A LITTLE KNOWLEDGE IS A DANGEROUS THING:

EFFECTS OF EXTRAPOLATION ON ATTITUDE POLARIZATION

by

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On April 15, 2013, Dzhokhar and Tamerlan Tsarnaev set off two bombs at the finish line of the Boston Marathon, killing three people and wounding over 260 others. On October 22, 2014, Michael Zehaf-Bibeau shot and killed a soldier at the Canadian National War Memorial. Just one day later in New York City, Zale F. Thompson charged at four NYPD officers with a hatchet, and injured two of them before being gunned down. These attackers had one thing in common -- they were so called "lone wolves" who had no substantial connection to any major terrorist organization. When thinking of a typical terrorist, many of us would picture a suicide-bomber brainwashed by an evil mastermind of Al-Qaeda or ISIS rather than a "lone wolf." We tend to believe that only those who are persuaded by a flood of extreme and hateful messages can become so radicalized that they will murder for a twisted cause. However, the existence of lone-wolf terrorists challenges the idea that terrorists can only be radicalized by external messages. What are the psychological processes through which lone-wolf terrorists might self-radicalize? Previous research on self-induced attitude change has identified several relevant cognitive mechanisms. The present research proposed and tested a related but previously unexamined mechanism of self-radicalization: extrapolation beyond the information given.

Self-Induced Attitude Polarization

Modern research suggests that people can indeed develop more extreme attitudes on their own. Studies of thought-induced attitude polarization showed that some individuals can develop more extreme attitudes after simply thinking about an attitude object for a few minutes (Tesser, 1978; Tesser, Martin, & Mendolia, 1995). The effect was first discovered

with interpersonal attitudes (Sadler & Tesser, 1973) and was later extended to a variety of attitude objects, including social and political issues (Tesser & Conlee, 1975), paintings (Tesser, 1976), risky actions (Bateson, 1966), and even oneself (Ickes, Wicklund, & Ferris, 1973). Tesser (1978) argued that instead of passively reviewing a static object, thought dynamically alters the cognitive representation of the object, resulting in a set of more evaluatively consistent beliefs, which in turn leads to attitude polarization. When thinking about an attitude object, people reinterpret, suppress, and lose associations inconsistent with the initial attitude, and generate new cognitive associations consistent with the initial attitude (Tesser, 1978). With more associations consistent with the initial attitude and fewer associations inconsistent with the initial attitude, people develop more extreme overall attitudes toward the same object.

These proposed mechanisms suggest that mental representations, or schemas, of attitude objects function as mediating structures in the processes of thought-induced attitude polarization. The effect of thought-induced attitude polarization depends, therefore, on well-developed cognitive schemas of attitude objects. Indeed, attitude polarization was found to be more pronounced when people had a more complex schema of the attitude object (Chaiken & Yates, 1985; Leone & Ensley, 1985; Tesser & Leone, 1977). In one study, for example, mere thought caused women to develop more extreme attitudes toward women's fashion items but not toward football-related topics, whereas the opposite effect was found for men (Tesser & Leone, 1977). This finding, however, was challenged by Linville (1982) whose work showed that simpler schemas can sometimes be associated with more extreme attitudes. In response, later studies (Millar & Tesser, 1986) showed that more complex schemas only led to greater thought-induced attitude polarization when high commitment to schemas made different

dimensions within the schemas become highly correlated. In a set of more recent studies, researchers examined thought-induced attitude polarization using the cognitive response model (Clarkson, Tormala, & Leone, 2011), a model that also emphasizes the mediating role of cognitive representation in attitude change (e.g. Petty, Ostrom, & Brock, 1981). These studies showed that people's confidence in their self-generated thoughts independently mediates the effect of thought-induced attitude polarization.

Previous research has shown that thought-induced attitude polarization is also moderated by various situational factors. The physical presence of attitude objects, for example, serves as a reality constraint and attenuates thought-induced attitude polarization (Leone, Taylor, & Adams, 1991; Tesser, 1976). In addition to the physical presence of attitude objects, social constraints such as the audience's attitudes (Tetlock, 1983), mental constraints such as motivation to defend the resulting attitude (Cialdini, Levy, Herman, & Evenbeck, 1973), and conflicting values regarding the attitude object (Liberman & Chaiken, 1991), can also cause similar attenuating effects. Although the mechanisms underlying thought-induced attitude polarization proposed by Tesser (1978) are difficult to measure directly, the change of polarization magnitude under different situational conditions provided indirect supporting evidence. For example, the effect of thought on attitude polarization was amplified when evaluatively inconsistent information about the attitude object was ambiguous enough for open interpretation (Tesser & Cowan, 1977), which supports the idea that people can polarize their attitudes by reinterpreting cognitive associations that are inconsistent with their initial attitudes. The effect of thought on attitude polarization was also more pronounced when people started with a smaller initial set of cognitions associated to the attitude object (Tesser & Cowan, 1975), which presumably leaves more room than would a

larger set for generating new evaluatively consistent cognitions. This finding in particular supports the idea that people can polarize their attitudes by generating new cognitive associations that are consistent with their initial attitudes.

A number of individual differences also moderate the effect of thought-induced attitude polarization. Need for cognition has been identified as an important moderator, because of the mediating role of cognitive schemas in thought-induced attitude polarization. When given enough time to think about an attitude object, people low in need for cognition are more likely to show attitude polarization than people high in need for cognition (Leone & Ensley, 1986). This finding was only replicated when people were explicitly instructed to think about the attitude object. When no explicit thinking instructions were given, but only time to think, individuals high in need for cognition showed more attitude polarization than those low in need for cognition (Lassiter, Apple, & Slaw, 1996; Lassiter & Apple, 1998). Objectivism also moderates the effect of thought on attitude-related belief consistency and attitude intensity, resulting in higher likelihood of thought-induced attitude polarization for people high in objectivism (Leone, 1996). Finally, dogmatism not only moderates the effect of thought on attitude polarization by itself, but also interacts with the moderating effect of reality constraints. Dogmatic people are more likely than non-dogmatic people to polarize their attitudes as opportunities for attitude-related thought increase (Leone, 1989), and are more susceptible to the attenuating effect of reality constraints (Leone et al., 1991).

Other than thought-induced attitude polarization, previous research has also suggested several attitude-polarizing mechanisms that presumably can be initiated by oneself, such as repeated expression (Brauer, Judd, & Gliner, 1995; Judd & Brauer, 1995), intergroup comparison (Skinner & Stephenson, 1981), selected exposure to familiar arguments

(Gvirsman, 2014), adopting a more abstract construal level (Luguri & Napier, 2013), and proselytizing for a pro-attitudinal cause (Pallak & Kleinhesselink, 1976; Schlenker & Goldman, 1982). None of these previous studies, however, nor the line of research explicitly devoted to thought-induced attitude polarization, has directly examined the effects of a process that could be crucial to self-induced radicalization -- extrapolation. To extrapolate is to project, extend, or expand known data or experience into an area not known or experienced so as to arrive at a usually conjectural knowledge of the unknown area. Potential lone-wolf terrorists may start with moderately negative attitudes toward their victims, based on a limited amount of negative information. These individuals, however, are not likely to ruminate on only the same handful of initial associations. Along the course of their radicalization, potential terrorists may extrapolate from what they initially know or believe about their victims to other unknown, more extreme dimensions.

We argue that extrapolating from one dimension to another, especially to a more extreme one, might bias the mental representation of attitude objects in a way comparable to thought-induced attitude polarization, resulting in more extreme negative attitudes. In a set of two studies, we explored the effects of extrapolation on attitude polarization, and the underlying mechanisms. It was hypothesized that extrapolating from moderate to extreme negative attributes regarding an attitude object polarizes people's attitudes. The effect may be mediated by memory source monitoring errors and, subsequently, more extreme cognitive associations to the attitude object.

Extrapolation and Source Monitoring Errors

People tend to extrapolate when evaluating. Early research on personality traits discovered that when participants were asked to describe a person who could be described by

a given list of adjectives, they tended to go beyond the information given (Asch, 1946). In a world full of novel stimuli, this tendency to extrapolate from the known to the unknown helps us to survive (Olson, Roese, & Zanna, 1996; Roese & Sherman, 2007). The survival benefit, however, comes with the risk of over-generalization (Slobin, 1971), a tendency to believe what is true about one aspect of an object is also true about other associated aspects. People who like or dislike one characteristic of a person readily assume that the person's other characteristics are of the same valence. This phenomenon is referred to as the "halo effect" (Cooper, 1981; Thorndike, 1920). On encountering members of a group, people automatically activate stereotypes of the group and assume that the overly generalized characteristics of the group apply to the particular individuals they encounter (e.g. Fazio, Powell, & Herr, 1983). People can even generalize a negative impression from one person to another merely because they share the same hairstyle (Lewicki, 1985). When generalizing, people tend to accept their assumptions as true rather than put them to test (Jost & Kruglanski, 2002; Kruglanski, 1989) because acting on one's assumptions is usually more adaptive than taking the risk of being wrong (Arkes, 1991; Wright & Murphy, 1984).

When extrapolating about an attitude object, people activate available information regarding the attitude object, and then generalize their beliefs from the activated information to unknown dimensions. The new beliefs people establish regarding the unknown dimensions are likely to be consistent with their existing beliefs. Previous research has established that people find information consistent with their initial positions as more likely to be valid than information that is inconsistent (Lord & Taylor, 2009). In a study of biased assimilation (Lord, Ross, & Lepper, 1979), for instance, participants read evidence from two fictitious studies that either supported or contradicted their initial attitudes toward an important social

policy issue. When evaluating how well the fictitious studies were done, participants were very critical of the study that contradicted their initial attitudes, but were quite ready to accept the validity of a study that supported their initial attitudes. Instead of forming a more balanced view, seeing evidence on both sides eventually polarized participants' attitudes, because they found the additional evidence consistent with their initial attitudes to be more valid. Recent studies have replicated the phenomenon of biased assimilation with a wide range of attitude objects, including homosexuals (Boysen & Vogel, 2007), mental illness (Boysen & Vogel, 2008), and scientific information (Munro, Leary, & Lasane, 2004). Some researchers have argued that the effect may be mediated by negative affective reactions to information that contradicts one's beliefs (Munro & Ditto, 1997; Munro, Ditto, Lockhart, Fagerlin, Gready, & Peterson, 2002).

In addition to research on biased assimilation, other studies on biased social cognition also substantiated people's tendency to accept evidence that supports rather than undermines their pre-existing attitudes. When processing health-related messages, people tend to find warnings of personal health risks less convincing than assurances of good health (Croyle, 1990; Croyle, Sun, & Hart, 1997; Liberman & Chaiken, 1992). Gamblers rationalize their gambling behavior by explaining away their losses, but not their wins (Gilovich, 1983; Gilovich & Douglas, 1986). In criminal investigations, witnesses who confirm investigators' hypotheses are perceived as more reliable and credible (Ask & Granhag, 2007). Research on motivated reasoning suggests that people's motivation to arrive at acceptable conclusions enhances use of those beliefs that are considered most likely to yield the desired conclusion (e.g. Kunda, 1990). People tend to examine information consistent with a desired conclusion less critically (Ditto & Lopez, 1992) and show more sensitivity and elaboration in processing

information inconsistent with the desired conclusion (Ditto, Scepansky, Munro, Apanovitch, & Lockhart, 1998). In the process of extrapolating from known to unknown attributes, people's judgment about the likelihood of an unknown attribute can presumably be biased in a similar way. When considering whether an attitude object has an unknown attribute, people may tend to find attributes consistent with their initial attitudes to be more likely.

This bias toward extrapolated beliefs that are consistent with initial attitudes may also lead to memory errors. Biased beliefs are known to cause biased memory. In an early study on social perception (Hastorf & Cantril, 1954), supporters of two competing football teams watched the same video of a football game and all claimed "seeing" more misconduct from their opposing team. During a political campaign, people are more likely to recall positive information about a preferred candidate and negative information about the opponent (Meffert, Chung, Joiner, Waks, & Garst, 2006). When making judgments regarding outgroup members, people remember stereotype-consistent evidence better (Bodenhausen, 1988). Because of people's biased tendency in believing information consistent with their initial attitudes, we argue that people may confuse the beliefs they derived from extrapolation with real information from soundly grounded sources. This type of memory confusion is known as a source monitoring memory error (Johnson, 1988, 2006).

Source monitoring theory suggests that the source of a memory record is evaluated through decision processes when the record is activated. Upon activation, a memory record is attributed to a source based on the characteristics of the mental experiences involved (Johnson, Hashtroudi, & Lindsay, 1993; Mitchell & Johnson, 2000). Of particularly interest to the present research is the process of discriminating memories perceived from the external world as opposed to memories generated internally -- a process known as reality monitoring

(Johnson & Raye, 1981). People often heuristically identify the source of a memory record based on its associated properties, including perceptual and contextual details (Goff & Roediger, 1998; Henkel, 2004; Johnson, Raye, Wang, & Taylor, 1979; Suengas & Johnson, 1988), semantic information (Lindsay, Johnson, & Kwon, 1991; Roediger & McDermott, 1995), and the cognitive operations involved (Finke, Johnson, & Shyi, 1988; Johnson, Kahan, & Raye, 1984; Johnson, Raye, Foley, & Foley, 1981). For example, a memory with many vivid perceptual and contextual details is more likely to be judged as a memory perceived from the external world, whereas a memory that involves a large amount of cognitive operations is more likely to be judged as internally generated (Johnson, 2006; Johnson & Raye, 1981). People also sometimes go beyond the heuristic cues to examine the source of a memory record more deliberately and systematically (Johnson & Raye, 1981, 2000), especially when properly motivated (Dodson & Johnson, 1993). Additional information is retrieved to ensure an attribution of memory source is compatible with pre-existing knowledge (Johnson, Foley, Suengas, & Raye, 1988), which might favor "external" source attributions for extrapolations that are consistent with initial attitudes.

Reality monitoring errors can occur if people find distributions of memory from different sources too similar, use lax monitoring criteria, experience difficulty in retrieving relevant information, or are not motivated to engage in effortful systematic monitoring (Johnson, 1991, 2006; Johnson & Raye, 1998). If people are more likely to accept extrapolated beliefs consistent with their initial attitudes as true, the high semantic similarity between extrapolated and initial beliefs may increase the difficulty of reality monitoring (Lindsay et al., 1991; Roediger & McDermott, 1995). Self-generated information that is highly consistent with pre-existing beliefs is more likely to be misattributed to reality

(Johnson et al., 1988). In fact, previous studies have found that information consistent with stereotypes (Mather, Johnson, & De Leonardis, 1999) or general knowledge (Bransford & Johnson, 1973) tends to produce more source monitoring errors. These findings suggest that extrapolated beliefs consistent with one's initial attitude may be misremembered as real information. Moreover, source monitoring errors are even more likely to occur when the extrapolated beliefs are extreme. Extreme beliefs tend to involve intense emotion, which may distract people from using more robust cues in source monitoring (Johnson, Nolde, & De Leonardis, 1996; Mather, Mitchell, Raye, Novak, Greene, & Johnson, 2006). As accuracy of source monitoring is reduced by memory decay over time (Johnson et al., 1993), people may start to forget that some of their extreme beliefs are results of mere extrapolation, and assume that the extrapolated beliefs come from the same firmly grounded source of their initial beliefs. Considerably evidence suggests, then, that when extrapolating about an attitude object from known to unknown attributes, people may later falsely regard unknown extrapolated attributes that are consistent with their initial attitudes as originally known.

Source monitoring errors caused by extrapolation may also lead to attitude polarization. Previous studies on source monitoring and attitude change showed a strong correlation between source monitoring errors and attitude change in a corresponding direction (Frye & Lord, 2009; McIntyre, Lord, Lewis, & Frye, 2003). Related studies confirmed that it was the source monitoring errors that caused attitude change, not the other way around (Frye, Lord, & Brady, 2012). If people extrapolate from moderately negative attributes of an attitude object to consistent attributes that are more extreme, the subsequent source monitoring errors could plant seeds that may grow into more extreme attitudes through the basic construal processes of evaluation.

Construal Processes of Evaluation

Traditionally, an attitude was construed as an innate psychological entity that drives all types of evaluative responses toward the corresponding attitude object (e.g. Eagly & Chaiken, 1993). Some researchers refer to this definition of attitude as the "file draw" metaphor (Wilson, Lisle, & Kraft, 1990). This metaphor implies that a person's attitudes are like files in a draw, accessed when an evaluative response is needed, and stored intact in the draw when not used. According to the file draw model, attitude toward the same object is supposed to be stable across different situations, and takes great effort to change (e.g. Petty & Cacioppo, 1986). Empirical evidence, however, has shown that attitudes are highly responsive to contextual changes (Schwarz, 2007). Attitudes can be changed by simply asking people to explain the reasons behind their attitudes (Wilson & Hodges, 1992), or even by mere measurement (Morwitz, Johnson, & Schmittlein, 1993; Sudman, Bradburn, & Schwarz, 1996). The file draw model can only account for such flexibility of attitudes with very complicated theorizing. In recent years, many researchers have proposed that it is more parsimonious to construe attitudes as temporary constructs rather than permanent latent entities (Lord & Lepper, 1999; Schwarz, 2007; Schwarz & Bohner, 2001; Tourangeau, 1992; Wilson & Hodges, 1992).

The construal model of attitude holds that evaluative responses are constructed *ad hoc* through a two-step basic evaluative process. In the first step, a handful of cognitive associations regarding an attitude object are activated upon the perception of the object (Bellezza, 1984; Schwarz & Bless, 1992; Wilson & Hodges, 1992). In the second step, the evaluative implications of these associations, combined with contextual factors, inform the overall evaluative response (Ajzen & Sexton, 1999; Lord & Lepper, 1999; Schwarz, Strack,

& Mai, 1991). The first combinatory model of this type was the probabilogical model of beliefs proposed by McGuire (1960a, 1960b), which was later developed into a more general version (Wyer, 1970; Wyer & Goldberg, 1970). This model suggests that one's attitude toward a belief depends on the combined product of the relevant implications of associated beliefs and the probable likelihood of each association. Researchers adapted this model for theories of attitude formation, resulting in influential frameworks such as the expectancy-value model (Fishbein, 1963; Fishbein & Ajzen, 1975) and information integration theory (Anderson, 1971, 1990). The construal model of attitudes holds that such combinatory processes apply to the construction of temporary evaluative responses rather than permanent attitudes to be stored like files.

The two steps of the basic evaluation process suggest two corresponding mechanisms through which evaluative responses can vary from one situation to another. In the first step, evaluative responses may vary based on different associations being accessed or activated. A typical attitude object activates only a handful of all possible associations on one occasion. These associations can take the forms of characteristics, exemplars, emotions, actions, and context (Lord & Lepper, 1999; Sia, Lord, Blessum, Thomas, & Lepper, 1999; Zanna & Rempel, 1988). Evaluative responses remain relatively stable when the same set of associations are accessed, and change when the accessed associations change. Evaluation-behavior consistency, for example, is higher when the mental representations activated at the time attitudes are first assessed match the mental representations activated at the time when attitude-relevant behaviors are measured (Ramsey, Lord, Wallace, & Pugh, 1994; Wallace, Paulson, Lord, & Bond, 2005). If associations with opposite evaluative implications are both highly accessible, evaluative responses tend to be less stable over time (Jonas, Broemer, &

Diehl, 2000; Lord, Paulson, Sia, Thomas, & Lepper, 2004). Research on attitude measurement suggests that mere measurement of an attitude can change evaluative responses because respondents are not aware that different question wordings, sequences, and formats would bring different associations to mind that might result in different evaluations. Instead, they experience the contextually primed information as their own thoughts and rely on these thoughts in arriving at an evaluative judgment (Morwitz et al., 1993; Sudman et al., 1996). Empirical evidence has shown that people respond to a social group more consistently and are less responsive to persuasive arguments when primed with the same rather than a different exemplar of a social category (Lord et al., 2004; Sia, Lord, Blessum, Ratcliff, & Lepper, 1997). When a different, more likable or less likable exemplar is primed, people change their evaluative responses in the corresponding direction (Sia et al., 1997).

In the second step of the basic evaluative process, evaluative responses may vary based on different perceived evaluative implications of the activated associations. Even if people activate the same set of associations when evaluating an attitude object from one time to the next, they may perceive the evaluative implications of the associations differently in different contexts (Lu, Lord & Yoke, in press; Schwarz, 2007). Positive attributes of an object, for instance, can have a negative implication if people experience difficulty in activating them. People may reason that they experience such difficulty because positive attributes are rare (Wänke, Bohner, & Jurkowitsch, 1997). When a person's behaviors are ambiguous enough for open interpretation, the perceived implications can be manipulated in different directions with semantic priming (Higgins, Rholes, & Jones, 1977) or made more extreme by general arousal (Stangor, 1990). In general, the same behavior from a person may be interpreted differently depending on what other associated information is available as

context, resulting in different impressions of the person (Higgins & King, 1981; Srull & Wyer, 1979; Wyer & Srull, 1989). These studies of context effects on attitudes suggest that the evaluative implications of activated associations are not perceived individually, but rather in relation to each other. As a result, the introduction of new associations may change the perceived implications of the entire set. Of particular interest to the present research, introducing more extreme associations to an originally small rather than large set was shown to be more likely to affect overall evaluative responses (Bless, Schwarz, & Wänke, 2003; Schwarz & Bless, 2007).

In the case of extrapolation from a limited amount of negative information, people presumably activate a few negative associations regarding an attitude object when formulating their initial attitudes, and then generalize their beliefs about the attitude object from activated associations to unknown, more extreme dimensions. Because extrapolated associations consistent with initial attitudes are likely to cause source monitoring errors, they may be confused with and treated the same as the initial, more firmly grounded associations. In the process of evaluating the attitude object later on, the initial associations and the extrapolated, more extreme associations might be equally accessible for activation. People might activate and apply to their overall attitudes a mixture of the initial associations and the extrapolated, more extreme associations, which presumably would have more extremely negative evaluative implications than the initial associations by themselves. As a result, subsequent evaluations, based on a mixture of given and extrapolated associations, might be more extreme than the initial associations would have warranted. Extrapolation from a small number of moderately negative "facts" might this polarize attitudes by causing source

monitoring memory errors, which in turn might lead to more extremely negative cognitive associations in the final evaluation.

The Present Research

In a set of two studies, we examined the effects of extrapolation on attitude polarization, and possible underlying mechanisms. It was hypothesized that, when compared to a non-extrapolating control group, participants who extrapolated from moderately negative attributes of a social group to unknown extreme attributes would find extremely negative attributes more likely to be true than extremely positive ones, and subsequently misremember these extremely negative attributes as originally known. These memory errors would lead to the activation of a more extremely negative set of associations in later evaluation of the attitude object, resulting in attitude polarization in a negative direction—a type of "self-radicalization." In Study 1, we tested whether extrapolation can cause attitude polarization, and whether the effect is mediated by source monitoring memory errors. In Study 2, we sought to replicate the effect of extrapolation on attitude polarization, and to test whether the effect is also mediated by the valence of activated associations.

Study 1

Study 1 tested the basic hypothesis that extrapolating from limited, moderately negative information regarding an attitude object can polarize attitudes. To simulate the process of self-radicalization as it applies to despising specific social groups, we created an artificial, fictitious social group as the attitude object, and manipulated participants to adopt moderately negative initial attitudes. By using a fictitious social group, we controlled the information available to participants regarding the attitude object and prevented any interference from pre-existing attitudes toward that group.

Participants learned about the group and viewed nine moderately negative attributes and three moderately positive attributes that members of the group were said to have. Negative attributes outnumbered positive attributes in order to create moderately negative initial attitudes toward the artificial social group. Participants then either extrapolated to other more extreme attributes, both positive and negative, that members of this group may or may not have, or completed an irrelevant control task. Later, all participants completed a memory test where they were asked to recognize the original attributes from a list composed of the original attributes, extrapolated attributes, and distractors. It was hypothesized that participants who extrapolated to unknown more extreme attributes of the attitude object would report more extreme attitudes than would control group participants who were given the same initial information but not asked to extrapolate, and that this effect would be mediated by source monitoring memory errors.

Method

Participants

A total of 115 undergraduate students (88 women, 27 men)[1] participated for course credit.

Procedure

The experiment was conducted in a computer lab. All experimental materials were presented in the online research suite Qualtrics.

Initial attitude formation. At the start of the experiment, participants read a story about a university in another country that was trying to form a relationship of sister institution with the university participants attended. The foreign university was referred as

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[1] No sex difference was found in any of the obtained effects in either study.

"XYZ University," ostensibly to protect the true identity of the foreign university.

Participants were told that their university sent small groups of students to visit XYZ

University, in order to observe what the students are like at XYZ University. Participants

then viewed 12 attributes (adapted from Kiesler, 1983; see Appendix A) of "students from

XYZ University," ostensibly provided by the students who went to visit XYZ University, in

random order. Nine of these 12 attributes were moderately negative (e.g. "They seem

compelled to conceal and evade;" "They are impulsive to a fault") whereas the other three

were moderately positive (e.g. "They find it easy to express their viewpoints;" "They take on

and initiate new projects").

      Extrapolation manipulation. Participants were then randomly assigned either to

extrapolate to 12 other attributes ($n = 60$), or to complete an irrelevant control task ($n = 55$).

Participants in the extrapolation condition viewed in random order 12 more extreme

attributes that might or might not be true of students from XYZ University, 6 of which were

very positive (e.g., "They make others feel welcome;" "They enjoy being with others"),

whereas the other 6 were very negative (e.g., "They judge others harshly and severely,"

"They exploit others for personal gain") (adapted from Kiesler, 1983; see Appendix B). We

used an equal number of equally positive and negative new attributes for the extrapolation

task so that we would not inadvertently be making negative attributes differentially salient

and cognitively accessible. For each of the 12 new attributes, participants were asked to rate

the likelihood[2] that students from XYZ University have that attribute, on a 10-point scale

from -5 (very unlikely) to +5 (very likely) with no middle point. Participants in the control

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[2] Participants rated negative attributes as significantly more likely ($M = 2.28$, $SD = 1.47$) than
positive attributes ($M = -0.73$, $SD = 1.75$), $t(59) = 6.01$, $p < .001$. Because the likelihood
ratings were only available for the extrapolation condition and thus could not be incorporated
into the mediation model, this effect is not reported in the results section.

condition were asked to solve 12 simple algebra problems, a task that is irrelevant to and would presumably prevent thinking about attitudes toward students from XYZ University.

Attitude report. All participants then reported their attitudes toward students from XYZ University on three items ("Please indicate your overall impression of students from XYZ University;" "The country of XYZ has asked our university to make XYZ one of our sister universities. Our university has many requests from universities to become sister institutions and cannot grant them all. How much would you support the country of XYZ's request?" and "Our university gives preference for admission to transfer students from some of our sister institutions. How much would you support giving preference to transfer students from XYZ University?"), all on 10-point scales from -5 to +5.

Memory test. All participants then participated in what was described as a memory test, in which they viewed 48 attributes and judged whether each of these attributes was a "true observation" originally shown. Twelve of these 48 attributes were originally presented as "true observations;" another 12 were the more extreme attributes used for extrapolation; and the other 24 were distractors (adapted from Kiesler, 1983; see Appendix C). Half of the distractor items were positive (e.g. "They work hard at the job at hand and persist when first efforts fail." "They energetically produce and achieve."), whereas the other half were negative (e.g. "They strike others as flamboyant, melodramatic, and unbridled." "They appear incapable of self-criticism.").

Results

Analyses were conducted to test for the presence of an extrapolation effect on attitudes, source monitoring memory errors that confused the negative extrapolation attributes with given attributes, and mediation of the extrapolation effect by memory errors.

Extrapolation Effect

Responses to the three attitude questions were averaged to serve as an indicator for the overall attitude toward students from XYZ University (Cronbach's α = .83). A one-way analysis of variance revealed a significant main effect of the extrapolation manipulation on overall attitude toward students from XYZ University, $F(1,113) = 4.93$, $p = .03$, $\eta^2 = .04$. Participants who extrapolated to new and more extreme attributes of students from XYZ University reported more negative attitudes ($M = -2.67$, $SD = 1.83$) than did participants in the control condition ($M = -1.91$, $SD = 1.85$), $d = .41$.

Memory Errors

It was hypothesized that participants would adopt more extreme attitudes because they misremembered the extrapolated attributes as given attributes. The analysis of memory errors therefore focused on one particular type of error -- extrapolation attributes falsely recognized as originally presented "true observations." The number of this type of false alarms made by each participant was counted for positive and negative extrapolation attributes, respectively. As an overall indicator of positive versus negative bias in memory errors, the number of false alarms in the positive extrapolation attributes was subtracted from the number of false alarms in the negative extrapolation attributes. Thus, a higher value in this difference score indicates that a participant was more likely to misrecognize negative extrapolated attributes as true than positive ones, whereas a lower value indicates the opposite. A one-way analysis of variance revealed a significant effect of the extrapolation manipulation on bias in memory errors, $F(1,113) = 30.56$, $p < .001$, $\eta^2 = .21$, with participants in the extrapolation condition showing higher values ($M = 1.58$, $SD = 1.96$) in the difference score of memory errors than participants in the control condition ($M = -.11$, $SD = 1.20$), $d = 1.07$.

Mediation

To test for mediation, procedures recommended by Preacher and Hayes (2008) were performed, with memory error difference score as the mediator, extrapolation manipulation condition as the independent variable, and attitude as the dependent variable. As revealed earlier by the analyses of variance, extrapolation manipulation had a significant effect on attitude, $b = -.76$, $SE = .34$, $t = -2.22$, $p = .03$, $r^2 = .04$, and memory error difference score, $b = 1.69$, $SE = .31$, $t = 5.53$, $p < .001$, $r^2 = .21$. Memory error difference score, in turn, significantly predicted attitude, $b = -.32$, $SE = .09$, $t = -3.56$, $p = .001$, $r^2 = .10$. When controlling for memory errors, the direct effect of extrapolation manipulation on attitude dropped to non-significance, $p = .47$. A bias-corrected bootstrap (1000 samples) confidence interval test revealed a significant indirect effect of extrapolation manipulation on attitude, $b = -.49$, 95% CI [-.99, -.11]. The results indicated that the effect of extrapolation on attitude was fully mediated by memory errors (see Figure 1).
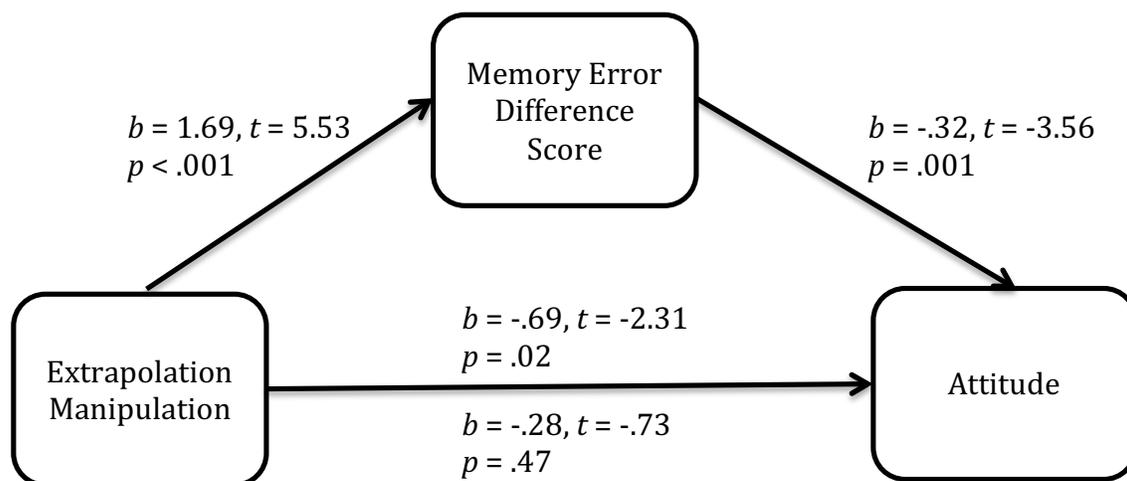

Figure 1. The effect of extrapolation on attitude mediated by bias in memory errors.

Study 2

Although the results of Study 1 supported the idea that engaging in extrapolation to new, more extreme attributes might produce attitudes more extreme than not thinking about

the group, the procedure left open the question of whether self-radicalization might involve

other mechanisms in addition to source monitoring confusions. Study 2 sought to replicate

the extrapolation effect of Study 1, but also included a different potential mediator.

Participants were asked to list the attributes they spontaneously associated with the attitude

object immediately before reporting their final attitudes and intentions, and rated how

positive versus negative each association made them feel toward students from XYZ

University (valence rating). To reveal whether extrapolation polarizes attitudes by changing

the perceived valence of associated thoughts, we tested the average valence ratings of the

associated thoughts as a mediator of the extrapolation effect.

Method

Participants

A total of 117 undergraduate students (93 women, 24 men) participated for course

credit.

Procedure

The participants read the same story about XYZ University and experienced the same

extrapolation ($n = 63$) versus control ($n = 54$) manipulation as in Study 1. All participants

were then given 12 blank lines and asked to list as many thoughts as came to mind for

students from XYZ University, stopping when they felt they had listed sufficient thoughts to

evaluate them. For each of the thoughts listed, participants rated how positive versus negative

it made them feel toward students from XYZ University (valence rating), on 10-point scales

from -5 (very negative) to +5 (very positive) with no middle point. Participants then reported

their attitudes and behavioral intentions toward students from XYZ University on the same

three items as in Study 1.

Results

Extrapolation Effect

The same overall attitude score as in Study 1 was calculated (Cronbach's α = .80). The extrapolation effect obtained in Study 1 was replicated in Study 2. A one-way analysis of variance revealed a significant main effect of the extrapolation manipulation on overall attitude toward students from XYZ University, $F(1,115) = 3.97$, $p = .049$, $\eta^2 = .03$. Participants who extrapolated to new and more extreme attributes of students from XYZ University reported more negative attitudes ($M = -2.30$, $SD = 2.08$) than did participants in the control condition ($M = -1.56$, $SD = 1.91$), $d = .38$.

Associated Thoughts

Valence ratings of all associated thoughts were averaged for each participant. A one-way analysis of variance revealed a significant effect of the extrapolation manipulation on thought valence, $F(1,115) = 10.13$, $p = .002$, $\eta^2 = .08$, with participants in the extrapolation condition reporting more negative average thought valence ($M = -2.08$, $SD = 2.14$) than participants in the control condition ($M = -.81$, $SD = 2.18$), $d = .59$.

Mediation

To test for mediation, procedures recommended by Preacher and Hayes (2008) were performed, with thought valence as the mediator, extrapolation manipulation as the independent variable, and attitude as the dependent variable. As revealed by the analyses of variance, extrapolation manipulation had a significant effect on attitude, $b = -.74$, $SE = .37$, $t = -1.99$, $p = .049$, $r^2 = .03$, and thought valence, $b = -1.28$, $SE = .40$, $t = -3.18$, $p = .002$, $r^2 = .08$. Thought valence, in turn, significantly predicted attitude, $b = .60$, $SE = .06$, $t = 9.48$, $p < .001$, $r^2 = .44$. When controlling for thought valence, the direct effect of extrapolation

manipulation on attitude dropped to non-significance, $p = .93$. A bias-corrected bootstrap

(1000 samples) confidence interval test revealed a significant indirect effect of extrapolation

manipulation on attitude, $b = -.77$, 95% CI [-1.36, -.27]. The results indicated that the effect

of extrapolation on attitude was fully mediated by thought valence (see Figure 2).
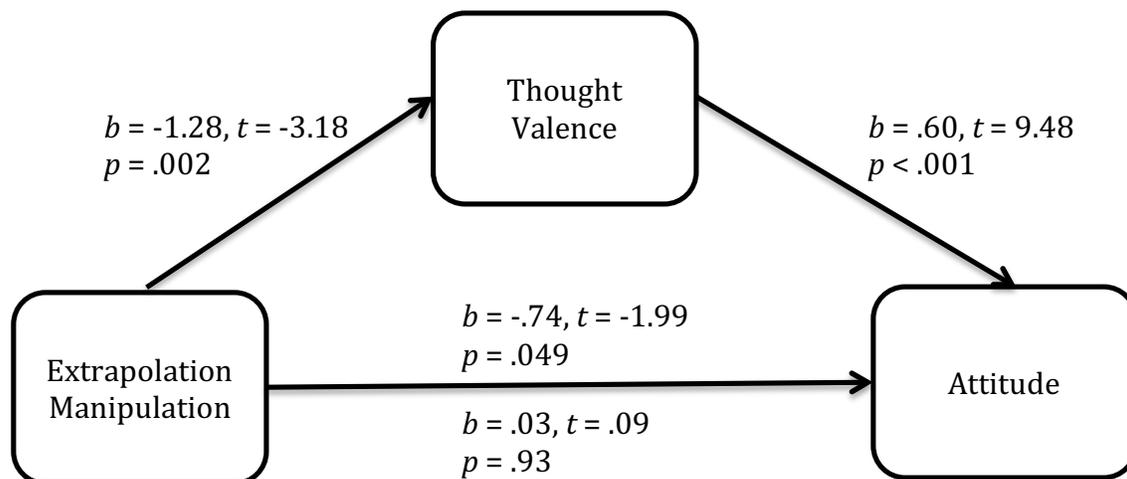
Figure 2. The effect of extrapolation on attitude from mediated by thought valence.

General Discussion

Results from these two studies suggest that extrapolating from a small set of

moderately negative attributes of a social group to a set of extreme attributes can polarize

negative attitudes toward that group, even in cases of extrapolation where people consider the

possible validity of both extremely negative and extremely positive additional attributes. The

effect was mediated by source monitoring memory errors in one study and valence of

associated thoughts regarding the attitude object in a second study. During extrapolation,

participants rated the extrapolated attributes that were consistent rather than inconsistent with

the initial negative information as more likely to be true, and later confused more of these

extrapolated attributes with originally presented attributes in the memory test (Study 1).

These memory errors presumably caused the extrapolated extremely negative attributes to be

accessible along with the original moderately negative attributes in later evaluation of the

attitude object. Thus a mixed set of moderately and more extreme associations was activated, which led to more extreme overall attitudes toward the group in question (Study 2).

Implications for Self-Induced Attitude Polarization

Previous research has established that attitudes can be polarized by mere thought (Sadler & Tesser, 1973; Tesser, 1978; Tesser et al., 1995). Generally speaking, thought affects attitudes through two types of underlying mechanisms: decreasing the number and importance of cognitions inconsistent with the initial attitude, and increasing the number and importance of cognitions consistent with the initial attitude (Tesser, 1978). These two broad types of mechanisms may each involve many specific mental processes. However, evidence from previous research that validates these mechanisms is mostly indirect. Situational factors that may facilitate the proposed underlying mechanisms, such as the ambiguity of undesired information (Tesser & Cowan, 1977) and fewer initially associated cognitions (Tesser & Cowan, 1975), have been found to amplify the polarizing effect of thought on attitude. No previous study has directly examined extrapolation -- a specific mental process that may be an important part of these mechanisms. The present studies tested the effects of extrapolating from known to unknown, more extreme attributes of an attitude object, a specific process people may engage in when they polarize their attitudes through mere thought. Extrapolation caused participants to confuse unknown, extremely negative attributes of an attitude object with moderately negative attributes that were originally known, increasing the associated cognitions consistent with their initial attitudes, which falls into one of the two broad types of mechanisms Tesser (1978) proposed for thought-induced attitude polarization.

Even though extrapolation could be one of many mental processes involved in the mechanisms underlying thought-induced attitude polarization, it deserves investigation

separate from the general study of thought-induced attitude polarization. No evidence suggests that extrapolation can only occur as a part of mere thought, or that extrapolation occurs in every occasion of mere thought. We argue that people may extrapolate about an attitude object as a process independent from thinking about the attitude object in general, triggered by contextual and motivational factors that do not necessarily encourage mere thought. For example, early research on memory found that when asked to recall details in a story set in an unfamiliar cultural background, participants tended to replace what they failed to recall with false memories that were more consistent with their own culture (Bartlett, 1932). People may therefore be more likely to extrapolate when pressed to provide more details about an attitude object they have little knowledge of, but unlikely to be motivated to merely think more about the attitude object. Research on audience tuning effects suggests that people tend to tailor their descriptions of an event or object to an audience's known preferences, which can subsequently cause corresponding memory errors (Brady & Lord, 2013; Echterhoff, Higgins, & Groll, 2005). People may be motivated to engage in more extrapolation when communicating to an audience with known preferences in order to create a shared reality, but not in more mere thought, because it does not serve the same purpose.

In addition, factors that mediate or moderate the effects of mere thought on attitude polarization do not necessarily affect extrapolation the same way. Previous research has shown that thought-induced attitude polarization is more pronounced when people already have a complex rather than simple cognitive schema of an attitude object (Chaiken & Yates, 1985; Leone & Ensley, 1985; Millar & Tesser, 1986; Tesser & Leone, 1977). Extrapolation, in contrast, starts with limited information regarding an attitude object, which presumably requires a relatively simple cognitive schema. Reality constraints have been shown to

attenuate thought-induced attitude polarization (Leone et al., 1991; Tesser, 1976). The effect of reality constraints on extrapolation may depend on the specific type of constraints in question. For example, the presence of the source that provided the original information about an attitude object may eliminate rather than only attenuate the effect of extrapolation, because it prevents source monitoring errors. Also, some individual differences that moderate the effect of mere thought on attitude, such as need for cognition, may not affect extrapolation in any meaningful way. Need for cognition, as a general preference for more engagement in cognitive activities (Cacioppo & Petty, 1982), predicts the tendency to think about an attitude object in general (Lassiter & Apple, 1998; Lassiter et al., 1996; Leone & Ensley, 1986). It does not, however, necessarily predict whether people tend to apply more cognitive work to existing knowledge about an attitude object, or to extrapolate from known to unknown attributes.

In summary, even though extrapolation may be one of many specific mental processes involved in thought-induced attitude polarization, the effects of extrapolation and mere thought may depend on different underlying processes. Extrapolation should therefore be investigated as an independent process through which people can develop more extreme attitudes on their own. In the context of self-radicalization, where potential lone-wolf attackers form initial negative attitudes toward their targets based on limited knowledge, the effect of extrapolation on attitude polarization is especially relevant. The present two studies provide new insights into this effect and its possible underlying mechanisms.

Implications for Source Monitoring

Study 1 found that the effect of extrapolation on attitude polarization was mediated by source monitoring errors. Participants who were given moderately negative initial

information and then extrapolated were more likely to confuse extrapolated, extremely negative attributes with originally presented attributes. Factors that increase source monitoring errors, identified in previous research, are almost purely cognitive, such as similarity in the level of perceptual details (Goff & Roediger, 1998; Henkel, 2004; Johnson et al., 1979; Suengas & Johnson, 1988), similarity in the amount of cognitive operations involved (Finke et al., 1988; Johnson et al., 1984; Johnson et al., 1981), semantic similarity (Lindsay et al., 1991; Roediger et al., 1995), and consistency with pre-existing knowledge (Bransford & Johnson, 1973; Mather et al., 1999). The possibility that consistency with initial attitudes may cause source monitoring errors was implied by work on similarity with pre-existing knowledge but was not examined directly. The present research is the first to provide empirical evidence that the desire for evaluative consistency might lead to source monitoring errors. Previous research has also established that biased beliefs can result in memory errors, enhancing memories consistent with pre-existing beliefs and diminishing the inconsistent ones (e.g. Bodenhausen, 1988; Hastorf & Cantril, 1954; Meffert et al., 2006). These memories errors, however, involved the recall of memory content but not the attribution of memory sources. In the present Study 1, participants rated extrapolated attributes consistent with their initial attitudes as more likely to be true, and misattributed these attributes to reality rather than extrapolation. These results add source monitoring errors to the memory errors that can be caused by biased beliefs.

Source monitoring errors fully mediated the effect of extrapolation on attitude. We argue that confusing extrapolated, more extreme attributes of the attitude object with originally presented attributes may lead to the activation of more extreme associations regarding the attitude object, and eventually to more extreme overall attitudes. An alternative

explanation would be that because the memory test came after the attitude report in Study 1, it was attitude change that caused source monitoring errors rather than the other way around. We placed the memory test after the attitude report to prevent it from interfering with the effect of extrapolation on attitude. The memory test in Study 1 consisted of 48 items in total, which takes much longer to complete than the main experimental manipulation. If such a lengthy task were placed before the final attitude report, the effect of extrapolation might have worn off before participants reported their attitudes. Moreover, each of the memory test items described an attribute the attitude object may or may not have. The evaluative implications of these items, especially the distractors, may have lessened the effect of extrapolation if they preceded the attitude report.

We admit that the necessity to place the memory test after the attitude report is a limitation of the present experimental design. Nonetheless, in a previous set of studies, direct manipulation of source monitoring errors caused attitude change, whereas changing attitude via persuasion failed to increase source monitoring errors (Frye et al., 2012). These findings support the present explanation of our results rather than the alternative explanation. In the present research paradigm, we believe that disputes over the causal order between memory error and attitude change are better resolved theoretically. Even if the memory test were placed before the attitude report, a supporter of the alternative explanation could still argue that attitude could be changed before the memory task and only reported after it. The construal model of attitudes suggests that associations that inform an overall evaluative response are activated from memory (Ajzen & Sexton, 1999; Lord & Lepper, 1999; Tourangeau, 1992). It stands to reason that changes in memory precede attitude change. For

theoretical coherence, we interpret source monitoring errors as the mediator rather than the outcome in our model.

Implications for Construal Processes of Evaluation

Study 2 replicated the effect of extrapolation on attitude polarization and found that the mean valence of thoughts associated to the attitude object fully mediated this effect. According to the construal model of attitude (Ajzen & Sexton, 1999; Lord & Lepper, 1999; Schwarz & Bohner, 2001; Schwarz et al., 1991), an evaluative response is informed by a handful of associations activated upon perceiving the attitude object. This idea was supported indirectly by changing attitudes through the manipulation of associated thoughts (e.g. McGuire & McGuire, 1991, 1996; Sia et al., 1997), and by directly measuring the correlation between attitude change and associated thought valence change (e.g. Petty et al., 1981; Lu et al., in press). Results from Study 2 were consistent with previous findings, adding to the evidence that changes in associated thoughts regarding an attitude object can cause corresponding attitude change.

Given that the effect of extrapolation was mediated by both source monitoring memory errors (Study 1) and mean valence of associated thoughts (Study 2), the most parsimonious explanation for the present set of results is that source monitoring errors made some of the extremely negative attributes accessible along with the original moderately negative attributes. When evaluating the attitude object after extrapolation, participants activated a mixture of the extreme attributes and the original attributes. Previous research has shown that activating a different set of associations with different evaluative implications changes attitudes accordingly (Ramsey et al., 1994; Sia et al., 1997; Wallace et al., 2005).

Once activated, the extremely negative attributes could result in attitude polarization by lending their extreme valence to the overall evaluative response.

The introduction of the extremely negative attributes into the activated set may have also changed the perceived implications of the original attributes. We cannot rule out the possibility that the extrapolated attributes not only themselves applied extremely negative implications to the overall evaluative responses, but also made perceived valence of the original attributes more negative. The evaluative implications of associations regarding an attitude object are often interpreted in the context of other accessible information (Higgins & King, 1981; Srull & Wyer, 1979; Wyer & Srull, 1989), especially when the implications in question are ambiguous (Higgins et al., 1977; Stangor, 1990). In the present studies, the original attributes were presented as moderately undesirable behaviors or characteristics of the target social group (e.g. "They often seem to talk on and on"), the implications of which may be easily affected by contextual information. This speculation, of course, cannot be directly tested without an elaborate content analysis of participant's associated thoughts, an endeavor that is beyond the scope of the present research. Nonetheless, results from Study 2 seemed to support, at least indirectly, the possibility that extrapolated attributes might have affected the perceived valence of original attributes. If the perceived valence of the original attributes were not affected, one would assume that a mixture of the original attributes and the extremely negative attributes (in the extrapolation condition) would show larger variance in valence ratings than the original attributes only (in the control condition). In Study 2, however, participants in the extrapolation condition rated their associated thoughts as universally more negative than the controls, but displayed no greater heterogeneity of variance. In summary, by activating the extrapolated, more extreme attributes when

evaluating the attitude object, people who extrapolate may apply the extreme valence of these attributes directly to the overall evaluative responses, or perceive the valence of the original attributes as more extreme. The two possibilities are not mutually exclusive and can both lead to more extreme attitudes.

Future Directions

We hypothesized that source monitoring errors would cause the activation of both original and extrapolated attributes in the evaluative process. That is, the two mediators tested separately in the present two studies might take their effects in succession. This idea would be best examined in a mediation model that incorporates both mediators. It is inadvisable, however, to include the thought listing task and the memory test in one experiment. Listing associated thoughts may refresh the memory of some attributes and interfere with the recall of others, inevitably affecting performance in the memory test. To measure both associated thought valence and source monitoring errors in one session, future researchers may consider revising the instructions of the thought listing task in a way that allows them to detect source monitoring error by analyzing the content of the thoughts. In the present Study 2, participants were instructed to list any thoughts that came to mind when evaluating the attitude object, with no restriction on the type or form of the thoughts. As a result, the content of the listed thoughts was highly diverse. To determine whether a thought was related to one of the original or extrapolated attributes, coders would have to depend largely on their subjective judgments. The goal of the present research did not justify such an analysis. However, by instructing participants in future studies to list attribute-related thoughts that might be relevant to evaluation (e.g. "list the good and bad qualities of students from XYZ University that come to mind"), researchers may be able to distinguish between

thoughts derived from original attributes and thoughts derived from extrapolated attributes. Success in such detection might allow source monitoring errors and associated thought valence to be tested in one mediation model.

Hypotheses of the present research were developed to address concerns regarding self-radicalization, an issue with important societal implications. Although the present research adds to the understanding of the mechanisms through which extrapolation may contribute to self-radicalization, future research should seek to generalize the present findings to more realistic situations. For example, to avoid any confounding effect of pre-exiting attitudes, we created a fictitious social group as the attitude object. In reality, the social groups people may extrapolate about are unlikely to be completely new. Future researchers may consider replicating the effect of extrapolation on existing attitudes toward actual social groups, and validate the mediating mechanisms with thoughts associated to these groups. Future research can also provide more practical guidance for dealing with self-radicalization by examining situational factors and individual differences that may trigger the process of extrapolation. As discussed above, social pressure to communicate details of an attitude object (Bartlett, 1932) and preferences of an audience (Brady & Lord, 2013; Echterhoff, et al., 2005) may encourage extrapolation. Patients with histrionic personality disorder are known to exaggerate for dramatic effect in communication (American Psychiatric Association, 2013). Individual differences related to this pathology may also affect the tendency to extrapolate. The validity of these speculations should be put to test in empirical studies. Better understanding of these factors could help practitioners such as security professionals to identify situations and individuals that pose the risk of self-radicalization.

Concluding Remarks

The present research provided evidence that extrapolating from moderately negative attributes of a social group to unknown, extreme attributes can cause people to develop extremely negative attitudes toward the group. People tend to confuse the extrapolated, evaluatively consistent attributes with the originally known attributes, and subsequently activate a mixture of both when later evaluating the attitude object. The process of extrapolation can play an important role in self-radicalization. Potential terrorists who know and receive little information about their target may seem less likely to radicalize through external persuasion. However, it is precisely because of their limited knowledge that they may radicalize on their own through extrapolation. A little knowledge could indeed be a dangerous thing.

Appendix A: The Originally Presented 12 Attributes of Students from XYZ University

Note: Each attribute was rated on a 10-point scale from -5 (very negative) to +5 (very positive) in a pilot study ($n = 10$).

Attributes	Mean Ratings	Standard Deviation
"They readily offer advice or opinions."	3.00	1.41
"They find it easy to express their viewpoints."	2.90	0.99
"They take on and initiates new projects."	2.90	0.74
"They seem compelled to conceal and evade."	-2.30	1.16
"They find it difficult to forgive injuries."	-2.40	1.17
"They are impulsive to a fault."	-2.40	1.35
"They find it impossible ever to bend their standards in judging others."	-2.5	1.58
"They often seem to talk on and on."	-2.6	1.43
"They bitterly compete with others."	-2.7	1.77
"They forcefully resist being told what to do."	-2.7	1.57
"They single-minded in pursuing prestige or money."	-2.7	1.70
"They usurp the center of attention."	-2.3	1.83

Appendix B: The Extrapolated 12 Attributes of Students from XYZ University

Note: Each attribute was rated on a 10-point scale from -5 (very negative) to +5 (very positive) in a pilot study (*n* = 10).

Attributes	Mean Ratings	Standard Deviation
"They make others feel welcome."	4.30	0.95
"They enjoy being with others."	4.20	1.23
"They comfortable at initiating conversation."	4.10	1.20
"They chat easily with others."	4.00	1.33
"They regularly invite others to join in activities."	4.00	1.05
"They impress others as being approachable, interested and neighborly."	3.90	0.99
"They strike others as being audacious, dictatorial and overbearing."	-4.2	1.03
"They judge others harshly and severely."	-4.3	0.95
"They exploit others for personal gain."	-4.6	0.84
"They revel in hurting others."	-4.9	0.32
"They ridicule and scorn others."	-4.8	0.42
"They seem determined to torment and abuse others."	-4.9	0.32

Appendix C: The Attributes Used as Distractors in the Memory Test

Positive Distracters

"They work hard at the job at hand and persists when first efforts fail."

"They energetically produce and achieve."

"They find it easy to stand up to others."

"They impress others as being aspiring, industrious and persistent."

"They eagerly initiate contact with others."

"They are eager to take on challenges."

"They express their views confidently."

"They find it easy to take clear stands on issues."

"They are quick to notice and acknowledge others."

"They often seem satisfied with themselves."

"They relentlessly pursue the job at hand."

"They regularly expect best effort from others."

Negative Distracters

"They strike others as flamboyant, melodramatic and unbridled."

"They appear incapable of self-criticism."

"They belligerently refuse requests for help."

"They impresses others as being hard-hearted, strict and unfeeling."

"They abruptly interrupt others."

"They prefer to resist cooperation."

"They see personal danger everywhere."

"They set tough conditions to accept others."

"They tend to dispute other's statements."

"They accuse others of persecuting them."

"They demand absolute compliance with rules."

"They often lead conversations and tell others what to do."

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ABSTRACT

A LITTLE KNOWLEDGE IS A DANGEROUS THING:
EFFECTS OF EXTRAPOLATION ON ATTITUDE POLARIZATION

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Although previous research has shown that mere thought can polarize attitudes, no previous studies have examined whether a specific type of thought, namely extrapolating from known to unknown attributes of an attitude object, can cause attitudes toward that attitude object to become more extreme or polarized. Two studies tested the predicted relationship between extrapolation and polarization, specifically testing the prediction that extrapolation can cause people who know a few moderately negative attributes of a group to adopt even more negative attitudes toward that group. Study 1 found that this polarizing effect of extrapolation is mediated by source monitoring errors. Study 2 found that the effect is also mediated by perceived valence of cognitive associations to the attitude object. The results add to understanding of how source monitoring and biased evaluation processes can contribute to self-radicalization.