992; Verplanken, 1989). Other researchers maintain that initial attitudes (i.e., judgments) and amount of thought are correlated in individuals high in need for cognition, whereas initial attitudes (i.e., judgments) and amount of thought are not correlated in individuals low in need for cognition (e.g., Hastie & Park, 1986; Haugtvedt et al., 1992; Verplanken, 1989).

Individuals who differ in need for cognition also vary in amounts of knowledge possessed. That is, individuals (i.e., high in need for cognition) who actively seek out and process information are more likely to have a greater amount of stored knowledge than are those individuals (i.e., low in need for cognition) who do not actively seek out and process information (Cacioppo et al., 1996). Researchers have gathered evidence that individuals high in need for cognition more so than individuals low in need for cognition possess greater amounts of knowledge about presidential candidates (Cacioppo et al., 1986), types of birds (Martin, Ward, Achee, & Wyer, 1993), and trivial test questions (Wolfe & Grosch, 1990). Overall, individuals high in need for cognition often possess a greater knowledge base than do individuals low in need for cognition (Cacioppo et al., 1996).

Individuals who differ in their need for cognition may also vary in their use of stereotypes. According to Snyder and Miene (1994), stereotypes are over-generalized beliefs about various members of social categories (e.g., African Americans, women, or terrorists). Rather than having individual attributes and expected behaviors, these social category members are given a shared set of attributes and expected behaviors. Individuals using stereotypes are able to ignore individual characteristics of a member in a social category by seeing that member as part of a generalized group. Snyder and Miene also state that individuals may use stereotypes as cognitive economizers in a sense that, by using stereotypes, individuals can reduce incoming information to a manageable size.

In this cognitive view, stereotyping plays a similar role to that of schemas in self-generated attitude change. Individuals use schemas in order to reduce cognitive effort when thinking about an attitude object (i.e., person, place, or thing). If individuals use stereotypes in order to reduce their cognitive load during thought, then it is possible that

these individuals may use stereotypes in a similar fashion as they use schemas.

Do individuals differing in need for cognition (i.e., high vs. low) vary in their use of stereotypes? Some researchers (e.g., Cacioppo et al., 1996; Kawakami, Dovidio, Moll, Hermsen, & Russin, 2000; Waller, 1993) have found that individuals high or low in need for cognition both use stereotypes when thinking about an attitude object. However, those individuals (i.e., high vs. low need for cognition) differ in how they use stereotypes. In two recent studies, researchers have found individual differences in stereotyping based on differences in participants' need for cognition (Crawford & Skowronski, 1998; Perlini & Hansen, 2001).

In a study on information recall, Crawford and Skowronski (1998) asked participants to recall both stereotype-consistent and stereotype-inconsistent personality traits of individuals in the presence of or absence of an occupational label. These researchers found that individuals high in need for cognition were able to recall more stereotype-consistent traits than were individuals low in need for cognition when traits were presented with an occupational label. In a no occupational label condition, however, there were no significant differences between individuals high or low in need for cognition in recall of trait information. Crawford and Skowronski found that not only did individuals high in need for cognition recall more trait information than individuals low in need for cognition but also that individuals high in need for cognition also used stereotypes (i.e., schemas) more so than did individuals low in need for cognition in order to recall that trait information.

In their study on responsiveness to peripheral cues, Perlini and Hansen (2001) asked participants to give attractiveness ratings of several photos. These researchers found that although both high and low need for cognition individuals exhibited use of attractiveness stereotyping, individuals low in need for cognition gave more favorable ratings to attractive photos than to unattractive photos. In this study, individuals low in need for cognition more so than individuals high in need for cognition were affected by attractiveness (i.e., peripheral cues). This difference in attractiveness ratings may be due to high need for cognition individuals showing a preference toward a central route of thinking (Perlini & Hansen, 2001). Although high need for cognition individuals did use attractiveness stereotypes, they did not rely on those stereotypes as heavily as did low need for cognition individuals; therefore, it is likely that high need for cognition individuals engaged in additional elaborative thought about those photographs.

Researchers from these two studies have provided somewhat contradictory findings concerning effects of individual differences in need for cognition on stereotyping. In one study, researchers observed that individuals high in need for cognition used stereotypes more often than did individuals low in need for cognition (Crawford & Skowronski, 1998). In another study, researchers observed that individuals low in need for cognition used stereotypes more often than did individuals high in need for cognition (Perlini & Hansen, 2001).

To summarize, individuals who differ in need for cognition also vary in their enjoyment of thinking, their tendency to engage in tasks which require active thought, and their motivation to acquire additional information (Cacioppo et al., 1996). Individuals high in need for cognition enjoy thinking about attitude objects (i.e., people, places, and things), engage in active thinking during tasks, and are motivated to seek out additional information about attitude objects. In contrast, individuals low in need for cognition think only as much as necessary about attitude objects, complete tasks without engaging in active thought, and are not motivated to seek out additional information about attitude objects.

Individuals differing in need for cognition (i.e., high vs. low need for cognition) also vary in the amount of cognitive activity (i.e., information recall, responsiveness to peripheral cues, and

correlation of thoughts and judgments) in which they engage (Cacioppo et al., 1996). High need for cognition and low need for cognition individuals also vary in their use of stereotypes (i.e., attractiveness cues, stereotype-consistency) when engaged in thought (Crawford & Skowronski, 1998; Perlini & Hansen, 2001). Individuals may use stereotypes as a means of reducing incoming information to a manageable size (Snyder & Miene, 1994). This idea of information reduction via stereotypes is similar to that of schema use in self-generated attitude change. It is possible, therefore, that individuals differ in their use of schemas (i.e., stereotyping) based on individual differences in need for cognition. Individuals high in need for cognition should rely on stereotypes less often than should individuals low in need for cognition when thinking about attitude objects.

Hypotheses

We predict that individuals will have greater levels of attitude polarization when given high opportunity rather than low opportunity for thought. We also predict that this effect of opportunity for thought will be affected by several other variables. Individuals will have greater attitude polarization if they possess well-developed rather than less-developed schemas when thinking about groups of people and if their well-developed schemas are consistent rather than inconsistent with information about those groups. Additionally, those effects of opportunity for thought, type of schema, and schema consistency will be more evident in individuals low in need for cognition rather than individuals high in need for cognition.

Method

Participants

A total of 151 students were recruited from undergraduate psychology courses. Students volunteered to participate in a study titled “Individual Differences in Perceptions of Groups”. In exchange for participation, students received extra credit toward a course grade.

A total of 21 males and 130 females participated in this study. A majority (65 %) of the sample was Caucasian. Most participants (57 %) were between 18 and 22 years of age.

A male experimenter randomly assigned all participants to experimental groups. He obtained written informed consent from all participants. Of all participants who volunteered for this study, only three did not complete the experimental procedure, and therefore their data was excluded from this study. All participants were treated in accordance with the Ethical Principles of Psychologists and Code of Conduct (American Psychological Association, 2003).

Procedure

A male experimenter greeted each participant in a hallway outside of a laboratory and interviewed each participant in an individual research room throughout this study. He described the general purpose of his research (i.e., studying college students’ attitudes toward groups and how individuals thought about themselves as well as others). After explaining his study’s general purpose, he obtained informed consent in writing from each participant.

He then informed participants that the first portion of his study would involve forming impressions of groups. He presented an example group descriptor card that was similar to group descriptor cards used in his study. He had four separate attributes listed on this example group descriptor card (e.g., perceptive, ordinary, visual, and over-bearing). He explained to each participant that although it would be easy for them to view each group descriptor set as describing an individual, it was very important for them to keep in mind that he was describing groups of people in these descriptor sets.

After presenting this example group descriptor card, the experimenter informed participants that they would respond with their initial impressions of groups using a 15-point scale. He placed this scale on a desk directly in front of each participant. Endpoints on this scale were labeled “*very favorable*

impression" (+7) and "*very unfavorable impression*" (-7) and a midpoint was labeled "*neutral*" (0). Intermediate points (e.g., +4, -4) were labeled as "*moderately favorable*" and "*moderately unfavorable*" respectively. He asked participants to provide him with their initial impressions of the example group descriptor card using this 15-point scale. After participants rated their initial impression of the example group descriptor, the experimenter asked if they had any questions concerning this procedure before continuing with his experiment.

Participants were then presented with 30 separate group descriptor sets on 12.7 x 20.3 cm. cards. There were four separate attributes (e.g., talented, independent, unconventional, and humorous) on each group descriptor card. The experimenter designed 15 group descriptor cards to have three negative attributes and one neutral attribute (e.g., authoritative, unintelligent, mediocre, and resentful) and 15 group descriptor cards to have three positive attributes and one neutral attribute (e.g., imaginative, loyal, inhibited, and skilled). The experimenter chose all group attributes used in his study from research by Norman Anderson (1968) who developed a definitive list of 555 personality-trait words that were rated on likableness.

After they read each group descriptor, participants were told to indicate their initial feelings towards that group by saying aloud a number on the 15-point scale that best represented their initial feelings. The experimenter prompted participants every 10 seconds to ensure an equal amount of time was used in consideration of initial feelings towards each group descriptor. He recorded participants' verbal responses on a separate sheet to ensure that initial ratings remained inaccessible to participants.

Upon receiving participants' responses to the last group descriptor card, the experimenter chose two group descriptor cards to which participants expressed moderately favorable impressions (i.e., ratings of +4) and two group descriptor cards to which participants expressed moderately unfavorable impressions (i.e., ratings of -4). If participants provided only one or no moderate impressions (i.e., +4 or –4), then the experimenter chose those participants' next closest impression score (i.e., +3 or -3).

Prior to showing participants one of the four group descriptor cards, the experimenter randomly assigned some participants to be informed either that groups described in the following cards were Freedom Fighters or that groups described in the following cards were Rebel Insurgents. After making participants aware of the assigned groups, he asked them to provide him with their own definitions of those groups (i.e., Freedom Fighters or Rebel Insurgents). He did so in order to see if participants understood what these group labels meant. After listening to participants' responses, the experimenter provided all participants with one of two pre-determined descriptions depending upon group assignment. For Freedom Fighters, participants were given an example of South American fighters attempting to overthrow a country's dictatorship and establish a democracy. For Rebel Insurgents, participants were given an example of South American fighters attempting to overthrow a country's democracy and establish a dictatorship.

Following each group description (i.e., Freedom Fighters or Rebel Insurgents), participants were instructed

> "…I'd like you to take some time to think about one of these descriptions. I want you to concentrate all of your thoughts on this [group] during the time I give you. You might want to think about how you feel about a [group] with these characteristics. You might want to think about [groups] you know that fit this description. Or you might want to think about what other qualities and traits [groups] like this may have. Just concentrate on this description and continue thinking until I tell you to stop…" (Leone, 1996, p. 385).

The experimenter then briefly displayed one of the four pre-selected group descriptor cards to participants and provided those participants with an opportunity to think about the group being described. Participants were randomly assigned to either low (i.e., 45 sec.) or high (i.e., 90 sec.) opportunity for thought conditions. Opportunity for thought conditions (45 sec. vs. 90 sec.) were taken from prior research in which investigators measured self-generated attitude change (see Leone et al., 1991).

After thinking about the group descriptor card shown, participants re-rated their impression of that group. Specifically, participants were instructed

> "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 a short period of time as this. Of course, you may or may not feel the same way about the [group]. Using the scale as before, indicate how you feel about the [group] now." (Leone, 1996, p. 385).

The experimenter presented a 15-point scale to participants who then stated aloud a number that best represented their feelings. He recorded participants' verbal responses on a separate sheet to ensure that these ratings remained inaccessible to participants. He repeated this same procedure for the remaining three group descriptor sets.

The experimenter measured attitude polarization by the following means (cf., Tesser, 1978). If a moderately favorable (+4) impression became more favorable (i.e., +5, +6, or +7) or a moderately unfavorable (-4) impression became more unfavorable (i.e., -5, -6, or -7) following a period of thought, then he assigned attitude change (i.e., attitude polarization) a score of "+1". If an initial impression did not change following a period of thought, then he assigned attitude change a score of "0". He assigned all other participant responses (i.e., attitude attenuation) a score of "-1". Scores were summed across all four descriptions with a higher total score indicating more thought-induced attitude polarization.

Upon completion of all thought tasks, the experimenter presented participants with a survey titled *Individual Differences in Cognitive Styles* containing the 18-item Need for Cognition Scale which was used to assess individual differences in need for cognition (Cacioppo, Petty, & Kao, 1984). Participants used a 5-point scale with response options labeled *strongly disagree, disagree, undecided, agree, and strongly agree* to respond to statements in the Need for Cognition Scale. Half of the statements within the scale were written such that agreement indicated a high need for cognition (e.g., "I would prefer complex to simple problems") and half of the statements were written such that disagreement indicated a high need for cognition (e.g., "I only think as hard as I have to").

Participant's responses to statements in which disagreement indicated high need for cognition were reversed scored. Answers to each of the 18 items on this scale were scored such that a higher overall score was indicative of a higher need for cognition. The experimenter classified participants as either high or low in need for cognition based on a median split of overall scores. There were 76 participants categorized as high in need for cognition and 75 participants classified as low in need for cognition.

In terms of internal consistency, several researchers found Cronbach's alphas of .85 or more for scores on the Need for Cognition Scale (e.g., Berzonsky & Sullivan, 1992; Leary, Sheppard, McNeil, Jenkins, & Barnes, 1986). During a seven week testing period, Sadowski and Gulgoz (1992) found a test-retest correlation of .88 for scores on the Need for Cognition Scale. In the current sample, the experimenter obtained a Cronbach's alpha of .96 for scores on the Need for Cognition Scale.

Researchers have conducted studies in which they provide evidence of convergent validity for scores on the Need for Cognition Scale. There were positive correlations between scores on the Need for Cognition

Scale and scores on the following measures: attention given to tasks (e.g., Osberg, 1987), information seeking and usage in problem solving (e.g., Berzonsky & Sullivan, 1992), and motivation for experiences that are thought provoking (e.g., Venkatraman & Price, 1990). Researchers have conducted studies in which they provide evidence of discriminant validity for scores on the Need for Cognition Scale. There was a lack of correlation between scores on the Need for Cognition Scale and scores on the following measures: dogmatism (e.g., Cacioppo & Petty, 1982), need for closure (e.g., Petty & Jarvis, 1996), and preference for order (e.g., Webster & Kruglanski, 1994). Researchers have shown construct validity for scores on the Need for Cognition Scale in studies of information recall (e.g., Cacioppo & Petty, 1982; Lassiter, Briggs, & Bowman, 1991), responsiveness to argument quality (e.g., Cacioppo, Kao, Petty, & Rodriguez, 1989; Petty, Wells, & Brock, 1976), and responsiveness to peripheral cues (e.g., Chaiken, Liberman, & Eagly, 1989; Petty & Cacioppo, 1981).

The experimenter included four questions at the end of his survey in order to assess participants' demographic information. Participants were first asked to indicate their age with response options labeled *18-22, 23-27, 28-32, 33-37, 38 or older*. They were next asked to indicate their sex with response options labeled *male* or *female*. They were asked to indicate their race with response options labeled *African-American/Black, Caucasian/White, Hispanic, Asian,* or *Other*. Participants were last asked to indicate their political affiliation with response options labeled *Democrat, Republican,* or *Independent*. Upon completion of the demographic section of his survey, the experimenter asked each participant a series a questions to serve as a manipulation check for this study. He asked each participant six questions during each post-experiment interview. Some questions concerned detailed portions of the study (i.e., What types of groups did you think of? Why?), and other questions concerned the study as a whole (i.e., What did you think we were looking at in this study?). After completing the post-experiment interview, all participants were debriefed as to the purpose of this study.

Results

Overview of Analyses

This study was a 2 (opportunity for thought: high vs. low) x 2 (group type: freedom fighters vs. rebel insurgents) x 2 (need for cognition: low vs. high need) x 2 (initial attitude: positive vs. negative) factorial design with repeated measures on the last factor. The dependent variable in this study was attitude polarization. All participants scores on attitude polarization were analyzed using a 2 (opportunity for thought) x 2 (group type) x 2 (need for cognition) x 2 (initial attitude) analysis of variance (ANOVA).

Main Analyses

It was hypothesized that individuals would experience greater attitude polarization when they were given a high opportunity for thought rather than a low opportunity for thought. It was also hypothesized that when individuals thought about a group (i.e., freedom fighters or rebel insurgents), those individuals would experience greater attitude polarization if their schemas were consistent (e.g., freedom fighters) rather than inconsistent (e.g., rebel insurgents) with descriptions of those groups (e.g., initially positive attributes). Finally, it was hypothesized that effects of opportunity for thought, group type, and initial attitude on attitude polarization would be more evident for individuals low in need for cognition than for individuals high in need for cognition.

In order for our first hypothesis to be supported, we would expect to find a main effect for opportunity for thought. Our second hypothesis would be supported by a three-way interaction between opportunity for thought, group type, and initial attitude. Our final hypothesis would be supported by a four-way interaction between opportunity for thought, group type, initial attitude, and need for cognition.

Contrary to our hypotheses, there was no significant main effect for opportunity for thought on attitude polarization, $F(1, 143) = 2.09$, $p < .15$. Individuals did not show significant differences in attitude polarization when given high opportunity for thought ($M = .28$, $SD = 1.46$) rather than low opportunity for thought ($M = .48$, $SD = 1.36$). There was also no significant three-way interaction between opportunity for thought, group type, and initial affect, $F < 1.00$ (see Table 1). During high opportunity for thought, individuals who had schemas about a group that were consistent with those individuals' initial attitudes did not experience more attitude polarization than did individuals who had schemas about a group that were inconsistent with initial attitudes. There was a similar absence of attitude polarization with individuals given low opportunity for thought in the same schema conditions.

*Table 1.*Effects of Attitude Polarization in Opportunity for Thought x Group Type x Initial Attitude Analysis of Variance (ANOVA)

Group Type	Opportunity for Thought Low		High	
	M	SD	M	SD
Freedom Fighters				
Positive Attitude	92	0.99	.78	1.27
Negative Attitude	.60	1.34	.39	1.44
Rebel Insurgents				
Positive Attitude	-.12	1.45	-.47	1.23
Negative Attitude	.54	1.41	.39	1.61

There was also no significant four-way interaction between opportunity for thought, group type, initial affect, and need for cognition, $F < 1.00$ (see Table 2). During either a low or a high opportunity for thought, individuals low in need for cognition who had schemas about a group that were consistent with those individuals' initial attitudes did not experience more attitude polarization than did individuals who had schemas about a group that were inconsistent with initial attitudes. There was a similar absence of attitude polarization with high need for cognition individuals in both high and low opportunity for thought conditions.

Table 2. Effects of Attitude Polarization in Opportunity for Thought x Group Type x Initial Attitude x Need for Cognition Analysis of Variance (ANOVA)

Low Need for Cognition

Group Type	Opportunity for Thought Low		High	
	M	SD	M	SD
Freedom Fighters				
Positive Attitude	.95	.88	.47	1.46
Negative Attitude	.85	1.30	-.05	1.63
Rebel Insurgents				
Positive Attitude	0.0	1.49	-.40	1.27
Negative Attitude	.44	1.50	.35	1.53

High Need for Cognition

Group Type	Opportunity for Thought Low		High	
	M	SD	M	SD
Freedom Fighters				
Positive Attitude	.89	1.13	1.05	1.07
Negative Attitude	.33	1.37	0.76	1.17
Rebel Insurgents				
Positive Attitude	-.23	1.44	-0.56	1.21
Negative Attitude	.62	1.36	.044	1.75

Although not predicted, there was a reliable main effect for group type (i.e., freedom fighters vs. rebel insurgents) on attitude polarization. Individuals experienced greater attitude polarization when thinking about groups of freedom fighters (M = 1.36, SD = 1.80) than when thinking about groups of rebel insurgents (M = 0.17, SD = 2.03), $F(1, 143) = 13.57$, $p < .01$. This main effect was qualified by a two-way interaction between group type and individuals' initial attitudes, $F(1, 143) = 12.77$, $p < .01$. Individuals experienced greater attitude polarization when they had initially positive attitudes and thought about freedom fighters (M = 0.85, SD = 1.14) than when those individuals had initially negative attitudes and thought about freedom fighters (M = 0.50, SD = 1.39). Additionally, individuals experienced greater attitude polarization when they had initially negative attitudes and thought about rebel insurgents (M = 0.47, SD = 1.51) than when those individuals had initially positive attitudes and thought about rebel insurgents (M = -0.29, SD = 1.35). In short, individuals showed more attitude polarization when schemas about a group were consistent with initial attitudes about that group than when schemas about a group were inconsistent with initial attitudes.

Secondary Analyses

At the end of this experiment, the researcher asked participants to indicate what groups they thought about during their opportunity for thought. Approximately 94% of participants in this sample indicated they were able to think about some group of people (i.e., freedom fighters or rebel insurgents) during assigned periods of thought. Of all participants, 41% of participants indicated a specific group (e.g., Al Qaeda), whereas 53% of participants indicated a non-specific group (e.g., terrorists).

In order to examine the possibility that group specificity (i.e., specific vs. non-specific) might be confounded with other factors, we evaluated our data using chi-square analyses. We conducted three chi-square analyses looking for relationships between group specificity and the following factors: group type, need for cognition, and opportunity for thought. In this sample, we found no relationship between group specificity and group type, $X^2 (1, N = 142) = 1.45$, $p < .23$, participants' need for cognition, $X^2 (1, N = 142) = 1.95$, $p < .16$, or opportunity for thought, $X^2 < 1.00$. In short, group specificity was not confounded with other factors in this experiment.

In order to explore a relationship between group specificity and attitude polarization, a one-way analysis of variance (ANOVA) was conducted. In this analysis, group specificity was our criterion variable and attitude polarization was our predictor variable. There was a significant effect for group specificity in terms of individuals' attitude polarization, $F(1, 140) = 3.83$, $p < .05$. Individuals who were able to imagine specific groups of freedom fighters or rebel insurgents tended to show more attitude polarization (M = 1.11, SD = 1.93) than did

individuals who were able to imagine only non-specific groups of freedom fighters or rebel insurgents (M = 0.46, SD = 1.99) (see Figure 1). For example, individuals who imagined specific groups of rebel insurgents (e.g., Al Qaeda) during thought had stronger feelings about those groups than individuals who imagined non-specific groups (e.g., terrorists).

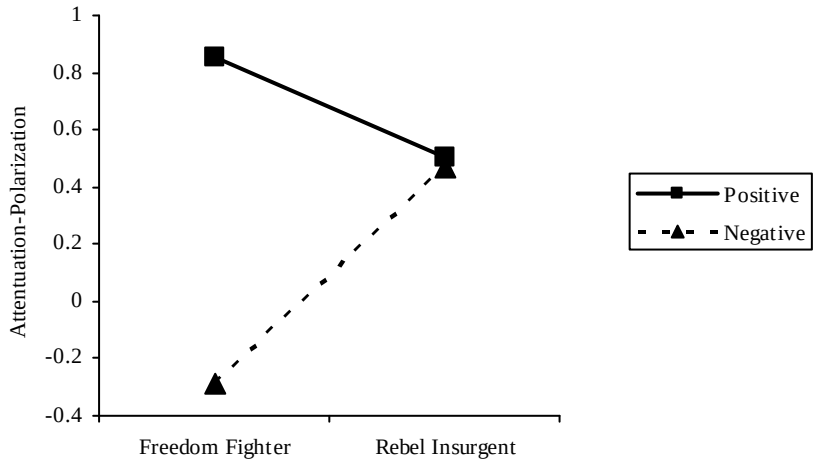

Figure 1. Effects of Group Type and Initial Attitude on Attitude Polarization

Having established a relationship between group specificity and attitude polarization, further analysis of group specificity (i.e., specific vs. general groups) was conducted in the form of a 2 (opportunity for thought) x 2 (need for cognition) x 2 (group type) x 2 (initial attitude) x 2 (group specificity) analysis of variance (ANOVA). In this analysis, opportunity for thought, need for cognition, initial attitude, and group specificity were the predictor variables. The criterion variable in this analysis was attitude polarization. There was no significant four-way interaction between opportunity for thought, need for cognition, group type, and group specificity, $F < 1.00$. During either a low or a high opportunity for thought, individuals low in need for cognition who had schemas about a group that were specific in nature (e.g., Al Qaeda) did not experience more attitude polarization than did individuals who had schemas about a group that were general in nature (e.g., terrorists). There was a similar absence of attitude polarization with high need for cognition individuals in both high and low opportunity for thought conditions.

We did, however, find a significant two-way interaction between opportunity for thought and group specificity, $F(1, 141) = 4.38$, $p < .05$. When individuals thought about a specific group (e.g., Al Qaeda), they experienced more attitude polarization when given low opportunity for thought (M = 1.61, SD = 1.54) rather than when given high opportunity for thought (M = .61, SD = 2.16). However, when individuals thought about a general group (e.g., terrorists), they did not experience significantly different amounts of attitude polarization when given low opportunity for thought (M = .46, SD = 2.13) than when given high opportunity for thought (M = .46, SD = 1.89) (see Figure 2).

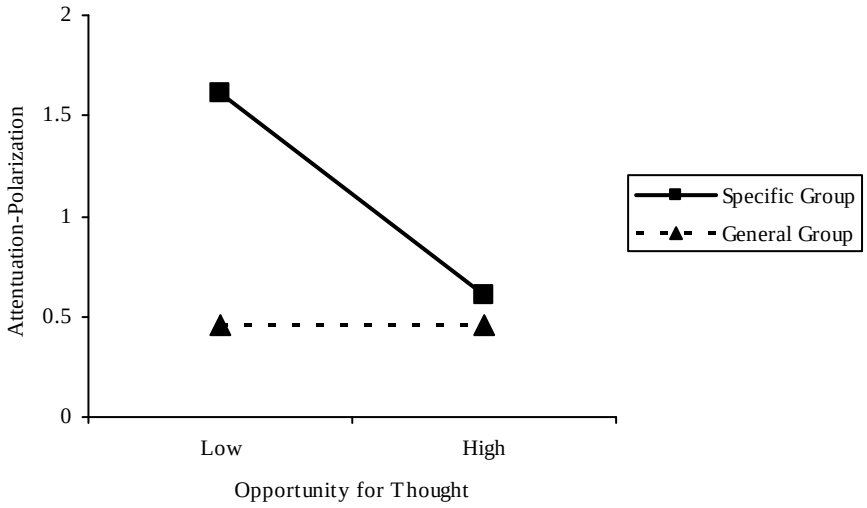

Figure 2. Effects of Opportunity for Thought and Group Specificity on Attitude Polarization

Discussion

We predicted that individuals would have more attitude polarization when given high opportunity rather than low opportunity for thought. We also predicted that individuals would have greater attitude polarization if they possessed well-developed rather than less-developed schemas when thinking about groups of people and if their well-developed schemas were consistent rather than inconsistent with information about those groups. Additionally,… those effects of opportunity for thought, type of schema, and schema consistency would be more evident in individuals low in need for cognition rather than individuals high in need for cognition.

As expected, attitude polarization did depend on type of schema individuals "tuned in" and whether that schema was consistent or inconsistent with those individuals' initial attitudes. In this study, we found increasing amounts of attitude polarization during thought when individuals had well-developed schemas about a particular group than when individuals had less-developed schemas about a particular group. Additionally, we found increasing amounts of attitude polarization during thought if those individuals' well-developed schemas were consistent with group descriptions (e.g., positive initial attitudes associated with freedom fighters) than if those individuals' well-developed schemas were inconsistent with group descriptions (e.g., negative initial attitudes associated with freedom fighters). Therefore, attitude polarization did depend on whether individuals engaged in thought using well-developed rather than less-developed schemas and whether those schemas were consistent or inconsistent with those individuals' initial attitudes.

Attitude polarization did not vary depending on individuals' opportunity for thought and differences in need for cognition. In this study, we did not find increasing amounts of attitude polarization with increasing opportunity for thought. Additionally, we did not find a higher amount of attitude polarization in low need for cognition individuals than in high need for cognition individuals. Therefore, attitude polarization did not depend on whether an individual was given a high or low opportunity for thought or whether an individual was high or low in need for cognition.

Support for attitude polarization.

We found partial support for our hypotheses concerning schema complexity (i.e., well-developed vs. less-developed schemas) and schema consistency (i.e., initial attitudes: positive vs. negative). In our study, we asked participants to tell us which groups of freedom fighters or rebel insurgents they thought about during their opportunity for thought. Our participants' gave us answers ranging from general group names to specific group names for both freedom fighters (e.g., soldiers vs. American armed forces) and rebel insurgents (e.g., terrorists vs. Al Qaeda). In terms of schema complexity, we found that amount of attitude polarization experienced by individuals was dependent upon whether those individuals had a well-developed (e.g., American armed forces) or less-developed (e.g., soldiers) schema about groups of people (e.g., freedom fighters). Individuals possessing well-developed schemas about groups showed greater attitude polarization than did individuals possessing less-developed schemas about groups. Additional researchers have found that individuals will experience greater attitude polarization when they possess well-developed rather than less-developed schemas (e.g., Leone & Ensley, 1985; Millar & Tesser, 1986).

In our study, if individuals "tuned in" a schema about a specific group of freedom fighters or rebel insurgents (e.g., American armed forces or Al Qaeda), then they experienced greater attitude polarization than did those individuals that "tuned in" a schema about a general group of freedom fighters or rebel insurgents (e.g., soldiers or terrorists). Other researchers have shown that individuals varied in the amount of attitude polarization they experienced depending on the nature of the schema those individuals "tuned in" when thinking about a particular attitude object (e.g., groups of people) (Clary, Tesser, Downing, 1978; Tesser & Danheizer, 1978).

In support of our schema consistency (i.e., initial attitudes) hypothesis, we found that individuals experienced more attitude polarization when they "tuned in" schemas that were consistent with their initial attitudes about a group of people than when they "tuned in" schemas that were inconsistent with their initial attitudes about a group of people. When individuals held initial positive attitudes and thought about freedom fighters, they experienced more attitude polarization than when those individuals had initially negative attitudes and thought about freedom fighters. Likewise, when individuals held initially negative attitudes and thought about rebel insurgents, they experienced more attitude polarization than when those individuals had initially positive attitudes and thought about rebel insurgents. In other words, when individuals' initial attitudes were consistent with schemas they "tuned in" about a group of people, those individuals experienced more attitude polarization than when their initial attitudes were inconsistent with schemas they "tuned in" about a group of people.

We did not find support for our hypotheses concerning opportunity for thought. We found that when individuals were given a high opportunity for thought, they tended to attenuate their attitudes rather than polarize their attitudes. When individuals were given a low opportunity for thought, they tended to polarize their attitudes rather than attenuate their attitudes. These attenuation effects shown by individuals given high opportunity for thought were opposite our prediction for opportunity for thought.

One possible explanation for a lack of attitude polarization and a trend toward attitude attenuation in our participants may be an inadvertent introduction of cognitive constraints in our study. There may have been something in our procedure that induced either reality constraints or process constraints to the thought processes of our participants. Recall that a reality constraint is the presence of an attitude object during thought and a process constraint is the critical examination of beliefs during thought (Leone, Taylor, & Adams, 1991; Leone & Aronow, 1992). When individuals have a reality or process constraint imposed during thought, they are more likely to attenuate their attitudes rather

than to polarize their attitudes (Leone et al., 1991). It is unlikely, however, that attitude attenuation effects seen in our study were due to cognitive constraints. Attitude attenuation was unlikely because we did not have actual groups present for evaluation (i.e., reality constraint) during our study nor did we ask our participants to critically examine their beliefs about groups of freedom fighters or rebel insurgents (i.e., process constraint).

Another possible explanation for lack of support in terms of attitude polarization and opportunity for thought may be that we did not allow participants to view group descriptions while participants were thinking. It was possible then that, without group descriptions in front of them, participants were distracted from thinking about those groups during their opportunity for thought. Researchers have found that individuals polarize their attitudes more so as a result of thought about an attitude object (i.e., groups of people) than when those individuals were distracted from thought about an attitude object (i.e., groups of people) (e.g., Leone & Ensley, 1986; Tesser & Leone, 1977). In our study, it is unlikely that lack of attitude polarization was due to participants' distraction because we did not have a distraction condition. All participants in our study were given either 45 or 90 seconds to think about group descriptions.

Another possible explanation for lack of support in terms of attitude polarization and opportunity for thought may be that we did not provide our participants with sufficient opportunity for thought. In our experiment, participants received either a 45 second or 90 second opportunity for thought. It is possible that our participants required more than 45 or 90 seconds to think about groups of people. However, it is not likely that opportunity for thought was a cause for lack of attitude polarization in our experiment. Other researchers have used 45 versus 90 second opportunity for thought and have replicated the self-generated attitude change effect (e.g., Leone, 1994, 1996).

In terms of need for cognition, we found that low need for cognition individuals did not experience greater amounts of attitude polarization than did high need for cognition individuals. There was also no significant difference in attitude attenuation based on whether individuals were high or low in need for cognition. There seemed to simply be no differences in terms of attitude change based on whether our participants were high in need for cognition or low in need for cognition.

One plausible explanation for lack of support in terms of moderating effect of need for cognition on attitude polarization may have been participants' completion of the Need for Cognition Scale. In this study, participants completed the 18-item Need for Cognition Scale to measure individual differences in the tendency to seek out and enjoy effortful cognitive activities (Cacioppo et al., 1984). It is possible that participants could be primed by the Need for Cognition Scale such that they may alter their manner of thought. Participants may experience "priming" when they read something or perform a task that helps them recall a particular attitude (Smith, 1998). When participants do recall a particular attitude, they may also recall other related attitudes (e.g., Raghubir & Johar, 1997) or they may experience spreading activation of their attitudes (e.g., Judd, Downing, Drake, & Krosnick, 1991). It may also be more socially desirable for participants to view themselves as high in need for cognition and less socially desirable for participants to view themselves as low in need for cognition. Therefore, if participants took the Need for Cognition scale prior to thought portion of an experiment, then they may have been "primed" to think about groups of people in a manner consistent with expectations of high in need for cognition individuals. However, in our study, participants' completion of the Need for Cognition Scale was not likely to be related to their attitude polarization because participants completed the questionnaire containing the scale after they completed all thought activity. Additionally, other researchers assessed people's need for cognition along with measuring people's attitude polarization and obtained the results they expected (e.g.,

Leone, 1994; Leone & Ensley, 1986; but see also Lassiter, Apple, & Slaw, 1996; Lassiter & Apple, 1998).

Another plausible explanation for the lack of support in terms of moderating effects of need for cognition on attitude polarization may be that our Need for Cognition Scale was invalid within this study. In this study, our scores on the Need for Cognition Scale were unusually skewed with many more individuals showing scores indicative of high need for cognition. There are several factors that may be related to this skewed set of scores. First, there are several psychology classes at the University of North Florida in which the Need for Cognition Scale is distributed and analyzed. Students are allowed to take this scale and then analyze their results to see if they are high or low in need for cognition. It is possible that these students recognized that high need for cognition was a more socially desirable trait and, therefore, they answered the Need for Cognition Scale within our research in a socially desirable manner. Although there is a possibility of contamination of results of the Need for Cognition Scale, it is not so plausible that this contamination occurred in our study. Our sample for this experiment came from many different students from many different psychology classes, therefore it does not seem plausible that a majority of our sample had been exposed to the Need for Cognition Scale prior to this experiment.

Limitations of this Study.

One limiting factor in this study was an issue of self-report when measuring participants' attitude change. We did not actually observe changes in behavior when measuring attitude change. In our study, we simply asked participants to report any changes in their feelings (i.e., attitudes). Other researchers have indicated that perhaps self-report measures may not be as valid in assessing attitude change as other evaluation methods such as direct assessment (e.g., Miller, McHoskey, Bane, & Dowd, 1993; McHoskey, 1995).

Another limiting factor in this study was that there was no direct assessment of thought processing. In other words, we were not able to assess whether individuals were actually engaging in thought about groups of people during those individuals' opportunity for thought. Several researchers have asked participant to write down their beliefs (i.e., thought listing) after an opportunity for thought and have found attitude polarization effects (e.g., Leone, 1989, 1994; Leone et al., 1991). In our study, however, we did not ask our participants to list their beliefs after their opportunity for thought. Therefore, we were unable to measure whether or not our participants were actually thinking about the groups of people we asked them to think about.

Another limiting factor in this study was there was no direct assessment of individuals' schemas about groups of freedom fighters or rebel insurgents. In other words, we were not able to assess whether individuals were able to "tune in" schemas about groups of freedom fighters or rebel insurgents. Other researchers have asked participants to write down their impressions of the attitude object (i.e., person, place, or thing) that those participants were thinking about and were then able to assess whether those individuals had well-developed or less-developed schemas about that attitude object (e.g., Tesser & Danheiser, 1978). In our study, however, we did not ask our participants to list their impressions of groups of freedom fighters or rebel insurgents. Therefore, we were unable to measure whether or not our participants had well-developed or less-developed schemas about groups of freedom fighters or rebel insurgents.

Another limiting factor within this study was a likelihood of media effects (i.e., news coverage of War on Terror) influencing our participants' thoughts. In our study, we researched attitude change and perceptions of groups. In particular, we researched individuals' attitudes toward groups of freedom fighters and rebel insurgents. This study took place after September 11, 2001

and during the War on Terror. Therefore, it is quite probable that individuals' attitudes toward groups of freedom fighters and rebel insurgents were influenced in part by news media exposure. If participants were influenced by media effects, then it is possible that those participants would have different attitudes about groups of freedom fighters and rebel insurgents depending on the amount and type of news coverage of the War on Terror those participants had viewed. Other researchers have found that individuals' attitudes toward attitude objects were influenced by exposure to media (e.g., Garramone, Atkin, Pinkleton, & Cole, 1990; Malamuth & Check, 1981).

Future Directions.

There are many implications for future research that have arisen as a result of our research on attitude change and perception of groups. In our study, we have explored only a small portion of self-generated attitude change as it pertained to participants' attitudes toward groups of people. Additionally, we researched moderating effects of need for cognition on participants' attitudes toward groups of people. There are, however, some additional areas related to self-generated attitude change that could be explored further in later research including comparisons of in-group bias and out-group bias, comparisons of differences in schema complexity between groups (e.g., freedom fighters) and individuals (e.g., a freedom fighter), incorporation of thought listing procedure into methodology, and study of different personality variables.

Our first possibility for future research is in areas of in-group versus out-group bias differences. In our study, we looked at individuals' attitudes toward groups of freedom fighters and rebel insurgents. Most, if not all, individuals involved in our research would most likely not consider freedom fighters (e.g., American soldiers) or rebel insurgents (e.g., Al Qaeda) to be members of their in-group. Researchers have shown that individuals' attitude and opinions toward other groups of people can be influenced by those individuals' in-group/out-group bias (e.g., Downing & Monaco, 1986; Lee & Ottati, 2002). However, if we were to include in our study evaluations of attitudes toward groups that participants could consider as in-groups (e.g., Republicans vs. Democrats) as well as groups that participants could consider as out-groups (e.g., freedom fighters vs. rebel insurgents), then perhaps we could compare those two sets of groups to see if there is a difference in how individuals' form their attitudes about those groups.

A second possibility for future research is in areas of effects of schema complexity on attitude change. In our study, we had participants attempt to "tune in" schemas about groups of freedom fighter and rebel insurgents. Researchers have shown that most individuals have better developed schemas about individuals than they have about groups of individuals (Tesser & Leone, 1977). If we were to include in our study an evaluation of both groups of people (e.g., rebel insurgents) and individuals (e.g., a rebel insurgent), then we may see that self-generated attitude change does depend on whether participants think about an individual or a group of individuals.

A third possibility for future research involves expanding our thought portion of our experiment in future research. In our study, we asked participants to think about either a group of freedom fighters or a group of rebel insurgents for periods of 45 or 90 seconds. However, we did not include a manipulation check to see whether or not those individuals were able to generate thoughts about those groups. Several researchers have asked participant to write down their beliefs (i.e., thought listing) after an opportunity for thought and have found attitude polarization effects (e.g., Leone, 1989, 1994; Leone et al., 1991). If we were to include a thought listing manipulation check in our future studies, then we may see variations in number of beliefs individuals' are able to generate about freedom fighter and rebel insurgent groups. Using this thought listing manipulation, we may be able to assess how individuals' abilities to generate beliefs about a certain

group (i.e., the number of thoughts they list) may influence their attitudes about that group.

Our final possibility for future research involves expanding our research on personality variables and their moderating effects on attitude change. In our study, we had participants complete the Need for Cognition Scale so that we could determine whether individual difference in need for cognition influenced attitude change. Even though we did not find support for the moderating effects of need for cognition on attitude change in this particular study, there are many other personality variables (e.g., objectivism or dogmatism) that, if we incorporate them into future studies, may show moderating effects on attitude change. Other researchers have found differences in self-generated attitude change to be moderated by individual differences in objectivism (e.g., Leone, 1996) and dogmatism (e.g., Leone, 1989).

Summary

Although the results of this current study did not turn out as we had expected, it is still important that researchers continue to look at self-generated attitude change because it is a concept that applies to many real world issues. There are real world applications of self-generated attitude change which can be used for reduction of fears (e.g., Leone & Aronow, 1992; Leone & Baldwin, 1983), reduction of phobias (e.g., Leone, 1984; Leone et al., 1983; Rothbaum, Hodges, Kooper, Opdyke, Williford, & North, 1995), and reduction of biased attitudes (e.g., Hall, Varca, & Fisher, 1985; Munro & Ditto, 1997). Self-generated attitude change applies to all three of these areas because as individuals think about certain objects (e.g., snakes, heights, or terrorists), they may begin to feel more afraid, more phobic, and more biased then they felt originally.

For example, in the months following September 11th, we saw continuous news coverage of these terrorist attacks and resulting loss of life. It would be very easy for individuals to begin to polarize their attitude toward terrorists because of this media influence. According to the Council of American-Islamic Relations and the U.S. Commission on Civil Rights, anti-Arab American sentiment rose markedly following the attacks on September 11, 2001 (Hohman, 2002). Having extreme attitudes about September 11th may allow individuals to act out in a biased manner toward Middle Eastern individuals. By understanding certain mechanisms (e.g., self-generated attitude change) that underlie these feelings of fear, phobia, and bias, psychologists can develop real world applications to assist in the reduction of those extreme feelings.

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Dedications

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