

2007

# Self-Generated Attitude Change and Need for Cognition: Does a Change in One Attitude Affect Other Attitudes?

Tatiana Melnik  
*University of North Florida*

Follow this and additional works at: [http://digitalcommons.unf.edu/ojii\\_volumes](http://digitalcommons.unf.edu/ojii_volumes)

 Part of the [Social and Behavioral Sciences Commons](#)

---

## Suggested Citation

Melnik, Tatiana, "Self-Generated Attitude Change and Need for Cognition: Does a Change in One Attitude Affect Other Attitudes?" (2007). *All Volumes (2001-2008)*. 33.  
[http://digitalcommons.unf.edu/ojii\\_volumes/33](http://digitalcommons.unf.edu/ojii_volumes/33)

This Article is brought to you for free and open access by the The Osprey Journal of Ideas and Inquiry at UNF Digital Commons. It has been accepted for inclusion in All Volumes (2001-2008) by an authorized administrator of UNF Digital Commons. For more information, please contact [Digital Projects](#).

© 2007 All Rights Reserved

# **Self-Generated Attitude Change and Need for Cognition: Does a Change in One Attitude Affect Other Attitudes?**

Tatiana Melnik

Faculty Sponsor: Dr. Christopher Leone,  
Professor of Psychology

Picture yourself giving a speech to an audience of one hundred people. While you speak, every person boos and makes hostile comments. You have no support. Would you have the strength to persevere against such adversity?

On January 16<sup>th</sup>, 2004, Pakistani President Pervez Musharraf demonstrated such strength. For about forty minutes, he was booed and heckled while he tried to update the Parliament on the status of Pakistan's anti-terrorism movement. His critics primarily booed him for supporting the United States' War on Terror. This incident demonstrates that people all over the world have either extremely negative views or extremely positive views of the United States (Bidwai, 2003; Rohde, 2002; Ross, 2003). Some people do not simply disagree with the United States rather they despise to an extreme level those people who agree with the United States (Linville & Edward, 1980; Meindl & Lerner, 1984). Two assassination attempts on President Musharraf presumably demonstrate that people despised him because of his positive feelings toward the United States.

Why and how do people become so extreme that they would kill a person who disagrees with them? One explanation for this extremism is the effect of thought on a person's attitudes. If people believe Arabs have less right to the Holy Land than do Israelis, then these people might have a moderately negative view of Arabs. Examining the actions of others (e.g., Arabs)

and thinking about a situation (e.g., suicide bombings) can cause people with initially moderate negative views to hold extreme negative views (i.e., polarize; Tesser, 1978). Merely by thinking, people's views about Arab attacks on Jews may become more extreme because the attacks (i.e., negative behaviors) reinforce people's initially negative views. The amount of negative examples people have to consider influences the justification these people have for their negative attitudes. Consequently, in many instances after thinking, extremists feel rightly justified in their attitudes and beliefs.

Psychologist Abraham Tesser (1978) termed the aforementioned phenomenon as self-generated attitude change. People's attitudes polarize when given time to think (see Tesser, 1978, for a review). That is, if people's original attitudes are positive, then after thinking about the object of their attitudes, people's attitudes will become more positive. If people's original attitudes are negative, then after thinking about the object of their attitudes, people's attitudes will become more negative. The longer people think about an issue, the more extreme their attitudes may become (Tesser & Conlee, 1975).

## *Thought, Beliefs, and Feelings*

Thought is a fluid process that helps people change the way they mentally see a person, object, event, or issue (Tesser, 1978). When people think, they change in a distinct way what they believe. During thought, people reconstruct their beliefs about a person, object, event, or issue to make beliefs consistent about that same person, object, event, or issue (Tesser, 1978; Tesser & Cowan, 1977). During reconstruction, when people think about the object of their attitude (e.g., person, event, or issue) people create new beliefs, reinterpret vague information, and reject questionable information. Thus, through the reconstruction process, people tend to make their beliefs consistent with other beliefs (Tesser, 1978; Tesser, Martin, & Mendolia, 1995). Individuals, for example, may have moderately negative beliefs about

Palestinians. Thinking about negative behaviors attributed to Palestinians (e.g., suicide bombings) may lead these individuals to hold views that become more extreme about all Arabs rather than just Palestinians.

What people think tends to influence not only what they believe but also what they feel (McGuire, 1969). That is, what people feel about a person, object, event, or issue depends in part on what they believe about that same person, object, event, or issue. If, for example, people do not agree with violent attacks on the Holy Land and they generally attribute those attacks to Arabs (i.e., belief), then they will come to dislike Arabs (i.e., affect).

In sum, through thinking, people make their subsequent beliefs consistent with their original beliefs. People’s beliefs influence their feelings. Consequently, people’s thoughts make their beliefs more consistent (i.e., less ambivalent), which in turn results in their feelings being more consistent (i.e., less conflicting). Basically, people’s thoughts lead to their attitudes polarizing.

*Schemas*

People use their schemas or “naïve [theories] of some stimulus domain” to think about a person, object, event, or issue (see Table 1 for an example; Tesser, 1978, p. 290). As people use schemas, people’s beliefs become consistent within their schemas. When people use schemas during thought, people find it easier than when not using schemas during thought to focus on relevant stimuli, recall relevant information, infer absent information, interpret relevant information and discount questionable information (Tesser, 1978).

Table 1

*Example of a possible schema about an Arab person*

Stimulus	Schema
Arab person	dark skinned
	dark hair
	speaks with an accent
	robes
	kaffiyeh (Arab headdress)
	business owner
	Ali Baba
	criminal
	bombings in Israel
	Muslim
	September 11 <sup>th</sup>
	terrorism
	unfriendly people
	don’t like those that are different

*Relevant stimuli.* People use schemas to provide a direction of focus for thinking about relevant stimuli (Tesser, 1978). Specifically, when people use well-developed schemas, people focus their senses (e.g., vision, hearing, etc.) on relevant stimuli (Tesser, 1978). Tesser and Danheiser (1978) found that when participants were informed they would be cooperating with their partner, participants’ schemas of a cooperative relationship helped them focus on positive attributes about their partner. When

participants were informed they would be competing with their partner, participants' schemas of a competitive relationship helped them focus on negative attributes about their partner.

People tend to notice physical attributes associated with their well-developed schema about a person, object, event, or issue. If, for example, people have a well-developed schema for suicide bombers in Israel, certain physical characteristics would get their attention. People might notice skin color, hair texture, the sound of a person's voice, the language a person speaks, or the clothing a person wears.

*Recall relevant information.* People's schemas help them recall relevant information about a person, object, event, or issue (Tesser, 1978). When people try to recall relevant information, people's schemas provide rules for how to think about a person, object, event, or issue. That is, people tend to recall behavior and information consistent with their schema rather than behavior and information inconsistent with their schema (Tesser, 1978). When provided with a description of a particular person, such as a job applicant for a salesman position, participants recall information they know about salesmen (Clary, Tesser, & Downing, 1978). Participants rated applicants that fit into their schema of a salesman higher than those applicants that did not fit into their schema of a salesman. Following the previous example (i.e., suicide bomber), if people focus on physical characteristics relevant to a certain schema, people will recall information (e.g., Muslim) they have about those who commit suicide bombings.

*Infer Absent information.* People with well-developed schemas about a person, object, event, or issue are better able than people with less-developed schemas to generate beliefs consistent with their schema (Leone & Ensley, 1985; Tesser & Leone, 1977). Therefore, when there are holes (i.e., deficits) in people's information, people use schemas to help them fill in any missing information in their beliefs (Tesser, 1978). People, for example, might hear on a news

broadcast that a person committed a terrorist act. However, a newscaster may not provide the terrorist's nationality. People who have a well-developed schema about Arabs being terrorists would assume that the terrorist in the news broadcast is an Arab.

People can also infer absent information through employing substitution. Rumelhart and Ortony (1976) found that schemas could include both lower and higher levels where lower levels have more details than do higher levels. Substitute information can come from a lower level within an accessed higher level schema. However, people can also use an activated higher level schema to respond without giving all lower level details. If, for example, people infer that a person is an Arab, they do not need to know how they made such an inference. All people need to know is their conclusion: that person is an Arab.

*Interpret information.* During the interpretation process, people give meaning to events. That is, people decide what information means to them and how it relates to their schema. If the information is inconsistent with an established schema, people often reinterpret the information making it consistent with an established schema (Tesser & Cowan, 1977). When asked to evaluate ambiguous adjectives among sets of unambiguous adjectives for the likeability or dislikeability of an individual, participants reinterpreted ambiguous adjectives to make them consistent with unambiguous adjectives (Tesser & Cowan, 1977). If all unambiguous adjectives characterized a likeable person, participants reinterpreted ambiguous adjectives to make them consistent with the likeable adjectives. If all unambiguous adjectives represent a dislikeable person, participants reinterpreted ambiguous adjectives to make them consistent with the dislikeable adjectives. When thinking about a person who is an Arab, people will attribute to that person behaviors and attitudes they believe Arabs exhibit. If people believe Arabs are unfriendly people, yet they see an Arab being friendly to another person, people would reinterpret the positive behavior to be

consistent with their unfriendly Arab schema. Therefore, people might conclude that the witnessed positive behavior was only an attempt to appear to be a good person.

*Discount questionable information.*

People use schemas while performing several cognitive processes such as understanding, remembering, and thinking (Tesser, 1978). During these cognitive processes, people tend to discount questionable information (Lord, Ross, & Lepper, 1979). When participants interviewed other people to determine if interviewees were introverted (i.e., shy) or extroverted (i.e., outgoing), participants tended to ask questions leading in the direction of their hypothesis about the person being an introvert or extrovert (Fazio, Effrein, & Falender, 1981; Snyder & Swann, 1978). In addition, participants asked questions about their introverted behavior tended to behave in a more introverted manner after being interviewed than they did before being interviewed. Participants asked questions about their extroverted behavior tended to behave in a more extroverted manner after being interviewed than they did before being interviewed (Fazio et al., 1981). Asking leading questions forced interviewees to remember and think about times they behaved in an introverted or extroverted manner and thus exhibit such behavior.

When people use a developed schema, the more they think about some object or event, the more people polarize their feelings. Sadler and Tesser (1973) tested this notion by having participants describe themselves to one another. They found that when partners (a recording made by the researcher) complimented participants, participants given an opportunity for thought evaluated their partners more positively as compared to participants who were distracted. In numerous experiments (e.g., Leone, 1989, 1994; Leone & Ensley, 1985), researchers found that attitudes of participants given time to think about a person, object, event, or issue, became more polarized and more consistent with existing schemas than attitudes of participants not given time to think.

*Moderating Influences*

In order for attitudes to polarize, people must think (i.e., engage their schema) (Tesser, 1978). Not all forms of thought, however, are the same (Spiro, 1975). People who engage in a form of thought may or may not experience attitude polarization. In general, beliefs tend to be evaluatively consistent within an existing schema (Tesser, 1978). However, process and reality constraints can limit or reverse attitude polarization (Tesser, 1976; 1978; Tesser et al., 1995). People utilize process constraints when examining the origin of a belief for unrealistic or faulty support (e.g., Leone & Aronow, 1992; Tesser, Leone, & Clary, 1978). This identification of the root of a belief is a process constraint.

Through close examination of their beliefs, people could determine that the root of their beliefs is faulty or unrealistic because the root does not stand up to scrutiny. People could also realize that they made a leap of logic and therefore have no logical basis for their beliefs (Leone & Aronow, 1992; Tesser et al., 1978). If people determine a belief is unrealistic or faulty and cannot be supported, people have no choice but to dismiss or re-examine their beliefs. Thus, because people would no longer have a valid belief on which to base their attitudes, peoples' attitudes could not polarize (see also Leone & Baldwin, 1983; Leone, Minor, & Baltimore, 1986). Individuals believing Arabs are bad, for example, can be asked to examine why they hold such a belief. During examination, individuals may review reasons for their beliefs. However, individuals may have only one reason: attacks on the Holy Land. Upon further examination, those individuals examining their beliefs may realize that Israelis also commit attacks on the Holy Land. Individuals realize that if they believe Arabs are bad, they must also believe Israelis are bad.

When people utilize reality constraints, they focus on factual information or verifiable attributes of a person, object, event, or issue (Tesser, 1978; Tesser et al., 1995). People test their beliefs against an

actual person, object, event, or issue to ensure that what they believe is accurate or factual (Festinger, 1954). When people become aware of inconsistencies between their beliefs about a person, object, event, or issue and reality (i.e., factual information or a verifiable attribute), these people will have no choice but to abandon such beliefs in order to appear reasonable and rational (Leone, Taylor, & Adams, 1991). As people abandon beliefs used to support polarized attitudes, people's polarized attitudes will weaken or depolarize (see also Leone & Baldwin, 1983; Leone et al., 1986).

Following a previous example, individuals believing Arabs are bad may witness an Arab exhibiting a positive behavior such as assisting an elderly woman crossing a street. The witnessed positive behavior may be a reality constraint on the extreme beliefs of individuals believing Arabs are bad. Individuals' reality constraints, in this case helping an elderly person, will force these individuals to acknowledge that their extreme beliefs (e.g., Arabs are bad) are inconsistent with reality. Through addressing such inconsistencies between reality and their beliefs, individuals will be forced to abandon their extreme views about the Arab they witnessed exhibiting a positive behavior and possibly abandon their extreme views about all Arabs.

### *Individual Differences*

Individual differences in thinking style are related to whether or not people's thinking leads to their attitudes polarizing. Individuals with a verbal cognitive style (i.e., they think and learn using words) will react to process constraints and re-adjust their beliefs because finding the origin of a belief requires thought through words (Leone & Aronow, 1992). Individuals with a visual cognitive style (i.e., they think and learn using pictures) will be less likely to react to process constraints and therefore be less likely to re-adjust their beliefs because finding the origin of a belief requires thought through words (Leone & Aronow, 1992). When given process constraints, individuals with a visual

cognitive style will be more likely than individuals with a verbal cognitive style to polarize their attitudes, because visual individuals are less able to think in the verbal style required to reanalyze and reconsider beliefs.

The extent to which an individual is dogmatic also influences attitude polarization. Dogmatism refers to the way people think about their world (Rokeach, 1954, 1960). People who are dogmatic compartmentalize beliefs and feelings about a person, object, event, or issue (Franklin & Carr, 1971; Zagana & Zurcher, 1965). Dogmatic people could have many different beliefs about a person, object, event, or issue but would never integrate inconsistent information (Hunt & Miller, 1968; Donehew, Parker & McDermott, 1972). People who are non-dogmatic integrate their beliefs and feelings about a person, object, event, or issue (Franklin & Carr, 1971; Zagana & Zurcher, 1965). Non-dogmatic people could have many different beliefs about a person, object, event, or issue and would integrate inconsistent information (Hunt & Miller, 1968; Donehew, Parker & McDermott, 1972). People that do not like Arabs, for example, could work closely with Arabs and have a positive relationship. Despite a positive working relationship, dogmatic people would maintain their dislike of Arabs because dogmatic people would not integrate a positive working relationship with their negative view of Arabs. Conversely, non-dogmatic people may discount their dislike of Arabs because non-dogmatic people would reassess their negative view of Arabs and integrate their experience of a positive working relationship.

Dogmatic people are more likely than non-dogmatic people to hold extreme views (Leone, 1989). Dogmatic people compartmentalize their beliefs and are therefore likely to hold inconsistent beliefs about a person, object, event, or issue. During thought, dogmatic people would not integrate inconsistent information to challenge other beliefs. Due to the thinking style of dogmatic people, they are likely to experience thought-

induced attitude polarization (Leone, 1989). Non-dogmatic people have an integrated set of beliefs and thus would analyze and reconsider all aspects of a person, object, event, or issue. During thought, non-dogmatic people are able to recognize that they hold inconsistent beliefs. Due to the thinking style of non-dogmatic people, they are not likely to experience much thought-induced attitude polarization (Leone, 1989).

Another individual difference associated with thought-induced attitude change is a person's need for cognition. Researchers use the Need for Cognition Scale to measure individual differences in the tendency to seek out and enjoy effortful cognitive activities (Cacioppo & Petty, 1982; Cacioppo, Petty, Feinstein, & Jarvis, 1996). High need for cognition individuals like to think about a variety of issues (including social, political, and international). Low need for cognition individuals do not like to think about such issues. High need for cognition individuals are seen as "chronic cognizers," whereas low need for cognition individuals are seen as "cognitive misers" (Cacioppo et al., 1996, p. 247). High need for cognition individuals generally enjoy thinking even when not necessary. High need for cognition individuals, for example, would solve challenging puzzles for fun. Low need for cognition individuals engage in effortful thought only when necessary. Low need for cognition individuals, for example, would solve challenging puzzles only if required. The effort of high need for cognition individuals and the lack of effort of low need for cognition individuals does not, however, reflect their level of intelligence (see Cacioppo et al., 1996, for a review).

As opposed to low need for cognition individuals, high need for cognition individuals tend to be more knowledgeable about a variety of social issues (see Cacioppo et al., 1996, for a review). Compared to low need for cognition individuals, high need for cognition individuals tend to analyze their beliefs and consider both sides of an issue (i.e., both pros and cons) and thus formulate complex schemas (Fletcher, Danilovics,

Fernandez, Peterson, & Reeder, 1986). Due to their analysis and reanalysis, high need for cognition individuals experience more difficulty than do low need for cognition individuals in reaching a conclusive decision about an issue (Haugtvedt & Petty, 1992; Priester & Petty, 1995). Also, if high need for cognition individuals perceive a bias, they are more likely than low need for cognition individuals to make a cognitive effort to compensate for their bias (D'Agostino & Fincher-Kiefer, 1992; Petty & Jarvis, 1996; Petty & Wegener, 1993).

Unlike low need for cognition individuals, high need for cognition individuals also analyze arguments presented by others (Smith & Petty, 1996). Due to their analysis, high need for cognition individuals are less likely than low need for cognition individuals to change their attitude immediately after a persuasive argument (see Cacioppo et al., 1996, for a review). During their analysis, high need for cognition individuals employ their complex schemas to develop counter arguments. After full consideration (which may take minutes, hours, days or weeks), high need for cognition individuals will make a decision about the argument. If high need for cognition individuals believe a speaker presented a strong argument, they will change their attitude. High need for cognition individuals will not be persuaded if they believe a speaker presented a weak argument and they will dismiss a speaker's argument because the argument did not withstand scrutiny. In contrast, low need for cognition individuals do not employ their complex schemas to develop counter arguments. Low need for cognition individuals will make a decision about the argument quickly. If low need for cognition individuals were exposed to a speaker who presented a strong argument, they will change their attitude but not because they evaluated the argument. Low need for cognition individuals will not be persuaded if they believe a speaker presented a weak argument, however, because they do not exert the cognitive energy to fully consider the merits of the argument they will likely change

their attitude. Low need for cognition individuals are more easily influenced than high need for cognition individuals by superficial aspects such as the appearance of a message (e.g., a colorful commercial), person speaking (e.g., a celebrity or popularity), expertise of a speaker (e.g., doctor or layperson), or the number of arguments (e.g., five instead of two) presented (Cacioppo, Petty, & Kao, 1983; Cacioppo et al., 1996).

Situations such as high personal relevance do arise where both high and low need for cognition individuals pay close attention and carefully scrutinize information (Axsom, Yates, & Chaiken, 1987). There are also situations such as low personal relevance where both high and low need for cognition individuals conserve cognitive effort (Axsom et al., 1987). When a speaker's message is low in personal relevance, an audience's reaction during a presentation influences attitudes of participants low in need for cognition because low need for cognition individuals do not enjoy cognitive effort (Axsom et al., 1987). An audience's reaction does not influence attitudes of participants high in need for cognition as opposed to attitudes of participants low in need for cognition, because high need for cognition individuals enjoy cognitive effort. When a speaker's message is high in personal relevance, however, audience reaction does not affect participants low in need for cognition or participants high in need for cognition (Axsom et al., 1987). That is, when a situation is important, high and low need for cognition individuals are attentive.

People's need for cognition also affects attitude polarization (Leone, 1994; Leone & Ensley, 1986). Specifically, low need for cognition individuals, as compared to high need for cognition individuals, find less difficulty in generating consistent beliefs as the opportunity for thought increases (Leone, 1994; Leone & Ensley, 1986). As the generation of consistent beliefs increases so too does attitude polarization. When low need for cognition individuals analyze their beliefs, they discount inconsistent beliefs (Leone, 1994). Low need for cognition individuals do not access multiple schemas for analysis because these individuals likely do not have multiple schemas developed. If they do have multiple schemas, low need for cognition individuals do not want to exert the cognitive effort necessary to access them. When high need for cognition individuals analyze their beliefs, they add new information to their established beliefs. High need for cognition individuals will access multiple schemas for analysis. High need for cognition individuals typically have multiple schemas developed for a variety of issues. High need for cognition individuals will exert the cognitive effort necessary to access their schemas. Thus, high need for cognition individuals have a more difficult time than do low need for cognition individuals in generating consistent beliefs about some stimuli (Leone, 1994). Therefore, high need for cognition individuals are less susceptible than low need for cognition individuals to attitude polarization.

Table 2

*Summary of High Need for Cognition Individuals and Low Need for Cognition Individuals*

High Need for Cognition Individuals	Low Need for Cognition Individuals
Enjoy cognitive effort.	Do not like to exert cognitive effort.
More knowledgeable about a variety of social issues.	Less knowledgeable about a variety of social issues.
Have difficulty reaching a conclusive decision because they like to analyze their beliefs.	Do not have difficulty reaching a decision because they follow a readily available schema.
Likely to correct judgment bias.	Not likely to correct judgment bias.
Not likely to change their attitude <i>immediately</i> after a persuasive argument.	Likely to change their attitudes <i>immediately</i> after a persuasive argument.
When the argument is not important, <i>will</i> pay attention.	When the argument is not important, <i>will not</i> pay attention.
When the argument is important, <i>will</i> pay attention.	When the argument is important, <i>will</i> pay attention.
Low opportunity for thought: less susceptible to attitude polarization; less likely to depolarize.	Low opportunity for thought: susceptible to attitude polarization; not likely to depolarize.
High opportunity for thought: susceptible to some attitude polarization; likely to depolarization.	High opportunity for thought: susceptible attitude polarization; not likely to depolarize.

*Attitude Structure*

People derive a specific attitude about an issue from a broad attitude about the same or similar issue (Chaiken & Yates, 1985; Eagley & Chaiken, 1998). People who have a negative attitude about foreigners, for example, are more likely than people who have a positive attitude about foreigners to believe that foreigners are terrorists. People also tend to unknowingly structure their attitudes in a top-down hierarchy in which

general attitude (e.g., foreigners are bad) is closer to the top and a specific attitude (e.g., War on Terror) is closer to the bottom (Eagley & Chaiken, 1998). Attitudes at the top of a hierarchy are more readily available than attitudes at the bottom of a hierarchy (Eagley & Chaiken, 1998). People's general attitudes tend to lay a foundation for many other attitudes, beliefs, and values on related issues (see Table 3; Feather, 1996).

Table 3.

*Hierarchical attitude structure (top to bottom)*

General Value (e.g., foreigners are bad)

Intermediate (e.g., foreigners are terrorists)

Specific Attitude (e.g., War on Terror, against liberal policy on immigration, etc.)

Researchers also link attitudes to ideologies (Chaiken & Yates, 1985; Kinder & Sears, 1985). Ideologies include a wide variety of schemas in which these schemas are in a hierarchical structure. That is, an ideology (i.e., general attitude) is at the top and a schema (i.e., intermediate or specific attitude) is at the intermediate level or the bottom. Basically, ideologies are a set of beliefs about interrelated issues and schemas are a set of beliefs about one particular issue. Following the previous example about foreigners, people's attitude that foreigners are terrorists could be a schema, and this schema could be categorized under an ideology of foreigners are bad.

When people have such an attitude structure (i.e., specific attitudes derived from general attitudes), people find difficulty in changing a specific attitude (Eagley & Chaiken, 1998). Given a complex ideology and schema structure from which people derive values for multiple issues, people might have difficulty changing an attitude because such a process could require a great deal of effort. That is, people might need to analyze and reanalyze several specific attitudes to change one general attitude. Following figure one, people might need to analyze their attitudes and beliefs about issues one (i.e., foreigners are terrorists), two (i.e., foreigners can't be trusted) and three (i.e., conservative on immigration) to affect their attitude about a value (i.e., foreigners are bad).

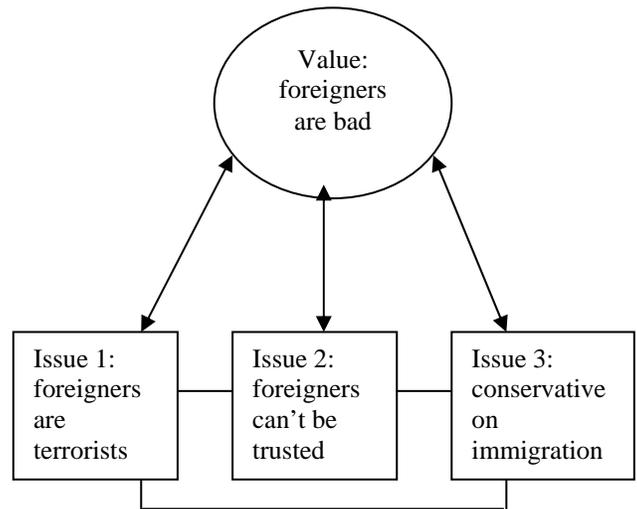
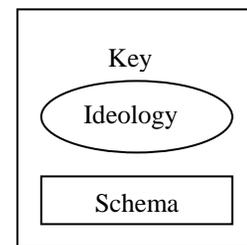


Figure 1. Ideology and Schema Relationship



Because low need for cognition individuals do not like to exert mental effort and tend to have less complex ideology and schema structures than do high need for cognition individuals (Cacioppo et al., 1996), low need for cognition individuals will be more likely than high need for cognition individuals to change an attitude about a specific issue (Leone, 1994). Also, because low need for cognition individuals have less complex ideology than do high need for cognition individuals, attitudes of low need for cognition individuals are weaker and will be less constant (i.e., predictable) over a period of time (Haugtvedt & Petty, 1992). Low need for cognition individuals' possess a small repository of information and arguments that provide a weak basis for their attitudes (Cacioppo et al., 1986) thereby allowing low need for cognition individuals to experience greater attitude polarization than high need for cognition individuals (see figure 2). High need for cognition individuals enjoy exerting mental effort and tend to have more complex ideology and schema structures than do low need for cognition individuals (Leone, 1994), and thus high need for cognition

individuals will be less likely than low need for cognition individuals to change an attitude about a specific issue. Also, because high need for cognition individuals have a more complex ideology than do low need for cognition individuals', high need for cognition individuals' attitudes are stronger and will be more constant (i.e., predictable) over a period of time (Cacioppo et al., 1996).

That is, high need for cognition individuals' possess a large repository of information and arguments that provide a strong basis for their developed attitudes (Cacioppo et al., 1986) thereby allowing high need for cognition individuals to be more resistant than low need for cognition individuals to attitude polarization (see figure 2).

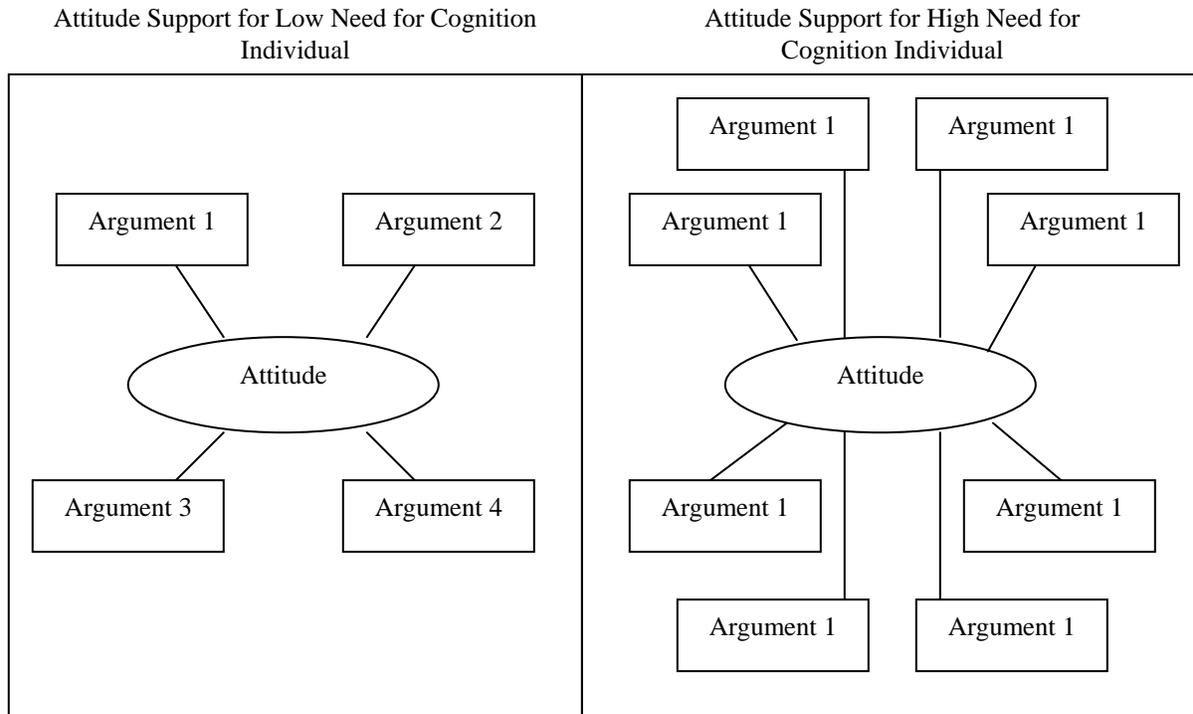


Figure 2. Low need for cognition versus high need for cognition attitude structure.

*Summary and Hypothesis*

When people use schemas, some beliefs become salient (i.e., prominent). In addition, people's schemas give people rules for thought. Through use of schemas, people's beliefs tend to become evaluatively consistent. Also, when people follow a schema salient cognitions can change. Thus, if people's beliefs become evaluatively consistent, then the more people think, the more their feelings (i.e., attitudes) should polarize.

Following previous theory and research (Leone, & Ensley, 1985; Tesser, 1978), it is predicted that the amount of time

given for thought (i.e., longer opportunity for thought) will influence the amount of attitude polarization. Additionally, individual differences in need for cognition affect the extent to which attitudes will polarize. It is predicted that when given a longer opportunity for thought, attitudes of low need for cognition individuals will polarize, whereas attitudes of high need for cognition individuals will depolarize. Finally, when considering theory on ideologies (Kinder & Sears, 1985), if the effect of opportunity for thought is limited to the issue considered, then attitudes about all other issues, for both high and low need for cognition individuals,

will not polarize. If, however, the effects of opportunity for thought do generalize, it is predicted that attitudes of low need for cognition individuals will become extreme even about issues they did not specifically consider. It is predicted that attitudes of high need for cognition individuals will depolarize about issues they did not specifically consider.

## Method

### *Participants*

The experimenter recruited 153 university students using the Psychology Department participant pool. Participants volunteered for a study on “Individual Differences in Views on International and Athletic Issues.” Participants received extra-credit. Participation was voluntary as students could earn extra-credit by other means.

Participants were predominantly White, ( $n = 93$ ) enrolled in undergraduate psychology courses. The remainder of participants reported that their racial backgrounds were Asian ( $n = 15$ ), Black ( $n = 27$ ), Latino ( $n = 13$ ), or Other ( $n = 5$ ). Efforts were not made to recruit an equal number of female (123) and male (30) participants. Participants reported their ages in terms of age ranges: between 18 and 22, 22.2% ( $n = 34$ ); between 23 and 27, 4.6% ( $n = 7$ ); between 28 and 32, 3.9% ( $n = 6$ ); between 33 and 37, 7.2% ( $n = 11$ ); 38 and older. Participants’ ages were atypical of traditional university students because the university is a commuter school (i.e., most students live off campus) with an older, non-traditional population (Sears, 1996).

Several ( $n = 7$ ) participants did not respond to one statement on their questionnaire. Data from three participants were excluded because they left several statements unanswered. A female experimenter randomly assigned participants to an experimental condition before this study began. She obtained informed consent in writing from all participants and treated them in accordance with APA standards (American Psychological Association, 1992). At the end of the study, she debriefed every participant.

She obtained Institutional Review Board approval before collecting any data.

### *Procedure*

A female experimenter greeted individual participants as they entered a room and briefly explained the purpose of the experiment (i.e., to learn about individual differences in students’ attitudes on a variety of international and athletic issues). She informed participants that their responses are confidential. Then she advised participants that because participation was voluntary, they could withdraw from the study at any time without penalty. Participants had an opportunity to ask questions to ensure they were adequately informed. Participants then signed an informed consent form.

The first part of the procedure involved an interview similar to the procedure used by Leone (1989). A female experimenter showed participants a 15-point scale with endpoints labeled as *strongly agree* (+ 7), *neutral* (0), and *strongly disagree* (– 7). Intermediate points were also labeled; + 4 was labeled as *moderately agree* and – 4 was labeled as *moderately disagree*. She explained this scale to each participant. Then she provided an example of a statement (i.e., Alligators should be removed from ponds adjacent to houses) similar to statements participants would read. She then demonstrated to participants the manner in which to respond to a statement to indicate their attitude (e.g., + 7 if they strongly agreed or – 7 if they strongly disagreed). To ensure participants clearly understood how to use the scale to indicate their attitude, she provided another example (i.e., Every street should have a crossing guard to assist children) and asked participants to respond out loud with the number closest to their attitude. She then gave each participant the scale to use during the first part of the procedure and participants were given an opportunity to ask questions.

After providing an explanation of the scale, she presented seventy statements to participants: thirty-five statements about international issues and thirty-five statements about athletic issues. She presented

participants with one statement at a time. Statements about international issues were presented before statements about athletic issues. Each statement was typed on a 5" by 8" note card to allow for easy randomization of statement order within each category (i.e., international or athletic). Each note card contained one statement regarding an international issue (e.g., There should be stricter laws against international computer crime) or an athletic issue (e.g., College athletes should be paid). Participants had approximately 10 seconds to verbally respond to each statement. A written number on the back of each note card to allowed for easy recording of participant responses. She recorded participant responses on a coding sheet to which participants had no access and thus could not compare later responses to current responses.

Once participants responded to each statement, she informed them that she was especially interested in their thoughts about several issues in particular. Participants were then told they would be asked to think about several selected issues. She selected two statements concerning international issues to which participants responded with a moderately agree response (i.e., + 4) and two statements regarding international issues to which participants responded with a moderately disagree response (i.e., - 4). If a participant did not respond with a moderately agree or moderately disagree to any statements, then she selected the next closest response (i.e., +3 or -3). Once she selected four issues, she read out loud one of the four issues to each participant and allowed the participant to read the issue as well. Participants did not have access to the 15-point scale while they thought about the issues. Similar to Leone's (1989) experiment, she informed participants that

I just had you rate the issues based on how you currently feel. Now I would like you to gather your thoughts about several issues in particular. I will give you one issue at a time. Concentrate all your thoughts on the issue during the time I give you. You might want to think about

how you feel about the issue. You might want to think about important facts related to the issue. Or you might want to think about your own personal beliefs about the issue. Just think about the issue and continue to think about it until I tell you to stop. Please think about [the experimenter read out loud one of the issues previously selected] (p. 1245).

Before the experiment began, she randomly assigned participants to one of two opportunities for thought: to think about the issue for either 30 or 90 seconds (Leone, 1989). She counterbalanced the issue order (i.e., positive vs. negative) within opportunity for thought times (i.e., 30 or 90 seconds). However, the assigned time was used for every issue.

Once opportunity for thought ended, the experimenter told participants (Leone, 1989)

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 a period of time as this. Of course, you may or may not feel the same way about the issue. Using the scale in front of you, just indicate how you now feel about [the experimenter reiterated the issue] (p. 1245).

She showed participants the 15-point scale and recorded their responses on a coding sheet to which participants had no access. She repeated the above procedure for the three remaining statements.

To assess *issue-specific* attitude polarization, participant "pre-test" (i.e., before given opportunity for thought) responses are compared to participant "post-test" (i.e., after given opportunity for thought) responses for each of the four issues. If a participant's initial attitude strengthened, the response was assigned a score of "1" (e.g., if a participant's initial attitude changed from a + 4 to a + 6 or a - 4 to a - 7, then the response was assigned a "1"). If a participant's initial attitude weakened, the response was assigned a score of "-1" (e.g., if a participant's initial attitude

change from a + 4 to a + 2 or a - 4 to a - 1, then the response was assigned a "-1"). If a participant's attitude remained the same, the response was assigned a score of "0" (e.g., if a participant's attitude remains at + 4 or - 4, then the response was assigned a "0"). Once scores were assigned to each individual statement, the scores for all four issues were summed.

Once participants re-rated their attitude on the selected four issues, she told participants:

Now, I'd like you to take another look at all the statements. I will follow the same procedure as before. I will give you the note card and I would like you to once again respond out loud with the number closest to your attitude about the issue now. Go with your gut reaction. You might feel the same way or you might not. It is okay either way. Just go with your gut reaction.

As in the first portion of the experiment, she recorded participant's responses on a coding sheet to which participants had no access.

Two different methods were used to assess participants' *overall* attitude polarization. In the first method, participant's "pre-test" (i.e., before given opportunity for thought) response was compared to their "post-test" (i.e., after given opportunity for thought) response for *each* of the thirty issues. If a participant's initial attitude strengthened, the response was assigned a score of "1". If a participant's initial attitude weakened, the response was assigned a score of "-1". If a participant's attitude remained the same, the response was assigned a score of "0". Once a score was assigned to each individual statement, response scores for the international and athletic issues were summed separately.

In the second method, the focus was on the extremity of overall attitude polarization. For each "pre-test" and "post-test" statement for international and athletic issues, a score was derived through assessing the absolute value of each response. That is, if a participant's response to a statement was "+5", then the score for the statement was

"5". If a participant's response to a statement was "-5", then the score for the statement was "5". Once a score was assigned to each statement, response scores for the "pre-test" international issues, "pre-test" athletic issues, "post-test" international issues and "post-test" athletic issues were summed separately.

Following the completion of the interview, 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). Participants' evaluated each statement as being characteristic of themselves on a scale of 1 to 5 (i.e., 1: *extremely uncharacteristic*; 2: *somewhat uncharacteristic*; 3: *uncertain*; 4: *somewhat characteristic*; 5: *extremely characteristic*). Nine statements on the Need for Cognition Scale are positively worded (e.g., "I only think as hard as I have to") such that agreement is indicative of a low need for cognition; nine statements on the Need for Cognition Scale are negatively worded (e.g., "I usually end up deliberating about issues even when they do not affect me personally") such that agreement is indicative of a high need for cognition.

Responses to all individual statements were scored such that a higher score is indicative of a higher need for cognition. For statements where participants left an item unanswered, the mean for the response of the entire sample was used. Once scores were assigned to the individual responses, a total score for each participant was obtained via summation of scores for individual responses. High scores indicate a high need for cognition (i.e., participant likes to engage in effortful thought), whereas low scores indicate a low need for cognition (i.e., participant does not like to engage in effortful thought). A median split of the entire range of scores on the Need for Cognition Scale was used to categorize participants as high or low in the need for cognition.

Researchers found that Need for Cognition Scale scores are reliable. Many researchers found Cronbach's alphas ranging from .81 to .97 (e.g., Cacioppo, et al., 1984;

Peltier & Schibrowky, 1994; Sadowski, 1993; Sadowski & Gulgoz, 1992b; Spotts, 1994). In this study, a Cronbach's alpha of  $\alpha = .89$  was obtained for scores on the Need for Cognition Scale. Researchers also assessed test-retest reliability with for Need for Cognition Scale scores. Over a seven-week period, Sadowski and Gulgoz (1992) found a test-retest correlation of  $.88$  ( $p < .01$ ).

In addition, researchers found the Need for Cognition Scale scores to have discriminant validity. In measuring dogmatism, for example, researchers found only a weak negative correlation with the need for cognition scores ( $r = -.23$ ,  $p < .05$ , Cacioppo & Petty (1982), study 3 & 4). As expected, researchers also found the Need for Cognition Scale scores to be negatively, but weakly, related to intolerance of ambiguity ( $r = -.31$ , *ns*, Petty & Jarvis, 1996) and openness to new ideas (meta-analysis  $r_{ave} = -.34$ ,  $p < .01$ , Petty & Jarvis, 1996). Furthermore, researchers found that Need for Cognition Scale scores do not significantly relate to test anxiety ( $r = .02$ , *ns*, Cacioppo & Petty, 1982) and social desirability (meta-analysis  $r_{ave} = .14$ ,  $p < .01$ , Cacioppo & Petty, 1982; Petty & Jarvis, 1996).

Additionally, researchers found the Need for Cognition Scale scores to have convergent validity. As would be expected, researchers also found that Need for Cognition Scale scores positively relate to the generation of attributes for peoples behavior ( $r = .36$ ,  $p < .001$ , Fletcher, Danilovics, Fernandez, Peterson, & Redder, 1986;  $r = .51$ ,  $p < .01$ , Petty & Jarvis, 1996), the desire to think ( $r = .40$ ,  $p < .05$ , Venkatraman, Marlino, Kardes, & Sklar, 1990a), and the desire to evaluate ( $r = .35$ ,  $p < .05$ , Jarvis & Petty, 1996).

Participants' sex, age, and race were also assessed through a series of demographic questions. Participants were asked their sex. Response options included *male* and *female*. Participants were asked about their age. Response options included *18 – 22*, *23 – 27*, *28 – 32*, *33 – 37*, or *38 and older*. Participants were asked their race. Response options included *Asian*, *Black / African-American*,

*Caucasian / White*, *Latino / Hispanic*, or *Other*.

## Results

### *Overview of Design and Analysis*

This study was a 2 (low vs. high opportunity for thought) by 2 (low vs. high need for cognition) factorial design. The dependent variables of interest in this study were issue-specific attitude polarization and overall attitude polarization. Participant scores on issue-specific attitude polarization and overall attitude polarization were analyzed using a 2 (opportunity for thought) by 2 (need for cognition) analysis of variance (ANOVA).

### *Main Analyses*

*Issue-Specific Attitude Polarization.* It was hypothesized that the longer participants thought (i.e., high opportunity for thought) about a particular issue, the more their attitudes would become polarized on that issue. Additionally, it was hypothesized that people's need for cognition would be related to the extent to which people's attitudes would become polarized. That is, given a high opportunity for thought, low need for cognition people's attitudes would become polarized but high need for cognition people's attitudes would become depolarized. If these hypotheses were supported, a two-way interaction between opportunity for thought and need for cognition would be expected.

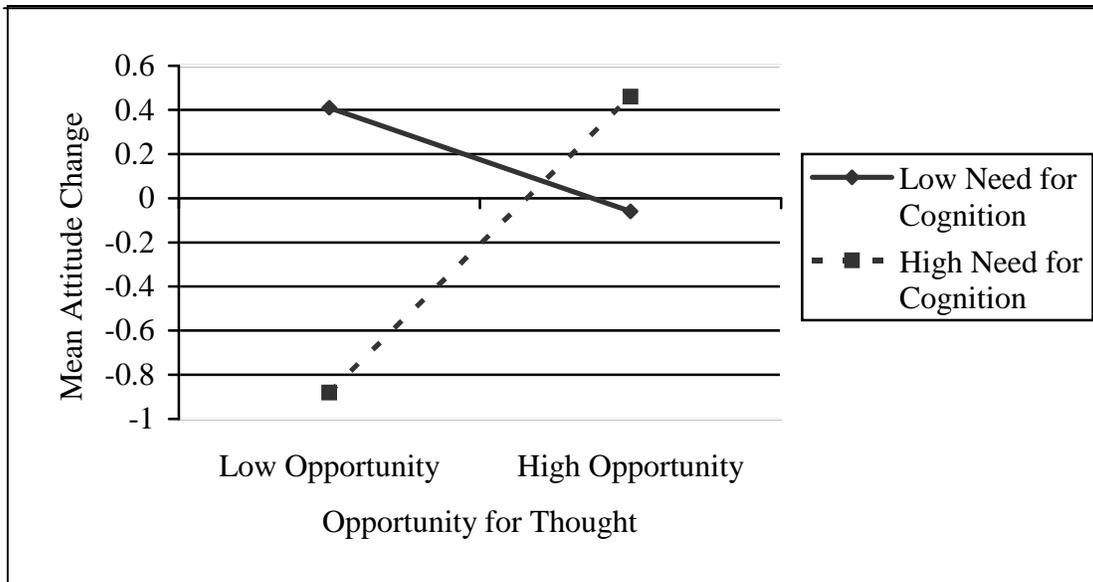
Contrary to these hypotheses, people with a longer opportunity for thought did not experience more attitude polarization ( $M = 0.22$ ,  $SD = 1.96$ ) than did people with a shorter opportunity for thought ( $M = -0.22$ ,  $SD = 1.89$ ). There was no statistically significant difference in attitude polarization between levels of opportunity for thought (i.e., 30 sec. vs. 90 sec.). That is, there was no main effect of opportunity for thought on issue-specific attitude polarization,  $F(1, 149) = 1.73$ ,  $p > .20$ .

As expected, whether or not people's attitudes became polarized depended on people's need for cognition and opportunity for thought about an issue. That is, there was

a statistically significant interaction between opportunity for thought and need for cognition on issue-specific attitude

polarization,  $F(1, 149) = 8.02, p < 0.01$ . People's attitude change, however, was not in the direction expected (see Figure 3).

Figure 3. Mean attitude change as a function of opportunity for thought and need for cognition.



Individuals low in need for cognition experienced more attitude polarization given a low opportunity for thought ( $M = 0.41, SD = 1.79$ ) than individuals low in need for cognition given a high opportunity for thought ( $M = -0.06, SD = 1.85$ ). Individuals high in need for cognition experienced more attitude polarization given a high opportunity for thought ( $M = 0.46, SD = 2.05$ ) than individuals high in need for cognition given a low opportunity for thought ( $M = -0.88, SD = 1.81$ ). In short, there was no empirical support for this hypothesis. That is, given a high opportunity for thought, low need for cognition people's attitudes did not become polarized and high need for cognition people's attitudes did not become depolarized.

*Overall Attitude Polarization.* If the effects of opportunity for thought are limited to the issue being considered (e.g., a specific international issue), then people's attitudes about related issues they did not specifically consider (e.g., all other international issues) should not become polarized. If people consider four international issues out of 35

international issues, for example, then people's attitudes about the remaining 31 international issues they did not specifically consider should not become polarized. If, however, the effects of opportunity for thought do generalize, then people's attitudes about related issues they did not specifically consider should also become polarized whereas their attitudes about non-related issues (e.g., athletic issues) should not be affected. If people consider four international issues out of 35 international issues and 35 athletic issues, for example, then people's attitudes about the remaining 31 international issues they did not specifically consider should become polarized whereas their attitudes about the 35 athletic issues should not be affected. Moreover, if people's attitudes about related issues polarize, then overall attitude polarization should be related in part to people's need for cognition. During high opportunity for thought, low need for cognition people should be more likely than high need for cognition people to experience more overall attitude polarization. In contrast, during low opportunity for thought, both low

and high need for cognition people should not experience overall attitude polarization.

If these hypotheses were supported, there should be a four-way interaction between opportunity for thought (low vs. high), need for cognition (low vs. high), type of issue (international vs. athletic), and time of assessment (pre-thought vs. post-thought). To evaluate these hypotheses, a 2 (low vs. high opportunity for thought) x 2 (low vs. high need for cognition) x 2 (international vs. athletic issues ratings) x 2 (pre-thought vs. post-thought ratings) ANOVA with repeated measures on the last two factors was conducted on participants' overall attitude polarization. Contrary to expectations, effects of opportunity for thought did not generalize more for low need for cognition people than for high need for cognition people. Additionally, effects of opportunity for thought did not generalize more for related issues than for non-related issues. In short, the four-way interaction between opportunity for thought, need for cognition, type of issue, and time of assessment did not occur as predicted,  $F < 1.00$ .

Although not predicted, there was a main effect for type of issue (i.e., international vs. athletic issues). In general, people experienced more attitude polarization about athletic issues ( $M = 317.08$ ,  $SD = 60.36$ ) than they experienced about international issues ( $M = 259.87$ ,  $SD = 59.98$ ),  $F(1, 149) = 228.60$ ,  $p < .01$ . There was also a main effect for time of assessment (i.e., pre-thought or post-thought). In general, people experienced more polarized attitudes post-thought ( $M = 291.12$ ,  $SD = 58.93$ ) than they did pre-thought ( $M = 285.84$ ,  $SD = 54.81$ ) regardless of the type of issue considered,  $F(1, 149) = 6.57$ ,  $p < .01$ . In short, people's attitudes were more polarized about athletic issues than international issues and people's attitudes were more polarized about both issues (athletic and international) post-thought.

### Secondary Analysis

After conducting the main analysis, a series of secondary analyses using (a) participant's self-reported athletic television viewing and (b) participant's self-reported news television viewing were conducted. Specifically, we conducted a series of chi-square analyses using participants' individual differences in need for cognition and responses to questions about television viewing. Participant responses to athletic viewing questions were assessed first. There was no relationship between participants' scores on the Need for Cognition Scale and how frequently participants reported watching athletics on television. High and low need for cognition individuals did not significantly differ in how frequently they watched athletics on television in general,  $\chi^2(3, N = 153) = 2.91$ ,  $p > .05$ . There was also no relationship between participants' scores on the Need for Cognition Scale and their response to how frequently they watched athletics on particular networks. That is, high and low need for cognition individuals did not significantly differ in how frequently they watched athletics on CBS, ABC, NBC, FOX, or TNT (see Table 4).

Table 4  
*Chi-Square Results for Frequency of Athletic Television Viewing*

News Station	Chi-square
CBS	$\chi^2 = 1.53, p > .05$
ABC	$\chi^2 = 4.02, p > .05$
NBC	$\chi^2 = 4.66, p > .05$
FOX	$\chi^2 = 5.21, p > .05$
TNT	$\chi^2 = 5.17, p > .05$

(Note: for all analyses,  $N = 153$ ).

There was, however, a significant relationship between participants' scores on the Need for Cognition Scale and their

response to how frequently they watched athletics on ESPN,  $\chi^2(2, N = 153) = 6.63, p < .05$ . When asked whether they watched ESPN, high need for cognition individuals responded 'yes' (41.38%) less frequently than did low need for cognition individuals (58.62%). High need for cognition individuals also responded 'no' (48.65%) less frequently than did low need for cognition individuals (51.35%). But high need for cognition individuals responded 'not applicable' (68.97%) more frequently than did low need for cognition individuals (31.03%). That is, high need for cognition individuals were less likely than low need for cognition individuals to watch athletics on ESPN.

There was also a significant relationship between participants' scores on the Need for Cognition Scale and participants overall athletic television station preference,  $\chi^2(4, N = 153) = 10.11, p < .05$ . Low need for cognition individuals (51.63%) preferred to watch CBS, ABC, and NBC more frequently than did high need for cognition individuals (42.86%). Low need for cognition individuals (72.22%) also preferred to watch FOX more frequently than did high need for cognition individuals (27.78%). High need for cognition individuals, however, preferred to watch TNT (88.89%) more frequently than did low need for cognition individuals (11.11%). High need for cognition individuals also preferred to watch ESPN (53.85%) more frequently than did low need for cognition individuals (46.15%). Finally, low need for cognition individuals selected the 'not applicable' option (53.33%) more frequently than did high need for cognition individuals (46.67%).

Participant responses to news viewing statements were also assessed. There was no relationship between participants' scores on the Need for Cognition Scale and participants' responses to how frequently they watched news on particular networks. That is, high and low need for cognition individuals did not significantly differ in how frequently they watched news on CBS, CNN, FOX, or PBS (see Table 5).

Table 5  
*Chi-square Results for Frequency of News Television Viewing*

News Station	Chi-square
CBS	$\chi^2 = 1.36, p > .05$
CNN	$\chi^2 = .04, p > .05$
FOX	$\chi^2 = 1.65, p > .05$
PBS	$\chi^2 = 1.79, p > .05$

(Note: for all analyses,  $N = 153$ )

There was, however, a significant relationship between participants' scores on the Need for Cognition Scale and their response to watching news on NBC,  $\chi^2(2, N = 153) = 8.06, p < .05$ . When asked whether they watched news on NBC, low need for cognition individuals responded 'yes' (58.72%) more frequently than did high need for cognition individuals (41.28%). High need for cognition individuals, however, responded 'no' (67.50%) more frequently than did low need for cognition individuals (32.50%). Both high and low need for cognition individuals responded 'not applicable' with the same frequency (50.0%). That is, low need for cognition individuals watched news on NBC more frequently than did high need for cognition individuals.

There was also a significant relationship between participants' scores on the Need for Cognition Scale and their response to watching news on ABC,  $\chi^2(2, N = 153) = 14.50, p < .01$ . When asked whether they watched news on ABC, low need for cognition individuals responded 'yes' (65.43%) or 'not applicable' (57.14%) more frequently than did high need for cognition individuals (34.57%, 42.86% respectively). High need for cognition individuals, however, responded 'no' (66.15%) more frequently than did low need for cognition individuals (33.85%). That is, low need for cognition individuals watched news on ABC more

frequently than did high need for cognition individuals.

Additionally, there was a significant relationship between participants' scores on the Need for Cognition Scale and how frequently participants watched news on television in general,  $\chi^2(4, N = 153) = 10.23, p < .05$ . High need for cognition individuals reported watching news 7 days a week (57.14%) more frequently than did low need for cognition individuals (42.86%). However, low need for cognition individuals reported watching news 5 days a week (58.82%) or 3 days a week (68.29%) more frequently than did high need for cognition individuals (41.18%, 31.71% respectively). High need for cognition individuals reported watching news 1 day a week (62.07%) or 'not applicable' (71.43%) more frequently than did low need for cognition individuals (37.93%, 28.57% respectively).

There was no significant relationship between participants' scores on the Need for Cognition Scale and participants overall news station preference,  $\chi^2(3, N = 153) = 4.88, p > .05$ . That is, low and high need for cognition individuals did not prefer to watch a particular news station (e.g., FOX) more or less than they preferred to watch a different news station (e.g., CNN).

## Discussion

People's thoughts affect their attitudes. Typically, given an opportunity for thought, people's attitudes polarize (Tesser, 1978; Tesser et al., 1995). Amount of opportunity for thought is related to the extent of people's attitude polarization (Tesser & Paulus, 1976). Individual differences, such as their need for cognition, are related to the amount of people's attitude polarization (Leone, 1989; 1994; 1996; Leone et al., 1991; Leone & Ensley, 1986).

The first purpose of the current research was to replicate previous research on self-generated attitude change. It was hypothesized that individuals given a longer opportunity for thought would experience

more attitude polarization than would individuals given a shorter opportunity for thought. Although several researchers previously replicated the self-generated attitude change phenomenon (e.g., Leone & Ensley, 1985; Tesser & Conlee, 1975; Tesser & Leone, 1977), the findings in this current study failed to support this phenomenon.

The second purpose of the current research was to replicate the relationship between people's need for cognition and self-generated attitude change. People's need for cognition is their tendency to engage in and enjoy effortful thought (Cacioppo & Petty, 1982; Cacioppo et al., 1996). It was hypothesized that given a longer opportunity for thought, attitudes of low need for cognition individuals would polarize whereas attitudes of high need for cognition individuals would depolarize. Although several researchers previously replicated this relationship between people's need for cognition and self-generated attitude change (e.g., Leone, 1994; Leone & Ensley, 1986), the findings in this current study failed to support this relationship.

The last purpose of the current research was to extend the research on self-generated attitude change to include ideologies. People's ideologies consist of a variety of attitudes about interrelated issues (Kinder & Sears, 1985). People's attitudes about athletic issues and international issues, for example, would be considered separate ideologies because athletic issues (e.g., steroid use in college athletics) and international issues (e.g., war on terrorism) are not typically interrelated. It was hypothesized that attitudes of low need for cognition individuals would polarize about attitude related issues they did not specifically consider. It was also hypothesized that attitudes of high need for cognition individuals would depolarize about attitude related issues they did not specifically consider. However, there was no empirical support in this study for low need for cognition people's attitude polarization for related issues they did not specifically consider. Similarly, there was no empirical

support in this study for high need for cognition people's attitude depolarization for related issues they did not specifically consider.

There was, however, an unexpected effect for issue type (i.e., international vs. athletic issues). Although people did not specifically think about athletic issues, people generally experienced more attitude polarization about athletic issues than they did about international issues. There was also an effect for time of assessment. Overall, people experienced more attitude polarization post-thought than they did pre-thought for both issues.

#### *Why did people's attitudes not polarize?*

One possible explanation for a lack of attitude polarization is a problem with opportunity for thought manipulation. In this study, participants received an opportunity to think for either 30 or 90 seconds. Recall that amount of opportunity for thought is related to the extent of people's attitude polarization. Perhaps participants needed more than 30 or 90 seconds to fully consider international issues. However, opportunity for thought was likely not a problem in the current study. Other researchers used similar amounts of opportunity for thought and replicated the self-generated attitude change process (e.g., Leone & Ensley, 1986; Tesser & Conlee, 1975).

Another possible explanation for a lack of attitude polarization is participants not receiving enough time to express their attitudes. Other researchers found that the more opportunity people have to express their attitudes, the more people's attitudes tend to polarize (e.g., Downing, Judd, & Brauer, 1992; Judd & Brauer, 1995). However, lack of opportunity for expression was likely not a problem in the current study. Participants received more opportunity to express attitudes about international issues than they did about athletic issues, and yet participant attitudes polarized about athletic issues while not polarizing about international issues.

Participants' completion of the Need for Cognition Scale could also be related to

their attitude polarization. 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). Participants' completion of the Need for Cognition Scale was not, however, likely to be related to their attitude polarization because participants completed the questionnaire 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 possible explanation for a lack of participant's attitude polarization specific to international issues is that participants did not feel that international issues were important to them. If people feel that an issue is important to them, they are often involved, active, and informed about that issue (e.g., Harton & Latane, 1997; Kaysen & Stake, 2001). If people do not feel that an issue is important to them, they are uninvolved, inactive, and uninformed (e.g., Harton & Latane, 1997; Kaysen & Stake, 2001). Involved and active people are more likely than uninvolved and inactive people to have polarized attitudes (e.g., Liberman & Chaiken, 1996; Liu & Latane, 1998; Plous, 1991; Smith, 1989). Additionally, informed people are more likely than uninformed people have polarized attitudes (e.g., Pomerantz, Chaiken, & Tordesillas, 1995). Participants in this study may have felt involved, active, and informed about athletic issues and uninvolved, inactive, and uninformed about international issues. Consistent with this reasoning, participants' attitudes about athletic issues became more polarized than did their attitudes about international issues.

If people feel uninvolved, inactive, and uninformed about international issues, people will likely lack a well-developed schema. Therefore, another possible explanation for people's attitudes not

polarizing in the current study is a lack of people's schemas about international issues. People's attitudes often depend on their knowledge about a person, object, event, or issue (McGuire, 1985). In order for people's attitudes to polarize, people must have a developed schema about the person, object, event, or issue in consideration (e.g., Leone & Ensley, 1985; Millar & Tesser, 1986; O'Keefe & Brady, 1980). During thought, people use their schemas to make their information evaluatively consistent (e.g., Chaiken & Yates, 1985; Liberman & Chaiken, 1991; O'Keefe & Brady, 1980). Recall that when people use schemas during thought, people find it easier than when not using schemas during thought to focus on relevant stimuli (e.g., Tesser & Danheiser, 1978), recall relevant information (e.g., Clary, Tesser, & Downing, 1978; Tesser & Cowan, 1975), infer absent information (e.g., Leone & Ensley, 1985), interpret relevant information (e.g., Tesser & Cowan, 1977), and discount questionable information (e.g., Leshowitz, DiCerbo, & Okun, 2002; Lord et al., 1979; Plous, 1991).

People use their well-developed schemas about an issue to focus on relevant stimuli. If people lack a well-developed schema about international issues when thinking about a specific international issue, people will not be able to focus on relevant information. If, for example, people think about suicide bombers in Israel and they cannot focus on relevant stimuli (e.g., information about Israel or suicide bombers), then people's attitudes will likely not polarize.

People use their well-developed schemas about an issue to recall relevant information about an issue. If people lack a well-developed schema about international issues when thinking about a specific international issue, people will not be able to recall relevant information about an international issue. If, for example, people think about suicide bombers in Israel and they cannot recall relevant information (e.g., physical characteristics of a suicide bomber), people's attitudes will likely not polarize.

People use their well-developed schemas about an issue to infer absent information about that issue. If people lack a well-developed schema about international issues when thinking about a specific international issue, people will not be able fill in any missing information in their beliefs about an international issue. If, for example, people think about suicide bombers in Israel and they cannot infer absent information (e.g., ethnicity of a suicide bomber), people's attitudes will likely not polarize.

People use their well-developed schemas about an issue to interpret relevant information about that issue. If people lack a well-developed schema about international issues when thinking about a specific international issue, people will not be able determine how the new information relates to their schema. If, for example, people think about suicide bombers in Israel and people cannot determine the relevance of the information to their established beliefs (e.g., people see Arabs exhibiting positive characteristics when people believe that Arabs lack positive characteristics), people's attitudes will likely not polarize.

People use their well-developed schemas about an issue to discount questionable information about that issue. If people lack a well-developed schema about international issues when thinking about a specific international issue, people will ignore questionable information. If, for example, people think about suicide bombers in Israel and people cannot determine and thus discount new information that is questionable (e.g., a Catholic rather than a Muslim commits a suicide bombing), people's attitudes will likely not polarize.

Although people did not experience overall attitude polarization about international issues, people did experience overall attitude polarization about athletic issues. Because people's attitudes polarized about athletic issues, people likely possessed a well-developed schema about athletic issues. Because people's attitudes did not polarize about international issues, people

likely lacked a well-developed schema about international issues.

An additional possible explanation for a lack of people's attitude polarization is a problem with methodology. Participants completed this study in several steps. First, participants expressed their attitudes about all issues, then participants thought about four specific issues, and finally participants expressed their attitudes about all issues. A primary difference between previous studies and this study, however, is the measurement of ideologies (cf. Leone, 1989; Leone & Ensley, 1986). To test people's ideologies, people expressed their attitudes about two types of issues (i.e., international and athletic) rather than only one type of issue as in previous studies. The addition of a second type of issue, however, likely did not affect the results because people experienced more attitude polarization about the second type of issue (i.e., athletic issue) than they experienced about the first type of issue (i.e., international issue).

Another possible issue with methodology is participants only reported their attitudes. That is, participant attitudes were not directly assessed. Self-reported measures may not be as valid in assessing participant attitudes as other evaluation methods such as direct assessment (e.g., Miller, McHoskey, Bane, & Dowd, 1993; McHoskey, 1995). Therefore, any participant self-reported attitude polarization may not generalize to participant's actual attitudes (e.g., Kuhn & Lao, 1996; Miller et al., 1993). Perhaps participant attitudes did polarize but participants did not perceive or could not verbally express this change. However, this was likely not the situation because other researchers used a similar method of assessment and found that participant attitudes did polarize (e.g., Leone, 1994; 1996; Leone & Ensley, 1986)

### *Unexpected Findings*

There was, however, an unexpected interaction between opportunity for thought and need for cognition for issue-specific attitude polarization. Individuals low in need

for cognition experienced more attitude polarization given a low opportunity for thought than did individuals low in need for cognition given a high opportunity for thought. Individuals high in need for cognition experienced more attitude polarization given a high opportunity for thought than did individuals high in need for cognition given a low opportunity for thought. That is, low need for cognition individuals' attitudes polarized given a low opportunity for thought while high need for cognition individuals' attitudes polarized given a high opportunity for thought.

Other researchers did find a relationship between people's attitude polarization and people's need for cognition (Leone, 1994; Leone & Ensley, 1986). That is, several researchers found that low need for cognition individual's attitudes polarized more given a high opportunity for thought than given a low opportunity for thought. High need for cognition individual's attitudes, however, depolarized given a high opportunity for thought than given a low opportunity for thought. Conversely, Lassiter, Apple, and Slaw (1996; see also Lassiter & Apple, 1998) found that when participants were not prompted to explicitly think about their attitudes about a particular issue, high need for cognition individual's attitudes polarized more than did low need for cognition individual's attitudes. When participants were prompted explicitly to think about their attitudes about a particular issue, low need for cognition individual's attitudes polarized more than did high need for cognition individual's attitudes. That is, when participants were prompted to think about their attitudes, Lassiter et al. (1996) replicated the findings of Leone and Ensley (1986).

The Leone and Ensley (1986) and Lassiter et al. (1996) studies do have several methodological differences. First, Leone and Ensley (1986) had a female participant individually interview each participant whereas Lassiter et al. (1996) used a computer to interview each participant. Although an experimenter did monitor participants in the Lassiter et al. (1996) study,

participants may not feel the same need to comply as they would during an individual interview. In other computer interview studies where participants received an opportunity to list their attitudes or believed they would discuss their attitudes with others, participant's attitudes did polarize (e.g., Harton & Latane, 1996; Liu & Latane, 1998). This methodological inconsistency may be the reason for the different results found by Leone and Ensley (1986) and by Lassiter et al. (1996).

Second, Leone and Ensley (1986) provided participants with the Need for Cognition Scale after participants received an opportunity to express their attitudes. Lassiter et al. (1996), however, provided participants with the Need for Cognition Scale before participants received an opportunity to express their attitudes. Providing participants with the Need for Cognition Scale before they received an opportunity to express their attitudes may have "primed" participants. Participants are primed when something a participant reads, does, or watches helps them recall a particular attitude or feeling (Smith, 1998). When participants recall one attitude or feeling, they may recall another related attitude or feeling (e.g., Raghbir & Johar, 1997). That is, participants may experience a spreading activation of attitudes or feelings (e.g., Judd, Downing, Drake, & Krosnick, 1991; Raghbir & Johar, 1997). When people are primed for a particular attitude or feeling, their behavior tends to reflect this primed attitude or feeling (e.g., Berkowitz & Alioto, 1973; Bushman & Anderson, 2002). A participant, for example, may be asked to watch an athletic event. A participant may be lead to believe that the athletic event is aggressive or non-aggressive. After viewing the event, participants lead to believe the event was aggressive behave more aggressively than do participants lead to believe the event was non-aggressive (e.g., Berkowitz and Alioto, 1973; Bushman & Anderson, 2002).

Because Lassiter et al. (1996) may have primed their participants, they may have produced atypical results. That is, when

Lassiter et al. (1996) presented participants with the Need for Cognition Scale before participants expressed their attitudes, both high and low need for cognition individuals though about themselves. Having this thought opportunity lead to participants making their self-concept salient and readily accessible for the next phase of the study. However, participants' self-concept and their responses may be affected by their need for cognition. High need for cognition individuals enjoy fully analyzing and considering all sides of an issue (Cacioppo et al., 1996). These individuals may believe that because high need for cognition individuals thoroughly analyze an issue, they hold strong beliefs. Low need for cognition individuals only analyze and consider all sides of an issue when they must (Cacioppo et al., 1996). These individuals may believe that because low need for cognition individuals do not thoroughly analyze an issue, they hold weak beliefs. If the above reasoning is correct, then, once primed, high need for cognition individuals would express more attenuated views than would low need for cognition individuals. But, both high and low need for cognition individuals would express such views only to be consistent with the primed self-concept and not necessarily with how they may generally process information.

Additionally, a detailed discussion of the Need for Cognition Scale in undergraduate social psychology courses as well as social psychology textbooks is progressively becoming a common practice. Because researchers find the Need for Cognition Scale to be reliable (e.g., Cacioppo et al., 1984; Sadowski, 1993; Sadowski & Gulgoz, 1992) and scores on the measure have discriminant validity (e.g., Cacioppo & Petty, 1982; Petty & Jarvis, 1996), professors often use this scale to engage their students. Professors request for students to complete the scale and then professors proceed to describe characteristics of low need for cognition individuals as well as high need for cognition individuals to their students. Through exposing students to the scale and describing the scale, professors may prime

students with respect to the students' need for cognition.

When students participate in studies, students may believe they know whether they are high or low in need for cognition. Consciously or unconsciously, participants may respond to statements in accordance to their belief. If, for example, students believe they are low in need for cognition, they may not even attempt to think about a particular statement. If, however, students believe they are high in need for cognition, they may attempt to think about a particular statement. That is, students may act in a manner consistent with their perceived level of cognition rather than with their actual level of cognition. Future research on self-generated attitude change should consider the affects of priming on need for cognition as related to self-generated attitude change.

### *Summary*

Although the results of the current research were not as expected, researchers should continue to study the phenomenon of self-generated attitude because of its real world applications. Self-generated attitude change can particularly be seen in people's attitudes after September 11<sup>th</sup>. As people thought about the attack on the United States and considered the Muslim attackers, people became more extreme in their views of all Muslims (Associated Press, 2005). People's extreme attitudes about Muslims may have eventually lead people to support the ousting of the Taliban in Afghanistan and the imprisonment of 'enemy combatants' in Guantanamo Bay (Jensen, 2002).

Psychologists can also use self-generated attitude change in practical applications such as reduction of fear (e.g., Leone & Aronow, 1992; Leone & Baldwin, 1983), phobias (e.g., Leone, 1984; Leone et al., 1983; Rothbaum, Hodges, Kooper, Opdyke, Williford, & North, 1995), and prejudicial attitudes (e.g., Hall, Varca, & Fisher, 1985; Munro & Ditto, 1997). These three phenomenon may involve the same process. As people think, they become more afraid, more phobic, or more prejudicial. By

understanding the self-generated attitude change phenomenon, psychologists can identify ways to help people reduce their fears, help people confront their phobias, and help people control their prejudicial attitudes.

People can also use self-generated attitude change in business, political fields, and college campuses. In understanding self-generated attitude change, marketing managers may better understand consumer purchase satisfaction (Smith, 1989) as well as how people react to advertising and movies (e.g., Garramone, Atkin, Pinkleton, & Cole, 1990; Malamuth, 1981), political strategists may better understand how people react to political arguments (e.g., Munro, Ditto, Lockhart, Fagerlin, Gready, & Peterson, 2002), and university administrators may understand how students handle controversial issues (e.g., Rohde, 1974). Attorneys may also use self-generated attitude change as well as need for cognition in jury selection. Prosecutors, for example, may seek out high need for cognition jurors because these jurors may be better able than are low need for cognition jurors to scrutinize a case. In sum, self-generated attitude change is a phenomenon that may be related to all professions (e.g., psychology, marketing, law) and thus must continue to be studied.

## References

- Chaiken, S., & Yates, S. (1985). Affective-cognitive consistency and thought-induced attitude polarization. *Journal of Personality & Social Psychology*, 49(6), 1470-1481.
- Clary, E. G., Tesser, A., & Downing, L. L. (1978). Influence of a salient schema on thought-induced cognitive change. *Personality & Social Psychology Bulletin*, 4(1), 39-43.
- Downing, J. W., Judd, C. M., & Brauer, M. (1992). Effects of repeated expressions on attitude extremity. *Journal of Personality & Social Psychology*, 63(1), 17-29.
- Garramone, G. M., Atkin, C. K., Pinkleton, B. E., & Cole, R. T. (1990). Effects of negative political advertising on the political process. *Journal of Broadcasting & Electronic Media*, 34(3), 299-311.
- Hall, R. G., Varca, P. E., & Fisher, T. D. (1986). The effect of reference groups, opinion polls, and attitude polarization on attitude formation and change. *Political Psychology*, 7(2), 309-321.
- Harton, H. C., & Latané, B. (1997). Information- and thought-induced polarization: The mediating role of involvement in making attitudes extreme. *Journal of Social Behavior & Personality*, 12(2), 271-299.
- Ironside, W. (1973). Conflict at the interface or the janus effect. *Australian & New Zealand Journal of Psychiatry*, 7(4), 229-233.
- Judd, C. M., & Brauer, M. (1995). Repetition and evaluative extremity. In R. E. Petty, & J. A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences; attitude strength: Antecedents and consequences. Ohio state university series on attitudes and persuasion, vol. 4* (pp. 43-71). Hillsdale, NJ, England: Lawrence Erlbaum Associates, Inc.
- Judd, C. M., Drake, R. A., Downing, J. W., & Krosnick, J. A. (1991). Some dynamic properties of attitude structures: Context-induced response facilitation and polarization. *Journal of Personality & Social Psychology*, 60(2), 193-202.
- Kaysen, D., & Stake, J. E. (2001). From thought to deed: Understanding abortion activism. *Journal of Applied Social Psychology*, 31(11), 2378-2400.
- Kuhn, D., & Lao, J. (1996). Effects of evidence on attitudes: Is polarization the norm? *Psychological Science*, 7(2), 115-120.
- Lassiter, G. D., & Apple, K. J. (1998). Need for cognition and thought-induced attitude polarization: Examining possible demand characteristics. *Social Behavior & Personality*, 26(1), 99-103.
- Lassiter, G. D., Apple, K. J., & Slaw, R. D. (1996). Need for cognition and thought-induced attitude polarization: Another look. *Journal of Social Behavior & Personality*, 11(4), 647-665.
- Leone, C. (1996). Thought, objectivism, and opinion extremity: Individual differences in attitude polarization and attenuation. *Personality & Individual Differences*, 21(3), 383-390.

- Leone, C. (1994). Opportunity for thought and differences in the need for cognition: A person by situation analysis of self-generated attitude change. *Personality & Individual Differences, 17*(4), 571-574.
- Leone, C. (1989). Self-generated attitude change: Some effects of thought and dogmatism on attitude polarization. *Personality & Individual Differences, 10*(12), 1243-1252.
- Leone, C. (1984). Thought-induced change in phobic beliefs: Sometimes it helps, sometimes it hurts. *Journal of Clinical Psychology, 40*(1), 68-71.
- Leone, C., & Aronow, R. E. (1992). Thought, process constraints, and cognitive style: Individual differences in self-generated reduction of fear. *Journal of Social & Clinical Psychology, 11*(4), 365-376.
- Leone, C., & Baldwin, R. T. (1983). Thought-induced changes in fear: Thinking sometimes makes it so. *Journal of Social & Clinical Psychology, 1*(3), 272-283.
- Leone, C., & Ensley, E. (1986). Self-generated attitude change: A person by situation analysis of attitude polarization and attenuation. *Journal of Research in Personality, 20*(4), 434-446.
- Leone, C., & Ensley, E. (1985). Self-generated attitude change: Another look at the effects of thought and cognitive schemata. *Representative Research in Social Psychology, 15*(1-2), 2-9.
- Leone, C., Minor, S. W., & Baltimore, M. L. (1983). A comparison of cognitive and performance-based treatment analogues: Constrained thought versus performance accomplishments. *Cognitive Therapy & Research, 7*(5), 445-454.
- Leone, C., Taylor, L. W., & Adams, K. C. (1991). Self-generated attitude change: Some effects of thought, dogmatism, and reality constraints. *Personality & Individual Differences, 12*(3), 233-240.
- Leshowitz, B., Eignor DiCerbo, K., & Okun, M. A. (2002). Effects of instruction in methodological reasoning on information evaluation. *Teaching of Psychology, 29*(1), 5-10.
- Liberman, A., & Chaiken, S. (1991). Value conflict and thought-induced attitude change. *Journal of Experimental Social Psychology, 27*(3), 203-216.
- Liu, J. H., & Latané, B. (1998). Extremization of attitudes: Does thought- and discussion-induced polarization cumulate? *Basic & Applied Social Psychology, 20*(2), 103-110.
- Lord, C. G. (1989). The "disappearance" of dissonance in an age of relativism. *Personality & Social Psychology Bulletin, 15*(4), 513-518.
- Lord, C. G., Ross, L., & Lepper, M. R. (1979). Biased assimilation and attitude polarization: The effects of prior theories on subsequently considered evidence. *Journal of Personality & Social Psychology, 37*(11), 2098-2109.

- Malamuth, N. M., & Check, J. V. (1981). The effects of mass media exposure on acceptance of violence against women: A field experiment. *Journal of Research in Personality, 15*(4), 436-446.
- McHoskey, J. W. (1995). Case closed? on the John F. Kennedy assassination: Biased assimilation of evidence and attitude polarization. *Basic & Applied Social Psychology, 17*(3), 395-409.
- Millar, M. G., & Tesser, A. (1986). Thought-induced attitude change: The effects of schema structure and commitment. *Journal of Personality & Social Psychology, 51*(2), 259-269.
- Miller, A. G., McHoskey, J. W., Bane, C. M., & Dowd, T. G. (1993). The attitude polarization phenomenon: Role of response measure, attitude extremity, and behavioral consequences of reported attitude change. *Journal of Personality & Social Psychology, 64*(4), 561-574.
- Munro, G. D., & Ditto, P. H. (1997). Biased assimilation, attitude polarization, and affect in reactions to stereotyped-relevant scientific information. *Personality & Social Psychology Bulletin, 23*(6), 636-653.
- Munro, G. D., Ditto, P. H., Lockhart, L. K., Fagerlin, A., Gready, M., & Peterson, E. (2002). Biased assimilation of sociopolitical arguments: Evaluating the 1996 U.S. presidential debate. *Basic & Applied Social Psychology, 24*(1), 15-26.
- O'Keefe, D. J., & Brady, R. M. (1980). Cognitive complexity and the effects of thought on attitude change. *Social Behavior & Personality, 8*(1), 49-56.
- Okuda, H. (1993). Topic importance and assumed similarity: Their effects on interpersonal attraction. *Japanese Journal of Experimental Social Psychology, 33*(1), 11-20.
- Osgood, C. E. (1941). Ease of individual judgment-processes in relation to polarization of attitudes in the culture. *Journal of Social Psychology, 14*, 403-418.
- Plous, S. (1991). Biases in the assimilation of technological breakdowns: Do accidents make us safer? *Journal of Applied Social Psychology, 21*(13), 1058-1082.
- Polley, R. B. (1984). Subjectivity in issue polarization. *Journal of Applied Social Psychology, 14*(5), 426-440.
- Pomerantz, E. M., Chaiken, S., & Tordesillas, R. S. (1995). Attitude strength and resistance processes. *Journal of Personality & Social Psychology, 69*(3), 408-419.
- Raghubir, P., & Johar, G. V. (1999). Hong kong 1997 in context. *Public Opinion Quarterly, 63*(4), 543-565.
- Rohde, K. J. (1974). Polarization: What is it? *Personality & Social Psychology Bulletin, 1*(1), 207-209.
- Rothbaum, B. O., Hodges, L. F., Kooper, R., & Opdyke, D. (1995). Virtual reality graded exposure in the treatment of acrophobia: A case report. *Behavior Therapy, 26*(3), 547-554.
- Schlenker, B. R., & Goldman, H. J. (1982). Attitude change as a self-presentation tactic following attitude-consistent behavior: Effects of choice and role. *Social Psychology Quarterly, 45*(2), 92-99.

- Smith, R. A. (1989). The role of situational involvement in consumers' attitude polarization. *Journal of Business & Psychology*, 3(4), 439-447.
- Tesser, A. (1976). Attitude polarization as a function of thought and reality constraints. *Journal of Research in Personality*, 10(2), 183-194.
- Tesser, A. (1978). Self-generated attitude change. *Advances in Experimental Social Psychology*, 11, 289 – 338.
- Tesser, A., & Conlee, M. C. (1975). Some effects of time and thought on attitude polarization. *Journal of Personality & Social Psychology*, 31(2), 262-270.
- Tesser, A., & Cowan, C. L. (1977). Some attitudinal and cognitive consequences of thought. *Journal of Research in Personality*, 11(2), 216-226.
- Tesser, A., & Cowan, C. L. (1975). Thought and number of cognitions as determinants of attitude change. *Social Behavior & Personality*, 3(2), 165-173.
- Tesser, A., & Danheiser, P. (1978). Anticipated relationship, salience of partner and attitude change. *Personality & Social Psychology Bulletin*, 4(1), 35-38.
- Tesser, A., & Leone, C. (1977). Cognitive schemas and thought as determinants of attitude change. *Journal of Experimental Social Psychology*, 13(4), 340-356.
- Tesser, A., Leone, C., & Clary, E. G. (1978). Affect control: Process constraints versus catharsis. *Cognitive Therapy & Research*, 2(3), 265-274.
- Tesser, A., Martin, L., & Mendolia, M. (1995). The impact of thought on attitude extremity and attitude-behavior consistency. *Attitude Strength: Antecedents and Consequences, Ohio State University Series on Attitudes and Persuasion*, 4, 73 – 92