Toward a Greater Understanding of the Impact of Anger on Attitudes Toward War: A Consideration of Three Hypotheses

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Toward a Greater Understanding of the Impact of Anger on Attitudes Toward War: A Consideration of Three Hypotheses

by

John Paul Schott

A dissertation presented to the Graduate School of Arts and Sciences of Washington University in partial fulfillment of the requirements for the degree of Doctor of Philosophy

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This dissertation is dedicated to my best friend, Eron Senor (1982-2012). His gift of true friendship and endless laughs made an impact on my life I will never forget.
Previous research indicates that emotion is an important factor in shaping attitudes towards war. Specifically, studies have shown that the experience of anger leads to increased support for war. However, little is known about the mechanisms and boundary conditions of the anger-war attitudes effect. In this dissertation, I propose three potential mechanisms: time perspective, changes in risk perception and preference, and cognitive control. Results indicated risk perception and preference and cognitive control were not related to either anger or war attitudes. The consideration of future consequences (CFC) scale, used to measure time perspective, revealed only weak effects as a mediator. However, there was much stronger evidence of its role as a moderator. In particular, participants’ position along the CFC scale—their tendency to exhibit or not exhibit a focus on the future—did determine the nature of the relationship between anger and war attitudes. People who focused on the present became more pro-war as their anger increased. Therefore, focusing on present or future consequences appears to be an important factor in war opinion formation. Implications of these results and ideas for future research are discussed.
Introduction

Few public policy issues are of greater importance than waging war. Military conflicts are inherently matters of life and death for both soldiers waging the battles against one another, and the civilians trapped in between. The preparation for, and the execution of, military actions are also of enormous monetary cost. In the United States, defense spending for fiscal year 2011 was $718 billion, accounting for 20% of the country’s total federal budget (cbpp.org, 2012). For these reasons and the myriad of other facets of society impacted by war, it is critical that we acquire a more substantial understanding of the factors that influence the public’s support for war. This is the overriding motivation for the present set of experiments.

In this dissertation my main focus was on anger and the role it might play in driving people to support war more than they otherwise would. One important clarification of my research goals is worth noting at the outset. The central purpose of my research was not simply to show that anger tends to promote greater support for war. This assertion is not particularly noteworthy (although, as I will discuss presently, there is less direct empirical evidence for this relation than one might suppose). Rather, my main focus was on the reasons why anger might produce this kind of effect.

Of course, the most obvious mechanism to explain anger’s effect on war attitudes is to simply assume that anger increases aggression, and that these higher rates of aggression are causing the increased support for war. On the one hand, it is obviously true that the emotion of anger is intertwined with aggressive thought and action (Berkowitz, 1990). To this extent, it is reasonable to suppose that experimental induction of anger would, in turn, increase the likelihood that people would generally be more receptive to aggressive actions and policies, including those carried out by the government. On a theoretical level, however, it is ultimately
unsatisfying to simply conclude that “anger makes people think and act in aggressive ways” and simply view any links between anger and pro-war attitudes as part of the overall cycle of aggression. This position is a theoretical dead-end, offering no further insight into anger other than the knowledge that angry emotion leads to angry attitudes. I was interested in understanding why anger might affect attitudes, especially given that there could be more than one mechanism driving this effect.

For this introduction, I first briefly discuss and explain some key terminology that is used throughout the dissertation; this discussion is important in order to clarify the points to be made later. Next, I consider the literature that is relevant to the relation between anger and pro-war attitudes, with special attention to some less-than-obvious complexities that are relevant to these considerations. Following this, I present three hypotheses that are relevant to the issue of why, exactly, anger might have a systematic effect on these attitudes. Because anger’s impact on war attitudes is most certainly due to a host of biological, motivational, and cognitive processes, a complete understanding of these mechanisms is not possible in one set of studies. However, I elected to study three possible mechanisms in particular: consideration of future consequences, changes in risk, and limitations on cognitive control. The overarching goal of the present research is to test for these variables as possible mediators of anger’s causal influence on attitudes towards war.

**DEFINITION OF KEY CONSTRUCTS**

*Emotion vs. Mood*

In the social and personality literature, psychologists sometimes have made a distinction between *emotions* versus *moods* when referring to internal affective states (Schwarz, 2007). Strictly speaking, *emotions* have specific referents or objects whereas *moods* are more
general and typically do not have specific referents (Schwarz, 1990). In principle, this
distinction can be important, although the difference between emotions and moods is not so
easily made in practice. For example, if someone kicked your shin in the subway, it is likely that
this action will put you in an angry mood, in addition to eliciting angry emotion toward the
perpetrator. It is also worth noting that the same techniques often used to measure mood (i.e.,
adjective checklist approach) are often used to measure emotion, and vice versa. Hence,
although the distinction between emotion and mood may be important in certain contexts, it is
not especially critical here. For the sake of consistency, however, I shall use the term “emotion”
throughout the paper whenever I am referring to internal states of the participant.

State vs. Trait-Based Differences in Emotion

In the present context, my main focus was on experimentally-induced (i.e., “state”)
differences in anger, in which participants are randomly assigned to an anger inducing versus
control task. However, as with most other types of emotion, anger can also have trait-like
properties, reflecting reasonably stable differences across people in terms of their chronic levels
of anger. Whenever experimental designs seek to manipulate a particular variable, it can often be
useful to measure, prior to the manipulation, pre-existing individual differences with respect to
that construct. At the very least, this approach can allow the researcher to covary out individual
differences in the given construct, to permit a clearer assessment of the effect of the experimental
manipulation. However, depending on the context in which this strategy is employed, it is also
possible that assessing these individual differences in combination with the experimental
manipulation can yield more insight than if one merely focused on the experimental
manipulation alone. In my case, it is was not clear on a priori grounds how much, or even
whether, trait-based anger would play a role in these studies. Hence, in the discussion to follow,
I focus my primary attention on experimentally-induced anger, given that this provides the most leverage with respect to inferring causality. However, it should be kept in mind that I also measured trait-based differences in anger prior to the experimental manipulations.

**ON THE EFFECTS OF ANGER ON WAR-RELATED ATTITUDES**

On intuitive grounds, one might naturally assume that there would be some relation between anger and attitudes toward war, especially when such attitudes pertain to militaristically aggressive actions and policies of one’s own government. This is generally what the literature shows. For example, a number of recent studies (Huddy, Feldman, & Cassese, 2007; Sadler, Lineberger, Correll, & Park, 2005; Skitka, Bauman, Aramovich, & Morgan, 2006) have shown that angry (vs. non-angry) people are more likely to support aggressive actions by the United States in the context of the “war on terror” (e.g., show greater support for invading Iraq).

All of these studies strongly suggest a positive relationship between anger and war attitudes. However, they have two key limitations. First, all of these studies used a nonexperimental design, precluding any definitive conclusions regarding the causal impact of anger on attitudes and allowing for the possibility that a third variable is affecting both constructs. Second, most of this past research investigating the anger-war link used memories of a military conflict or attack (e.g., the events of 9/11 attacks) to elicit the emotion of anger. Hence, there was a perfect confounding with the dependent variable (attitudes toward war) and the factors that were used to elicit the emotion of anger in the first place, the latter of which were grounded in memories of a previous war. As noted in Lambert, Scherer, Schott, Olson, Andrews, O’Brien, and Zisser (2010), studies that prime memories of past wars are explicitly increasing the accessibility of cognitions (e.g., speeches by presidents, memories of war-related broadcasts) that could also affect attitudes, over and above any consequences of activating the
emotion of anger. Hence, if one wants to more effectively isolate the consequences of anger, it is preferable to activate that emotion using an experimental manipulation that has nothing directly to do with war or even politics in general.

Such empirical demonstration must also show that there is something about anger per se on pro-war attitudes, as opposed to other negative emotions, or states of high arousal, that are correlated with this emotion. I am aware of only one such study that meets these criteria, and that is the recent study published by Lambert et al. (2010). Across four studies, this work showed that experimentally-induced anger (controlling for changes in other internal states, such as sadness, anxiety, or arousal) led to significant pro-war shifts in attitudes toward the Iraq War. Equally important, the magnitude of this effect was shown to be the same, regardless of whether anger was elicited in a context that was related to war (Experiments 1 and 2) or not (Experiments 3 and 4). In the latter case, angry mood was elicited by having participants write about an autobiographical event that had nothing to do with war or even politics in general.

The “Why” Question

Over and above the foregoing issues, one additional element is needed in order to fully understand any linkage between anger and attitudes towards war: A research design must also be able to address why anger might be exerting this kind of effect. This includes a greater understanding of the conditions under which anger may, or may not, lead to increased support for war. Stated somewhat differently, it is important at the outset to establish that anger has a causal effect on war attitudes. Although the number of studies that have shown evidence for this causal relation is surprisingly small, the available evidence does seem to support this conclusion (cf. Lambert et al., 2010). However, such data does not speak directly to the processes by which anger might produce these sorts of effects, and the factors that might moderate when they do or
do not, occur. In the next section I present three potential mechanisms that are relevant to these considerations.

PRESENTATION OF HYPOTHESES

As described above, one of the overarching aims of my research is to understand why and how anger might lead to systematic changes in attitudes toward war. In this research, I propose, and empirically test, three hypotheses that are relevant to this overarching aim, including the (a) **time perspective hypothesis**, (b) **risk hypothesis**, and (c) **cognitive control hypothesis**. To anticipate a potential misunderstanding, these hypotheses are not mutually exclusive of one another. For example, evidence that supports (or does not support) the first hypothesis does not bear directly on the validity of the other two. Hence, each of these hypotheses should be considered as conceptually distinct from one another.

**THE TIME PERSPECTIVE HYPOTHESIS**

One possible mechanism driving anger’s causal impact on war support is the fact that angry people may not be thinking very much about the future. That is, when people become angry, their attention is drawn away from the future and the upcoming consequences (Lowenstein, 1996). There are several reasons why this might be so. For one thing, many of the problems that make us angry have to do with events that have occurred in the past, especially those events that are perceived to violate one or more norms of justice. As Michael Ross and his colleagues have noted (e.g., Starzyk, Blatz, & Ross, 2009), anger has extremely “long legs”, in the sense that people’s memories of past events, even those that have occurred centuries ago (e.g., an ancient battle between warring nations), often have the capacity to trigger hostilities among nations. In this sense, anger represents a kind of “backward looking” emotion in the sense that this emotion is often rooted in one’s memories of things that have already happened.
The general tendency for anger to foster decreased consideration of the future could potentially account for several known consequences of this emotion. For example, consider the traffic-induced experience of anger commonly known as “road rage”. A driver becomes infuriated by a fellow drivers’ lack of automotive aptitude, and decides to pull over, get out of the vehicle, and act on his anger. While in the heat of the moment, it is unlikely that the “rager” is carefully contemplating the future consequences of his actions. Rather, he or she may be thinking in the short-term moment, “I’m going to get this guy for almost knocking me off the road!” rather than the long-term consequence “On second thought, I could hurt this person quite badly, and pay a lot of money in a lawsuit”. As many of us know, this focus on the short-term can cause us to make ultimately poor decisions that fulfilled our immediate desires, but were harmful in the long-term.

The tendency for anger to shift attentional focus away from the future may very well transfer to conflicts of a larger scale, such as military conflicts. When a nation is provoked by another nation or organization, the offended is likely to be more focused on meeting short-term goals (e.g., of revenge, or to bolster one’s immediate sense of security), as opposed to considering the future consequences of their present actions. As history demonstrates (and as several writers have noted cf. Denson, 1999), the effects of war can include many long-term negative economic, societal, and military consequences that far outweigh the short-term goals achieved by engaging in war. Based on this premise, I hypothesized that one of the mechanisms causing anger to increase support for war is the shift of focus to short-term over long-term consequences.
A Closer Look at the Time Perspective Construct

The preceding discussion of time perspective is relevant to a much larger and rather diverse literature bearing on issues such as delay of gratification (Metcalf & Mischel, 1999; Mischel, 1966), “time perspective” (Zimbardo, 1999), delay discounting (Green, 1994), probability discounting (Green & Myserson, 2010), self-regulation (Baumeister & Heatherton, 1996), impulsivity (Madden & Bickell, 2010), and the want/should conflict paradigm (Bazerman, Tenbrunsel, & Wade-Benzoni, 1998; Milkman, Rogers, & Bazerman, 2008) to name just a few areas of research.

For the present purposes, the concept in this area of research that is most congruent with my hypotheses is the degree to which people are concerned with present and future consequences. The consideration of future consequences (CFC) construct was originally defined as “the extent to which people consider the potential distant outcomes of their current behaviors and the extent to which they are influenced by these potential outcomes” (Strathman, Gleicher, Boninger, & Edwards, 1994). Individuals who score low on the CFC scale are highly concerned with the immediate consequences of behavior and have little concern for the delayed consequences of their actions. In contrast, people scoring high on the CFC scale place greater importance on future consequences and less importance on the immediate consequences of behavior. Low CFC scores are related to a variety of behavioral outcomes including higher alcohol and cigarette use (Strathman et al., 1994), less exercise (Ouellette, 2005), lower sleep quality (Peters, Joireman, & Ridgway, 2005), and lower grade point average (Joireman, 1999). CFC is also related to attitudes towards pro-environmental behaviors (e.g., recycling) and some political issues (e.g., offshore-drilling) (Strathman et al., 1994). Most importantly for the present research, the existing literature indicates that CFC is related to anger and aggression (Joireman,
Anderson, & Strathman, 2003). Specifically, individuals scoring higher in anger tend to score lower on the CFC scale and vice versa, a finding that supports the idea that, compared to other individuals, angry people tend to be less concerned with the future.

**Mediation vs. Moderation**

The CFC scale could potentially play two kinds of roles in the present context. First, CFC could mediate the effect of anger on support for militaristically aggressive policies. In this type of model, I assumed that CFC would show some degree of situational fluidity, in that experimental induction of anger could lead people to score lower on the scale (i.e., would show decreased consideration of the future) than they otherwise would. Note that this position does not contradict the assumption that CFC can and does tap meaningful individual differences in time orientation. Rather, this merely assumes that any given measure can tap meaningful variability owing both to aspects of the person, as well as the situational context in which the scale is completed. However, because the scale had not been used to measure temporary changes in CFC, there was some question whether or not it could do so effectively. In order to maximize the CFC scale’s potential to capture fluctuations in state levels of the construct, the scale was moderately altered from its original form for the present study. In the instructions, participants were told that they may have a particular preference on most days, but to make responses based on how they feel “right now in this moment”.

CFC could also act as a moderator variable, insofar as the effect of the anger manipulation on support for militaristically aggressive policies could be moderated by the extent to which participants score relatively high or low on this scale. For example, it could be that the tendency for anger to foster support for militaristically aggressive policies would be especially
pronounced for people who score low in CFC (i.e., are usually less concerned with future consequences in the first place).

**THE RISK HYPOTHESIS**

Another potential mechanism of the anger and war relationship involves two aspects of risk: perceptions of risk and willingness to make risky choices. Before considering this hypothesis in any great detail, however, it is important for my purposes to make a distinction between risk *perception* as opposed to risk *preference*. As will become clear presently, these are distinct facets of risk and were hypothesized to play their own role in explaining why anger might lead to systematic changes in war attitudes.

**Risk Perception**

In this dissertation, I define *risk perception* as an individual’s subjective belief that a particular positive or negative event will occur. For example, let’s say two people, Jim and Bob, are both late to a job interview and that they are both considering driving over the speed limit in order to arrive in time. Suppose further that Jim believes that there is a 1% chance that he will get a ticket, whereas Bob believes that the probability of getting a ticket is 30%. In this case, the behavioral option (i.e., “should I speed?”) is identical for both persons, but they obviously differ in the perceived likelihood of a negative outcome (i.e., getting a ticket) if they were to engage in that behavior.

Although there is no single, agreed-upon way of measuring perceived risk, the most common method of measuring this construct is to ask participants’ how likely certain life events are to occur (e.g., Johnson & Tversky, 1983; Lerner & Keltner, 2001). For example, in this type of research paradigm participants are typically presented with a list of target outcomes or events (e.g., how likely it is that they will marry wealthy, the probability they will contract a sexually-
transmitted disease, or the number of people who will be killed in the next year by a terrorist attack). The logic employed here is that the perceived probability of an event occurring is the same as the perceived risk of occurrence. As defined here, risk perception bears some resemblance to the concept of optimism. Indeed, the technique used in the study by Lerner and Keltner (2001) involved an adaptation of a well-known measure of optimism developed by Weinstein (1980). Nevertheless, it is important to keep in mind that, as employed here, the construct of risk perception is broadly defined as the subjective likelihood of negative as well as positive events.

Risk Preference

Another important aspect of risk is risk preference. Here, the focus is on the degree to which the person is, or is not, likely to engage in a given risky behavior, holding perceived risk constant. Returning to my earlier example, now suppose that Jim and Bob both hold identical beliefs about the probability of getting a ticket, and both believe that the chances are quite high (50%). Suppose further that they also have identical perceptions with respect to all other relevant outcomes present in this situation (e.g., they hold identical beliefs about the likelihood of getting a job offer after the interview). Even if one were to hold every single aspect of their beliefs constant, it still could be that Jim might be more likely to speed than Bob. In this case, Jim and Bob differ in their apparent preference for risk, insofar as Bob appears to have a lower tolerance for engaging in behaviors that are associated with potentially serious and negative outcomes, even though he does not actually differ from Jim in terms of how likely those outcomes are considered to be. In this case, one might loosely say that Bob is less of a “risk taker” than Jim, but a more precise way of rendering this difference is that these two individuals
differ in how they prefer to act in the context of risk, with all relevant aspects of their perceptions held constant.

As used here, the concept of risk preference bears some resemblance to the constructs of risk aversion (vs. risk taking), as studied by Kahneman and Tversky in their line of work on prospect theory (1979). In one of the more well-known paradigms employed in this literature, participants are asked to select among one of two potential choices after being explicitly informed of the relevant probabilities associated with each decisional optional. For example, in the famous “Asian disease” problem, participants are told that if they choose treatment A, there is a 100% chance that 200 (out of 600) people will definitely live. However, if they choose treatment B—the “riskier” of the two decisions—there is a 1/3 chance that everyone will live, but a 2/3 chance that everyone will die. One of the interesting findings to emerge from this work is that seemingly trivial differences in the way that the problem is framed can lead people to have relatively greater preference for the risky choice, which is not normally seen as a viable option. For my purposes, however, the most important aspect of this research is that people are explicitly given the relevant probabilities associated with each decision and, as such, risk perception is held constant. Nonetheless, as the research by Kahneman and Tversky shows, people can differ in their preferences for choosing to act in certain ways, even though the risk perceptions are held constant.

The construct of risk preference (as opposed to risk perception) is also relevant to work in the personality area. Early research in this area suggested a general link between extraversion (Eysenck, 1990) and risk, but more recent work suggests that preference for risky behaviors and choices may actually be driven by individual differences in sensation seeking, a dimension which is correlated with, but distinct from, extraversion (cf. Horvath & Zuckerman, 1993; Hoyle,
Fejfar, & Miller, 2000; Zuckerman & Kuhlman, 2000; Steinberg, Albert, Caufmann, Banich, Graham, & Woolard, 2008). This raises the possibility of a dynamic interchange between risk preference and risk perception, which I discuss in more detail below.

**Risk Perception and Risk Preference in Real-Life Decisions**

In most real-life decisions, people rarely know all of the relevant probabilities of their decisions (or potential decisions) ahead of time. In such cases, there may be a fluid, dynamic interchange between risk perception and risk preference. For example, a person who downplays the risks of skydiving (e.g., believe that the odds of a failed parachute are low) are probably more likely to prefer this sport compared to those who believe that these risks are high. Or, the reverse may be true, insofar as preferences can drive perceptions. For example, a person who (for whatever reason) loves to skydive may attempt to justify that lifestyle by arguing that the perceived risks of the sport are actually lower than is commonly believed.

Nonetheless, although risk perception and risk preference may sometimes be related, they are clearly distinct and it is reasonable to suppose that they are not always perfectly correlated. An individual who is “risk-seeking” may very well perceive that a situation has a high probability of a negative outcome (e.g., “yeah, failed ‘chutes do happen all the time”), yet will still make the risky choice. Conversely, an individual who is “risk-averse” may perceive that an act has a low probability of a negative outcome, but could still select the option with the least amount of risk. Put another way, risk perception is looking at a situation and asking, “Are there risks?” Risk preference asks, “Should I act knowing the risks?”

**Anger and Risk**

In the emotional appraisal literature, one often sees the claim that anger tends to promote “risky” decision making (Litvak, Lerner, Tiedens, & Shonk, 2010). This position seems to
validate our intuitions, as angry people often appear to engage in behaviors that, from an outside perspective, seem rather inadvisable. For example, people who are very angry often choose to retaliate against others in ways that run the risk of making the situation even worse, leading to an escalating cycle of negative outcomes. One way of framing this sort of anger-driven riskiness is that the emotion of anger, by its very nature, tends to lead people to engage in actions that are intrinsically risky.

These considerations raise a number of questions, however. For one thing, what aspect of risk might be involved here? Is it the case that anger produces a shift in preferences for risky behavior and decisions, leaving perceptions of risk unaffected? Or, is it the case that anger affects risk perception, insofar as angry people are more “optimistic” than non-angry people, a state of affairs that ultimately leads them to engage in behaviors, and support decisions, that non-angry people would tend to reject out of hand because of the perceived dangers associated with them? Of course, anger could, in principle, be relevant to both aspects of risk, insofar as this emotion might simultaneously (a) lead people to view the future more optimistically (i.e., see positive outcomes as more likely, and negative outcomes as less likely) and also, (b) lead to a greater preference for risky choices, holding perceptions constant.

What does the literature show with respect to these considerations? It should be noted at the outset that the risk literature generally focuses on either risk perception or preference. It is far rarer for researchers to measure perceptions and preferences within a single line of research (for notable exceptions see Klein & Cerully, 2007; Sitkin & Weingart, 1995; and Sokolowska, 2006). Focusing more specifically on studies that have explored the role of anger, I am aware of only one article that has measured risk perception as well as risk preference, that by Lerner and
Keltner (2001). This study is especially relevant to the current discussion and is therefore worth discussing in some detail.

In Study 1 of Lerner and Keltner (2001), researchers found a positive correlation between trait anger and risk preference on the afore-mentioned Asian disease problem. Specifically, anger was positively correlated with a tendency to prefer the more risky of the decisional alternatives. Moreover, this study nicely separated the effects of anger (which was positively correlated with preference for risky decisions) from anxiety (which was correlated in the opposite direction). To reiterate a point made above, use of the Asian disease problem provided valuable leverage that anger influenced risk preference, not perception, because all participants were simply told to accept the given probabilities as fact. Note, however, that this study was nonexperimental and hence could not show the direct causal effect of anger on this sort of preference.

The remaining studies (Studies 2-4) showed a relation between anger and risk perceptions. In particular, anger was shown to be associated with a pattern of “optimistic” risk perceptions, such that anger was associated with higher probabilities of positive outcomes, but lower probabilities of negative outcomes. In other words, anger seemed to promote a general “rosiness” in thinking about the future. Two of these studies (Studies 2 and 3) demonstrated this pattern using a nonexperimental design, whereas the final experiment (Study 4) demonstrated this effect using an experimental design, in which participants were randomly assigned to an anger vs. anxiety induction task. This latter study showed greater optimism among participants assigned to the former compared to the latter condition. Unfortunately, this study did not contain a control group. A control group is critical in order to separate the effects of anger from anxiety and vice versa. Stated differently, it is not clear whether the observed effects were mostly due to
the “optimistic” effects of anger, the “pessimistic” effects of anxiety, or whether both types of emotions were contributing.

**Summary and Potential Implications**

To summarize, the available literature suggests that the emotion of anger is likely to lead people to adopt more pro-war attitudes than they might otherwise endorse. Nevertheless, much of the available evidence in this regard is nonexperimental and, even for the research that has shown this effect using an experimental design (cf. Lambert et al., 2010), it is far from clear why, exactly, anger might have this effect. As for risk, there is some evidence that anger can affect risk in at least two ways, both by leading to a systematic shift towards risky decision making (holding risk perceptions constant) but, also, in leading people to hold more optimistic views of the future. As noted above, however, the available evidence is not completely definitive in this regard. Setting aside these complexities, however, these considerations raise a provocative and empirically testable set of propositions regarding the role that risk might play in the relation between anger and pro-war attitudes.

**ANGER, RISK, AND ATTITUDES TOWARD WAR**

An essential point of the risk hypothesis is that differences in risk perception and risk preferences will affect the way individuals make judgments about engaging in war. In considering this possibility, it is important to note that I am assuming that war is an intrinsically “risky” enterprise, in the sense that any large-scale military campaign typically carries the possibility that there will be significant casualties associated with that war. Of course, war is also associated with the potential for loss in a material sense, as waging a large scale war is inordinately expensive. For example, the United States Congress has allocated over 1 trillion dollars for the wars in Afghanistan and Iraq since 2001 (Reuters.com, 2010). One could always
justify these potential losses in several different ways, either on moral grounds (e.g., “we must fight evil, no matter what the costs”), or on the grounds that victory is certain (e.g., “this will all be worth it at the end, once our enemy is defeated”). However, the reality of war is that the eventual outcome is never known in advance and, as such, there is always the possibility that things could go disastrously wrong. Nevertheless, despite these obvious risks, people can and often do support entry into war, and this seems especially true when people are angry. This raises the possibility that the link between anger and war attitudes is determined in some way by changes in risk. I describe these possibilities in a more formal way below.

**Hypothesis 1A (Mediation)**

One possibility is that the effect of anger (X) on war attitudes (Y) is mediated, in part, by changes in risk perception and/or risk preference (Z). In one version of this meditational model, anger leads to a general shift towards optimism, such that angry people are generally likely to see positive outcomes as more likely, and negative outcomes as less likely. Hence, when confronted with the prospect of a large-scale military invasion (e.g., the entry of the United States into war with North Korea), anger would tend to change the perceived risks of war, such that angry people would, compared to non-angry people, (a) believe that victory is more likely and that (b) the military involvement would entail fewer “losses” including those associated with loss of life. In other words, if the emotion of anger tends to breed general optimism, this fact alone might be responsible, in part, for the fact that angry people are more likely to support entry into war. Another possibility (not exclusive of the first) is that anger leads people to become more tolerant of the risks of war, holding perceptions constant. In this view, anger leads people to have a greater preference for engaging in risky enterprises and, as such, paves the way for greater support for war, even though the actual risks associated with this attitudinal position remains
unchanged. It is also possible that both risk perceptions and risk preferences would act as mediators at the same time, but independently from one another.

**Hypothesis 1B (Moderation)**

In addition to its possible role as a mediator, risk could also act as a *moderator* variable. In particular, even though risk can be affected by situational variables, there is ample evidence that risk perception and preferences have “trait-like” properties as well. Thus, even if risk is *not* affected by anger, it could be that pre-existing differences in risk perception and/or risk preference determine the magnitude of the effect of anger on support for militaristically aggressive policies. For example, the tendency for anger to foster support for militaristically aggressive policies could be especially prevalent among dispositionally optimistic risk perceivers. Here, dispositional differences in risk *perception* could moderate the relation between anger and attitudes, such that the magnitude of this relation would be greater among people who are generally optimistic in their perception of risk. In addition, it could also be that differences in risk preference could also moderate the relation between anger and attitudes, such that this relation would be stronger among people who have a chronically high preference for (or tolerance of) risk. Additionally, it is possible both mediation and moderation effects could also occur simultaneously.

**THE COGNITIVE CONTROL HYPOTHESIS**

In the two preceding sections, I considered the possibility that anger might affect (a) how people think about the future (cf. the risk hypothesis), and/or (b) whether they are thinking about the future at all (cf. the time perspective hypothesis). Here I consider a third and rather different possibility, that anger can more broadly affect the way that people process information. In particular, I proposed that anger can lead to a general decrease in people’s tendency to process
information in an analytic manner, leading them to engage, instead, in more heuristic styles of decision making. To anticipate the line of reasoning ahead, I suggest that anger leads people to latch on to rather simple rules of thumb (i.e., heuristics) which, in the context of a military conflict, could lead people to show more support for an emerging war than they otherwise would. In the discussion to follow, I first provide a very brief summary of what is known about the determinants of processing style, that is, whether people process information in an analytic versus heuristic manner.

Early studies of mood and processing style generally have tended to focus on the differential consequences of positive and negative affect. Most of these studies concluded that negative affect caused individuals to process information in an analytical, detailed, and careful fashion (often labeled “systematic processing”) whereas positive affect caused individuals to process stimuli in a shallow manner, using less effort and less attention to detail (Clore, Schwarz, & Conway, 1994; Forgas, 1995). This “heuristic-based” processing generally includes a reliance on pre-existing knowledge structures, peripheral cues, and cognitive shortcuts (e.g., stereotypes) for social judgments and decision-making.

More recent research suggests, however, negative emotions do not inevitably lead to increased systematic processing. In particular, although sadness does appear to induce greater reliance on systematic processing (Bless et al., 1990; Lambert, Khan, Lickel, & Fricke, 1997; Schwarz & Bless, 1991), anger produces an entirely different effect. In particular, studies on anger suggest that it acts in a manner similar to other positive emotions (e.g., happiness) and causes individual to use a more shallow, heuristic-based processing style (Bodenhausen, Sheppard, & Kramer, 1994; Lerner et al., 1998; Tiedens & Linton, 2001; Small & Lerner, 2008).
How might these considerations be relevant to the link between anger and pro-war attitudes? For one thing, note that the reasons one could use to justify going to war immediately (e.g., they threatened us, we need to retaliate NOW!) are relatively simple and often have a knee-jerk, tit-for-tat flavor. In contrast, the reasons that are often given for not going to war typically involve more complex conditionalized processing (e.g., if we attack now, this could potentially make us more vulnerable to attack). Hence, other things being equal, a shift from analytic to heuristic processing might make it more likely that people generate pro, as opposed to anti, war attitudes. A somewhat different way of framing this idea is that generation of anti-war attitudes may require some degree of inhibition of relatively “primitive” impulses, such as the desire to hit back when one is hit. However, successful inhibition requires cognitive control (i.e., is an effortful, rather than automatic, process) and to this extent anger might tend to interfere with this inhibitory process, making it more likely that people respond impulsively in times of war (or impending war). In either case, the central prediction here is that the emotion of anger might decrease cognitive control and produce greater reliance on heuristic, compared to controlled, processing. This shift could, in and of itself, promote a greater acceptance of pro-war attitudes for the reasons noted above.

A Brief Note on Motivation vs. Ability

The aforementioned discussion raises the question of why, exactly, anger promotes a less systematic (i.e., more heuristic-based) style of processing. This issue is not critically important for present purposes, but does merit brief explanation here. One possibility, stemming from the mood as information literature (Schwarz, 1990) is that anger essentially acts as an “act now, think later!” cue, prompting people to engage in well-learned behaviors that do not require a great deal of cognitive thought. Put somewhat bluntly, anger is a fairly “primitive” emotion that
is associated with relatively simple action tendencies (fighting back) and hence, the experience of anger might be sufficient to trigger simple (heuristic) rather than analytic modes of thought. Similarly, from an evolutionary perspective, anger may signal a dangerous/threatening environment. In order to survive the immediate situation, action must be taken rapidly. The need for an immediate response would most certainly require the use of a heuristic processing strategy. Note that this explanation is a motivational account of anger, in that anger decreases people’s motivation to engage in controlled, systematic processing.

A somewhat different explanation derives from the idea that the experience of the emotion itself, and/or the cognitions associated with it, can act as a kind of cognitive load, preventing people from engaging in careful, systematic processing of information (Lambert et al., 1997; Schwarz, 1990). Note that this is an ability-based, not motivational, account. According to this account, even if people wanted to process information carefully while they were angry, they would (to varying degrees, depending on the intensity of anger) be impaired in their ability to do so.

For purposes of the present studies, however, it was not especially critical whether the link between anger and processing style is due to changes in motivation or ability. What is most important is that the experimental induction of anger should lead to a reduction in cognitive control, leading participants, in turn, to rely to a greater extent on heuristic-based processing. For reasons noted above, this shift in processing style could, in and of itself, foster a greater likelihood of people formulating pro-war attitudes. Fortunately, there are several well-established techniques for measuring cognitive control, including a relatively simple technique recently employed by Payne (2005), which I describe in more detail in the methodology section.

Mediation vs. Moderation
Similar to the two proceeding hypotheses, the critical variable (here, cognitive capacity) could play a role as a mediator, as well as a moderator. In this particular case, I was most confident in making predictions for mediation, given the evidence pointing to the deleterious effects of anger on cognitive control. This meditational model can be formally stated as the possibility that the effect of anger (X) on support for war (Y) could be mediated, in part, by changes in people’s cognitive control (Z), the latter measure to be assessed via a general measure of control (Payne, 2005). It is also conceivable that cognitive control could act as a moderator. Here, as in the previous two hypotheses, there could be individual differences in cognitive control. To this extent, it seems reasonable to suppose that people who exhibit chronically low levels of cognitive control might be more likely to show evidence of the effects of anger on support for militaristically aggressive policies. Stated differently, it could be that the combination of experimentally induced anger coupled with chronically low levels of cognitive control could lead to relatively high levels of support for military conflicts.

**SUMMARY OF HYPOTHESES**

One way of thinking about these topics is that I am proposing that anger could affect cognition in two key ways. In particular, anger could affect (a) what people are thinking about as well as (b) how people are thinking. The first two hypotheses--changes in time perspective and risk perception/preference--are examples of changes in what people are thinking about. That is, anger may affect whether people are thinking about the future or not (cf. Experiment 1) as well as whether they are, or are not, considering the relevant presence of risks (cf. Experiment 2). However, anger could also affect how people are thinking about these issues, namely, the extent to which these thoughts are dominated by controlled vs. automatic processes (cf. Experiment 3).
Figures 1A and 1B provide a schematic summary of the preceding hypotheses. As seen in the top figure (1A), my research assessed the validity of three distinct meditational mechanisms that could, in theory, account for the effects of anger on pro-war attitudes. In each case, I employed suitable measures of each of the three key constructs (time perspective, risk, cognitive control) and used standard statistical techniques to assess mediation. In this case, differences with respect to these three variables could moderate the extent to which the experimental manipulation exerts an influence on the dependent variable. This possibility is schematically illustrated in Figure 1B.

As implied by the preceding section, my primary focus was on mediation, mostly because the predictions derived from the literature were more relevant to mediation, rather than moderation. However, it should be emphasized that moderation is no less “important” than mediation and that support for one or more models of moderation is likely to offer as much insight into the present considerations as would models of mediation. Of course, as mentioned previously, it is also possible that both mediation and moderation could occur.

**OVERVIEW OF EXPERIMENTS**

In all three experiments, all participants first completed a battery of individual difference measures, including standard measures of political ideology, trait anger, and trait aggression. Following these measures, participants were randomly assigned to either the anger or the neutral mood manipulation. At the end of all three experiments participants were presented with a hypothetical war scenario and asked to evaluate their support for war and perceived risks of the war. The key difference between the three experiments was which of the hypothesized mediators of the anger--war attitudes relationship were measured.
In theory, it might be possible to conduct a single experiment in which all relevant tests of mediation/moderation involving all three of the relevant intervening variables (time perspective, risk, and cognitive control) were conducted in the context of a single study.

However, a valid concern was that if participants are spending a significant amount of time and effort on the meditational measurement tasks, this could counteract the effect of the mood induction. If their experimentally induced moods drop back to baseline, then we would be unable to see the emotion’s effects on the main dependent variable, attitudes towards war.

To avoid this possible problem, each proposed mechanism was measured in separate experiments. Experiment 1 involved an experimental manipulation of anger (vs. control) and included a measure of consideration of future consequences. Experiment 2 was the same as Experiment 1, but instead of measuring CFC, participants completed measures of risk perception and preference. Experiment 3 was the same as Experiments 1 and 2 except for the use of a measure of cognitive control.

**EXPERIMENT 1**

**METHOD**

*Participants and Design*

A total of 116 college undergraduates (54 male, 62 female) participated in this study for partial completion of course credit or payment of ten dollars. The design consisted of one between-subjects factor, involving random assignment to the justice violation versus neutral mood condition. Preliminary analyses of the data revealed seven participants with outlier scores on key dependent variables (in all cases, +2.75 SDs above or below the mean), including (a) five participants who had extreme responses on the anger/war attitude tasks and (b) two participants who selected the lowest possible option when asked to rate how much effort they put into the experiment as a whole. The 2.75 SD cut-off is based on the identification of two particular cases
that were apart from the distribution. This cut-off allowed for these two participants to be removed from analysis. Two additional participants were excluded, one for not following directions, and another for demonstrating a high level of suspiciousness on the experiment. After these exclusions, a total of 107 participants were retained in the formal analyses, 51 in the experimental condition and 56 in the control condition. (When the aforementioned participants were not excluded, analyses revealed a pattern that was very similar to, but somewhat weaker than, the results reported ahead.)

Schematic Overview of Design

Because of the complexity of the design and multitude of measures pertaining to different theoretical issues, some readers may wish to consult a schematic summary of the various measures and tasks to be described in more detail ahead. This summary is presented in Figure 2.

Assessment of Individual Differences

Upon arriving at the laboratory, participants were escorted to separate cubicles. Participants first completed a battery of individual difference questionnaires, briefly summarized below. (For the sake of expositional clarity, I do not list all of the items in each individual difference variable in the discussion to follow; see Appendix A for a complete list of all items in each scale.)

Trait anger/aggression. The first two set of scales assessed chronic (trait-based) measures of aggression or anger. The first of these was Spielberger’s (1985) 13-item trait-anger scale. This scale contained items such as “I am a hotheaded person” and “I have a fiery temper” while using a Likert response scale of 1 (almost never) to 9 (almost always). Two items that are normally used in this scale were not included because they were state rather than trait measures of anger (“I feel irritated; I feel angry”). A composite index of trait anger was formed on the
basis of an average of all 13 items (alpha = .83). Participants next completed Buss and Perry’s (1992) trait aggression scale, in which participants were asked to respond to 14 items along a scale ranging from 1 (extremely uncharacteristic of me) to 9 (extremely characteristic of me). An average of these items yielded an overall index of trait aggression (alpha = .84). As one might expect, the aforementioned measure of trait anger was significantly correlated with scores on this index of trait aggression (r = .54, p < .001). However, I included both measures in light of previous theory and research suggesting that trait anger and trait aggression are correlated, but theoretically distinct, constructs. See Table 1 for the means and standard deviations of constructs in Experiments 1 – 3.

**Sensation seeking.** Next, participants completed Hoyle, Stephenson, Palmgreen, Lorch, and Donohew’s (2002) Brief Sensation Seeking Scale (BSSS). As noted in the introduction, sensation seeking is a personality variable related to risk-taking. Research also suggests that sensation seeking may be associated with a tendency to not think about the future (i.e. be focused on the present; Joireman, Anderson, & Strathman, 2003). The BSSS employed a Likert-type scale of 1 (strongly disagree) to 9 (strongly agree); a composite measure was formed on the basis of all 8 items in the scale (alpha = .82).

**Political attitudes.** Participants then completed a series of scales to assess their pre-existing political attitudes. They first completed a 12-item measure of political orientation. Each participant’s favorability towards liberalism and conservatism was assessed by presenting the two statements “I consider myself to be politically liberal (conservative)” with a response scale of 1 (very much disagree) to 9 (very much agree) for both (Conover & Feldman, 1981). These types of ideology measures have been a strong predictor of voting behavior and a wide variety of political attitudes (Jost, 2006). In the political science and political psychology literature,
political orientation is usually divided into two dimensions: Economic and Moral ideology (Feldman, 2003). Therefore, in addition to the two broad items of political orientation described above, participants also responded to four questions regarding their views towards political economics (“The U.S. government already spends too much giving money to the poor”) and three items on political morality (“I support full legalization of homosexual marriage”). Recent research has also indicated a third dimension called “tough-mindedness” which consists of political attitudes towards militarism, crime, and immigration (Young, 2009). Three items were included to assess trait attitudes towards this dimension (“The death penalty should be eliminated from the American Justice System”). These political orientation measures consisted of a total of 12 items and were averaged for a reliability alpha of .72.

Participants next completed measures of Social Dominance Orientation (SDO; Pratto, Sidanius, Stallworth & Male, 1994) and Right-Wing Authoritarianism (RWA; Altemeyer, 1988). These are by far two of the most common political attitude measures used in the literature presently. SDO is an attitudinal orientation regarding intergroup relations. More specifically, SDO measures whether one generally prefers group relations to be hierarchical rather than equal. Scale items include, “To get ahead in life, it is sometimes necessary to step on other groups” and “All groups should be given an equal chance in life”. RWA is a personality variable containing three main factors: conventionalism, aggression towards outgroups, and submission to authorities. Items on the RWA scale include “The established authorities generally turn out to be right about things, while the radicals and protestors are usually just "loud mouths" showing off their ignorance”. Participants completed a shortened version of the RWA scale to limit the reduction in participants’ attentional abilities that may occur during the experiment. Both
measures used a response scale of 1 (strongly disagree) to 9 (strongly agree). Both indices had excellent reliabilities (SDO, $\alpha = .91$; RWA, $\alpha = .88$).

*Assessment of Baseline Mood*

In addition to the aforementioned individual difference variables, mood was also assessed before the mood manipulation. The purpose of this task was to provide an initial “baseline” level of mood. This was accomplished using a modified Positive and Negative Affect Scale (PANAS) (Watson & Tellegen, 1988). (The modification in question simply reflects the fact that I included a wider range of mood queries than is typically included on the PANAS.) In this task, participants were presented with adjectives describing a particular mood (e.g., angry, pleased). For each of the mood adjectives participants were asked to rate the extent to which they felt that affective state at that moment, along a scale ranging from 1 (not at all) to 9 (very much so). The full set of adjectives included the following 25 randomly presented adjectives: interested, bored, edgy, happy, alert, irritated, satisfied, mad, upset, tense, sad, pleased, relaxed, unhappy, angry, determined, irate, dejected, anxious, comfortable, jittery, nervous, worried, confident, calm.

*Correlation Among Individual Difference Variables*

It is useful to provide a preliminary indication of how all of the various individual difference variables were related to one another. As seen in Table 2, the three political measures (Political Orientation, SDO, RWA) all correlated with each other significantly. Interestingly, sensation seeking was positively related to trait aggression, but was non-significantly negatively associated with trait anger. Of the political ideology measures, only social dominance was significantly related to trait aggression at the .05 alpha level. However, both SDO and RWA (but not Political Orientation) were significantly related to Trait Anger.
Baseline state emotions were strongly correlated with one another. Not surprisingly, the baseline state anger, anxiety, and sadness were all related to trait anger. The state emotion baseline measures did not correlate with any of the other individual difference variables with the exception of baseline anger with trait aggression and RWA.

*Mood Manipulation and Measurement*

After completion of the pre-measures, mood was manipulated using a procedure adapted from a widely-used method initially developed by Strack and his colleagues (Strack, Schwarz, & Gschneidinger, 1985; see also Lambert et al. 1997; 2010). Half of the participants were randomly assigned to an anger induction condition. This induction consisted of two sections. In the first section, participants were asked to “think about an event in your life in which you were treated extremely unfairly. In your response, describe what actually happened in as much vivid detail as you can”. Participants were given a blank space (taking up approximately three fourths of one page) to write their response. On the next page, participants were given the following additional instructions: “Now we would like you to focus more specifically on how this event makes you feel. Please include any and all aspects of your own internal reactions, including thoughts, emotions, as well as any physiological changes (e.g., changes in heart rate). Please focus both on (a) how the event made you feel at the time the event initially occurred as well as (b) how this event makes you feel right now”. As in the first part, participants were given a blank space, consisting of three fourths of a page, to write their response. Completion of this task generally took between 10 and 15 minutes.

The other half of the participants were assigned to a neutral mood condition (or, more precisely, a non-manipulated/baseline, mood condition). In this group, participants were asked to write about the mundane details of an average day in their life. This task took about the same
amount of time as the angry mood induction, i.e. approximately 10-15 minutes. Following the mood manipulation task, all participants returned to the computer and completed the same PANAS task that had been given as a pre measure.

*Formation of Mood Composites*

Composites of specific emotions were created based on principal components analysis. The index of anger was created using the items *mad, angry, irate, upset* (α = .93). In addition, I also formed a composite index of anxiety (*anxious, fearful, worried nervous;* α = .86), and sadness (*sad, unhappy;* α = .81). Two parallel sets of composites were formed, one for the baseline measure and another for the assessment of mood immediately after the experimental manipulation. The composition of each index was the same in both cases. For example, the four specific items that were used to construct the baseline measure of anger were the same as those used to construct the post-manipulation index of anger. As one might expect given their identical composition and administration within a short period of time, each of the pairings of mood indices (e.g. pre vs. post-measures of anger) were strongly correlated with one another. The intercorrelations between the post manipulation mood indices are presented in Table 3.

*Assessment of Consideration of Future Consequences*

As described in the introduction, temporal orientation was operationalized in terms of the 12-item Consideration of Future Consequences scale (Strathman, Gleicher, Boninger, & Edwards, 1994). The CFC scale contained response options of 1 (*not at all how I feel right now*) to 9 (*very much how I feel right now*). This scale was slightly altered from its original form so that it was clear to readers that responses should indicate current feelings towards the items, not their global consideration of the future and its consequences. An average of all items was used for the CFC index (α = .86).
Because of the central importance of the CFC scale to this study, it is useful to elaborate on its role in the analyses to follow. As I noted in the introduction, an overarching objective of the present research was to gain greater insight into “intervening” variables that might help to explain the link between anger and changes in war attitudes. In this study, temporal orientation, as measured by the CFC scale, could actually play two distinct roles.

First, it is possible that CFC could act as a mediator, whereby the effect of the experimental manipulation on war attitudes could be due, in part, to changes in temporal orientation. (Note that the meditational role of CFC would likely arise in combination with changes in mood. Hence, technically, this would involve a “double mediation” involving changes not only in angry mood, but temporal orientation as well.) Second, CFC could also act as a moderator, in addition to any role it might play as a mediator. In this latter case, the effects of the experimental manipulation on key dependent variables could depend on whether participants score high or low on CFC. Although the combination of mediation and moderation in the same study can sometimes be complex, the present data provided a fairly clear delineation of these two “roles” of CFC.

**War Passage**

After completing the CFC scale on the computer, all participants were instructed to return to the paper packet used previously for the mood manipulation. There, they were given instructions to read a passage about a hypothetical military conflict involving the United States of America, South Korea, and North Korea. They were told that although the current situation was NOT actually happening, they should read it as if it did in fact reflect the current state of affairs in the world today. They were asked to think about the implications of such a situation
and what actions they believe the United States should take going forward. Participants were given the following passage:

**Washington DC, (UPDATED 5:20 pm).** In a series of fast-moving events today, the President and the U.S. Congress agreed to further talks in light of the serious situation quickly developing involving North Korea. Senior Pentagon officials confirm that these options include the use of military force. The current situation has escalated dramatically over the past three weeks, and is centered on four key events. All four of these events involve North Korea engaging in acts of aggression against the United States and South Korea, one of the U.S.’s strongest allies in the region.

Although North Korea has threatened the United States and much of Western Europe the past months, the situation turned deadly when the American embassy in Thailand was bombed, causing the deaths of nearly 15 people, most of which were American citizens. All evidence provided by the C.I.A. suggests North Korean militants were responsible for the attack. Following this attack, five Americans were kidnapped from the American embassy in Japan and are currently being held hostage in Pyongyang, North Korea. Last week, the U.S. shot down two North Korean spy planes flying into American air space. Two days after the spy planes were shot down, 25 alleged North Korean spies were arrested in and around Washington D.C. and New York City. Reports from senior government officials indicate the captured spies had been conducting surveillance of important U.S. sites including the Pentagon and the Capital building. The alleged spies were caught with thousands of pictures and videos of the sites, as well as massive amounts of bomb making materials. U.S. officials believe they were part of a large network of North Korean militants plotting within the United States and believe more are still at large in the U.S. During this time, the North Koreans have continued nuclear weapon testing extending far into the pacific within 500 miles of Hawaii. The North Korean government has denied all allegations of involvement with these events. North Korean officials argue they cannot control the actions of a few rogue militants.

Officials believe North Korea’s actions stem from their frustration over recent sanctions placed on the country by the United Nations. These sanctions were pushed heavily by the U.S. and South Korea. The U.S. argued for these sanctions due to North Korea’s refusal to end their nuclear weapons program. In recent days both the United States and North Korea have attempted to display their military might. The U.S. sent a fleet of ships and submarines off the coasts of North and South Korea, North Korea has responded by conducting tests of their long-range missiles and other nuclear devices.

Beyond the United States’ hostilities towards North Korea, reports suggest that the situation is even more serious in South Korea. Both South and North Korea have been verbally fighting over many issues in the past. However, since the U.N. sanctions were imposed, North Korea has called up their military and has amassed hundreds of thousands of troops on the border between North and South Korea. American military experts believe North Korea’s military build-up is consistent with preparations for a massive invasion of South Korea. These same experts are especially concerned due to the fact North Korea has the 4th largest standing army in the world. Despite diplomatic efforts by numerous countries to convince North Korea to remove their troops from the border, North Korea has only increased their military build-up. Reports indicate that most intelligence agencies around the world, including the C.I.A, believe an invasion of South
Korea by North Korea is imminent. Due to the recent attacks on the United States and the strong possibility of the invasion of South Korea, the U.S. government is currently contemplating how to respond.

After reading the passage, participants were given space to write down their thoughts about the passage on the following page of the packet. The goal of this section was for participants to consolidate and more fully develop their opinions of the content of the passage by writing out their current feelings. In this section, participants were asked a series of questions regarding their evaluations of the scenario they just read. They were first asked, “What are your overall feelings towards the situation?” After a section of writing space, participants were prompted with the following questions: “What do you think the United States should do in this situation? Please explain why you feel the U.S. should act in the way you described. Please be as detailed as possible.” Participants were again given space on the page to write their response.

Assessment of War Attitudes

Upon finishing the writing task, participants were instructed to return to the computer for additional questions. Here, participants were asked a series of questions about the war passage. One section, which served as the main dependent variable for this study, pertained to whether participants believed the United States should engage in a military conflict with North Korea. Based on the results of principal components analyses, an average of the following items was used to construct an index of attitudes towards the possibility of U.S. military action against North Korea: Under these circumstances, the United States should immediately begin bombing North Korea; America would be completely justified in attacking North Korea; America should not go to war with North Korea, more diplomacy should be used to resolve the situation; It would be a huge mistake for the United States to attack North Korea; The United States should invade North Korea; The United States should begin to move soldiers into S. Korea in order to
advance into North Korea; Under the current circumstances, I do not support going to war with North Korea; The United States will look weak if they do not engage militarily with North Korea. Reliability for this construct was excellent (alpha = .91).

**Perceived War Risk**

Participants also received a separate section measuring their subjective likelihood estimates of possible outcomes that could occur if the United States were to attack North Korea within the contexts of the hypothetical situation presented in the passage. This included items such as, “If the United States were to attack North Korea, there would be a high probability that the U.S. would meet its objectives”. The purpose of this measure was to assess participants’ beliefs regarding the perceived risk involved for the United States if it were to go to war with North Korea. Someone agreeing strongly to the item listed above would presumably perceive little risk in going to war because he or she believes a positive outcome will occur. The reliability alpha for this construct was .67. Participants responded on a 1 (strongly disagree) to 9 (strongly agree) scale for both of the war measures².

**Assessment of Demographics**

Following the war measures, I collected demographic information from each participant. Participants were asked to provide their gender, age, citizenship, and ethnicity, as well as other related factors. Participants who replied “Asian” to the ethnicity question, were asked to specify which Asian country(ies) they themselves are originally from, or descend from. (These more precise questions of Asian ethnicity were deemed necessary because ethnicities of certain Asian countries could have differentially affected attitudes towards the hypothetical war passage, because it directly involved specific Asian countries.) After this section of demographics,
participants were asked how easy the war scenario was to imagine, how interesting the article was to them, and the amount of effort they gave on the task.

**Summary of Methodology**

To summarize, all participants began the experiment by completing a series of individual differences measures and an assessment of their state mood. Participants were randomly assigned to either the justice violation condition or the control condition and completed the subsequent writing task. Next, all participants completed an additional mood assessment task. This was followed by completing the consideration of future consequences scale and presentation of the United States vs. North Korea military conflict passage. Participants then completed the war attitudes and war risk measures. Lastly participants completed a series of demographic items and a self-report of their effort on the task.

**Brief Summary of Predictions**

I have already discussed the predictions for this experiment along with the theoretical assumptions on which these predictions are based. Nevertheless, it is useful to briefly reiterate the main predictions before presenting the main findings, ahead. To begin, I predicted that participants would show more favorable (“hawkish”) views towards military engagement with N. Korea if they had been assigned to the anger induction condition than if they were not. Anger was expected to play a key mediator role in this effect, such that the effect of the anger induction on these attitudes should be due to changes in angry mood. However, I predicted that changes in temporal orientation (as assessed by scores on the CFC scale) could also play a meditational role, over and above whatever meditational role angry mood might play. I also considered the possibility that temporal orientation could also act as a moderator, such that the positive effect of
the anger manipulation on war attitudes would be stronger among participants scoring low in CFC (i.e. those who score low in future orientation) rather than those who score high.

RESULTS

Effects of the Experimental Manipulation on Anger

As predicted, participants in the justice violation condition expressed significantly higher ratings of anger compared to those in the control condition ($M_s = 3.34$ vs. $1.74$), $F(1, 106) = 31.24, p < .001$, $\eta^2_p = .23$. This effect demonstrates that the justice violation manipulation had an effect on emotions, albeit a small effect. This effect was not moderated by gender $F(1, 105) = 1.11, p > .25$, nor by political orientation, $F(1, 105) = 0.87, p > .25$.

In addition to anger (the focal emotion in this paper), analyses revealed two additional effects, both of which were smaller (in statistical magnitude) than the effect involving anger. In particular, there was an effect involving anxiety such that scores were higher in the experimental condition compared to control ($M_s = 2.88$ vs. $2.28$), $F(1, 106) = 4.99, p < .05$, $\eta^2_p = .05$. In addition, participants reported higher levels of sadness in the former condition compared to the latter ($M_s = 3.18$ vs. $2.25$), $F(1, 106) = 10.05, p < .01$, $\eta^2_p = .09$. I believe these effects can be seen as a side effect of the anger manipulation.

One way of demonstrating the “dominant” role of anger is to show that the effects of my manipulation on anger remained significant, even after controlling for its shared variance with the other mood indices\(^2\). In particular, the main effect of the experimental manipulation on the angry mood index remained significant even after controlling for anxiety ($M_s = 3.24$ vs. $1.83$), $F(1,103) = 25.17, p < .001$ $\eta^2_p = .20$. However, the effects of this manipulation on anxiety disappeared after statistically controlling for anger ($M_s = 2.64$ vs $2.49$), $F(1,103) = .28, p > .25$. Similarly, the effect of the experimental manipulation on sadness was no longer significant after
controlling for anger ($Ms = 2.61$ vs. $2.76$), $F(1, 103) = .35, p > .25$. In sum, even after controlling for its shared variance with the other negative emotions, the experimental manipulation exerted a significant effect on anger. However, the reverse was not true, as the effects of the manipulation on the other negative emotions tended to be attenuated, or disappear altogether, once I controlled for anger.

**Primary Analyses**

One of the first issues to arise in these analyses is whether the experimental manipulation (justice vs. control) had a direct or indirect effect on (a) consideration of future consequences (hereinafter, CFC) and participants’ attitudes towards war (hereinafter, war attitudes). (For the sake of expositional brevity, I refer to the experimental condition as the “anger induction” condition, with the understanding that this manipulation actually involved a reminder of a personal event involving injustice.) A direct effect was tested using a one-way ANOVA, with the null hypothesis stating there was no difference between conditions on the CFC scale or the war attitudes scale. Neither of these analyses provided a hint of a direct effect. In particular, scores on the CFC were nearly identical, regardless of whether participants were in the anger induction condition or the control condition ($Ms = 5.99$ vs. $6.14$), $F(1, 107) = .38, p > .25$. Similarly, scores on war attitudes did not differ as a function of condition ($Ms = 3.50$ vs. $3.66$), $F(1, 107) = .27, p > .25$. Hence, CFC could not serve as a mediator in the conventional sense of that term (Baron & Kenny, 1986) because the experimental manipulation did not produce any changes in this variable in the first place. Analysis also revealed that neither CFC nor any other variable acted as a moderator of the Condition – War attitudes association. Thus, the potential moderation effect displayed in Figure 1B was not significant for any variable of interest.
However, there were a number of moderators of the Anger – War attitudes relationship. These effects are described below.

Hierarchical regression analyses revealed a marginally significant positive relationship between Anger and War attitudes (Beta = .23, p = .09) indicating a tendency for higher levels of angry mood to be associated with greater support for war. All regression analyses and tests for moderation in all three experiments were conducted controlling for the variables of condition and the baseline measure of anger, including the moderator analyses discussed below. In addition to the moderating effects of CFC (which we shall consider presently), initial analyses revealed several meaningful moderator effects of the anger – war attitudes association in their own right, including those related to (a) gender, with the anger-war effect stronger for males compared to females, (b) political ideology, with this relationship stronger for conservatives compared to liberals, and (c) trait aggression, with the anger-war attitudes link stronger for participants scoring high in trait aggression. Each of these analysis were conducted with only the moderator of interest included, and did not include the other interaction effects. Details pertaining to each of these moderator effects are provided below.

**Moderator Effect #1: Gender**

Analyses of war attitudes revealed an angry mood by gender interaction, B = -.33, p < .001. This interaction was clearly due to the fact that the relationship between anger and war attitudes was strong for the male participants (B = .63, p < .01) whereas this relationship showed, if anything, a small trend in the opposite direction for females (B = -.09, p > .25). The nature of this interaction is displayed in Figure 3.

**Moderator Effect #2: Political Ideology**
In addition to gender, the positive relationship between anger and war attitudes was also moderated by the continuous variable of political orientation (B = .18, p < .05). Using the procedure suggested by Aiken and West (1991), I explored the nature of this effect by centering all predictor variables and computing the relationship between anger and war attitudes for participants 1 SD above, as well as 1 SD below the mean for political orientation. The relatively more politically conservative participants in this sample had a strong positive Anger – War support relationship (B =.43, p = .01). In contrast, the more liberal participants did not show this effect (B = .05, p > .25). This finding is also consistent with the fact that conservatives tend to be more “hawkish” in their evaluations of war. Figure 4 provides a graphical illustration of this interaction.

**Moderator Effect #3: Trait Aggression**

Pre-existing levels of trait aggression also moderated the anger and war attitudes relationship (B = .15, p < .05). As seen in Figure 5, participants high in trait aggression revealed a significant, positive relation between angry mood and support for war, (B = .41, p < .05). In contrast, those who scored low on trait aggression did not show any hint of an anger – war relationship (B = .08, p > .25).

**Moderator Effect #4: CFC**

Initial analyses revealed a significant CFC x Anger interaction when treating war attitudes as the criterion variable, (B = -.19, p < .05). Participants scoring low (1 SD below the mean) on CFC (indicating a tendency to not think about the future) displayed a significant Anger-War relationship (B = .42, p < .01). In contrast, those at high levels (1 SD above the mean) of the CFC scale (i.e. participants who did, in fact, have a future orientation) did not display an association between Anger and War (B = -.04, p > .25). The nature of this relationship
is shown in Figure 6. As seen in this figure, participants who were thinking more about immediate consequences of military action tended to support war more as they became angrier.

**Summary of Moderator Effects**

As seen in the preceding sections, analysis revealed four moderators of the anger – war relationship: gender, trait aggression, political orientation, and CFC. That is, the tendency for anger to be related to war attitudes was contingent on four conceptually distinct variables. Nevertheless, this raises an important question: Is it really the case that these analyses reflect the operation of four distinct moderator effects? This sort of question is especially important to ask whenever the moderator variables in question are correlated with one another.

As seen in Table 4, there were, in fact, some reliable relationships between some of the moderator variables. This included a contingency of political ideology and trait aggression on gender, such that males tended to score high in conservatism and also scored high in trait aggression. As it turns out, however, conclusions are the same, even after taking into account this overlap. In particular, I again tested for each of these moderator effects while controlling for the other three moderator effects. (For example, when testing for the moderating effects of political ideology on the relationship between anger and war attitudes, I statistically controlled for gender, CFC, and trait aggression). This analytic approach yielded very similar conclusions, as these analyses again yielded clear evidence for each of the four moderator effects in question.

A more formal analysis of the independence of the interaction effects is to include all four interactions in the model simultaneously. This analysis revealed that only the gender by anger interaction remained significant $B = -.25, p < .05$. Thus these interaction effects are partially due to the role of the gender interaction effect. However, this finding does not mean that
the other three moderates (CFC, political ideology, and trait aggression) are not important and meaningful in their own right. Although it is clear that gender is key to understanding these interaction effects, the individual moderators are important for understanding the anger-war support relationship.

**Mediation of Anger-War Support**

Although CFC’s role as a moderator is consequential in its own right, an important purpose of this experiment was to test CFC as a mediator of the association between anger and war attitudes. As stated previously, because the main independent variable in this study (experimental condition) was not related to the dependent variable, classic mediational analyses following recommendations from Baron and Kenny (1986) were not possible. However, recent research on variable mediation demonstrates that indirect effects can still be theoretically meaningful and important even without meeting the preconditions stipulated by Baron and Kenny. Specifically, a significant “total effect” in which the main dependent variable (in this case, war support) is regressed upon the independent variable (condition) is not necessary to interpret meaningful indirect effects (Preacher, Rucker, & Hayes, 2007; Rucker, Preacher, Tormala, & Petty, 2011). In this particular case, I was interested in testing whether the effect of the experimental manipulation on war attitudes was mediated in serial fashion, first by anger, and then by CFC. (schematically, experimental manipulation $\rightarrow$ anger (M1) $\rightarrow$ CFC (M2) $\rightarrow$ war attitudes). As with any other test of mediation, the viability of this process depends, of course, on the presence of reliable relationships at each step of the proposed pathway. Prior to formal tests of mediation, therefore, it is useful to first determine if such relationships do, in fact, exist.
The nature of these relationships is shown in Figure 7. All analyses were conducted controlling for condition and baseline anger in each step. One aspect of this figure, the significant relationship between the experimental manipulation and anger (Beta = .43, p < .001), simply confirms the implications of the preceding analyses. However, there was not a significant relationship between anger and CFC, (Beta = -.08, p > .25), even though there was a negative relationship between CFC and war attitudes (Beta = -.20, p < .05). This CFC – War attitudes relationship holds when including all prior variables (pre-measure of anger, post measure of anger and condition) in the model as predictors. Because each pathway is not significant, CFC does not appear to be a mediator of the Anger – War relationship using this full data set.

Separate Mediational Analyses for Males and Females

My primary analyses showed that males were displaying a stronger relationship between anger and attitudes toward war. Hence, it seemed prudent to test for the possibility of mediation for each gender group separately.

Male participants only. As seen in Figure 8, condition again had a strong effect on reported anger (Beta = .36, p < .001). Next, anger and CFC were only marginally significantly related (Beta = -.43, p = .06). Interestingly, CFC and war attitudes were significantly associated with one another (Beta = -.30, p < .05). Analyses also revealed a significant relationship between anger and war support (Beta = .63, p < .01) for this male-only data set. Most important, formal tests of mediation using Hayes’ (in press) PROCESS bootstrapping procedure did not actually yield significant support for the proposed multiple mediation. The confidence interval for the indirect effect was (-.051, .469) (For a complete discussion of the PROCESS model see Hayes, in press, or Preacher & Hayes, 2008). The failure to find strong evidence for mediation in this
case is likely due to the fact that one of the critical relationships (anger → CFC) was not actually significant at the .05 alpha level.

Another way of conducting these regression analyses is to include all prior variables beyond the manipulation into the model as predictors at each step of the path analysis. Since condition is already included at each step, the only difference in this technique and the above procedure is the inclusion of anger as a predictor variable in the CFC – War support analysis. For the full data set, the CFC – War relationship remains significant, Beat = -.19, \( p = .05 \). However, for males only, the inclusion of post-manipulation anger does lessen this effect, and makes it non significant at the .05 alpha level, Beta = -.20, \( p = .16 \). This finding indicates that anger plays an important role in the CFC – War relationship for males. The implications of this are described further in the discussion section.

**Female participants only.**

The relationships among and between the various pathways for the female participants is shown in Figure 9. None of these regression coefficients were significant for the relevant pathways for female participants.

**DISCUSSION**

One of the overriding goals of Experiment 1 was to understand how time orientation may play a role when examining the relationship between anger and war attitudes. In this study, time orientation was assessed by the Consideration of Future Consequences scale (CFC). I consider two roles that CFC could have played in the current context, as both a mediator as well as moderator. In the sections to follow, I shall discuss the implications of my data for these issues in turn.
Support for Mediation

Results did not generate any strong evidence for formal mediation, although the data did provide a hint of such effects for the male participants (see Figure 8). Given that the observed relationships are consistent with predictions, it would be useful to consider whether future research would be able to replicate these interesting (albeit weak) effects, at least for males. It should also be kept in mind that the regression analyses described above did, in fact, reveal a significant relationship between CFC and war attitudes. To my knowledge, this is the first study to demonstrate this relationship. Although these findings should be taken with a great deal of caution, they do suggest that time orientation—as measured by CFC—may be an important factor for understanding the relationship between anger and war. Apart from its role as a mediator, recall also that CFC did, in fact, emerge as a significant moderator of the relationship between anger and war attitudes.

Support for Moderation

It should be kept in mind at the outset that a test of moderation is asking a question that is different from that of mediation. Unlike mediation (which is asking questions about changes in the proposed mediator), moderation does not actually presume that the moderator variable is changing at all. Rather, moderation is asking whether different processes are occurring at different “levels” of the proposed moderator.

My results did, in fact, show evidence of moderation involving CFC. In particular, the nature of the relationship between anger and war attitudes was different, depending on the chronic time orientation of the participants. Participants scoring low in CFC--those focused more on the present--became more supportive of war the angrier they became. In contrast, this
relationship did not emerge among participants scoring high in CFC, who were focused more on the future. Thus, CFC appears to be a boundary condition for the anger-war effect.

Future research will be needed to fully understand the role of CFC in this dynamic, but it is possible that future orientation serves, in essence, to inhibit what would otherwise be a strong relationship between anger and attitudes towards war. In particular, participants who were high in CFC—and thus focused on future consequences of their actions—might have been able to inhibit these anger-produced cognitions. For this reason, therefore, anger did not lead to a change in war attitudes.

It is not entirely clear what this inhibition process consists of. Although we know that participants scoring high in CFC are thinking about future consequences to a greater extent generally speaking, we do not know what details they are thinking about. High CFC individuals are not necessarily thinking more than others, they are just thinking differently. CFC is a somewhat vague construct, and thus it is difficult to know what it is they are considering, in this particular circumstance, that does not allow anger to have the effect on their beliefs about war. That being said, it is likely that high CFC participants were more cognizant of some of the potentially negative long-term consequences of engaging in war. Future research should more precisely ask participants to list the positives and negatives of each side of the argument for both the long term and short term. I shall discuss this and other related issues in more detail in the General Discussion section.

Other Moderator Effects

Aside from the moderating role of CFC, Experiment 1 revealed three moderators of the relationship between anger and war attitudes: political orientation, trait aggression, and gender.
For political orientation, conservatives had a stronger anger and war attitudes relationship than liberals. Note that this is not merely saying that conservatives show more positivity for war than liberals. This finding indicates that for conservatives, as anger increases, support for war also increases, whereas liberals’ support for war is not affected by their current anger state. Other similar research has not found differences in political orientation for the anger – war attitudes relationship (Lambert et al., 2010). Because political orientation appears to be a factor in particular circumstances, future research should attempt to understand the boundary conditions for this effect.

Trait aggression also moderated the relationship between anger and war. Results indicated that individuals high in trait aggression became more pro war as their anger increased. For people low in trait aggression, anger had little to no effect on their war attitudes. This finding suggests that for these individuals who are generally not very aggressive people, increasing their anger does not make them any more inclined to support aggressive acts such as military engagement. However, for people who are dispositionally more aggressive, experiencing anger likely amplifies those aggressive tendencies. Because war provides an avenue for acting aggressively, the increase in anger leads to an increase in support for war.

For gender, it was the male participants who showed a positive relationship between anger and war. Females did showed a slight, but non-significant negative trend in the opposite direction. Research has shown that males are more likely to become physically aggressive (Eagley & Steffen, 1986), violent (Smith & Visher, 1980), and support war more than females (McDonald, Navarette, & Van Vugt, 2011). So, it is not surprising that males would support war with North Korea in the present example more than females. It is interesting, however, that war support for females was not affected by increased anger. Past studies pertaining specifically to
the relationship between anger and war have found that both males and females support war at higher levels when they are angry. Researchers interested in the anger – war effect should explore the particular conditions in which males and females differ in the way their attitudes towards war are affected by anger.

To summarize, three variables outside of CFC—gender, political ideology, and trait aggression moderated the strength of the relationship between anger and war attitudes. Although these are distinct effects, there is a common link binding them together: In each case, the strongest relationship between anger and war attitudes emerged among those participants who were already predisposed to support aggressive, hawkish policies. In the case of gender, there is a wealth of evidence showing that men (vs. women) tend to be more supportive of “aggressive” policies and my results show that the anger-war attitudes link was stronger for men. Similar, there is a great deal of data showing that conservatives (vs. liberals) tend to be relatively more supportive of aggressive policies and my data show that the anger-war attitudes link was stronger for conservatives. Finally, people high (vs. low) in trait aggression would, for somewhat obvious reasons, be more comfortable with the use of force in such context, and my data show that the anger-attitude link was stronger for participants high in trait aggression. In other words, the stronger link between anger and support for war tended to emerge when the psychological makeup of the participant was conducive to the use of force in the first place.

**EXPERIMENT 2**

Experiment 1 provided evidence that suggested that consideration of future consequences is affected by anger and helps to explain anger’s causal impact on attitudes towards war. The focus of Experiment 2 was to test for another potential causal mechanism, risk.
As noted earlier, I make an important conceptual distinction between two elements of risk: risk perception and risk preference. To reiterate, risk perception is an individual’s subjective belief that a particular positive or negative event will occur. Stated another way, it is the degree of risk that is believed to be involved in a particular situation. When measuring risk perception, I was interested in how much risk and pessimism participants currently perceive in their lives. Risk preference, on the other hand, refers to one’s willingness to engage in a particular behavior that carries potentially negative consequences. Risk preference tasks measure participants’ desire to engage in risky behaviors.

Previous research suggests that experiencing anger causes individuals to perceive less risk in a given situation. I predicted that this decrease in perceptions of risk would cause individuals to perceive less potential risk in a given war scenario, and therefore lead people to be more willing to support going to war. Feeling angry has also been associated with a tendency to take more risks. I hypothesized that this increased preference for risk would also cause individuals to be supportive of war, despite its inherent risks. I predicted that both risk perception and risk preference would act as mediators or moderators of the anger-war attitudes relationship.

METHOD

Participants and Design

A total of 144 college undergraduates (60 male, 82 female; two participants failed to report their gender) participated in Experiment 2 for partial completion of course credit or $10. The present experiment consisted of two between-subjects factors. The first factor was whether participants were randomly assigned to the justice violation or the neutral mood condition. The second factor was the order in which they received the war attitude measurement and the war
likelihood estimates. In this sample, preliminary analyses of the data revealed four subjects with outlier scores on important variables (all of which had scores +2.75 SDs above or below the mean) including three with extreme scores on the mood task and one with the lowest possible score of self-reported effort. After exclusions were made, a total of 140 participants were used for formal analyses with 67 in the experimental condition and 73 in the control condition.

All aspects of Experiment 2 were identical to that of Experiment 1, save for the measurement of risk, the proposed mediator/moderator which is described in the following section.

**Assessment of Risk**

Following the post manipulation mood measurement, all participants were given tasks to assess their risk perception and measure their preference for risk-seeking versus risk aversive decisional responses. The risk perception task consisted of likelihood estimates of various positive and negative life events related to the self. Participants were presented with events such as “I acquired the flu” and “I married someone wealthy” and asked to rate the probability of that event happening to them in their lifetime on a 1 (extremely unlikely to happen to me) to 9 (extremely likely to happen to me) scale. This risk preference construct had a reliability of .74. As noted earlier, there are several ways of measuring risk, but subjective estimates of likelihood represent a fairly common approach (Weinstein, 1980; Fischhoff et al., 2005; Lerner & Keltner, 2001) and are also less likely to produce some of the extreme skewing problems associated with questions that require participants to literally generate probabilities between 0 and 100. See Appendix A for a complete list of risk perception items.
Following this, participants were given three items to measure risk preference. The first task was based on the common “Asian Disease Problem” originally implemented by Kahneman and Tversky (1981). In this task, participants were given the following scenario:

*Imagine that the US is preparing for the outbreak of an unusual toxic disease, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the exact scientific estimates of the consequences of the programs are as follows.*

**Program A:** If Program A is adopted, 200 people will be saved.

**Program B:** If Program B is adopted, there is 1/3 probability that 600 people will be saved, and 2/3 probability that no people will be saved.

Participants’ first measure of risk preference was to make a choice between Program A and Program B. To obtain a more precise measurement of their program preference, participants were also given a Likert scale with options ranging from 1 (*I find Program A more attractive*) to 7 (*I find Program B more attractive*). This paradigm was originally used as a part of the measurement of the effects of framing gains and losses on decision-making and risk preference. Although framing effects of potential gains and losses are not of concern in the present study, this method was used because it was a valid measure of risk preference in the often cited paper by Lerner and Keltner (2001).

Two additional scenarios were provided to measure risk preference. These two items were successfully implemented by Raghunathan and Pham (1999) in their study of the effects of sadness and anxiety on risky decision-making. One task presented participants with two gambles: Gamble A, which offered a 60% chance of winning $5 and Gamble B, which offered a 30% chance of winning $10. Similar to the response options in the first risk preference task,
participants were asked to circle “A” if they prefer Gamble A, and “B” if they favored Gamble B. Next, participants were given a scale to evaluate the respective gambles with a response scale of 1 (I find Gamble A more attractive) to 7 (I find Gamble B more attractive). After the gamble task, participants were presented with an employment selection situation. Here, they were told to imagine they were recently hired for two separate jobs, and that they must only choose one. Job A was described as having a “High salary, with low job security” and Job B was described as having “Average salary with high job security”. As in the other two tasks, participants were asked to make a forced choice between Job A and Job B and were then given a scale with the response options of 1 (I find Job A more attractive) to 7 (I find Job B more attractive).

All three of these scenarios contain one option with higher risk and one with lower risk. The higher risk options all contain relatively higher rewards but with lower probabilities of success. For example, in the Asian Disease Problem, Program B offers a high reward in that all 600 individuals could be saved. It has a lower chance of occurring (1/3) than the other available option (2/3). Thus, participants who were willing to make behavioral choices with higher risk were more likely to favor these riskier options (Program B, Job A, Gamble B).

In some research paradigms, it might be useful to form an overall composite measure of risk preference. However, such an approach presumes that all of the relevant measures correlate with one another. In some cases, the different measures of risk preference may actually be tapping relatively independent (i.e. largely uncorrelated) aspects of risk. In this latter case, it is more appropriate to analyze each measure of risk preference separately (i.e. not form an overall composite).

The latter approach clearly was more appropriate here. This can be easily seen by the fact that none of the three measures of risk preference were actually correlated with one another.
(The highest correlation among the three items were that between Job and Gamble items, $r = .14$, $p = .10$.) Hence, because each item appears to be tapping into a unique domain of risk preference, each of the three measures was used separately as their own assessment of risk preference. This method would increase type I error and would require a correction. However, none of these individual measures were found to be related to the experimental condition, or anger (all ps > .15) and thus they are not discussed further.

**Predictions**

I predicted that participants in the angry mood manipulation condition would show greater support for war with N. Korea in the hypothetical scenario than those in the neutral mood condition. In addition, anger’s causal impact on support for war would be mediated by perceptions of risk and/or risk preferences. Anger should cause a decrease in perceptions of risk. People then would perceive less risk in the war scenario, and thus become more willing to support war. Also, feeling angry should make people more risk-taking, and therefore be more supportive of engaging in military conflict with North Korea.

**RESULTS**

**Effects of the Experimental Manipulation on Anger**

Participants in the anger induction condition expressed significantly higher ratings of anger compared to those in the control condition ($Ms = 2.85$ vs. 1.57), $F(1, 139) = 30.40$, $p < .001$, $\eta_p^2 = .18$. This finding, which is similar to that obtained in Experiment 1, again verifies that the experimental induction had its intended effects. The effect was not moderated by gender $F(1, 138) = 6.68$, $p > .25$, or political orientation, $F(1, 138) = .87$, $p > .25$. Unlike Experiment 1, the manipulation did not significantly affect levels of anxiety ($Ms = 2.60$ vs. 2.31), $F(1,139) = 1.32$, $p > .25$. However, levels of sadness did differ as a function of condition, with higher levels of
sadness in the anger induction condition compared to control ($Ms = 2.99$ vs. $1.92$), $F(1,139) = 16.52$, $p = .001$, $\eta^2_p = .11$. Unlike Experiment 1, the assumptions of the analysis of covariance were met for both anxiety as well as sadness, and analyses indicated that the effects of the experimental manipulation on anger remained reliable, even after controlling for these two emotions, (adjusted $Ms = 2.62$ vs. $1.79$), $F(1,137) = 16.85$, $p = .001$, $\eta^2_p = .11$. In addition, no effects of the manipulation on anxiety or sadness were found after controlling for anger (all $ps$ were not significant).

**Primary Analyses**

Analyses revealed that the experimental condition did not have a significant effect on risk perception, risk preference, war attitudes, or perceptions of risk associated with the North Korea conflict. Thus, aside from anger, there were no direct effects of the anger condition on the key variables of the study. First, I tested if anger and war attitudes were causally related. Analysis showed the relationship was in the expected positive direction, but was not statistically significant ($Beta = .12$, $p = .26$). With this sample, gender did not moderate the effect and there were no clear differences between males and females in the strength of the relationship. This was somewhat surprising, given the large gender effects found in Experiment 1. None of the other trait variables moderated the association of anger and war attitudes. In addition, anger was not related to attitudes in perceived risks associated with war.

As with Experiment 1, the intervening variable in the present experiment, risk perception, was tested separately for both moderation and mediation of the anger and war attitudes relationship. Analyses showed that risk perception did, in fact, moderate the relationship between anger and war attitudes, $B = .31$, $p < .05$. However, the nature of this moderator effect was not what I had predicted. I had anticipated that there would be a strong positive correlation between
anger and war attitudes (i.e. more anger predicting more pro-war attitudes), provided that participants manifested low perceptions of risk. In fact, the exact opposite happened. In particular, participants scoring high in risk perception (1 SD above the mean) tended to show strong associations between anger and war attitudes, B = .34, p < .05. In contrast, participants who perceived low amounts of risk (1 SD below the mean) showed a non-significant negative relationship between anger and war, B = -.17, p > .25. Hence, it was the participants who saw the world as a risky place who showed the strong association between anger and pro-war attitudes. I had anticipated, however, that this effect would mostly emerge among participants who saw the world in relatively non-risky terms.

To understand if risk perception had any indirect effects on the main variables of interest, I conducted further regression analyses similar to the path analyses presented in Experiment 1, with risk perception replacing Consideration of Future Consequences as the intervening variable in this analysis. First, condition and anger were again strongly related, Beta = .46, p < .001. Analyses showed that anger and risk perception were marginally related Beta = .18, p = .10. However, the effect’s direction is opposite of what was predicted. Anger was predicted to cause lower levels of risk perception; however in this experiment anger has a small tendency to cause higher levels of perceived risk (see ahead in the discussion section for a further analysis and commentary on this issue). Next, I examined the relationship between risk perception and war attitudes. This analysis showed no significant relationship between perceptions of risk and attitudes towards U.S. involvement in a war against North Korea, Beta = -.08, p > .25. This also was counter to predictions, which stated that low levels of risk perception would lead to higher levels of support for war. For the sake of completion, I present, in Figure 10, the full set of these regression coefficients. Analysis using the PROCESS serial multiple mediation procedure from
Experiment 1, confirmed the null effects and showed that risk perception did not act as a mediating variable, \( CI_{.95} = (-.142, .012) \).

**DISCUSSION**

Experiment 2’s finding that increased anger was not significantly associated with lower perceptions of risk or higher preference for risk was indeed surprising. This was unexpected because Experiment 2 was based partially on the findings of the widely-cited article by Lerner and Keltner (2001) on emotion and risk. In their study, they found that anger was associated with lower levels of risk perception and higher levels of risk preference. Although there are a number of key features that differentiate the Lerner and Keltner study and my experiment, none provide a clear explanation for the difference in results.

**A Closer Look at the Lerner and Keltner (2001) Paradigm**

In their first experiment Lerner and Keltner (2001) found a significant correlation between anger and risk preference. The present study and Lerner and Keltner both used the Asian Disease problem as a measure of risk preference. However, for anger, Lerner used a dispositional measure of anger. My main operationalization of anger is a state measure using an expanded version of the PANAS. However, I also measured trait anger with a measure similar to the one used by Lerner and Keltner (2001; Spielberger, 1985). In the present study, neither the trait nor state measures of anger were related to scores on the risk preference measure.

Lerner conducted three additional studies that investigated anger and risk *perception*. All three studies used a variant of the risk perception measure utilized in the present study. This measure was the Weinstein (1980) likelihood estimates task, in which participants state how likely they expected a given negative or positive life event to happen to them (i.e. “Graduating in
top third of class”). For anger, two of their studies used a version of the Spielberger trait anger scale whereas one study used a state anger measure (responses to the term “angry” and “mad”) after an anger manipulation. This latter study was clearly the most similar to what was used in the present Experiment 2, yet their study found a significant anger-risk preference relationship, and the present study did not. However, in my study, one measure of anger is in fact negatively associated with risk perceptions as predicted. Using the state *pre-measure* of anger, analysis found a significant relationship, $B = -.17, p < .05$, (controlling for state pre-measures of sadness and anxiety, $B = -.26, p = .01$). It is unclear why this baseline state anger measure, and *not* the post manipulation anger measure, was related to risk preference.

In addition, a recent dissertation by Lane (2012) also found inconsistent evidence of an anger-risk perception effect. In this paper, participants’ levels of anger and risk perceptions of terrorism were measured at three time points: two weeks, one year, and three years after the 9/11 attacks. Lane found anger and risk perception to be significantly negatively related in two of the three time points, but only when controlling for anxiety and sadness. Thus, in this study, the anger – risk perception effect seems to be somewhat inconsistent and only occurring when controlling for other negative emotions. One possible explanation of these diverging results is that the anger – risk preference/perception effect is actually quite small and inconsistent.

These failures to replicate do not invalidate the previously published studies. However, it does call into question the size and consistency of the effect. Future research should investigate the anger and risk relationships to better understand the conditions in which the relationship is found and the size and validity of the effect. One limitation to this study that may have affected risk perception scores is that the order of the likelihood estimates and the risky choice tasks was not counterbalanced. It is possible that completion of the likelihood estimates affected the
manner in which participants responded to the risk preference items. In particular, some of the negative life events (contracting a venereal disease, getting lung cancer) may have made serious negative consequences salient, and thus caused people to respond in a manner that was less risky. However, this issue would not affect likelihood estimates and therefore not provide an explanation of why the anger - risk perception relationship did not replicate past studies.

Experiment 2 did produce a surprising finding as part of risk perception’s moderating effect on anger – war support. Here, people with high levels of risk perception became more pro-war as they became angrier, and people scoring low in risk perception did not have a significant anger – war effect. This is surprising because people with high risk perception are people who tend to see a great deal of risk in given situations. Thus, I predicted that these would be the type of people who would see an unacceptable amount of risk in going to war with North Korea, and their anger would not affect their war attitudes because of these concerns about the riskiness of the situation. Likewise, people who do not see much risk should have their war attitudes increased by the experience of anger. I do not have a clear explanation for this effect. One possibility is that high risk perceivers actually thought there was more risk in not going to war, as the threat from North Korea seemed too strong. Future research should continue to explore the role of risk in anger and war support, especially by using different types of war scenarios that vary on their amount of risk.

**EXPERIMENT 3**

Experiments 1 and 2 investigated *what* people were thinking, whereas Experiment 3 was concerned with *how* people were thinking. That is, the final study was concerned with the possibility that the activation of anger might decrease the probability that people engage in
controlled processing. This possibility is important because it suggests another possible underlying mechanism that could explain the anger and war attitudes relationship.

In particular, I hypothesized that one reason people support governments’ engaging in war is because they are experiencing decreased cognitive control and are using shallow processing to consume war-relevant information. More specifically, people are not thinking carefully and systematically about some of the negative, future outcomes of war such as civilian and military casualties and monetary costs. In addition, I hypothesized that this shallow processing style is a consequence of experiencing anger. In order to test these assumptions I used the anger manipulation presented in the previous two studies and measured cognitive control through an antisaccade paradigm. Although Experiment 3 had the drawback of being the most exploratory of the three studies, it also had the most potential of producing results that would expand our understanding of anger’s effects on war attitudes and anger’s effects on cognitive functioning in general.

**METHOD**

*Participants and Design*

In Experiment 3, 127 subjects (61 males, 65 females, one participant did not report gender) participated for partial completion of course credit or $10 in payment. The present experiment consisted of one between-subjects factor: whether participants were randomly assigned to the justice violation or the neutral mood condition. Preliminary analyses of the data resulted in eight participant exclusions. Two participants were removed for extreme scores (+2.75 SDs of the above or below the mean). One was an outlier on the antisaccade measure and another on the self-reported effort task. Six additional participants were not included for noncompliance including (a) two participants who did not follow instructions on the writing
tasks, (b) three who did not follow instructions on the antisaccade task and (c) one who refused
to complete the experiment. In total, 119 subjects (59 in the control condition and 60 in the
experimental condition) were used for analysis.

All aspects of Experiment 3 were identical to that of Experiment 1, save for the
measurement of cognitive control, the proposed mediator/moderator that is discussed in the
following section.

Assessment of Cognitive Control

Cognitive control was measured using an antisaccade task (Everling & Fischer, 1998;
Kane, Bleckley, Conway, & Engle, 2001; Payne, 2005). Each trial of the antisaccade task
contained three parts: a fixation point, a cue, and a target. Trials began with a fixation point
appearing in the middle of the screen for 2,000 ms. After the fixation point disappeared, the cue
(a red circle) appeared in one of two possible locations: the left side of the screen or the right
side. The cue was present for a total of 400 ms. Following the cue, the target then also appeared
on either the left or right side of the screen. The target was either an “H” or a “T” and was
present for 60 ms$^5$. After the 60 ms elapsed, a pound symbol appeared and acted as a mask for
the target. For each trial, participants were asked to respond by indicating if they saw an H or a T
as quickly as possible. Each participant’s number of errors was the main dependent variable for
the task.

Participants completed two blocks. The first block was the “prosaccade” block. In this
block, the target always appeared on the same side as the cue. However in block 2 (the
“antisaccade” block) the target always appeared on the opposite side of the cue. Each block
contained 48 trials for a total of 96 trials.
The logic behind the task is that participants focus their attention on the cue based on an automatic orienting response to stimuli on the screen. With attention drawn to one particular side of the screen, their ability to accurately identify the target is either facilitated or hindered. When the position of the cue and target are congruent, performance is facilitated because participants are already attending to the side of the screen in which the target appears. However, when the target is presented on the opposing side of the cue, the cue acts as a distracter. On these trials, the cue hinders one’s ability to view and accurately identify the target because attending to the cue means one must quickly shift attention to the other side of the screen to view the target. The presentation speed of the cue is fast enough to where shifting attention and still accurately identifying the target is quite difficult. In order to provide an accurate response, the optimal strategy is for participants to resist attending to the cue. However, this is difficult because people have an automatic orienting response towards viewing an object as it appears on the screen (in this case, the cue). This ability to override one’s impulse to attend to the cue and thus wait for the target to appear in order to view and accurately identify the target is the measure of cognitive control. Because performance on block 1 is presumed to be independent of cognitive control levels, errors on block 2 served as the main dependent variable of cognitive control in this experiment.

**Predictions**

I predicted participants who complete the angry mood manipulation would show more positivity towards military engagement with North Korea in the hypothetical scenario than those in the neutral mood condition. Anger’s effects on war support would be mediated by scores on the cognitive control measure. Those who evidence limited cognitive control (high numbers of errors) will be more supportive of the war than participants who have higher cognitive control.
(low numbers of errors). This is because limited cognitive control indicates an inability to inhibit the use of shallow, heuristic-based information processing style, and an inability to override the “primitive” aggressive urges brought on by the experience of anger. Using this heuristic processing style and not inhibiting these aggressive tendencies would lead participants to not think carefully or comprehensively about the factors related to the war scenario. This lack of inhibition and detailed processing would then lead to higher support for military conflict with North Korea.

RESULTS

Effects of the Experimental Manipulation on Anger

Consistent with Experiments 1 and 2, analysis of variance revealed that participants in the justice violation condition reported higher levels of anger than participants in the control condition, \((M_s = 3.54 \text{ vs. } 1.81), F(1, 118) = 30.46, p < .001, \eta_p^2 = .21\). The effect of condition on anger was not moderated by either gender \(F(1, 117) = 0.08, p > .25\) or political orientation \(F(1, 117) = 1.00, p > .25\). For Experiment 3, the experimental condition did not affect anxiety ratings, \((M_s = 2.95 \text{ vs. } 2.52), F(1, 118) = 1.95, p = .17\). However, participants in the justice violation condition had higher ratings of sadness \((M_s = 3.30 \text{ vs. } 2.32), F(1, 118) = 7.74, p < .01, \eta_p^2 = .06\). As with the previous experiments, I tested the effects of the manipulation on both anger and sadness while including the other relevant negative emotions as covariates. An ANCOVA with anger as the dependent variable and anxiety as a covariate\(^7\) showed that condition still had a significant effect on anger \((M_s = 3.42 \text{ vs. } 1.93), F(1, 117) = 30.86, p < .001, \eta_p^2 = .21\). However, there was no significant difference between the control condition and the justice violation condition on sadness when controlling for anger and anxiety \((M_s = 2.71 \text{ vs. } 2.92), F(1, 116) = 0.62, p > .25\). Replicating the previous two experiments, in Experiment 3, when controlling for
the other negative emotions, only levels of anger were significantly different between the justice
violation condition and the control condition.

**Primary Analyses**

Next, I tested the experimental condition’s effect on the key variables in Experiment 3. As described above, the variable that differentiates Experiment 3 is participant’s score on the
antisaccade task. Each person’s level of cognitive control is represented by the number of errors
made on block 2 of the task. Higher numbers of errors indicated a lack of cognitive control.
Overall, participants averaged 6.60 errors on the 48 trials presented in this block, with a range of
0 to 22. Analysis showed that participants’ error scores were not associated with any pre
measures. Analysis of variance showed that errors on block 2 were not significantly different
between the two conditions (Ms = 6.72 vs. 6.47), $F(1,118) = 0.07, p > .25$. Scores on war
attitudes also were not affected by the condition participants were in (Ms = 3.91 vs. 3.72),
$F(1,118) = 0.35, p > .25$. As with the previous three studies, the main independent variable
(condition) did not affect the criterion variable (war attitudes).

Next, I investigated the relationship between anger and war attitudes. This relationship
was in the predicted positive direction, but was not statistically significant, Beta = .18, $p > .10$. In
Experiment 3, only trait aggression moderated the anger-war attitudes relationship. This is quite
different from the results of Experiment 1 in which anger-war attitudes was moderated by four
variables. Further exploration of the nature of the interaction revealed that participants scoring
low on trait aggression actually had a stronger relationship between anger and pro-war attitudes,
$B = .30, p < .06$, than people who scored higher on trait aggression, $B = -.003, p > .25$. It is
unclear why participants who scored low on trait aggression might have showed a stronger anger
– war relationship. Hence, pending replication of this surprising effect it seemed best to avoid speculating on its meaning.

As with the preceding experiments, I tested the impact of the proposed intervening variable. For Experiment 3, this variable was cognitive control and was measured by the antisaccade task, as both a moderator and a mediator of the anger – war attitudes relationship. Contrary to predictions, analyses showed that errors on block 2 of the antisaccade task did not moderate the association between anger and war attitudes, Beta = -.34, p > .10. Cognitive control was tested as an intervening variable through regression analysis similar to those conducted in the previous experiments and is presented in Figure 11. In the first path of these analyses, anger was regressed onto condition, which resulted in a strong positive relationship, Beta = .45, p < .001. Next, analysis revealed no relationship between anger and cognitive control, Beta = .09, p > .25. The next step in the path analysis showed no relationship between errors and attitudes towards war with North Korea, Beta = -.03, p > .25. Thus the hypothesis that the relationship between anger and war attitudes was partially due to changes in cognitive control was not supported by the present study. Higher levels of anger were marginally associated with war risk estimates, Beta = .21, p = .08, however block 2 errors and war risk estimates were not at all related, Beta = .05, p > .25. Analysis with serial multiple mediation using Hayes’ PROCESS macro confirmed these null results, CI.95 = (-.109, .028).

DISCUSSION

In Experiment 3 I found that levels of cognitive control were unrelated to the experimental condition, discrete emotional experiences, and attitudes towards war. Thus, the present results failed to support the hypothesis that experiences of anger affect cognitive control abilities, which would in turn lead to higher levels of support for war. However, I do not believe
this notion should be necessarily rejected as an explanation for why anger affects war attitudes.

This particular study was the most “exploratory” of all three experiments and there were a number of limitations that may have precluded results from aligning with the stated hypothesis.

One issue to consider is that the antisaccade task may not have been the best way to measure the inhibition processes that I predicted would mediate the anger – war relationship. As a reminder, I proposed that anger would lead to two important changes: angry individuals would be unable to inhibit their motivation to process information less carefully, and would also be unable to inhibit the aggressive impulses that considering war creates. The link I proposed between the task and these processes is that they both would be related to the concept of inhibiting a dominant response. For the antisaccade task, participants attempted to resist the dominant orienting response of attending to the cue (the red circle). I also proposed that pro-war participants do not inhibit their anger-derived automatic motivation to respond aggressively or to inhibit the motivation to process information heuristically. However, inhibiting one’s gaze at a circle on the screen and inhibiting an automatic positivity towards war may very well be quite different processes. Inhibition is a concept with a great deal of complexities, and these particular types of inhibition may have very different cognitive and motivational processes that drive them. Thus, the processes measured by the antisaccade task may not have been a good representation of the hypothesized inhibition processes that lead to pro-war attitudes.

Another potential impediment was the amount of time between the anger manipulation and the completion of the war attitudes task. Based on personal experience with the materials and pilot testing, the Experiment 3 cognitive control task took much longer to complete than Experiment 1’s CFC scale and Experiment 2’s risk estimate scale and three risk preferences items. This additional time between the manipulation and dependent variable may have caused
the induced anger to dissipate and limit its effect on both the cognitive control task and the war attitudes task.

Despite the results of Experiment 3, I believe it is important for future research to explore the relationship between anger, cognitive control, and war support. Specifically studies should look at alternative ways of measuring information processing other than the antisaccade task. I will consider this and other potential limitations of the present research at the end of the General Discussion.

**GENERAL DISCUSSION**

Research on anger has demonstrated that anger is a potent emotion. Intense experiences of anger can lead to negative outcomes in all facets of life including harming social relationships, problematic work performance, and lower levels of physical and mental health. In order to better understand and manage these outcomes, researchers have investigated the psychological factors that are affected by anger and that lead to these negative consequences. These factors include anger’s effects on broad psychological constructs such as judgment and decision-making, cognitive processing, and attitude formation. For my dissertation I combined a number of these sets of consequences to better understand anger and its outcomes. Specifically, my goal was to explain and understand the boundary conditions of anger’s effect on one particular attitude object, war support, by investigating processes such as judgment, perceptions, and cognitions. The present study found some support that one construct, Consideration of Future Consequences, plays an important role in the anger – war effect, but cast doubt on the two other hypothesized mediators: risk and cognitive control. The results also raise a number of other important issues I will discuss in the following sections.

*Anger and War Attitudes*
One of the more interesting and surprising results of the present set of experiments is the unstable nature of the anger and war attitudes association. Anger, whether in the form of trait anger, experimentally induced state anger, or naturally occurring anger, has consistently been related to war support, and in some cases causally increased support for war (Lambert, 2010; Huddy, 2003; Sadler, 2005; Skitka, 2006). My studies show a small effect in Experiment 1 for the full sample, but a large effect for males. Experiment 2 and 3 both show a relationship in the expected direction, but the effect is not statistically significant and does not depend on gender. This is somewhat puzzling given the available evidence in published studies.

Although I believe the evidence asserting an anger – war attitudes relationship is larger than the evidence against it, the current studies put into question the size and consistency of the effect. It is possible the anger – war link is a very small effect and therefore studies will not always produce this outcome due to random variation. It could also be that anger only affects war attitudes in specific situations and does not generalize to all conceptualizations of anger or wars. There is also the possibility that the classic “file drawer” problem affects perceptions of the relationship. That is, it’s possible that only the studies that found a relationship were published and thus all knowledge of the effect is based on those particular studies. A meta-analysis of past studies (published and unpublished) would be helpful to understand the consistency and general size of the effect.

In terms of the present study, there are a few methodological factors that may have contributed to underwhelming size of the anger-war attitudes relationship. One is the experimental manipulation of anger. For this manipulation participants were instructed to write about a time in their life they felt they were treated extremely unfairly. When people perceive their sense of justice or fairness is violated, the dominant emotional response is anger. Results of
the present studies confirm this fact. In all three experiments anger was higher for the treatment condition than the control condition. Thus, the justice violation was effective in affecting participants’ self-reported anger. However, the manipulation was not significantly related to other important variables such as war attitudes or the three proposed mediators.

It is possible there is something about this particular emotional trigger that causes its emotional impact to be lacking in strength or duration. The manipulation did not produce objectively strong increases in anger. In all three studies, the experimental group’s average anger ratings were less than 4, which is under the midpoint of the scale of 4.5. Thus, the current studies cannot comment on what affect anger would have if the manipulation produced much higher ratings of anger. It is possible, and quite logical, that much higher ratings of anger (for example, anger at the midpoint and above) could produce effects where null results were found in the present studies, and could produce a stronger anger-war correlation. Recent research in my lab has also demonstrated that this justice violation manipulation increased anger ratings, but did not directly affect the other dependent variables in the experiment (Lambert, Peak, Eadeh, Scherer, & Schott, 2012, Experiment 4). Other more direct triggers of anger such as feelings of frustration, threats to reputation, disrespect, goal blockage, or simply asking participants to write about a time they felt anger specifically, could produce stronger experiences of anger. These longer-lasting and intense experiences in the lab may result in a clearer impact on psychological constructs. These triggers may also have higher external validity by more closely mimicking the experience of anger and its consequences in everyday life. Future research should investigate how the use of different emotion manipulations impacts the relationship between anger and war attitudes.
Another unique aspect of this dissertation is the operationalization of war attitudes. Past studies on anger and war have assessed attitudes towards the Iraq War, the Afghan War, and the “War on Terror” as their measure of war support. This is not at all surprising considering these studies were all conducted in the 2000s while these military events were ongoing and an ever-present topic in the news media. However at the time the present study was conducted (Fall 2011), the Iraq War was at a close and the Afghan War was no longer a widely discussed news topic. My concern with asking participants views of the war is that people would not have meaningful opinions because they simply would not know what the current situation was.

Because there were no other current wars with direct American involvement, I elected to create a hypothetical, yet realistic scenario for an American military conflict. However, it is possible that the North Korea/United States conflict presented in the war passage lead to a few issues that prevented a stronger anger – war attitudes effect. The most obvious difference between the North Korea war scenario and the war attitude measures of past studies is that the present scenario forced participants to contemplate and imagine the presented military situation was currently happening and develop an opinion of how the United States would handle it moving forward. The additional cognitive effort required by the task (reading and understanding the passage, writing out their thoughts) may have weakened their level of anger and its impact on “hawkish” attitudes.

Another difference between these two types of war measures is that items concerning the Iraq/Afghan Wars are nearly always pertaining to the continuation of war. In contrast, the North Korea scenario was about beginning a military conflict. This is an important distinction because it may be that the consequences of anger are more pronounced when continuing a current behavior or attitude versus embarking on a brand new set of thoughts and actions. Future studies
should attempt to vary the “real vs. hypothetical” war factor and whether the conflict in question is a continuation of, or a start to, military engagement.

The role of Immediacy in Consideration of Future Consequences and War

In order to fully understand the implications of the results of Experiment 1, it is important to take a step back and discuss the key differences between people who score high versus low on the CFC scale. Those scoring low on CFC are most concerned with immediacy. They will gladly trade negative experiences later for good fortune today. Importantly, they will attempt to maximize immediate benefits, even at the expense of future costs. These immediate benefits can come in two main forms: experiencing hedonically pleasing events or avoiding negative experiences. For someone who scores low in CFC, this tendency to maximize immediate benefits could affect behavior in two distinct contexts. One is a situation in which the individual chooses behavior with a hedonically pleasurable outcome in the present but yields negative consequences in the future. An example of this would be choosing to smoke cigarettes. Smoking cigarettes is often evaluated as a positive immediate experience, yet can have extremely negative effects in the long term. A separate situation is one in which an individual who is low on CFC would choose to avoid a negative experience in the present that eventually causes a lack of a positive outcome in the future. An example of such a scenario would be someone choosing not to do the hard work involved with studying for a difficult college exam, which results in poor academic performance and limited opportunities in the future. In this example, the individual is not necessarily behaving in a way that will reap extremely positive benefits in the short term, but instead is acting to avoid negative feelings. In both situations people are maximizing the benefits of the present in detriment to their future, but they differ in whether that immediate benefit is pleasurable or merely just avoiding a negative, unpleasant experience in the short term. This difference is important to fully understand the effects of CFC on behavior and the fact that it can
vary depending on the given situation, including the topic of this present work – CFC and war support.

My results indicate that CFC ratings are related to attitudes towards war. Because people who score low on CFC maximize immediate benefits in the manner discussed above, this leads to the question of which form of maximization took place. One could make an argument for either. It is possible that supporting an American military attack on North Korea would provide a moment of immediate pleasure. Evidence suggests that taking aggressive actions, such as engaging in war, can produce positive feelings. One reason for this positivity can be revenge. Revenge is associated with positivity and specifically expectations of positive feelings (see Lambert, Eadeh, Peak, & Schott, 2012 for a full discussion). In the war passage of this study, bombing North Korea could be seen as an act of revenge, and thus present an opportunity to maximize immediate hedonic pleasure. However, it is also possible that low CFC individuals supported this war because doing so would protect them from aversive, negative feelings. This could be the case if individuals believed that in the U.S.-North Korea war scenario, North Korea would soon be attacking the United States and its allies. To prevent this clearly negative immediate outcome, individuals with a temporal orientation focused on the near-term, may then be willing to take action and go to war to prevent this outcome in the present, regardless of what the distant future outcome may be. It is also conceivable that both acquiring positive and avoiding negative experiences in the present are motivations occurring simultaneously for those people scoring low in CFC in this study.

This helps us to explain why low CFCers were supportive of American military involvement with North Korea. There are also a few notable reasons why high CFCers were against the war. The fact that there is a negative relationship between CFC and war support
indicates that when people were thinking more about the long term ramifications of the war they tended to support the war less. This result strongly implies that there were indeed a number of negative long-term consequences that influenced their negative attitudes towards military conflict by the United States. In the writing section, participants cited concerns over greater instability in the region, and fears of both monetary costs and loss of life. They also cited that a long war could deplete the military and a war in that region may increase the likelihood of a conflict with China because the Chinese are unlikely to tolerate a protracted war off their Eastern Coast. All of these reasons are likely to apply to almost any war and therefore implies that CFC and war attitudes may be negatively related in general, and not just specifically to this particular war scenario.

**Awareness/Concern models of CFC**

In the previous section I discussed how maximizing benefits in the immediate setting can take on multiple forms for low CFCers. It is important then to follow up on this by noting that the broader literature on CFC has discussed the various ways in which future consequences are processed by participants who score low in CFC. Joireman, Strathman, and Balliet (2006) have proposed two models to explain how low CFCers approach future outcomes: the Awareness Model and the Concern Model. The Awareness Model presumes that people who score high or low in CFC differ in that the latter are not even aware of the future consequences of their current behavior. These people are not considering future consequences because they do not even know of them. Thus, these consequences do not impact their current decision-making because they are not aware of their existence. For example, an individual may choose not to eat vegetables at all during their life because they are unaware of the positive, long-term benefits of doing so. In contrast, the Concern Model proposes that both high and low scorers on CFC are indeed aware
of the potential positive or negative future outcomes of their current behavior. The difference lies in their sensitivity to future consequences. High CFCers are very concerned about whether these long term outcomes are pleasant or unpleasant whereas those on the opposite end of the spectrum place a low priority on ramifications that are far off and seemingly distant. Thus, it is focus, not awareness that is the explanatory mechanism in the Concern Model.

I am not proposing one over the other in the current study. However, these models do present differing accounts of why low CFCers may have been more supportive of war, and it is helpful to present these accounts to gain a clearer understanding of my results. An explanation consistent with the Awareness model would be that participants scoring low in CFC were not cognizant of potential long term negative (or positive) consequences of war. Something about their current state (possibly experiencing anger) prevented these participants from generating cognitions related to long term outcomes of the presented scenario. In contrast, the Concern Model would explain my results as low CFCers considering potential outcomes of the war but not putting much weight on these distinct consequences, and instead basing their choices on the current (presumably positive) consequences of war. Thus, they may have been fully aware of the possible outcome of a huge financial and military cost, but did not put much weight into this possibility. Although both models agree on the end result, they differ in their view of the roads taken by low CFCers to arrive at their attitudes and judgments.

*Implications of Temporal Orientation as a Moderator Variable*

As noted above, the fact that individuals who are focused on rewards in the short term over the long term showed a *stronger* anger – war relationship, indicates that people perceive that they will experience a type of positive benefit in the present if they go to war. Put simply, people who are angry and focusing on the short term will likely be more supportive of war. This
has important practical implications for the political leaders’ and the general public’s views of war.

For example, if a political entity would like to alter the opinions of a group of politicians or the mass public towards an anti-war position, it may help to have them consider the longer term consequences of military conflict. It is possible that individuals focus their attention on the present factors and consequences of military actions by default. That is, they automatically consider the present consequences to a greater degree than future considerations. Research suggests this is indeed the case when people are angry (Gray, 1999). A simple reminder to “think long-term” may cause individuals to stop and consider outcomes down the road and then decrease their support for the war.

Instead of focusing on how the war may be beneficial in the present (reduce a threat, revenge) having them imagine the long-term consequences or simply listing the potential future negative effects of war (monetary costs, loss of civilian and military lives, possible escalation of the war) may shift attitudes in the anti-war direction. In contrast, pro-war entities should do the reverse and highlight the perceived short-term benefits of engaging in war to increase favorability for their side.

It is important to note that this strategy of focusing on the future may increase pro-war sentiment in some circumstances. If the situation is such that a threat to a home country is most likely far in the future (i.e., an adversary does not have military power to attack now, but will in ten years), this increased attention to the future may cause the public to become more favorable to war in the present.

Consideration of Future Consequences and Political Attitudes
Another question raised by the present studies is whether considering future consequences and political attitudes are related constructs. Both sides of the political spectrum could easily make the case that their ideology is focused on long-term consequences while the opposing political view is overly short-sighted. For example, political liberals would argue that conservatives do not think about the long-term effects of pollution and climate change or the hedonically pleasurable, but morally problematic use of torture on terrorists. On the other hand conservatives might say liberals do not think about the long-term financial consequences of the growth of federal entitlement programs or the future consequences of “soft” punishments for terrorists and other criminals.

Experiment 1’s finding that considering immediate consequences over future consequences is associated with the politically conservative position of supporting war, does provide some evidence (albeit, only on one policy issue) of a negative relationship between CFC and conservatism. Some past research has also indicated that CFC is associated with politically conservative policy initiatives. However there is reason to be cautious about making this conclusion. First, political orientation and CFC are only marginally related in the present study ($r = -0.17, p = 0.08$). However it is important to note that both RWA ($r = -0.06, p = 0.50$) and SDO ($r = -0.18, p = 0.06$) correlate in the same negative direction as political orientation, with SDO also showing a marginally significant relationship. Thus, the current results do not indicate a strong association between CFC and political attitudes. Second, past research has suggested that high CFC scores correlate with support for pro-environmental causes such as off-shore drilling (Strathman, 1994), public transportation (Joireman, Van Lange, & Van Vugt, 2004) and higher rates of recycling (Ebreo & Vining, 2001; Lindsay & Strathman, 1997). However, a closer look at the Strathman (1994) paper reveals that CFC is not always related to conservative policies in
their studies. Although this paper is cited as showing that CFC is related to decreased support for oil drilling, it also shows that this effect is dependent on its framing. When advantages of oil drilling are framed as occurring in the future, it is actually high CFC individuals supporting oil drilling. Thus, at least in the case of domestic oil drilling, it is the temporal framing of the advantages and disadvantages that is determining responses and not merely the possibility of overlapping properties between CFC and conservatism. The combination of the current results and past studies does indicate that High CFC scores may lean closer towards liberalism than conservatism.

The ways in which CFC may affect political attitudes (or vice versa) is an important area for future research. Clearly, neither political orientation’s policy preferences are always geared toward maximizing the long-term consequences of their actions. However, it is possible that state or trait CFC levels may be generally associated with one type of political orientation or the other. Just as conscientiousness and openness are two personality factors related to political attitudes, CFC may also be one such factor. Future research should investigate this issue at the trait level, as well as how situational forces can affect state CFC and political attitudes simultaneously.

**DIRECTIONS FOR FUTURE RESEARCH**

There is a great deal we do not understand about anger and how it affects people’s support for military action. The results of the present studies show that there are key areas future research should explore concerning the anger – war attitudes effect, including its mechanisms and boundary conditions.

**Research on Anger and War Attitudes**

Researchers should continue to explore the strength of the anger – war effect and explore the conditions in which anger does and does not affect beliefs about war. My results indicate that
the effect may not be as robust and consist as previously believed. Researchers should utilize differing measurements of state and trait anger, as well as anger manipulations to see how using various operationalizations of anger affects the anger-war attitudes relationship. As discussed previously, war attitudes should be measured using a number of different methods. These include using Likert scales to assess attitudes about current wars, views of war in the abstract, and hypothetical wars, to understand how effects differ between these variations. In regards to the latter method, the present results indicate that measurement using hypothetical war passages may reduce the effect and are likely less generalizable. However, based on just these studies, there is no way to know if these effects were idiosyncratic to the specific war scenario devised for this project, or if they apply to all manufactured war situations.

Also, I am not aware of any studies that test if anger’s effect only pertains to wars that involve participants’ “home” countries. Studies conducted in the United States have measured war attitudes with the war in question directly involving the U.S. (i.e. Iraq and Afghanistan). It is not clear if anger increases support for military engagement for countries of which one is neither a citizen nor a resident. For example, if American participants have a positive anger and war correlation when the countries in conflict are two African nations, this implies that the effect of anger generalizes out to support for war in a very broad way. Importantly, this would imply that anger’s influence on war attitudes is not exclusively based on perceptions of threat to one’s self or country. Because America is highly unlikely to be affected by a war in two African countries (the U.S. homeland is especially unlikely to be harmed in this scenario), concerns over threat to one’s home country is not likely to be a factor in causing anger’s increase in support for war. In the present studies, we gathered information on participants’ citizenship. Non-American citizens did not show different patterns of war attitudes than U.S. citizens. However, these non-citizens
were students currently residing in America, so they were clearly not detached from any threat towards America, and thus this is not an alternative to this proposed research design.

Another area that has not been investigated is anger’s possible affect on implicit war attitudes. Anger may be affecting positivity towards war at a more unconscious level and the explicit, self-report measures used in all past research is not able to capture these changes in implicit beliefs. Participants may be unaware of how their war attitudes have changed. Or they may be unwilling to report their increased war support, due to factors such as social desirability and a preference to appear anti-war (especially because college campuses are generally quite “dovish” regarding war). An implicit war attitude measure may be a way to diminish this potential problem.

Alternative Measurement of Potential Mediators

Temporal Orientation

Future studies should also continue to investigate potential mechanisms that explain why anger causes an increase in favorability towards military conflict. The present results suggest that considering the present consequences of the war instead of the future consequences is one way anger affects war attitudes. I believe researchers should continue to examine CFC in the context of emotion and aggressive acts such as war attitudes to better understand its role as a potential mediator or moderator of this effect. Using CFC as a trait (rather than state) variable may provide additional insight into the role of temporal orientation and war.

Another approach would be to directly manipulate the extent to which people are thinking about the present and future consequences of their actions. The study could consist of a “present orientation” condition, a “future orientation” condition, and a control condition. The two experimental conditions would differ in that the present group would be instructed to read
the passage while keeping in mind the short term advantages and disadvantages of the war scenario while the future condition would be asked to think long term. Both groups would then write out their reasons for their respective time periods. My prediction is that the present orientation condition would show higher levels of support than the control or future condition.

It is important to remember that CFC is only one particular way of measuring temporal orientation. There are a number of constructs that measure thinking about the present versus the future that would be extremely important to measure as potential moderators or mediators for the anger – war relationship. One of these constructs is delay discounting. Delay discounting is people’s tendency to choose a smaller, but immediate reward instead of a delayed, larger reward (Green & Myerson, 2010). This can be viewed as a maladaptive strategy because in the long run, it results in smaller gains. Although most individuals tend to show some degree of discounting, people who are more present-orientated show higher rates of discounting because they tend to overvalue rewards in the present even more than the average person.

Delay discounting can be measured in various ways, but a common method is to present a series of choices in which there is a reward that can be attained in the present versus a larger reward in the future (i.e. $650 now OR $1,000 in ten years). Participants are given a number of combinations of choices varying in size of the rewards and the amount of time for the delayed reward. A delay discounting score for each person is calculated based on factors such as when the individual begins to switch over to picking the immediate reward instead of the delayed reward (and vice versa depending on what was first given to the participant). This measure, along with other related constructs such as delay of gratification (Metcalf & Mischel, 1999) and time perspective (Zimbardo, 1999), would serve as quality alternative methods of assessing
temporal orientation in an anger and war attitudes study, providing us with a clearer understanding of the role of temporal orientation in the anger – war relationship.

One area of psychological research that has provided unique insight on temporal orientation, anger, and aggression is clinical psychology. Although CFC has not, to my knowledge, been studied in the clinical literature, another related time orientation-based construct that has an important role for psychopathology is impulsivity.

Research indicates that anger and impulsivity may interact in a way that amplifies their effects within specific clinical disorders and pathological behaviors. For example, research shows that anger and impulsivity both affect the likelihood of physical abuse for patients with Borderline Personality Disorders (Dutton & Starzomski, 1993). Furthermore, anger and impulsivity are important for diagnosing and understanding Psychopathy (Jackson, Neumann, & Vitacco, 2007) and impulsivity has been found to moderate the relationship between anger and eating disordered behavior in bulimic patients (Engel, Boseck, Crosby, Wonderlich, Mitchell, Smyth, Miltenberger, & Steiger, 2007). In addition to the clinical research on anger and impulsivity, studies have indicated that impulsiveness can lead to more aggressive behaviors.

Impulsivity is a prominent personality variable associated with alcoholism (Sher & Trull, 1994; Whiteside & Lynam, 2009) and leads to various negative consequences including physical altercations and other forms of violence (Park, 2004). Also, impulsivity is associated with more aggressive behaviors such as spousal abuse, especially in men with Antisocial Personality Disorder and Borderline Personality Disorder (Edwards, Scott, Yarvis, Paizis, & Panizzon, 2003). This relationship between anger, impulsivity, and aggressive behaviors in the clinical literature suggest that anger and time orientation can be studied outside of the domain of CFC.
Therefore, it is important for future research to investigate if impulsivity plays a role in understanding how anger causes changes in an aggressive attitude construct such as war support.

CFC is associated with a number of pro-social outcomes such as recycling, (Strathman et al., 1994) lower rates of substance abuse (Strathman et al., 1994) higher GPAs (Joireman, 1999) and engaging in higher rates of physical activity (Ouellette, 2005). There is a strong case to make that if more individuals were orientated towards long-term consequences rather than short-term consequences, it could have a number of important positive effects on society. Unfortunately, there is no direct evidence of interventions increasing individuals’ motivation or ability to consider future consequences. However, there is some indirect evidence that treatments can affect time orientation and subsequent behavior. This evidence from the clinical literature shows that a number of treatments have been designed to decrease impulsivity and make fewer decisions that are focused on the short-term that result in negative consequences. This research shows that treatments such as Cognitive Behavioral Therapy, Self-Statement Modification and Modeling treatments have been at least mildly effective in treating impulsivity in disorders such as Attention-Deficit Hyperactivity Disorder and Conduct Disorder based on a meta-analysis of impulsivity and treatments in children by Bear & Nietzel (1991). Based on these findings, researchers should continue to investigate the methods in which people can alter their behavior to consider future consequences more thoroughly and thus make decisions that benefit the individual as well as society as a whole.

**Risk**

In my results, the concepts of risk perception and risk preference did not prove to be related to either anger or war. As noted previously, the lack of an anger – risk relationship was especially surprising considering results of past research, that used very similar methods to those
used in the present study. With this in mind, future research should employ different measures of risk perception and risk preference to further investigate if they are indeed important constructs in the anger – war relationship. One potential obstacle is that there appears to be very few general measures of risk perception (Olofsson & Rashid, 2011). The majority of scales for both risk perception and risk preference are created to address risk in specific domains such as driving (White, Eiser, & Harris, 2004), sexual behaviors (Adefuye, Abiona, Balogun, & Lukobo-Durrell, 2009), environmental issues (Peters & Slovic, 1996), and health concerns (Watson, Lloyd, Meyer, Eeles, Ebbs, & Murday, 1999), and not to assess an individual’s “overall” level of risk perception.

Of course, a single risk perception measure of driving behaviors is unlikely to be a valid measure of one’s general risk perception and thus cannot be used to measure risk perception in a differing paradigm such as anger and war. However, one way to get a general sense of risk perception is to use a number of items from all these different domains. For example, picking one item from a risk perception measure of HIV, another from climate change concern, and so forth could allow for a more broad measure of someone’s current risk perception. With this type of measure, one could then investigate how risk perception is related to anger and war attitudes.

Another approach to measuring risk perception is to create a measure in which participants are given specific scenarios and asked how likely the negative outcome is to occur. For example, participants can be provided a scenario in which a driver is stopped at a red light and takes a right turn without looking for oncoming cars on a busy road. Then ask the participant, “how likely is it that the driver will get into an auto accident if this act is performed”. Participants can respond using an 11-point scale, with each scale point representing a percentage
from the range of 0% to 100%. Using a number of these items in different risky domains, one can obtain a measure of an individual’s risk perception.

The process of selecting alternative measures of risk preference has similar obstacles to measuring risk perception. That is, most risk preference measures are specific to a particular risk domain. Luckily the same solution can be applied to risk preference. Using different risk preference tasks over various areas should provide a general sense of one’s level of risk-taking.

It is unclear exactly why the measures used in the present study did not replicate previous research. However, because these data did not match the predicted hypotheses, further research in this area should attempt alternate means of measuring these important constructs.

**Cognitive Control**

The present results did not suggest that there is a cognitive control element to the anger and war relationship. Cognitive control is a broad concept and the antisaccade task I used is clearly not the only way of capturing everything that is associated with cognitive control. One simpler way to measure if cognitive abilities in general affect attitudes towards war would be to randomly assign participants to either a cognitive load manipulation or a control group and then measure war attitudes. If participants in the cognitive load condition express more support for war than the control group, it would suggest that a reduction in cognitive abilities does increase support for war. Because heuristic processing can be due to a lack of cognitive resources, this would suggest that war support and processing information in a less detailed way are related concepts.

Aside from cognitive measures, one avenue would be to assess information processing style (heuristic versus systematic) directly by using a measure that gives each participant a processing style score. However, studies that measure processing style routinely use measures
that determine whether heuristic or systematic processing merely exists. Importantly, these studies do not award a particular processing style value for each participant. Without a score of information processing, one cannot use the processing variable to determine if it moderates or mediates the anger – war relationship. For example, Tiedens and Linton (2001) showed that anger is related to heuristic processing through an expertise/persuasion paradigm. In their study, participants that completed an anger manipulation were more persuaded by an essay written by “experts” than by presumed non-experts on the subject. Control group participants did not favor one essay over the other. Both essays were identical except for the essay’s formatting and the occupation of the author. Thus, it appeared that participants in the anger condition were relying more heavily on the cue of presumed expertise to make their judgments of the essay than participants in the control group. This reliance on expertise was because participants were using a more heuristic processing style when consuming the content within the essay. This is a fine study for understanding if anger affects processing style, but this type of study does not assign a value for each person’s level of processing. Without a value for processing style, it is not possible to test for moderation or mediation. Because most, if not all, processing style studies use similar methods, there is currently no clear method for determining the degree to which processing style moderates or mediates anger and war studies.

A measure that is somewhat close to being a direct measure is the well-known Need for Cognition scale (Cacioppo & Petty, 1982). However, this scale, which investigates the degree to which people prefer engaging in effortful cognitive activities, is used at the trait-level and is not devised to measure changes in processing style due to manipulated incidental emotion. Need for Cognition would be an interesting construct to test for its possible relationship with state or trait
anger and whether it is related to support for military conflict, but it would not be a good candidate to understand changes in processing style due to an anger manipulation.

A FINAL WORD

Steven Pinker (2012) and other prominent scholars have argued that violence and war across the globe are currently at their lowest levels in human history. Although this belief very well may be accurate, it is quite unlikely that war will ever be completely eradicated from the human experience. Because violence and aggression are ever-present aspects of humanity, it is vital that the scientific community continues to probe attitudes towards war to understand their genesis and why they persist despite the negative outcomes that they generate. I believe emotions, including anger, are extremely important factors in the development of both pro and anti-war attitudes. This is important to understand not just in the context of public opinion, but also for the political and military leaders that ultimately make the life and death decisions involving international and intranational conflict. With continued research and exploration of these important ideas, we may one day understand the mechanisms that shape our beliefs and behaviors concerning war and all forms of violence with the aim of reducing their devastating impact.
REFERENCES


orientation and reasons for reducing waste as predictors of self-reported behavior.

*Environment and Behavior, 33,* 424-448.


Footnotes

1 It may seem odd that positive life events could be considered a measure of “risk”. However, both serve as general measures of optimism, which is believed to be a very similar construct to risk perception. Lerner & Keltner (2001) also used both positive and negative event estimates to measure risk perception, and that was the approach taken here. Responses to negative and positive events were correlated ($r = .25$, $p = .003$). When separating risk perception into negative and positive events, both constructs showed somewhat similar relationships between the key variables of interest. Combining both to form the measure of risk perception produces very good reliability alpha = .74.

2 For Experiment 1, war attitudes were measured before war risk for all participants. In Experiment 2, the order of presentation for war attitudes and war risk was counterbalanced. Results showed presentation order had no effect on scores. Experiment 2 was conducted chronologically before Experiment 1. Because there were no order effects, the war attitudes measure was presented before the war risk measure for Experiments 1 and 3.

3 An important assumption in an analysis of covariance is the homogeneity of regression slopes assumption. Initial analyses of anger, controlling for anxiety, were consistent with this assumption. However, analyses of covariance using sadness were not. Thus, for the ANCOVA with condition as the independent variable and anger as the dependent variable, only anxiety is included as a covariate in the results to be reported ahead.

4 Based on the recommendation from Aiken and West (1991) all regression coefficients reported will be unstandardized Bs instead of the standardized Betas reported for all other regression analyses.
In the classic Asian Disease Problem scenario, the outbreak is described as an “unusual Asian disease”. Because the hypothetical war scenario in the present study involved Asian countries (North and South Korea) the word “Asian” was replaced with the word “toxic” to avoid any possible issue that this overlap may create.

Payne (2005) presented the target object for 100 ms. However, in piloting this task, very few errors were recorded for either block 1 or block 2 at this presentation speed. A presentation of 60ms did result in more errors, and thus this speed was used in the present experiment.

Tests of the homogeneity of regression slopes assumption reveled that the sadness X condition interaction was significant, $F(1,117) = 10.00, p = .002$. Thus only anxiety and not sadness was included as a covariate in the ANCOVA with condition as the independent variable and anger as the dependent variable.

In contrast, a key advantage of using a hypothetical war scenario is that participants cannot have pre-existing attitudes towards the studied conflict. These pre-existing attitudes are likely to harden their opinions, and thus be less malleable to the impact of an angering experience.
Table 1

Descriptive Statistics – Mean levels for each construct. Standard Deviation in parentheses.

*CFC = Consideration of Future Consequences.*

<table>
<thead>
<tr>
<th>Construct</th>
<th>Experiment 1</th>
<th>Experiment 2</th>
<th>Experiment 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Trait Anger</td>
<td>4.26 (1.07)</td>
<td>4.38 (1.17)</td>
<td>4.11 (1.16)</td>
</tr>
<tr>
<td>2. Trait Aggression</td>
<td>3.25 (1.14)</td>
<td>3.12 (0.94)</td>
<td>3.42 (1.07)</td>
</tr>
<tr>
<td>3. Sensation Seeking</td>
<td>5.70 (1.60)</td>
<td>5.66 (1.51)</td>
<td>6.16 (1.45)</td>
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<tr>
<td>4. Political Orientation</td>
<td>3.68 (1.03)</td>
<td>3.66 (1.23)</td>
<td>3.65 (1.27)</td>
</tr>
<tr>
<td>5. Right-Wing Authoritarianism</td>
<td>2.69 (1.05)</td>
<td>2.71 (1.00)</td>
<td>2.73 (0.99)</td>
</tr>
<tr>
<td>6. Social Dominance Orientation</td>
<td>3.16 (1.15)</td>
<td>3.00 (1.23)</td>
<td>3.12 (1.25)</td>
</tr>
<tr>
<td>7. Pre Manipulation Anger</td>
<td>2.04 (1.25)</td>
<td>1.81 (1.10)</td>
<td>2.07 (1.24)</td>
</tr>
<tr>
<td>8. Post Manipulation Anger</td>
<td>2.50 (1.67)</td>
<td>2.19 (1.51)</td>
<td>2.68 (1.90)</td>
</tr>
<tr>
<td>9. War Attitudes</td>
<td>3.58 (1.66)</td>
<td>3.92 (1.65)</td>
<td>3.81 (1.73)</td>
</tr>
<tr>
<td>10. War Risk</td>
<td>3.77 (1.10)</td>
<td>4.15 (1.09)</td>
<td>3.77 (0.93)</td>
</tr>
<tr>
<td>11. CFC</td>
<td>6.07 (1.23)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>12. Risk Perception</td>
<td>N/A</td>
<td>4.07 (0.83)</td>
<td>N/A</td>
</tr>
<tr>
<td>13. Cognitive Control Errors</td>
<td>N/A</td>
<td>N/A</td>
<td>6.60 (4.87)</td>
</tr>
</tbody>
</table>
Table 2

*Correlation Among and Internal Reliabilities of Individual Difference Variables – Experiment 1*

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
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<tbody>
<tr>
<td><strong>1. Trait Anger</strong></td>
<td>(.83)</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>2. Trait Aggression</strong></td>
<td>.54*** (.84)</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>3. Sensation Seeking</strong></td>
<td>-.13</td>
<td>.20*</td>
<td>(.82)</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
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<tr>
<td><strong>4. Political Orientation</strong></td>
<td>.06</td>
<td>.06</td>
<td>.05</td>
<td>(.72)</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>5. Right-Wing Authoritarianism</strong></td>
<td>.21*</td>
<td>.17†</td>
<td>.00</td>
<td>.58*** (.88)</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>6. Social Dominance Orientation</strong></td>
<td>.25**</td>
<td>.30**</td>
<td>.00</td>
<td>.40*** .22*</td>
<td>(.91)</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>7. Pre Manipulation Anger</strong></td>
<td>.39*** .29**</td>
<td>.01</td>
<td>.15</td>
<td>.20*</td>
<td>.15</td>
<td>(.85)</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>8. Pre Manipulation Anxiety</strong></td>
<td>.36*** .08</td>
<td>-.04</td>
<td>-.02</td>
<td>.09</td>
<td>.13</td>
<td>.56*** (.80)</td>
<td>--</td>
<td></td>
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<tr>
<td><strong>9. Pre Manipulation Sadness</strong></td>
<td>.40*** .09</td>
<td>-.16</td>
<td>.01</td>
<td>.14</td>
<td>.07</td>
<td>.62*** .65*** (.82)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* †p < .10.  *p < .05.  **p < .01.  ***p < .001.
**Table 3**

*Correlation Among and Internal Reliabilities of Post Manipulation Mood Indices - Experiment 1*

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
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</thead>
<tbody>
<tr>
<td>1. Anger Index</td>
<td>(.93)</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>2. Anxiety Index</td>
<td>.36***</td>
<td>(.86)</td>
<td>--</td>
</tr>
<tr>
<td>3. Sadness Index</td>
<td>.69***</td>
<td>.59***</td>
<td>(.81)</td>
</tr>
</tbody>
</table>

*Note.* †p < .10. *p < .05. **p < .01. ***p < .001.
Table 4

Correlation Among and Internal Reliabilities of Moderators of Anger – War relationship – Experiment 1

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gender</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>2. CFC</td>
<td>.14</td>
<td>(.86)</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>3. Trait aggression</td>
<td>-.31**</td>
<td>-.10</td>
<td>(.84)</td>
<td>--</td>
</tr>
<tr>
<td>4. Political Orientation</td>
<td>-.37***</td>
<td>-.17†</td>
<td>.06</td>
<td>(.72)</td>
</tr>
</tbody>
</table>

*Note.* Gender coded such that 1 = male and 2 = female.

†p < .10. *p < .05. **p < .01. ***p < .001. CFC = Consideration of Future Consequences Scale.
Figure captions

**Figure 1**
Overview of proposed mediators/moderators.

**Figure 2**
Schematic overview of design of Experiments 1 – 3.

**Figure 3**
Regression Analyses of Gender as a moderator of the Anger and War Attitudes Relationship in Experiment 1. Values are controlling for condition and premeasured anger.

**Figure 4**
Regression Analyses of Political Orientation as a moderator of the Anger and War Attitudes Relationship in Experiment 1. Values are controlling for condition and premeasured anger.

**Figure 5**
Regression Analyses of Trait Aggression as a moderator of the Anger and War Attitudes Relationship in Experiment 1. Values are controlling for condition and premeasured anger.

**Figure 6**
Regression Analyses of Consideration of Future Consequences as a moderator of the Anger and War Attitudes Relationship in Experiment 1. Values are controlling for condition and premeasured anger.

**Figure 7**
Statistical paths of relevant variables in Experiment 1. All values are standardized beta coefficients. Values are controlling for condition and premeasured anger. Values in parentheses reflect the simple relation of the variables question. CFC was coded such that higher scores
indicate higher concern for immediate consequences rather than future consequences. † p < .10. * p < .05. ** p < .01. *** p < .001.

Figure 8
Males only. Statistical paths of relevant variables in Experiment 1. All values are standardized beta coefficients. Values are controlling for condition and premeasured anger. Values in parentheses reflect the simple relation of the variables question. CFC was coded such that higher scores indicate higher concern for immediate consequences rather than future consequences. † p < .10. * p < .05. ** p < .01. *** p < .001.

Figure 9
Females only. Statistical paths of relevant variables in Experiment 1. All values are standardized beta coefficients. Values are controlling for condition and premeasured anger. Values in parentheses reflect the simple relation of the variables in question. CFC was coded such that higher scores indicate higher concern for future consequences rather than immediate consequences. † p < .10. * p < .05. ** p < .01. *** p < .001.

Figure 10
Statistical paths of relevant variables in Experiment 2. All values are standardized beta coefficients. Values are controlling for condition and premeasured anger. Values in parentheses reflect the simple relation of the variables question. Risk Perception was coded such that higher scores indicate perceptions of higher levels of risk. † p < .10. * p < .05. ** p < .01. *** p < .001.

Figure 11
Statistical paths of relevant variables in Experiment 3. All values are standardized beta coefficients. Values are controlling for condition and premeasured anger. Values in parentheses reflect the simple relation of the variables question. Errors were coded such that higher scores
indicate higher levels of errors and thus less cognitive control abilities. †p < .10. *p < .05. **p < .01. ***p < .001.
Figure 1A (mediation)

Experimental manipulation of anger

Time Perspective

Risk Perception/Preference

Cognitive Control

War Attitudes

Figure 1B (moderation)

Experimental manipulation of anger

Time Perspective

Risk Perception/Preference

Cognitive Control

War Attitudes

Couldn’t it be both?
Figure 2

Individual Differences measurement and pre-measure of mood

Random Assignment to Justice Violation or Control Condition

Post Manipulation Mood Measurement

Intervening Variable:
Exp 1 – Consideration of Future Consequences
Exp 2 – Risk
Exp 3 – Cognitive Control

U.S./N. Korea War Passage

Measurement of War Attitudes and War Risk
Figure 3 (Experiment 1)

![Graph showing the relationship between war support, gender (males, females), and anger (1 SD Below, 1 SD Above). The graph displays a positive correlation between higher levels of anger and increased war support, with females generally showing a higher support level compared to males.]
Figure 4 (Experiment 1)

![Graph showing the relationship between Political Orientation and War Support across different levels of Anger. The graph indicates that political orientation significantly affects war support, with higher political orientation (Conservatives) showing a stronger correlation between anger and war support compared to mid-level and low political orientation (Liberals).]
Figure 5 (Experiment 1)
Figure 6 (Experiment 1)

Consideration of Future Consequences

- High CFC (consider future)
- Mid Level CFC
- Low CFC (consider present)

War Support

Anger

1 SD Below 1 SD Above
Figure 7 (Experiment 1: All participants)

Condition
(Control = 0; Justice Violation = 1) → Anger
\( B = 0.43^{***} \) (0.48)***

Anger → Consideration of future consequences
\( B = -0.08 (0.14) \)

Consideration of future consequences → War Support
\( B = 0.20** (0.21)* \)

War Support → Condition
\( B = 0.23^{+} (0.17)^{+} \)

\( B = -0.06 (0.05) \)

\(^{+}p < .10. \quad \ast p < .05. \quad \ast\ast p < .01. \quad \ast\ast\ast p < .001.\)
Figure 8 (Experiment 1: Males only)

Condition
(Control = 0; Justice Violation = 1)

Anger

Consideration
of future
consequences

War Support

B = .03 (-.04)

B = .36*** (.53)***

B = -.43† (-.31)*

B = -.30* (-.35)*

B = .63** (.45)**

B = -.04 (.05)

†p < .10.  *p < .05.  **p < .01.  ***p < .001.
Figure 9 (Experiment 1: Females only)

Condition (Control = 0; Justice Violation = 1)

Anger

Consideration of future consequences

War Support

B = -0.08 (-0.08)

B = 0.15 (0.04)

B = -0.04 (-0.02)

B = -0.09 (-0.19)

B = -0.17 (-0.16)

\( p < .10 \)

\( ^* p < .05 \)

\( ^{**} p < .01 \)

\( ^{***} p < .001 \)
Figure 10 (Experiment 2)

Condition
(Control = 0; Justice Violation = 1)

Anger

Risk Perception

War Support

B = .07 (.08)

B = .18† (.07)

B = .46*** (.43)***

B = - .08 (- .12)

B = .12 (.24)**

B = .10 (.08)

†p < .10. *p < .05. **p < .01. ***p < .001.
Figure 11 (Experiment 3)

\[ B = .02 (.03) \]
\[ B = .45^{***} (.46)^{***} \]
\[ B = .09 (.14) \]
\[ B = -.03 (-.04) \]
\[ B = .18 (.09) \]
\[ B = .06 (.06) \]

\[ ^\dagger p < .10. \quad ^* p < .05. \quad ^{**} p < .01. \quad ^{***} p < .001. \]
APPENDIX A

Trait Anger
1. I have a fiery temper.
2. I am quick-tempered.
3. I am a hotheaded person.
4. I get annoyed when I am singled out for correction.
5. It makes me furious when I am criticized in front of others.
6. I get angry when I am slowed down by others mistakes.
7. I feel infuriated when I do a good job and get a poor evaluation.
8. I fly off the handle.
9. I feel annoyed when I am not given recognition for doing good work.
10. People who think they are always right irritate me.
11. When I get mad, I say nasty things.
12. When I get frustrated, I feel like hitting someone.
13. It makes my blood boil when I am pressured.

Trait Aggression
Physical Aggression
1. Once in a while I can't control the urge to strike another person.
2. Given enough provocation, I may hit another person.
3. If somebody hits me, I hit back.
4. I get into fights a little more than the average person.
5. If I have to resort to violence to protect my rights, I will.
6. There are people who pushed me so far that we came to blows.
7. I can think of no good reason for ever hitting a person.
8. I have threatened people I know.
9. I have become so mad that I have broken things.

Verbal Aggression
1. I tell my friends openly when I disagree with them.
2. I often find myself disagreeing with people.
3. When people annoy me, I may tell them what I think of them.
4. I can't help getting into arguments when people disagree with me.
5. My friends say that I'm somewhat argumentative.

Sensation Seeking Scale
1. I would like to explore strange places.
2. I would like to take off on a trip with no pre-planned routes or timetables.
3. I get restless when I spend too much time at home.
4. I prefer friends who are excitingly unpredictable.
5. I like to do frightening things.
6. I would like to try bungee jumping.
7. I like wild parties.
8. I would love to have new and exciting experiences, even if they are illegal.

**Political Orientation**
1. I consider myself to be politically liberal.
2. I consider myself to be politically conservative.

**Economic conservatism**
3. It would be better for America to have a publicly funded health care system for all Americans rather than a for-profit private health care system.
4. The U.S. Government already spends too much giving money to the poor.
5. All the regulations placed on American business by the government are harming the economy by not allowing the free market to work as it should.
6. Rich Americans should have to pay more in taxes than they currently do.

**Toughness conservatism**
7. It would be good if we had more immigrants in the United States.
8. I support “English only” laws requiring all government business to be conducted in English.
9. The death penalty should be eliminated from the American judicial system.

**Moral conservatism**
10. There should be few limitations on abortion in this country.
11. Terminally ill people should have the right to physician-assisted suicide.
12. I support full legalization of homosexual marriage.

**Social Dominance Orientation**
1. Some groups of people are simply inferior to other groups.
2. In getting what you want, it is sometimes necessary to use force against other groups.
3. It’s OK if some groups have more of a chance in life than others.
4. To get ahead in life, it is sometimes necessary to step on other groups.
5. If certain groups stayed in their place, we would have fewer problems.
6. It’s probably a good thing that certain groups are at the top and other groups are at the bottom.
7. Inferior groups should stay in their place.
8. Sometimes other groups must be kept in their place.
9. It would be good if groups could be equal.
10. Group equality should be our ideal.
11. All groups should be given an equal chance in life.
12. We should do what we can to equalize conditions for different groups.
13. Increased social equality.
14. We would have fewer problems if we treated people more equally.
15. We should strive to make incomes as equal as possible.
16. No group should dominate in society.

**Right-Wing Authoritarianism**
1. The established authorities generally turn out to be right about things, while the radicals and protesters are usually just "loud mouths" showing off their ignorance.
2. Our country desperately needs a mighty leader who will do what has to be done to destroy the radical new ways and sinfulness that are ruining us.
3. It is always better to trust the judgment of the proper authorities in the government and religion than to listen to the noisy rabble rousers in our society who are trying to create doubt in people's minds.
4. Atheists and others who have rebelled against the established religions are no doubt every bit as good and virtuous as those who attend church regularly.
5. Our country needs free thinkers who will have the courage to defy traditional ways even if this upsets many people.
6. Our country will be destroyed one day if we do not smash the perversions eating away at our moral fiber and traditional beliefs.
7. Everyone should have their own life-style, religious beliefs, and sexual preferences, even if it makes them different from everyone else.
8. The "old-fashioned ways" and "old-fashioned values" still show the best way to live.
9. What our country really needs is a strong, determined leader who will crush evil and take us back to our true path.
10. God's laws about abortion, pornography, and marriage must be strictly followed before it is too late, and those who break them must be strongly punished.
11. There is no "ONE right way" to live life; everybody has to create their own way.
12. There are many radical, immoral people in our country today, who are trying to ruin it for their own godless purposes, whom the authorities should put out of action.
13. What our country needs most is discipline, with everyone following our leaders in unity.
14. It's better to have trashy magazines and radical pamphlets in our communities than to let the government have the power to censor them.
15. A lot of our rules regarding modesty and sexual behavior are just customs which are not necessarily any better or holier than those which other people follow.
16. The situation is getting so serious, the strongest methods would be justified if they eliminated the troublemakers and got us back on our true path.
17. Once our government leaders give us the "go ahead," it will be the duty of every patriotic citizen to help stomp out the rot that is poisoning our country from within.

**Risk Perception - Likelihood of life events**

Positive
1. Good job offer before graduation
2. Graduating in top third of class
3. Home doubles in value in 5 years
4. Your work recognized with award
5. Living past 80
6. Your achievements in newspaper
7. No night in hospital for 5 years
8. Having a mentally gifted child
9. Marrying someone wealthy
10. Statewide recognition in your profession
11. Weight constant for 10 years

Negative
1. Having a drinking problem
2. Attempting suicide

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3. Divorced a few years after married
4. Heart attack before age 40
5. Contracting venereal disease
6. Being fired from a job
7. Getting lung cancer

Consideration of Future Consequences
1. I consider how things might be in the future, and try to influence those things with my day to day behavior.
2. Often I engage in a particular behavior in order to achieve outcomes that may not result for many years.
3. I only act to satisfy immediate concerns, figuring the future will take care of itself.
4. My behavior is only influenced by the immediate (i.e., a matter of days or weeks) outcomes of my actions.
5. My convenience is a big factor in the decisions I make or the actions I take.
6. I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes.
7. I think it is important to take warnings about negative outcomes seriously even if the negative outcome will not occur for many years.
8. I think it is more important to perform a behavior with important distant consequences than a behavior with less-important immediate consequences.
9. I generally ignore warnings about possible future problems because I think the problems will be resolved before they reach crisis level.
10. I think that sacrificing now is usually unnecessary since future outcomes can be dealt with at a later time.
11. I only act to satisfy immediate concerns, figuring that I will take care of future problems that may occur at a later date.
12. Since my day to day work has specific outcomes, it is more important to me than behavior that has distant outcomes.

U.S.-N. Korea scenario attitudes
1. Under these circumstances, the United States should immediately begin bombing North Korea.
2. America would be completely justified in attacking N. Korea.
3. America should not go to war with North Korea, more diplomacy should be used to resolve the situation.
4. It would be a huge mistake for the United States to attack N. Korea.
5. The United States should invade N. Korea.
6. The United States should begin to move soldiers into S. Korea in order to advance into N. Korea.
7. Under the current circumstances, I do not support going to war with N. Korea.
8. The United States should use all force necessary to protect S. Korea from N. Korea.
9. The United States should not go to war with N. Korea because the U.S. cannot constantly get involved with other countries’ affairs.
10. The tensions between S. Korea and N. Korea are none of the United States’ business.
11. It would be irresponsible for the United States not to attack N. Korea if they begin to invade S. Korea.
12. The United States will look weak if they do not engage militarily with N. Korea.

**U.S. - N. Korea outcome likelihood estimates (risk perceptions):**
1. If the United States were to attack North Korea, there would be a high probability that the U.S. would meet its objectives.
2. It would be risky for the United States to engage in a military conflict with North Korea, given the hypothetical situation presented in the passage.
3. The United States will be able to stop N. Korea from invading S. Korea through military force.
4. N. Korea poses a great risk to the United States.
5. I believe at least 5,000 United States soldiers will die if America invades N. Korea.
6. I believe at least 50,000 civilians will die if the United States invades N. Korea.
7. If the United States were to invade N. Korea the U.S. would have to keep soldiers in N. Korea for as long as the U.S. has in Iraq, if not longer.
8. A war against N. Korea would not cost the United States nearly as much monetarily as in the war in Iraq.
9. There is not much risk involved for the United States in attacking N. Korea.
10. There is a good probability that the benefits of going to war with N. Korea will outweigh the benefits of going to war for the United States.