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Assessing Individual Differences in the Degree to Which People are Committed to Following
Their Beliefs

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Abstract

The authors developed a new dispositional measure of Commitment to Beliefs (CTB)—the degree to which people feel it is important to follow their value-expressive beliefs—across three phases of research. In Phases 1 and 2 (Studies 1-4), the CTB scale demonstrated strong internal consistency, and convergent and discriminant validity. Phase 3 demonstrated the scale’s predictive validity: high-CTB individuals were more likely to report engaging in activities during the past month and year that followed directly from their beliefs (Study 5), act on their beliefs when given the opportunity (Study 6), and show more polarized attitudes toward ideologically-relevant groups (Study 7). These findings illustrate the utility of a dispositional approach for examining the extent to which people follow their beliefs.

Keywords: belief commitment, individual differences

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1. Introduction

Consider the question, “how far would you be willing to go in order to act on your beliefs?” Most of the theory and research on people’s inclinations to follow their beliefs has focused on contextual influences, such as the interplay between the attainability and desirability of the behavior (e.g., Ajzen, 1991) normative influences (Thomas, McGarty, & Mavor, 2009), belief or attitude strength (Petty & Krosnick, 1995) or social identification (Kelly & Breinlinger, 1996). The goal of the current research was to systematically develop and test a complementary, but distinct individual differences approach to examine how people think about and act in ways that are consistent with their belief systems.

The general hypothesis of this research is that there are stable, individual differences in the degree to which individuals are generally committed to their beliefs. We propose that these differences can be partially explained in terms of a dispositional construct we refer to as Commitment to Beliefs (CTB), defined as the degree to which an individual generally feels it is important to follow his or her value-expressive beliefs. In theory, such an approach would help account for pre-existing individual differences that explain why some individuals act in accordance with their beliefs while others do not—particularly when these individuals are faced with similar or identical situational conditions—and suggests that such differences could potentially impact people’s behavior across a variety of different situations and social domains.

1.1 Nomological Network of Commitment to Beliefs

Beliefs can be conceptualized as mental representations that describe the subjective probability that an object has a particular characteristic (Wyer & Albarracin, 2005). Beliefs can refer to propositions about oneself, other people, places, events, procedures, social norms, or the relations among these entities. Thus, the content and type of our beliefs can be expected to have different psychological implications depending on the content to which they refer (Kruglanski & Stroebe, 2005).

Rokeach (1968, 1973) was one of the first researchers to distinguish beliefs according to whether they describe a proposition as true or false (descriptive beliefs, e.g., “the earth is round”), an object as good or bad (evaluative beliefs, e.g., “abortion is wrong”) or advocate a certain action or state of existence as desirable or undesirable (prescriptive beliefs, e.g., “research that involves destroying animals should be permitted if it can help cure terminal human diseases”). Thus, prescriptive and evaluative beliefs may both reflect a person’s values and ideals (Feather, 1975), while descriptive beliefs may be based on experiential knowledge. This distinction in classes of beliefs is similar to the seminal work of Katz (1960), who proposed that attitudes can serve knowledge, utilitarian, ego-defensive, or value-expressive functions. Evaluative and prescriptive beliefs that express a person’s values are likely to be highly central to one’s self-concept and identity (Hitlin & Piliavin, 2004), highly accessible (Higgins, 1996), more resistant to persuasive appeals or change (Blankenship & Wegener, 2008), elicit strong emotions (Higgins, Shah, & Friedman, 1997), color one’s perception of one’s social world (Maio & Olson, 1998), and under certain conditions, predict value-expressive behavior (Torelli & Kaikati, 2009; Verplanken & Holland, 2002). Similarly, research on attitudes that have a value-expressive versus a utilitarian or instrumental function indicates that these

attitudes are particularly resistant to change or attack (Johnson & Eagly, 1989; Maio & Olson, 1995a), and predictive of value- or attitude-consistent behaviour (Maio & Olson, 1994; 1995b). Value-expressive beliefs therefore share some conceptual and phenomenological overlap with values, which are often defined as a desirable, trans-situational goal that serves as a guiding principles in a person's life (Rokeach, 1968; Schwartz, 1992) and attitudes, which are often defined as a tendency to evaluate an object favourably or unfavourably (Eagly & Chaiken, 2005; Olson & Maio, 2003; Zanna & Rempel, 1988).

Value-expressive beliefs can be partially distinguished from these constructs based on their focus and function, however (Fishbein & Ajzen, 1975; Kruglanski & Stroebe, 2005; Maio, Olson, & Cheung, in press). They are less broad and abstract than values (e.g., "preserving nature") and are typically conceived in a more syllogistic and concrete form (e.g., "it is important to join efforts to tackle climate change problems"), which in turn may facilitate belief- or value-relevant behaviour (Rabinovich, Morton, Postmes, & Verplanken, 2009). The value-relevance of value-expressive beliefs also distinguishes them from other attitudes or beliefs that serve utilitarian or instrumental functions (e.g., "roller-coasters are fun," "eating chocolate is satisfying"; Herek, 2000; Katz, 1960; Prentice, 1987; Rokeach, 1973). For example, research suggests that persuasive efforts that are consistent with the function associated with an attitude object (e.g., value-based advertising for objects with value-expressive functions, such as flags, political candidates, etc.) are more effective than persuasions that are inconsistent with the function associated with an attitude object (e.g., value-based advertising for objects with utilitarian functions, such as air conditioners, shampoo products, etc.; Lavine &

Snyder, 1996; Shavitt, 1990; Snyder & DeBono, 1985). In addition, some research suggests that value-expressive beliefs may occupy a more central, or “higher-order” status compared with their corresponding attitudes on the basis that these beliefs form the foundations for a person’s attitudes (Feldman, 2003; Fishbein & Ajzen, 1975; Boninger, Krosnick, & Berent, 1995), a relatively small number of values may be implicated in a broad range of attitudes (Maio & Olson, 2000; Rokeach, 1973) and that priming a value increases the salience of a variety of value-relevant attitudes, but priming value-relevant attitudes does not increase the salience of relevant values (Gold & Robbins, 1979; Thomsen, Lavine, & Kounios, 1996). For conceptual and theoretical parsimony, therefore, we distinguish our work from the more abstract focus of values, and from descriptive beliefs and attitudes that are based on a more utilitarian, or knowledge-based function, and focus the present research on the degree to which people commit to beliefs that are a reflection of their values and ideals (i.e., beliefs that have a value-expressive function).

The extent to which people follow their beliefs may depend on their commitment, which is typically described as the process of psychologically binding oneself to an object in one’s environment (Kiesler, 1971; see also Kanter, 1972), which may be a social cause or movement, a person or group, a place or location, a tangible material thing or object, or an action or series of actions. The processes underlying psychological commitment have been examined in contexts of romantic relationships, organizations, groups, altruism and volunteering, social roles, morality and religion, and the development of one’s own personal identity over time. As such, there are a variety of theoretical frameworks and empirical methods for conceptualizing and assessing

commitment, although there are consistent themes across many of these domains. Commitment often involves personal and affective attachment to the object of one's commitment (Agnew, Van Lange, Rusbult, & Langston, 1998; Meyer, Allen, & Topolnytsky 1998; Ray & Mackie, 2009), personal investment and self-sacrifice (McAdams, Diamond, de St. Aubin, & Mansfield, 1997; Roccas, Sagiv, Schwartz, Halevy, & Eidelson, 2008) that often last over a long versus a short period of time (Lydon, Pierce, & O'Regan, 1997; Reich, 1997), a sense of loyalty or obligation (Allen & Myer, 1990; Lydon et al., 1997), a drive that is intrinsically motivating above any immediate external rewards that may be obtained as a result of committing (Agnew et al., 1998), and it broadly affects a variety of cognitive and behavioural processes ranging from defending the object of one's commitment against criticism (Roccas et al., 2008), conforming with others who share in the commitment (Ellemers, Kortekaas, & Ouwerkerk, 1999; Kiesler, Zanna, & DeSalvo, 1966), and directly engaging in behaviours to support the object of one's commitment (Bègue, 2001; Burton, Lee, & Holtom, 2002; Feather & Rauter, 2004; Le & Agnew, 2003; Pierce, Lydon & Yang, 2001; Roccas et al., 2008).

Commitment is, therefore, a subjective experience that can be influenced by, but is distinct from, one's dependence on the target of one's commitment (Agnew et al., 1998; Reich, 1997). Accordingly, commitment is often implicated in persistence behaviours in the face of adversity or challenges to successfully achieving the goals related to one's commitment, even if persisting involves harm to oneself (Rhoades, Stanley, Kelmer, & Markham, 2010). In the chain of goal-directed behaviour processes, commitment has been conceptualized as being less proximal to concrete action than

corresponding goal or implementation intentions because of its broad scope. However, commitment may facilitate the formation of implementation intentions (Vanderdrift, Agnew, & Wilson, 2009), and behaviours that consistently support the object of one's commitment even in response to new situations or events as they occur (Feather & Rauter, 2004). The broad nature of commitment is therefore well-suited to the study of personality variables that influence thoughts and behaviour across a variety of situations. To our knowledge, very little research has systematically examined individual differences in one's general commitment to one's value-based beliefs.

From the current perspective, therefore, individuals who are highly committed to their value-based beliefs experience a strong cognitive and emotional connection to these beliefs, and feel obligated to sacrifice their time and resources in order to express those beliefs (Lydon & Zanna, 1990). In contrast, individuals with low belief commitment can be described as being detached or disengaged from their beliefs, similar to how people are sometimes detached from important goals and internal standards (Bandura, 1989). This perspective differs from the majority of research on attitude or belief commitment, which has often conceptualized and assessed commitment as an outcome variable that varies as a function of some environmental stimulus.

It is clear that contextual factors have a direct and decisive impact on the degree to which people follow their beliefs, however, the situational approach should not be exclusively relied upon for the study of belief commitment, or belief-relevant behavior. Some individuals may be more willing to act on opportunities that allow them to express their beliefs than others, even under identical situational conditions (Sheeran, 2002). An exclusively situational approach also cannot fully account for how people expose

themselves to certain social situations, events or groups that allow them to express their beliefs (DeBono & Snyder, 1995; Penner, 2002).

There is also research that suggests belief commitment should not be studied exclusively as a domain-specific phenomenon. Social activists often demonstrate or direct their endeavors toward a number of social issues, rather than only one specific issue (Andrews, 1991). Other research has shown that general levels of belief or attitudinal commitment can have an influence on people's attitude stability and social interactions. Abelson (1988) created a generalized attitude conviction measure by aggregating people's self-reported conviction across a number of different attitude objects (e.g., nuclear power, welfare), and found that individuals who registered a high degree of generalized attitude conviction also tended to have more stable attitudes over time. Skitka, Bauman, and Sargis (2005, Study 2) also found that higher levels of generalized moral conviction, assessed as a person's self-reported moral conviction across three different social issues, uniquely predicted a higher level of preferred social distance from another person who was expected to hold dissimilar attitudes on a separate issue.

These findings suggest that, in addition to situational influences, there are meaningful individual differences in the extent to which people are generally inclined to follow their beliefs, and that these differences have the potential to affect people's belief-relevant attitudes and behavior across a wide variety of contexts. However, there is relatively little research on individual differences in the extent to which people are committed to their beliefs. Comparable measures have instead focused on domain-specific ideological content (e.g., religious fundamentalism; Altemeyer & Hunsberger,

1992) or cognitive style (e.g., the need for cognitive closure, open versus closed-mindedness; Webster & Kruglanski, 1994; Kruglanski, 2004). From the current perspective, most scales that assess belief content are limited to one particular social topic or domain, and are likely to obscure the influence of general belief commitment.

It is also our view that individual differences in commitment to beliefs cannot be sufficiently assessed using cognitive style measures. One of the primary features of the CTB construct involves the activation of thoughts, goals, plans and execution of goal-relevant behaviors that are consistent with these beliefs (Gollwitzer & Sheeran, 2006; Shah, Friedman & Kruglanski, 2002). In some instances these tendencies may, but do not necessarily, involve blocking or rejecting other opinions that are inconsistent with one's beliefs, particularly when the individual is focused on pursuing his or her beliefs. High levels of general belief commitment would therefore not be expected to be limited to a particular belief system; rather, one's commitment level may have direct implications for one's behavior regardless of the particular beliefs that are activated (e.g., Skitka & Bauman, 2008). Indeed, a number of scales measuring cognitive style have adopted the strategy of presenting items that are independent of respondents' specific personal beliefs (e.g., the Need to Evaluate and Need for Cognitive Closure scales; Jarvis & Petty, 1996; Webster & Kruglanski, 1994), although such a strategy has not been employed in the domain of general belief commitment.

1.2 The Present Research

To explore the theoretical and practical implications of the role of individual differences in commitment to one's beliefs, the present research systematically developed and tested a measure of this construct. In Phase 1, we developed the Commitment to

Beliefs (CTB) scale. In Phase 2, we tested the convergent and discriminant validity of the CTB scale by examining its relations with other scales that assess belief content, self-concept, personality, and cognitive style (Studies 1-4). In Phase 3, we tested the CTB scale's predictive validity by examining whether participants' CTB scores predicted whether they acted on opportunities to express their beliefs (Studies 5-6) and accentuated their ideologically-based responses toward relevant social targets across a variety of social domains (Study 7).

2. Phase 1: Scale Development

2.1 Item and Scale Construction

The instructions and items in the CTB scale were designed with the goal of differentiating individuals according to how willing they are to pursue actions or activities that follow from their beliefs. Following the convention of other scales that prompt respondents to think about their behavioral tendencies across a variety of situations (e.g., Big-5 personality, self-monitoring; John & Srivastava, 1999; Snyder & Gangestad, 1986), the items and instructions in our scale ask respondents how they generally follow their personal belief systems. The instructions are as follows: "In this questionnaire, we will be asking you to indicate your agreement or disagreement with a number of questions about your personal beliefs. Your beliefs may relate to a number of topics, such as politics, relationships, ethics, religion, etc. Using the scale below, please indicate your level of agreement or disagreement with each of the following statements regarding your beliefs (-3 = *Strongly disagree*, 3 = *Strongly agree*)." Item construction was based on intuitive notions of how the cognitive style of highly committed individuals might differ from that of individuals who are relatively indifferent toward their belief

systems, as well as relevant insights from the research literatures on personality, values, and attitude strength (e.g., Ajzen, 2002; Petty & Krosnick, 1995). This review led to the generation of four themes that guided the construction of the CTB scale. We expected that individuals who are highly committed to their beliefs would consider their beliefs to be important parts of their identity, important guides for their behavior, indisputably correct, and important to follow irrespective of the consequences.

The first stage of our research involved the generation of 30 items that corresponded to these four themes.¹ This 30-item scale was administered in the fall of 2006 to 275 psychology students from the University of Western Ontario (194 women, 81 men) as part of an online mass-testing questionnaire. We analyzed the results from this 30-item scale, and removed five items that possessed low inter-item total correlations ($< .3$), and one item that was considered to be vague. Subsequent analyses are based on results from the final 24-item CTB scale, shown in Table 1. We next examined the factor structure and assessed the internal consistency, test-retest reliability, and convergent, discriminant, face, and predictive validity of this scale across multiple samples of students from the University of Western Ontario who participated for course credit.

Our conceptualization of the CTB construct, which suggests individuals vary on a continuum of low to high belief commitment, implies that CTB operates as a unitary variable that drives people to follow their beliefs across a variety of belief-relevant contexts. As such, we hypothesized that CTB scale scores would converge on a one-factor solution, or a solution in which one second-order factor subsumed first-order factors that correspond to our item construction themes (e.g., Webster & Kruglanski, 1994).

2.2 Exploratory Factor Analyses

We administered the final 24-item CTB scale ($\alpha = .91$) to 659 students as part of an online mass-testing questionnaire within the final six months of the 2006-2007 school year. After removing data from participants who provided incomplete responses to the CTB scale, we submitted the CTB scale responses from this sample ($n = 624$; 241 men, 372 women, 11 unspecified) to a series of exploratory factor analyses that used different methods of extraction and rotation. Although the eigenvalue-greater-than-one criterion suggested the presence of four factors that corresponded loosely to the four themes that guided our item construction, the scree plots consistently showed that the magnitude of eigenvalues and proportion of variance explained dropped substantially after the second factor, suggesting the presence of a two-factor solution. We also conducted a parallel analysis procedure, which involves generating a random data set of correlation matrices that is based on the number of participants and variables in the observed data set over a series of iterations, and comparing the average eigenvalues from the random data to the eigenvalues of the observed data (Horn, 1965; Turner, 1998). In the current sample, this analysis revealed that two eigenvalues from the observed data set were greater than the averaged eigenvalues from the random data set, providing further evidence for the presence of two factors. When we imposed a two-factor solution on participants' CTB scale responses in all of our samples, the items consistently converged primarily on one of the two factors that can be described as belief centrality (the tendency to report that one's beliefs are important aspects of one's self-definition and daily routines), and belief transcendence (the tendency to report that pursuing one's beliefs trumps all other concerns, regardless of the costs to others or oneself).

2.3 Confirmatory Factor Analyses

To validate the results of our EFA analyses with a separate sample, we administered the CTB scale to a total of 968 students as part of an online mass-testing questionnaire in the fall and winter of 2007-2008. We removed data from participants who provided incomplete responses to the CTB scale ($n = 943$; 325 men, 613 women, 5 unspecified; $\alpha = .91$). As seen in Table 1, the absolute skew and kurtosis values of our scale items were, given the large sample size, within acceptable levels (below 3 and 10, respectively; see Kline, 1998). However, the responses from this sample yielded a large value of Mardia's (1970) coefficient (129.68), and a significant result on DeCarlo's (1997) omnibus test of multivariate normality, $\chi^2(48) = 1387.56, p < .001$, suggesting a correction for multivariate nonnormality was appropriate.² We conducted our confirmatory factor analyses using EQS 6.1 and report our results based on the Satorra-Bentler scaled chi-square statistic (Satorra & Bentler, 1994), which has demonstrated more accurate model fit and parameter estimates than the unadjusted maximum likelihood estimation under conditions of multivariate non-normality (Anderson, 1996; Chou & Bentler, 1995; Nevitt & Hancock, 2000).

We began by assessing the fit of a model that loaded all of the items onto a single factor (Model 1). Following the exploratory factor analyses we also assessed the fit of two models with separate and correlated factors; one model consisted of four correlated factors that corresponded to our four item construction themes (Model 2), the other consisted of two correlated factors that corresponded to the belief centrality and transcendence factors identified by our EFA analyses (Model 3). In addition, following our conceptualization of CTB as a unitary construct that subsumes different first-order

facets of belief commitment, we assessed the fit of two additional models in which one second-order factor loaded onto a set of first-order factors; Model 4 assigned the second-order factor to load onto four first-order factors that corresponded to our item construction themes, and Model 5 assigned the second-order factor to load onto the two first-order factors in Model 3.³ For model identification and equivalence purposes, solutions that included a second-order factor constrained its variance to one and specified an equality constraint across each of its first-order factor loadings.

As shown in Table 2, the single-factor solution registered the poorest model fit, the four-factor solutions always yielded a poorer model fit than the two-factor solutions, and the two-factor solutions of Models 3 and 5 both yielded reasonable levels of fit. The results of the LaGrange modification indices from the latter two solutions suggested that specifying loadings on both factors for several items could improve model fit. For parsimony, we tested two additional solutions that specified dual loadings for items that, based on content, would seem reasonable to load on both factors (see Table 1): one with two correlated factors similar to Model 3 (Model 6) and another with a second-order factor loading on two first-order factors similar to Model 5 (Model 7). Both of these models registered slight improvements in model fit (see Table 2).

These and other results are more consistent with a solution in which a single higher-order CTB factor comprises two nested first-order factors that correspond to general belief centrality and transcendence. Across all of our studies we observed three trends when we examined the relations between the two factors — calculated according to their primary factor loadings — and the criterion variables in Phase 2 and 3: i) despite their qualitative distinction and high levels of internal consistency, both factors were

highly correlated (e.g., α 's = .89 and .86, respectively, $r(941) = .56, p < .001$ in our CFA sample); and ii) both subscales generally showed similar relations as the total CTB scale with each of the criterion variables described in Studies 1-7; however, iii) in some cases their relations with criterion variables were not as strong as those observed with the total CTB scale. This suggested that the CTB construct operates as a unitary latent variable which may be reflected by different surface manifestations of general belief centrality and transcendence, and that the total CTB scale represented the best, or most complete, assessment of this construct. In essence, the composite CTB measure provided more relevant information than its lower-order component parts (see Carver, 1989). For these reasons, and because our primary interest centered on the single higher-order CTB construct, we present the results for the total CTB scale in the subsequent sections.

3. Phase 2: Reliability, and Convergent and Discriminant Validity

Given the high levels of internal consistency of the CTB scale, we next examined its test-retest reliability and face validity, as well as its convergent and discriminant validity relative to other measures of belief content and ideology, cognitive style, personality, and interpersonal tendencies across four studies. As evidence for convergent validity, we expected that scores on the CTB scale would show moderately positive, but not extremely high or redundant correlations with measures that are related to thinking about or acting on one's beliefs, the perceived necessity of following one's beliefs, and the degree to which individuals commit themselves to belief- or other self-relevant endeavors across a number of social domains and contexts.

In terms of belief content, the theme of feeling strongly obliged to follow one's beliefs is present in the religious fundamentalism scale (Altemeyer & Hunsberger, 1992;

e.g., “God has given humanity a fundamental, unfailing guide to happiness and salvation, which must be totally followed”), and variables that assess religiosity and religious attendance. In relation to cognitive style, we reasoned that highly committed individuals would be more likely to engage in evaluative responding to objects and situations according to their belief systems, adopt a closed-minded approach to other belief systems, and a pronounced readiness to act on one’s beliefs. These themes are present in the Need to Evaluate scale (Jarvis & Petty, 1996), and the Need for Closure subscales that measure a Preference for Order, Decisiveness, and Close-mindedness (Webster & Kruglanski, 1994). For similar reasons we expected CTB scores to be positively related to measures of generalized attitude or belief conviction, as both constructs are related to people’s general sense of a strong emotional attachment and certainty regarding beliefs that pertain to a variety of social issues and domains. In terms of self-concept, we expected that CTB scores would be moderately correlated with measures of commitment or personal investment, particularly when such commitment is related to one’s beliefs or values. These themes are present in the Moral Identification scale (Aquino & Reed, 2002), which assesses the degree to which a set of nine prosocial traits indicative of high moral standing (e.g., helpful, compassionate) are reflected in a respondent’s actions, particularly with regard to the Symbolization (e.g., “I often wear clothes that identify me as having these characteristics”) versus the Internalization factor of this scale (e.g., “I strongly desire to have these characteristics”).

We assessed the discriminant validity of the CTB scale by examining its relations with measures of belief content, cognitive style and personality that were expected to be theoretically unrelated to the CTB construct. With regard to belief content, we expected

that high levels of CTB would be found among both liberal and conservative-minded individuals, resulting in a null correlation with political orientation. For similar reasons, we also expected that the CTB would be unrelated to other ideological measures such as the Social Dominance Orientation (SDO; Pratto, Sidanius, Stallworth, & Malle, 1994) scale, which assesses people's desire for hierarchical relations between societal groups, and the Modern Prejudice toward Ethnic Minorities scale (MPeM; McConahay, 1986), which assesses the degree to which participants believe ethnic minorities have more resources and influence than they deserve. In relation to cognitive style, we expected that CTB would be unrelated to the need for closure subscales that measure Preference for Predictability and Discomfort with Ambiguity. We also expected that the CTB scale would show null relations with the Big-5 Personality (John & Srivastava, 1999), self-monitoring (Snyder & Gangestad, 1986), self-esteem (Rosenberg, 1965) scales, and measures of socially desirable responding.

3.1. Study 1: Method

This study consisted of participants from our EFA sample ($n = 624$) who completed the CTB questionnaire as part of an online mass-testing questionnaire for course credit. As part of this questionnaire, participants also completed the Religious Fundamentalism scale ($\alpha = .90$), and single items assessing political orientation (1 = *Very liberal*, 7 = *Very conservative*), self-reported religiosity (1 = *Not at all religious*, 4 = *Very religious*) and self-reported frequency of attending religious services (1 = *Never*, 4 = *Usually*).

3.2. Study 2: Method

In order to assess test-retest reliability and conduct further tests of convergent, discriminant, and face validity, we invited participants who completed the CTB scale in Study 1 to a follow-up session that occurred three to six weeks after their initial participation. Invited participants ($N = 112$; 26 men, 80 women, 6 unspecified) came to a computer laboratory in groups of up to five people, sat at individual cubicles with personal computers, and completed a series of online questionnaires. The first page presented the CTB scale ($\alpha = .92$). The next page included a face validity probe in the form of a question that asked participants, “Could you please tell us about any situations or scenarios you may have been thinking of as you completed the survey on the previous page?” to confirm that the scale prompted respondents to think how their beliefs affected them in a generalized sense, rather than in one particular belief topic or domain. The next three pages asked participants to report any actions or activities that were directly and specifically related to their personal beliefs that they had engaged in within the past month and year, as tests of predictive validity (described in Phase 3 below). These pages were followed by electronic versions of the Big-5 Personality Inventory, Need to Evaluate, Need for Closure, and Self-Monitoring scales, a few filler questionnaires, and the Reynolds (1982) Social Desirability scale (α 's = .61 - .87).

3.3. Study 3: Method

A separate sample of students were invited in the winter of 2007 to come to the lab individually to complete a study on personal beliefs about social issues. Participants ($N = 78$; 33 men, 44 women, 1 unspecified) were led to a private room with a computer, where they completed a series of online questionnaires that included the same items assessing self-reported religiosity and self-reported frequency of religious service

attendance as in Study 1, followed by the CTB scale ($\alpha = .91$), the Big-5 Personality Inventory (α 's = .70 - .85), and a series of questions that constituted our measure of generalized attitude conviction. In prior research, attitude conviction has been measured as the degree to which participants express certainty toward an attitudinal object or statement (McGregor & Marigold, 2003; Tormala & Rucker, 2007), and generalized attitude or moral conviction has been measured as participants' attitude or moral conviction across a number of attitude statements pertaining to different social issues (Abelson, 1988; Skitka et al., 2005). Accordingly, we asked participants to first indicate their agreement with seven statements on different social issues related to distributive justice, gender differences, belief in just outcomes for others, abortion, capital punishment, animal rights (e.g., "True justice is carried out only by exact retribution (i.e. an eye for an eye)," "Men and women are fundamentally different," "Most people who don't succeed in life are lazy," "Abortion is a form of murder," "People who are guilty of murder should not receive the death penalty," "Animals should not be used in scientific research if it results in their death," respectively) using bipolar Likert scales (-5 = *strongly disagree*, 5 = *strongly agree*). The next page presented each statement again but asked participants to indicate how certain or uncertain they were that their position on the issue is correct (-5 = *Not at all certain*, 5 = *Extremely certain*). Participants' average degree of certainty across the eight statements served as our measure of generalized attitude conviction ($\alpha = .63$).

3.4. Study 4: Method

This study consisted of participants from our CFA sample ($n = 943$) who completed the CTB scale as part of an online mass-testing questionnaire in the fall and

winter of 2007-2008. As part of this questionnaire, participants also completed the Religious Fundamentalism, Moral Identification, SDO, and MPEM scales (α 's = .77 - .90), and the same items assessing political orientation, self-reported religiosity and self-reported frequency of religious service attendance as in Study 1.

3.5. Results (Studies 1-4)

Test-retest reliability (Study 2). The Time 1 – Time 2 correlation between CTB scores obtained in Study 1 and Study 2 was positive and strong, $r(104) = .75, p < .001$. Thus, participants' scores on the CTB scale were stable over time.

Face validity probe (Study 2). Two independent coders analyzed responses to the face validity probe in Study 2. Responses were fairly diverse, and a coding scheme of 16 separate coding dimensions was used ($M_{\text{agreement}} = 90\%$, agreement range: 74%-100%). Participants' responses typically fell into more than one content-dimension, but the most frequently reported were participants' descriptions of how they participated in activities related to their beliefs and how their beliefs affected their daily lives (66%); thoughts about the degree of extremity people should pursue in order to act on their beliefs (54%); experiences, situations, or beliefs about the degree to which people were/were not/should be open to changing their beliefs (39%); situations that involved discussions or arguments about people's personal beliefs (34%); participants' explicit descriptions of their own personal beliefs or belief systems (28%); and situations in which people's beliefs or belief systems led to harm directed at person(s) or group(s) (22%).

Relatively few participants (14%) chose to mention specific social issues, and in line with the generalized conception of CTB, these discussions related to a wide variety of topics that included abortion, racism, romantic relationships, sexual orientation,

religion and society, drug or alcohol use, terrorism, or environmentalism, military interventions, politics and voting, and world poverty and hunger. Very few participants mentioned confusion or uncertainty on how to answer the scale (3%). In examining the style of participants' responses, we found that 94% of participants discussed their beliefs and belief systems in a generalized manner across different situations and belief domains, and only a few participants (2%) mentioned a single belief-relevant domain, with the remaining participants' responses not readily classifiable into either style. In line with the idea that the CTB scale is assessing value-expressive beliefs, none of the participants mentioned descriptive beliefs based on matters of taste, utilitarian function, or knowledge-based beliefs derived from scholarly teaching or experience. Overall, the responses from the face validity probe suggest that the CTB scale effectively prompted participants to consider how their value-based beliefs generally influence their behavior and lifestyle.

CTB and Belief content (Studies 1, 3, and 4). There were positive significant correlations between CTB and religious fundamentalism, self-reported religiosity, and religious attendance, as expected (see Table 3). There were also weak or modest positive correlations between CTB and political orientation. In addition, there were also weak positive correlations between CTB and both SDO and MPEM.

CTB and Cognitive style (Studies 2 and 3). Six participants in Study 2 provided incomplete responses to the CTB scale and were dropped from the analyses; no participants provided incomplete responses in Study 3. As expected, there was a positive correlation between CTB and the need to evaluate (see Table 3). There was no significant correlation between CTB and overall need for closure, or for its subscales of decisiveness

or close-mindedness, contrary to our expectations. There was, however, a positive correlation between CTB and a preference for order or structure, as expected. There was also a marginally significant and positive relation between CTB and generalized attitude conviction.

CTB, Self-Concept, and Big-5 personality (Studies 2, 3, and 4). CTB demonstrated null relations with self-monitoring and social desirability, as expected. In Study 2, CTB had marginally positive correlations with extraversion and openness, and a positive correlation with conscientiousness. In Study 3, however, the only replicated correlation between CTB and Big-5 Personality was the positive correlation between CTB and openness.

In Study 4, CTB scores were positively correlated with scores on the overall Moral Identification scale, and it can be seen that this relation was driven by the expected positive relation between CTB and the Symbolization subscale scores. CTB was unrelated to self-esteem, as expected.

3.6. Discussion

The relations between CTB and other variables across Studies 1-4 generally supported the scale's convergent and discriminant validity. In terms of belief content, the positive, but non-redundant correlations between CTB and religious fundamentalism, self-reported religiosity, and religious attendance support the idea that high-CTB individuals feel it is necessary to abide by their belief systems. The modest relations between CTB, political orientation, SDO and MPEM suggest that individuals with high levels of general belief commitment may be more conservative, although the magnitude of these relations was not strong across all of our studies. The results from the face

validity probe further suggest that people's CTB scores are not defined by specific belief content, and in line with this idea, the CTB scale shared no more than 22% of variance with any of the belief content variables across all four samples.

In terms of cognitive style, the positive relations between CTB and need to evaluate and generalized attitude conviction suggest that high-CTB individuals evaluate objects and situations according to their beliefs across a variety of social domains, as would be expected. This tendency does not appear to be rooted in a tendency to be close-minded, however. CTB was only positively related to a preference for order/structure, but unrelated to the total and all of the other need for closure subscales—including a preference for close-mindedness—suggesting that general belief commitment is distinct from adopting a closed or inflexible cognitive style. This is consistent with the findings that CTB was not consistently related to any dimension of Big-5 personality other than a moderate positive relation with openness, suggesting that high-CTB individuals may be prepared to engage a wide variety of people or other social situations that are related to their beliefs.

With respect to self-concept, it was shown that CTB showed nonsignificant relations with theoretically unrelated constructs such as self-esteem, self-monitoring and social desirability, but was moderately related to the moral identification scale—most strongly with its Symbolization subscale—as we expected. To the extent that an individual with high general belief commitment would see following his or her beliefs as a moral imperative, it is not surprising the CTB scale is positively related to people's inclination to engage in behavior that reflects a set of moral traits.

The overall pattern of the relations between CTB and these measures also helps address the potential acquiescence bias critique that the CTB scale, which contains only one negatively-keyed item, may be assessing participants' tendency to passively agree or disagree rather than their level of general belief commitment. If this was the case, one would expect non-significant relations between CTB and measures of constructs that are expected to be largely unaffected by acquiescence on the basis that they contain both positively- and negatively-keyed items. Indeed, every multi-item measure reported in Table 3 contained positively- and negatively-keyed items except for two—the measure of generalized attitude conviction in Study 3 and the Symbolization factor of the Moral Identity scale in Study 4. The results in Table 3 show that CTB is correlated with several scales that contain positively- and negatively-keyed items, and that the pattern of significant and non-significant correlations is consistent with a measure of general belief commitment, rather than acquiescence.

In sum, the observed correlations between CTB, belief content, cognitive style, self-concept and personality, together with results from Studies 1-4 attesting to the scale's test-retest reliability and face validity suggest that the CTB scale assesses the degree to which individuals feel obligated to follow or abide by their value-based beliefs. This suggests that the CTB construct has broad relevance to personality theory and research, and specific relevance to contexts in which people have an opportunity to act on their belief systems.

4. Phase 3: Predictive Validity

Our conceptualization implies that individuals with high versus low levels of general belief commitment, as measured by the CTB scale, are more likely to engage in

activities and evaluate social targets in a way that is consistent with their beliefs. We tested this hypothesis in three studies. In Study 5, we examined whether participants who scored higher on the CTB scale would report having engaged in a relatively higher number of activities or events that were directly relevant to their beliefs in the past. In Study 6, we examined whether participants who scored higher on the CTB scale would be more likely to act on novel events that were related to their beliefs. In Study 7, we examined the hypothesized ability of the CTB variable to operate across a variety of belief-relevant domains by assessing whether participants' CTB scores would accentuate the effects of ideological variables on participants' attitudes toward a variety of ideologically-relevant social groups.

4.1. Study 5

4.1.1. Method

Participants in this study were the 112 students described in Study 2. The procedural details that were most relevant to assessing predictive validity involved the questions that asked participants to indicate the number of belief-relevant activities they had engaged in within the past month and year. Participants were presented with one page that included a list of activities, and were asked the following question: "Thinking of your own personal beliefs, have you engaged in any of the following activities that were directly and specifically related to your personal beliefs within the past month?"

The following page presented the same list of activities, and asked participants to indicate which of the activities they had performed within the past year. The list consisted of 48 activities (e.g., "Encouraged a friend or family member to join a particular organization") that were generated for the purpose of this study, as well activities from the Corning &

Myers (2002) Social Activism Orientation questionnaire. We expected that individuals who scored higher on the CTB scale would report having engaged in a higher number of belief-relevant activities.

4.1.2. Results & Discussion

There was a wide range in the number of belief-relevant activities reported by participants within the past month ($M = 13.75$, $SD = 7.07$) and year ($M = 17.88$, $SD = 8.84$). As expected, commitment to beliefs predicted the number of belief-relevant activities participants had performed within the past month, $b = 2.43$, $F(1, 102) = 8.36$, $p = .005$, as well as the number of belief-relevant activities participants had performed within the past year, $b = 2.86$, $F(1, 102) = 7.35$, $p = .008$. Moreover, each of these effects remained significant after including self-reported political orientation, religiosity, and religious fundamentalism as covariates.

Overall, these results provide evidence that participants who scored higher on the CTB scale engaged in a relatively higher number of belief-relevant activities in the past month and year, suggesting that these individuals are more inclined to actively participate in events that are related to their belief systems. Because of the correlational nature of this study, we designed Study 6 to determine if high-CTB individuals would respond to a novel situation in a manner consistent with their beliefs.

4.2. Study 6

In Study 6, we examined if people who scored higher on the CTB scale would be more likely to act on novel events that were related to their beliefs by presenting participants with an opportunity to act on their abortion-related beliefs. The topic of

abortion was chosen because it was one social issue that was expected to yield a high degree of variability in terms of belief content and conviction.

4.2.1. Method

Participants in this study were the 78 students described in Study 3. Recall that in the first portion of this study participants completed questionnaires that included the CTB scale and questions assessing their agreement toward a number of social issues; of note, we embedded one item that assessed participants' beliefs about abortion ("Abortion is a form of murder") and asked participants to indicate their agreement ($-5 = \textit{strongly disagree}$, $5 = \textit{strongly agree}$; $M = .60$, $SD = 3.50$) and certainty ($-5 = \textit{Not at all certain}$, $5 = \textit{Extremely certain}$; $M = 1.57$, $SD = 2.82$) with regard to this statement.

After participants completed these questionnaires, the experimenter told them about a developing situation at Carleton, a university within the same provincial region as Western, in which the Carleton University Students' Association voted in favor of a motion to prevent anti-choice groups from receiving financial support. The experimenter showed participants an online article about this development that was published in the Carleton student newspaper to reinforce that these events were real and ongoing at that university. The experimenter then told participants that the university student council at Western was also considering such a motion, but in an effort to gather feedback from students before submitting it for approval, the council was organizing a series of meetings with an open invitation for students to attend and express their views on this matter. Participants were asked if they would be interested in taking a card that would allow them to contact the person who was organizing these sessions. The experimenter then left the student alone with a pile of contact cards in order to allow the participant to take one

of the contact cards if he or she so wished. Once participants finished this stage, they met the experimenter in a common area and were debriefed, and the experimenter noted whether participants took a contact card. It is important to note that participants who supported or condemned abortion procedures would have been given the opportunity to express their beliefs. The act of taking a card was interpreted, therefore, as a participant taking an opportunity to act on his or her abortion-related beliefs, whatever they may be.

We examined if participants' level of CTB, in conjunction with their prior beliefs about abortion, predicted whether they took the contact card, over and above other theoretically relevant variables that included self-reported religiosity and religious attendance, specific attitude conviction (i.e., certainty) regarding the abortion statement, and generalized attitude conviction. The CTB framework makes the unique prediction of a significant interaction between CTB scores and the quadratic term of participants' beliefs about abortion. Including the quadratic term is necessary because people with highly polarized attitudes that are supportive *or* disapproving of abortion may *both* be highly likely to take a contact card. The likelihood of people with polarized attitudes about abortion taking the contact card would be increased if their levels of general belief-commitment were high, accordingly.

4.2.2. Results & Discussion

Eight participants suspected the events organized by the UWO student council were fictional, and their responses were excluded from the analyses. Approximately one-half (54%) of the remaining 70 participants took the contact card. To test the hypothesis of a significant interaction between commitment to beliefs and the quadratic term of participants' agreement with the statement that likens abortion to murder, we followed

the guidelines for conducting sequential curvilinear regression analyses recommended by Aiken & West (1991). After centering participants' CTB and abortion agreement scores, we conducted a hierarchical logistic regression analysis that entered self-reported religiosity and religious attendance, and generalized and specific attitude conviction in Block 1 as covariates, CTB and abortion agreement in Block 2, the quadratic term of abortion agreement in Block 3, the interaction between CTB and abortion agreement in Block 4, and the interaction between CTB and the quadratic term of abortion agreement in Block 5, with the act of taking the contact card (0 = *not taken*, 1 = *taken*) as the dependent variable.

In the final analysis with all of the lower- and higher-order terms entered, the curvilinear effect of agreement with the abortion statement predicted whether participants took the contact card, $\beta = .09$, $SE = .05$, $Wald = 4.11$, $Exp(B) = 1.09$, $p = .043$. Figure 1 shows the estimated probabilities for taking the contact card. It can be seen in Panel A of Figure 1 that relatively neutral levels of agreement were associated with the lowest probability estimates for taking the contact card, while high levels of disagreement *and* agreement were associated with relatively high probability estimates of taking the contact card, as may be expected. It is likely that the extraordinarily high probability estimates of taking the contact card among individuals who strongly agreed with the abortion statement was in response to the idea that a group which promotes similar beliefs as they could lose funding from the university.

The curvilinear effect of agreement was qualified, however, by the expected interaction between CTB and the quadratic term of agreement with the abortion statement, $\beta = .11$, $SE = .06$, $Wald = 3.98$, $Exp(B) = 1.12$, $p = .046$. As may be seen in

Panel B of Figure 1, the trajectory of probability estimates for taking the contact card were steeper among high-CTB individuals who showed relatively high levels of disagreement (-1 SD) and agreement (+1 SD) with the abortion statement. In contrast, the trajectory of probability estimates for taking the contact was close to the mean level of the sample among low-CTB participants, and it showed no inclination for an increased probability of taking the contact card, even at relatively high levels of disagreement or agreement with the abortion statement. These observations were supported by an analysis of simple slopes of low, neutral, and high agreement with the abortion statement at high and low levels of CTB. Among individuals with high levels of CTB, it would be expected that the probability of taking the contact card would decline as participants' agreement with the abortion statement became more neutral, implying a *negative* relation between agreement and the probability of taking the contact card at high levels of CTB and low levels of abortion agreement. This relation was indeed significant, $\beta = -.85$, $SE = .42$, $Wald = 4.06$, $Exp(B) = .43$, $p = .044$. At the same time, among individuals with high levels of CTB, the probability of taking the contact card would increase as participants' agreement with the abortion statement became more favorable toward the statement, implying a *positive* relation between agreement and the probability of taking the contact card at high levels of CTB and high levels of abortion agreement. This relation was also significant, $\beta = 1.34$, $SE = .56$, $Wald = 5.73$, $Exp(B) = 3.82$, $p = .017$. In contrast, there was no significant relation between agreement with the abortion statement and the probability of taking a contact card among individuals with low levels of CTB, $Walds = .00 - .53$, *ns*).

These analyses provide strong evidence that individual differences in CTB influenced participants to act on their abortion-related beliefs. The interaction between CTB and the quadratic term of participants' agreement with the statement equating abortion with murder also showed that CTB moderated the relation between participants' beliefs about abortion and their estimated likelihood of whether they acted on these beliefs. Specifically, the estimated likelihood of taking the contact card increased when agreement with the abortion statement became low *and* high, but only among those individuals who registered relatively high scores on the CTB scale. Moreover, the effects of CTB were robust after controlling for relevant variables (e.g., beliefs and specific attitude conviction about abortion) that could also influence people's likelihood of acting on their abortion beliefs.

The moderating effect of CTB on the relation between participants' abortion beliefs and their behavior in Study 6 is consistent with our conceptualization of how the CTB variable operates in a context that is related to people's belief systems. That is, we conceptualize the CTB construct as a variable that operates generally across any social domain that is relevant to people's values and beliefs by driving people to perceive and evaluate the world, or act in a way that is consistent with these beliefs whenever possible. Although the results of Studies 5 and 6 support this claim, further evidence is needed to show that such processes occur across multiple belief-relevant social domains.

4.3. Study 7

The goal of Study 7 was to test the idea that individual levels of CTB could influence people's attitudes or behavior across a variety of belief-relevant contexts. We did this by examining whether people's CTB levels would simultaneously moderate a set

of ideologically-based evaluative responses toward a number of belief-relevant social targets.

4.3.1. Method

Participants in this study were the 943 students described in Study 4 who completed a mass-testing questionnaire that also included a diverse array of measures on ideology, self-image and -esteem, identity, attitudes, dietary and consumption habits, relationship status and satisfaction. Most relevant to the purposes of this study, participants also completed the SDO and MPEM scales, and an Attitude Thermometer Rating Scale which asked them to indicate the favorability of their attitudes toward eight different social groups that included black, white, rich, and poor people, and immigrants, refugees, men, and women (0 = *Extremely unfavorable*; 100 = *Extremely favorable*). The CTB questionnaire was always administered after these scales near the end of the mass-testing questionnaire. The measures in this study, therefore, provided us with an opportunity to examine whether participants' CTB levels would moderate the effect of participants' value-based beliefs on their evaluations of ideologically-relevant groups in the domains of ethnic relations, international relations, and social status.

Ethnic relations hypotheses. The SDO scale assesses people's beliefs in the value of inequality and hierarchical relations between social groups in society, while the MPEM scale was adapted to assess the degree to which participants believe ethnic minorities in Canada have more resources and influence than they deserve. Prior research has shown that white respondents who score relatively high on the SDO and MPEM scales demonstrate negative attitudes and discriminatory actions toward black people, and

biased attitudes or behavior that favors white over black people (McConahay, 1986; for a review of SDO see Pratto, Sidanius, & Levin, 2006).

Because the CTB variable is designed to assess the tendency of people to generally follow their value-based beliefs, it follows that high-CTB individuals would be most likely to react to ideologically-relevant stimuli in a manner that is consistent with these ideologies. In the domain of ethnic relations, this implies that participants who score high on the SDO and MPEM scales would report the strongest levels of negative attitudes toward black people if they scored high on the CTB scale. In this sense, we also expected the CTB construct to “amplify” participants’ responses toward belief-relevant social groups in other domains.

International relations hypotheses. Because SDO assesses individuals’ preference for hierarchical intergroup relations within a society, high-SDO respondents also show negative attitudes towards immigrants and refugees, and any policies designed to empower them or enhance their position in society, but support policies to restrict immigrant rights or reduce immigration (Jackson & Esses, 2000; Pratto et al., 2006). We expected, therefore, that participants who score high on the SDO scale would report the strongest negative attitudes toward immigrants and refugees when they also scored high on the CTB scale.

Social status hypotheses. Prior research has shown that high-SDO participants have also indicated positive and negative attitudes toward high and low socio-economic status groups, respectively, because of their place within the societal hierarchy (Sidanius, Pratto, & Bobo, 1994). We expected, therefore, that participants who scored high on the

SDO scale would demonstrate the most negative attitudes toward poor people and the most positive attitudes toward rich people if they also scored high on the CTB scale.

4.3.2. Results & Discussion

In the current study, evidence that CTB amplified the effects of multiple ideological measures across multiple domains implies the presence of multiple two-way interactions between participants' centered CTB and ideological scale scores that predicted their attitude thermometer ratings of multiple ideologically-relevant social targets. Accordingly, we centered participants' CTB, SDO, and MPEM scores, and computed interaction terms between CTB and each of these ideological scale scores (Aiken & West, 1991). We then conducted a series of hierarchical multiple regression analyses.

Each analysis began by sequentially entering a block of covariates which included participants' self-reported sex, religious attendance, religiosity, political orientation, and mean moral identification score (see Study 4). The next blocks included CTB, the relevant ideological measure term, and finally the interaction term between CTB and the relevant ideological measure. The dependent measures were participants' attitude thermometer ratings of black people, immigrants, refugees, poor people, and rich people. We also examined participants' biased ratings of white versus black people and rich versus poor people by calculating the difference between participants' ratings of white minus black people, and rich minus poor people, respectively. Because the relations between each of these ideological measures and attitudes toward the social targets were expected to be more meaningful for Canadian-born respondents, the tests below analyzed responses from Canadian-born participants only ($n = 789$). For similar reasons, we further

restricted the samples for the ethnic and international relations tests to include only responses from white Canadian-born respondents ($n = 631$).

Ethnic relations. This set of analyses tested the hypotheses that the CTB construct would amplify white Canadians' attitudes and in-group biases toward black people. This set of analyses tested the interaction of CTB and MPEM, as well as the interaction of CTB and SDO predicting white Canadians' attitude favorability toward black people, and in-group biases against black people, yielding a total of four hypothesized interactions. The block of covariates in these analyses also included MPEM as an additional control when the CTB x SDO interaction was examined, and SDO as an additional control when the CTB x MPEM interaction was examined. As shown in Table 4, each of these interactions was fully or marginally significant. Figure 2 illustrates the impact of CTB on the effects of MPEM and SDO on attitude thermometer ratings of black people. Simple slope analyses revealed that the effects on attitude thermometer ratings of black people, shown in Panels A and B of Figure 2 were only significant at high levels of CTB (MPEM: $b = -4.56$, SDO: $b = -5.96$, p 's $< .05$), but not low levels of CTB (MPEM: $b = -2.10$, SDO: $b = -1.39$, *ns*). Similarly, the simple slope analyses revealed that the effects of MPEM and SDO on white participants' in-group biases against black people (Panels C and D of Figure 2) are strongest among those who scored relatively high (MPEM: $b = 6.99$, SDO: $b = 5.10$, p 's $< .001$), but weaker among those who scored low (MPEM: $b = 3.48$, SDO: $b = 2.09$, p 's $< .1$) on the CTB scale.

International relations. This set of analyses tested the hypotheses that CTB would moderate the effect of SDO on white Canadians' attitudes toward immigrants and refugees, yielding a total of two hypothesized interactions. As shown in Table 4, both of

these interactions were fully or marginally significant. Simple slope analyses revealed that the effect of SDO on attitude ratings toward immigrants and refugees were strongest among high- (b 's = -8.92 and -8.00, respectively, p 's < .001), rather than low-CTB respondents (b 's = -4.70 and -4.99, respectively, p 's < .001).⁴

Social status relations. This set of analyses tested the hypotheses that the CTB construct would amplify Canadian-born respondents' attitudes toward poor and rich people and biases of rich versus poor people. This set of analyses tested the interaction of CTB and SDO predicting attitude favorability toward poor and rich people, and Canadians' biases of rich versus poor people, yielding a total of three hypothesized interactions. As shown in Table 4, each of these tests was marginally or fully significant, and emerged in the expected direction. Simple slope analyses revealed that the effect of SDO on attitude ratings of poor people was stronger at high ($b = -5.91, p < .001$), but weaker at low levels of CTB ($b = -2.56, p = .020$). Similarly, the effect of SDO on attitude ratings toward rich people, and the attitudinal bias favoring rich versus poor people were strongest among high- (b 's = 4.48 and 10.46, respectively, p 's < .001), rather than low-CTB (b 's = 1.87 and 4.52, respectively, p 's $\leq .001$) respondents. In each of these tests, therefore, SDO had the strongest effect among those participants who scored relatively high on the CTB scale. Finally, it should be noted that each of these effects across all three domains were fully or marginally significant even when the covariates were not included.

In sum, Study 7 provided strong evidence for the amplification effect of CTB. As expected, participants' ideologically-based attitudes toward a variety of social targets were most pronounced among those individuals who scored relatively high on the CTB

scale. Although each of the hypothesized interactions accounted for a relatively small amount of variance, the fact that they were each fully or marginally significant in their expected directions regardless of whether other belief-relevant covariates were included attests to the consistency of this effect across different belief-relevant social domains and targets. Collectively, the results from Studies 5-7 support the idea that individual differences in commitment to beliefs can have an important influence on people's evaluative and behavioral responses to events that are directly related to their beliefs.

5. General Discussion

The current research was based on two general hypotheses: There are meaningful, stable differences in the extent to which people are committed to their beliefs, and these differences in belief commitment can be assessed using the CTB scale. These hypotheses received strong support across three phases of research. The results of the first and second phase of the research showed that the CTB scale had strong psychometric reliability and validity. The third phase provided evidence for predictive validity: high-CTB participants were more likely to report having engaged in a wide variety of belief-relevant activities within the past month and the past year, take an opportunity to act on their beliefs that was presented to them, and show polarized attitudinal responses to ideologically-relevant social groups.

The value of the CTB scale can be traced to its approach of assessing belief-commitment on a general level. Other scales on belief content, such as religious fundamentalism, focus on a single social domain, and may be best-suited to predict attitudes and behaviors that are specifically related to that domain. In contrast, the CTB variable may influence a wide range of social behavior across a number of social domains

that are related to participants' personal beliefs and values. This implies that the CTB scale may be used to predict attitudes, biases, and behavior across a wide range of social domains in a way that has not been predicted by other personality measures.

These ideas were generally supported by the results from Phases 2 and 3. First, the results of Studies 1-4 showed that the CTB scale was moderately related to, but non-redundant with scales that measured domain-specific belief content. In Study 5, participants' reporting of the number of belief-relevant activities they completed in the past month and year was positively related to their scores on the CTB scale. Furthermore, in Study 6, participants who had a positive or negative belief about abortion were more likely to act on this belief if they scored highly on the CTB scale. Finally, Study 7 showed that the most positive or negative ideologically-based responses to belief-relevant social groups were reported by those respondents who scored high on the CTB scale. In particular, the findings from Studies 6 and 7 are consistent with the idea that one may find highly committed individuals on opposite sides of issues that are central to people's personal beliefs, and that these individuals are relatively more willing to evaluate stimuli around them and behave in a way that adheres to their beliefs. Based on our review of the literature, these findings are one of few examples (e.g., Skitka & Bauman, 2008) that have empirically demonstrated this concept.

Another indirect benefit of the Commitment to Beliefs framework may be a focus on the cognitive and motivational mechanisms that affect how individuals become highly committed to their beliefs. Although the data in these studies do not directly address these questions, some findings are noteworthy. We speculated that commitment to one's beliefs would entail a strong tendency to adopt a closed mind regarding one's beliefs in some,

but not all situations, implying the presence of a moderate positive relation between commitment to beliefs and a preference for closed-mindedness. In contrast, the CTB measure had nonsignificant relations with the overall Need for Closure scale and its preference for closed-mindedness subscale, and positive relations with the Big-5 openness scale, suggesting that the constructs of general belief-commitment and closed-mindedness are more distinct than was originally anticipated. These findings, in line with the results from Studies 5 and 6, suggest that commitment to beliefs is rooted in a drive to approach events or opportunities to express one's beliefs, rather than a tendency to avoid or disregard situations that are inconsistent with one's beliefs. This indicates that high-CTB individuals could be relatively more inclined to approach the social groups described in Study 7 in a positive or negative manner, depending on their specific ideologies.

The relations between commitment to beliefs and a preference for order or structure, however, suggest a different possibility, specifically, that the motivational quality of the commitment to beliefs construct is at least partially rooted in a desire to follow a particular structure or set of lifestyle guidelines that is based on one's beliefs. This may be why commitment to beliefs had moderately positive relations with measures of political conservatism and religious fundamentalism. While it is conceivable that highly committed individuals would demonstrate high levels of commitment for any belief system, organized religions offer people a comprehensive organization of beliefs that includes guidelines on how to adhere to these beliefs (e.g., making sacrifices of oneself, following tradition). This reasoning suggests that highly committed individuals are not predisposed to be religious or conservative per se, but that they may find such

belief systems appealing because of the comprehensive belief structure they provide (Kruglanski, 2004). It also suggests that it would be common to observe profiles of highly committed individuals who identify with other social groups that provide a comprehensive belief system, such as social activists, animal rights groups, etc. In this respect, it is noteworthy that the trend in Study 7 was for high-CTB individuals to display the most negative *and* positive attitudinal responses toward belief-relevant social groups. If a desire for structure is most important, it would imply that highly committed people could employ either strategy of avoiding the uncertainty or ambiguity given by belief-incongruent events, or approaching situations that allow them to express their beliefs. It remains to be seen if there are particular situational cues or constraints that determine whether people with high and low levels of belief commitment are more likely to choose one strategy over the other.

It can be seen, therefore, that commitment to beliefs is relevant to a number of research areas in social and personality psychology. In research on interpersonal and intergroup relations for example, it has been widely observed that people tend to favor others who are perceived to have similar attitudes, beliefs, and values. Past research has attributed this finding to motives such as categorization and social identification (Hogg, 2007; Tajfel & Turner, 1986), or social affiliation (Van Vugt & Van Lange, 2006). These motives may not be sufficient to explain extreme acts of violence between members of different national or religious groups. In this context, we agree with Skitka and her colleagues (Skitka & Mullen, 2002; Skitka et al., 2005) that such behavior cannot be explained by or reduced to being a function of attitude strength. In this respect, a person who is highly committed to his or her beliefs may be more inclined to hold negative

attitudes and aggress toward other people who are perceived to have different beliefs than a person who is not as committed.

Commitment to beliefs may also be relevant to research on social action. For example, prior research has shown how people's willingness to engage in actions that support a political or religious group stem from contextual influences such as conformity (Levine & Kerr, 2007), social identification (Kelly & Breinlinger, 1996), relative deprivation and competition (Wright, 2001), and uncertainty reduction (Hogg, 2007). The commitment to beliefs framework outlined here can complement this research with a dispositional approach that may reveal individuals with higher levels of belief commitment who would be more likely to volunteer their time and get involved, perform belief-relevant behaviors, and potentially engage in extreme measures in support of groups that promote their beliefs. Thus, commitment to beliefs may also be instrumental in understanding extreme acts of self-sacrifice or violence in areas such as intergroup conflict, and in particular, morally mandated violence between different social groups.

Commitment to beliefs may offer other promising research directions in personality psychology. Research on other dispositional constructs has shown that individuals who score low on self-monitoring and high on private self-consciousness scales often demonstrate stronger relations between their attitudes and corresponding behaviours (Ajzen, Timko, & White, 1982; Scheier, Buss, & Buss, 1978; Snyder, 1986).

One may also expect that individuals who are highly committed to their value-based beliefs would demonstrate stronger relations between their values or value-expressive attitudes and corresponding behaviours. More specifically, commitment to beliefs may facilitate the tendency to generate specific goal or implementation intentions or mindsets

for behaviours that are supportive of one's value-based beliefs. These processes would also have implications for consumer psychology, suggesting that high-CTB individuals may be more inclined to select products and services in line with their values, and may be more receptive (or defensive) to persuasive attempts that show how consumption of products or ideas communicate or support certain values as opposed to fulfilling utilitarian functions.

In sum, our research has revealed important individual differences in the degree to which people commit to their beliefs, and that these differences can be reliably assessed using the CTB scale. The studies reviewed here support the reliability and construct validity of the scale, and suggest that the research in this area has a good deal of theoretical and practical importance. Specifically, this research may help us understand what drives people to perform ordinary and extraordinary behaviors in support of their beliefs. Understanding how to reduce violent behavior that results from people's personal beliefs may be facilitated by recognizing that extremists on both sides of an issue have certain dispositional tendencies in common.

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Footnotes

¹ These items were also based, in part, on preliminary work from a project in a senior undergraduate measurement course in which the first author participated.

² Tests of multivariate normality, model fit, and significance tests in Phases 2 and 3 were virtually unchanged after removing 10 multivariate outliers; therefore, we report results from the total CFA sample.

³ When assessing the fit of solutions with two first-order factors, the paths for items 3 and 14 were constrained to one to set the scale for the belief centrality and transcendence factors, respectively. When assessing the fit of solutions with four first-order factors, the paths for items 5, 11, 8, and 14 were constrained to one to set the scale for the importance, behavioural guideline, certainty, and conviction factors that corresponded to our item construction themes, respectively.

⁴ For brevity, Figure 2 illustrates the effect of CTB on multiple belief-relevant ideologies across conceptually distinct analyses (analyses of attitude thermometer ratings in Panels A-B intergroup bias in Panels C-D). The valence of the unstandardized simple slope coefficients show that the effects from the CTB x MPEM and CTB x SDO interactions on attitude thermometer ratings of black people were similar to the effects from the interactions between CTB and SDO on attitude thermometer ratings of immigrants, refugees, and poor people. Similarly, the effects from the CTB x MPEM and CTB x SDO interactions on white Canadian participants' in-group biases against black people produced similar effects as the interactions between CTB and SDO on Canadian participants' attitude thermometer ratings of rich people, and biases favoring rich versus

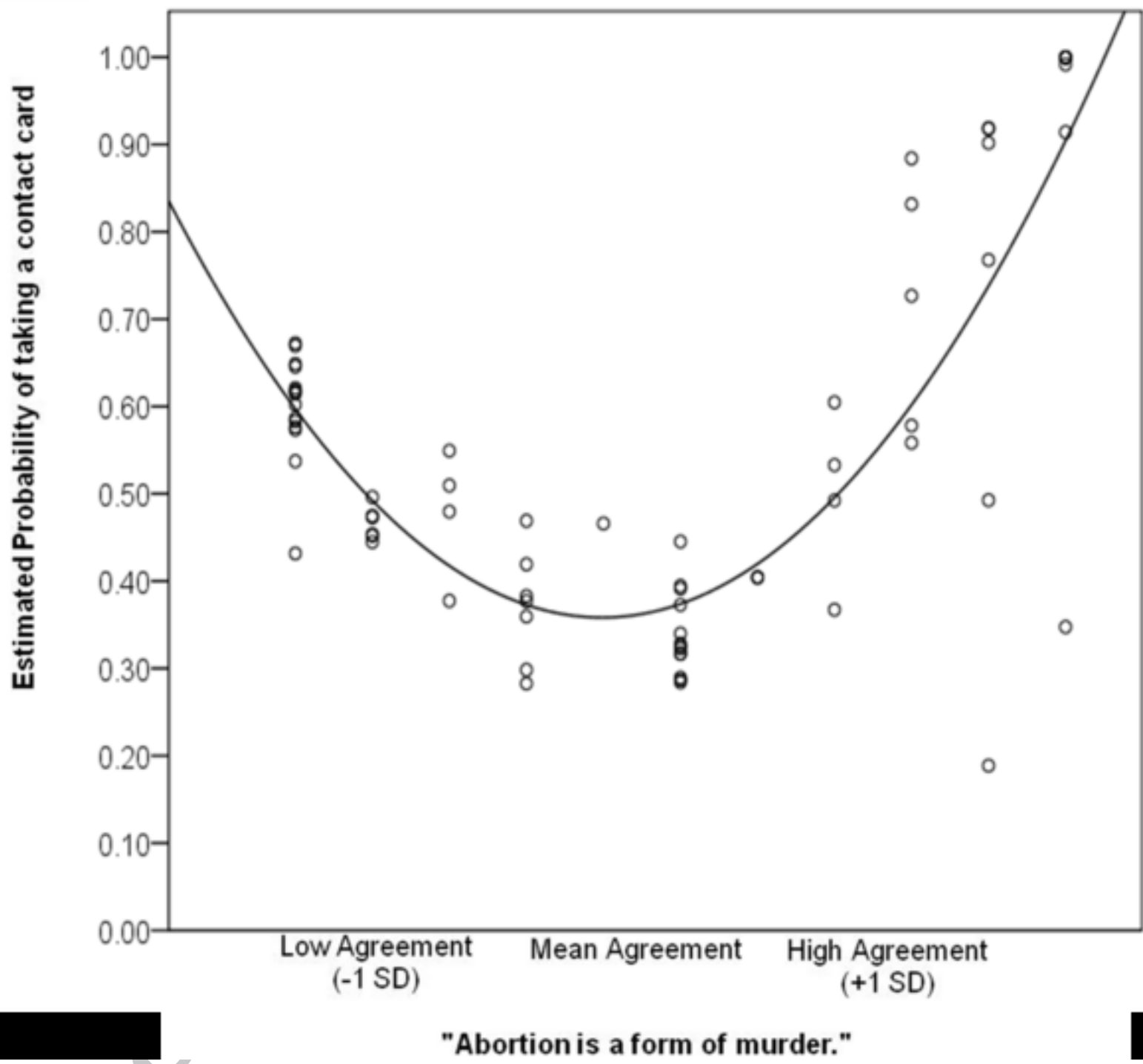
poor people. Illustrations of each interaction are available from the first author upon request.

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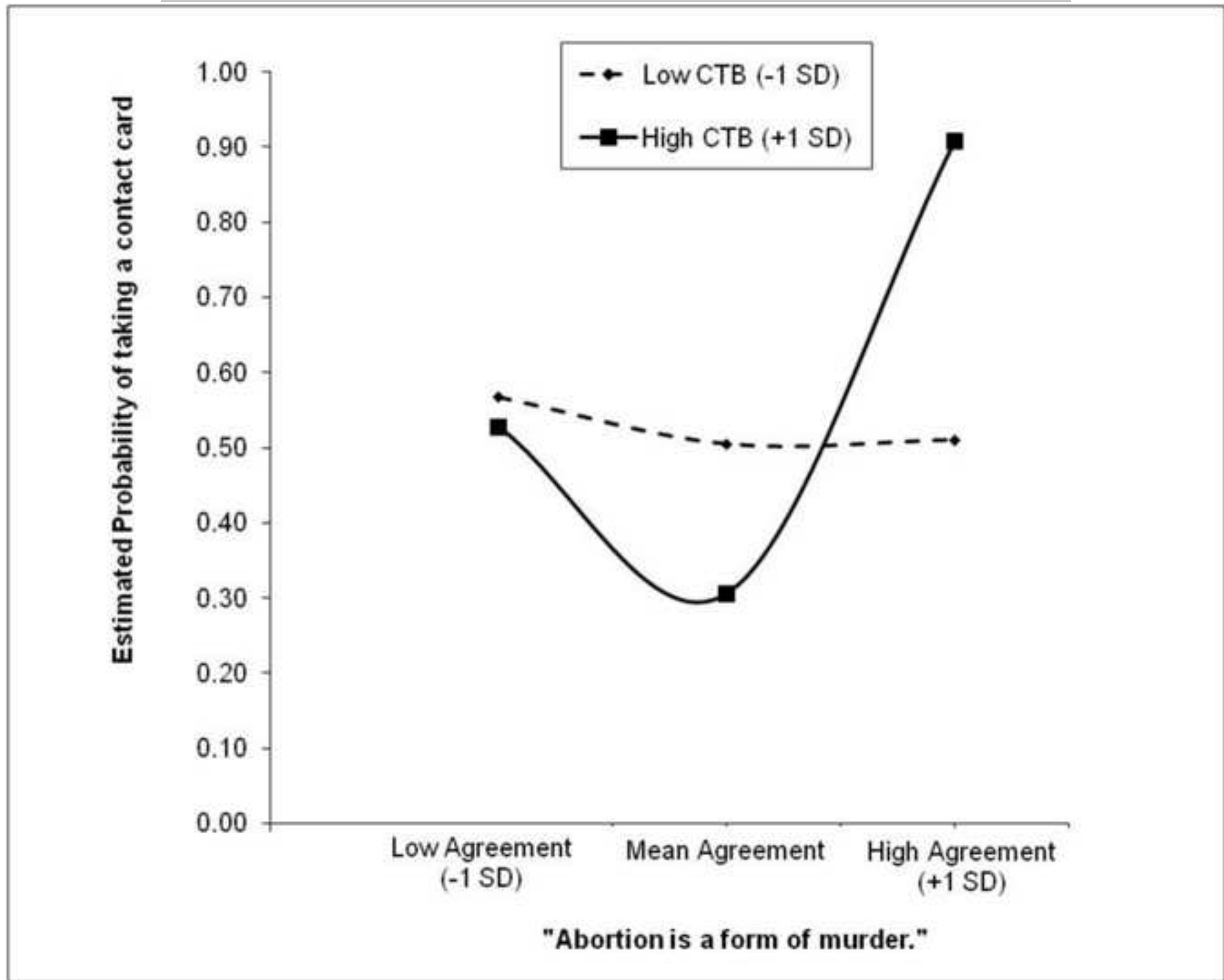
Figure Captions

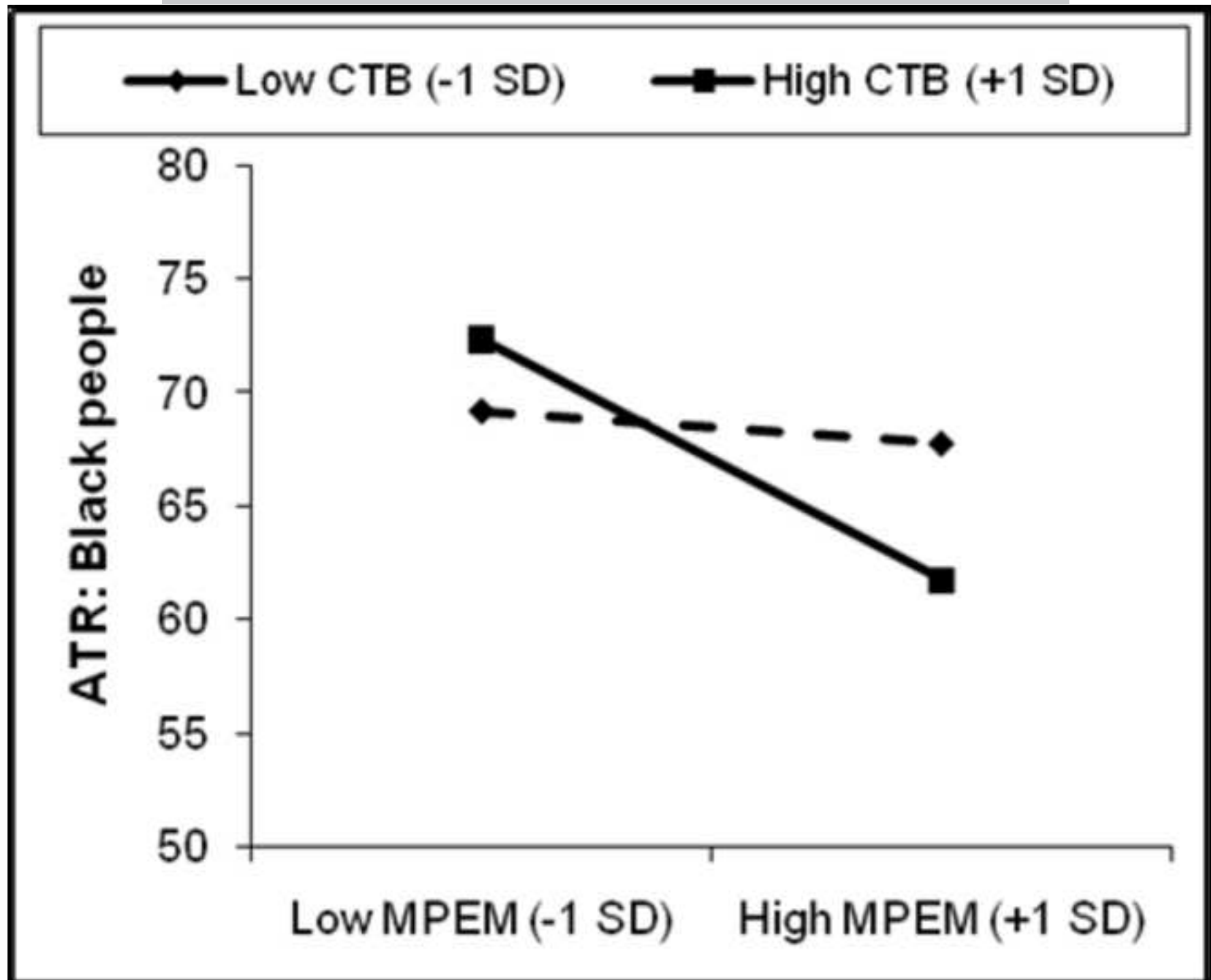
Figure 1. Panel A: Estimated probability of taking a contact card as a function of centered agreement with the statement, “abortion is a form of murder.” Panel B: Estimated probability of taking a contact card as a function of centered agreement with the statement, “abortion is a form of murder,” and centered commitment to beliefs (CTB).

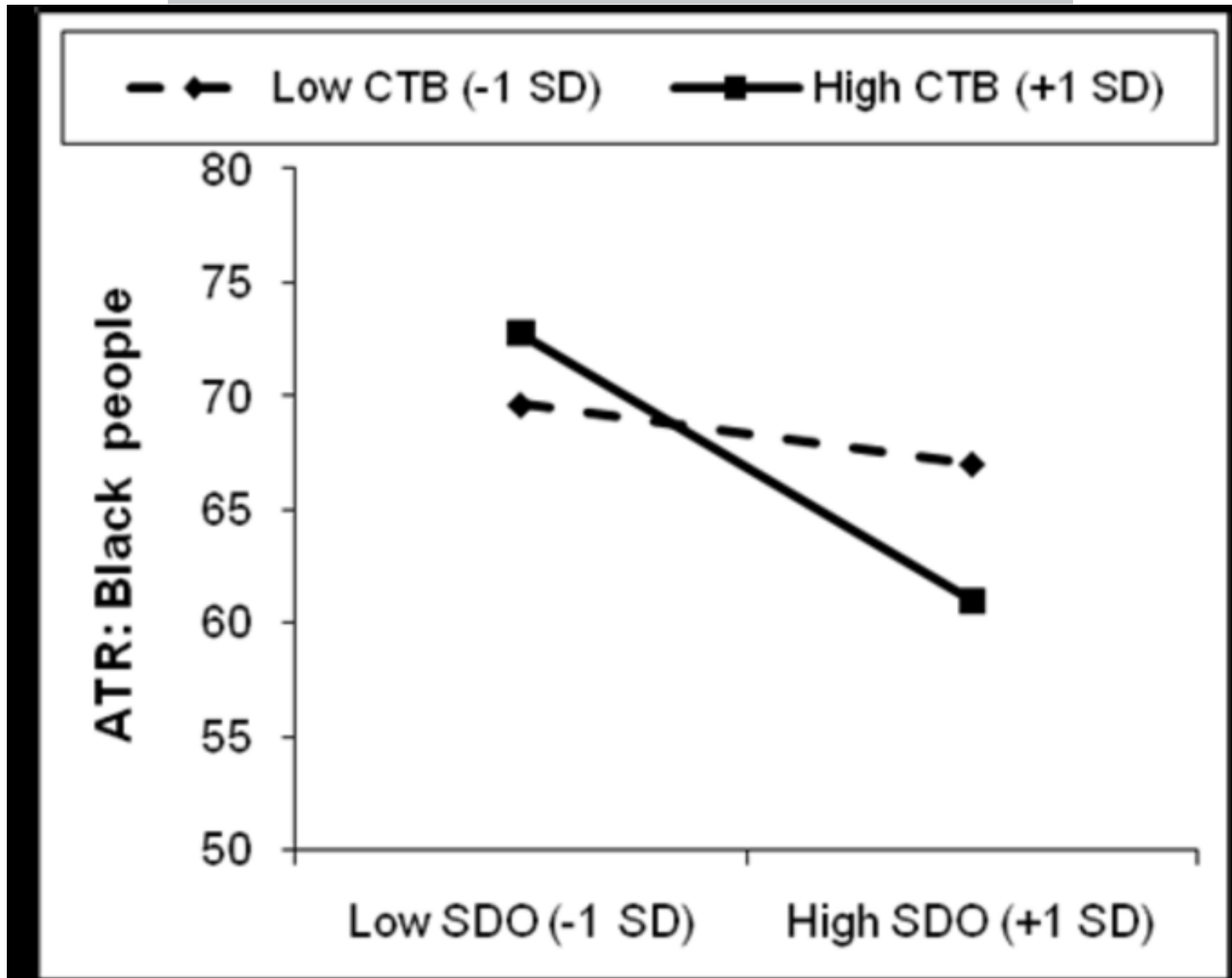
Figure 2. Attitude Thermometer Ratings (ATR) of ideologically relevant social targets as a function of centered Commitment to Beliefs (CTB) and centered ideological scale scores. Panel A: ATR of Black people as a function of CTB and Modern Prejudice toward Ethnic Minorities (MPEM). Panel B: ATR of Black people as a function of CTB and Social Dominance Orientation (SDO). Panel C: ATR of White vs. Black people bias as a function of CTB and MPEM. Panel D: ATR of White vs. Black people bias as a function of CTB and SDO.

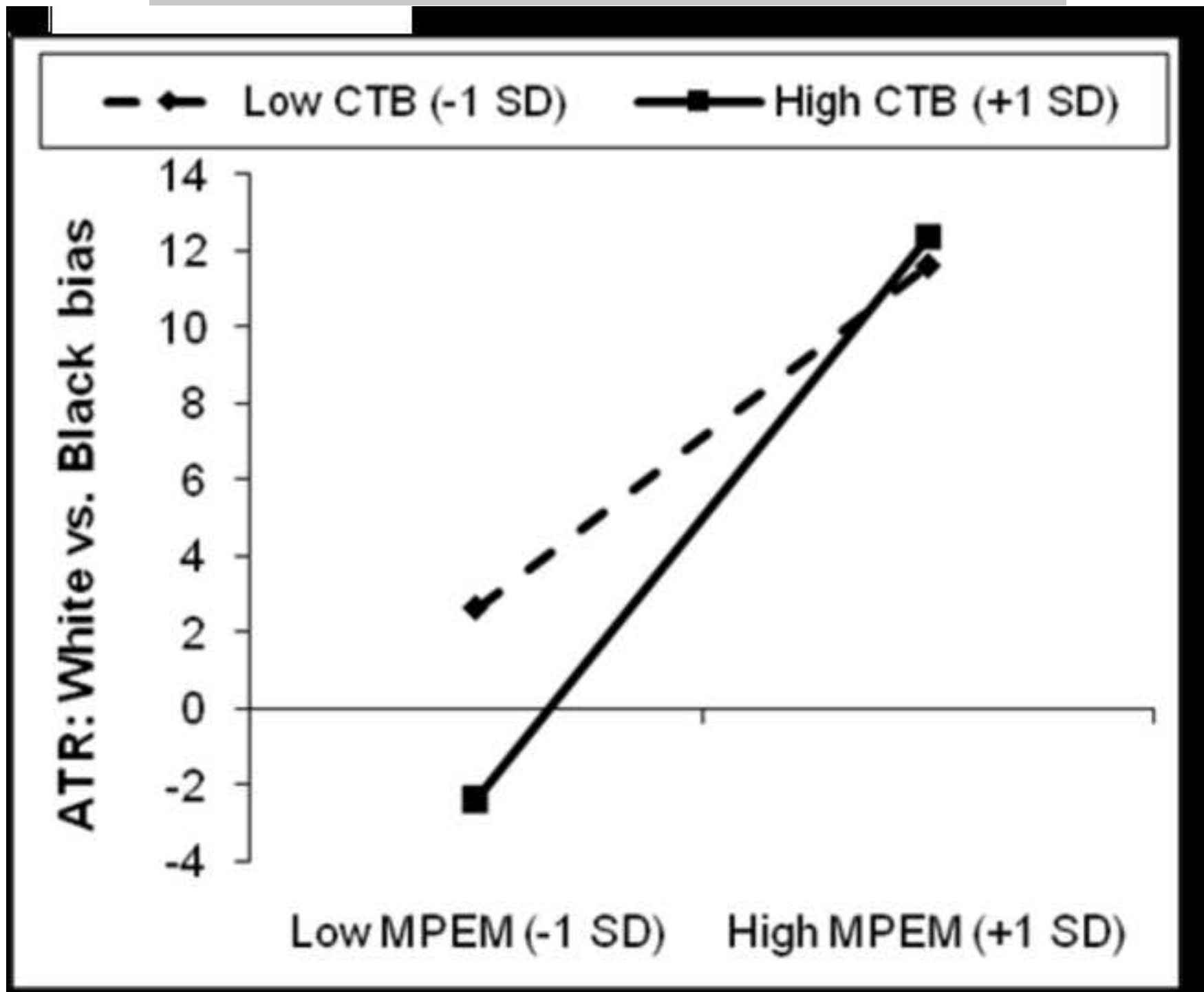


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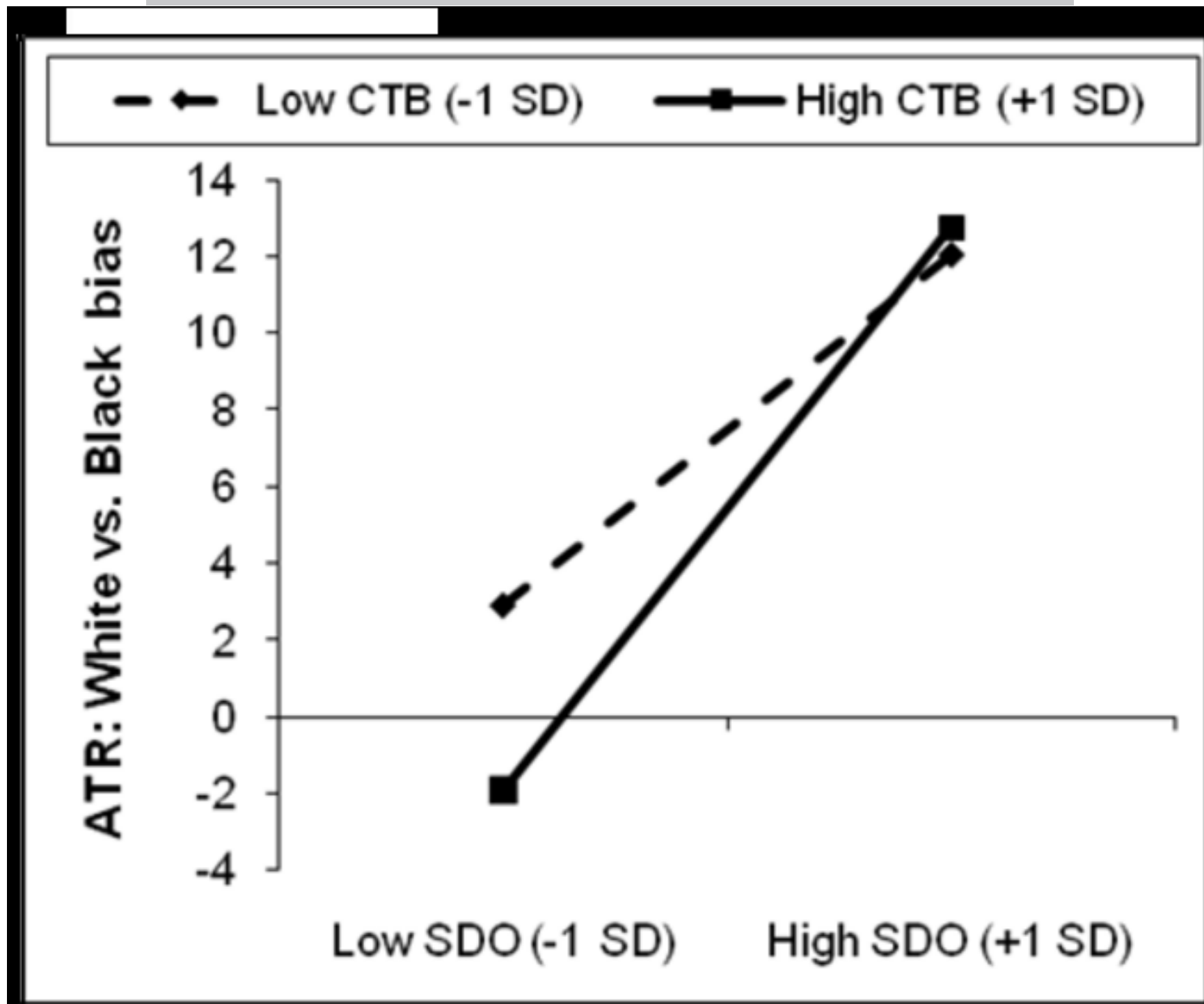


Table 1

Descriptive Statistics and Factor Loadings for the Commitment to Beliefs Questionnaire (CFA Sample)

Item	<i>M</i>	<i>SD</i>	Skew	Kurtosis	Factor loadings	
					Factor 1	Factor 2
First-Order Factor 1: Belief centrality						
(3) Nothing is more important to me than following my beliefs.	.97	1.40	-.63	-.15	.76	—
(5) My beliefs are the most important part of how I define myself as a person.	.90	1.53	-.69	-.09	.75	—
(20) My beliefs are very important to me.	1.31	1.33	-.95	.94	.71	—
(11) Living the lifestyle suggested by my beliefs is my top priority.	.27	1.53	-.30	-.54	.71	—
(4) My beliefs influence how I spend my time (e.g., the groups, associations and/or events that I participate in).	.99	1.43	-.81	.29	.71	—
(2) My beliefs influence the important choices I make in my life.	1.94	1.11	-1.48	2.99	.68	—
(15) My beliefs are reflected in the way I behave.	1.05	1.29	-.84	.74	.65	—
(1) I am confident that my beliefs are true and valid.	1.72	1.14	-1.06	1.39	.58	-.16
(7) I feel uncomfortable when I do something that goes against my beliefs.	1.13	1.50	-.84	.10	.57	—
(9) I act according to my beliefs even if those around me think that I shouldn't.	.74	1.45	-.58	-.08	.49	.18
(10) My beliefs do not have anything to do with who I am as a person. (reversed)	1.24	1.53	-.88	.22	.45	—
(8) My beliefs offer the most accurate and "true" reflection of reality.	.48	1.38	-.30	-.02	.40	.27

(24) I would not hesitate to argue in favor of my beliefs if called upon to do so.	.87	1.50	-.62	.04	.34	.26
First-Order Factor 2: Belief transcendence						
(14) My primary concern in life is to abide by my beliefs; all other concerns are secondary.	-.47	1.54	.15	-.64	—	.76
(18) Without my beliefs, I would have nothing.	-.68	1.73	.35	-.80	—	.69
(19) Pursuing my beliefs is of paramount importance, even if someone (possibly myself) loses their life in the process.	-1.42	1.78	.82	-.52	—	.69
(23) Those who hold beliefs opposite to my own are misguided.	-1.47	1.61	.90	-.07	—	.66
(21) I would act in accordance with my beliefs even if it meant harming others.	-1.48	1.59	.86	-.21	—	.65
(12) People need to adopt my beliefs in order to see things clearly.	-1.39	1.67	.80	-.42	—	.63
(16) When I believe in something, it is worth going to all possible lengths to defend that belief.	.42	1.49	-.37	-.36	—	.55
(6) The potential consequence of hurting others would not stop me from following my beliefs.	-.67	1.71	.34	-.85	—	.54
(22) I give up my free time in order to engage in activities related to my beliefs.	-.34	1.66	.04	-.91	.22	.46
(17) I spend my money in accordance with my beliefs.	-.10	1.56	-.13	-.64	.26	.40
(13) It is difficult to convince me that something I believe in is wrong.	.49	1.66	-.30	-.82	.14	.29
Total scale	.27	.87	-.06	.29	.76	.69

Note. Factor loadings correspond to the CFA of Model 7. Bolded factor loadings reflect the item's primary first-order factor. Dashed lines indicate that factor loading was constrained to zero. Loadings for the total scale reflect the loadings of the second-order factor on the first-order factors.

Table 2

Model Fit Statistics for the Commitment to Beliefs Questionnaire (CFA Sample)

Model	Description	χ^2	<i>df</i>	CFI	RMSEA
1	Single factor	2606.39***	251	.67	.11
2	Four correlated factors	2299.47***	246	.70	.10
3	Two correlated factors	1758.21***	251	.78	.08 □
4	Second-order factor loading on four first-order factors	2501.30***	251	.67	.10
5	Second-order factor loading on two first-order factors	1758.21***	251	.78	.08 □
6	Two correlated factors with cross-loadings	1581.26***	244	.81	.08
7	Second-order factor loading on two first-order factors with cross-loadings	1581.27***	244	.81	.08

Note. *** $p < .001$.

Table 3

Zero-Order Correlations With the Total Commitment to Beliefs (CTB) Scale

Measure	Study 1	Study 2	Study 3	Study 4
Religious Fundamentalism	.37***			.37***
Self-Reported Religiosity	.30***		.16	.31***
Self-Reported Religious Attendance	.28***		.47***	.29***
Political Orientation	.20***			.09**
Social Dominance Orientation				.11**
Modern Prejudice toward Ethnic Minorities				.10**
Need to Evaluate		.29**		
NFC: Total scale		.14		
NFC: Preference for order/structure		.20*		
NFC: Preference for predictability		.03		
NFC: Decisiveness		.12		
NFC: Discomfort with ambiguity		.09		
NFC: Preference for close-mindedness		-.06		
Generalized attitude conviction			.20 [†]	
MI: Total scale				.21***
MI: Symbolization				.26***
MI: Internalization				.04
Self-esteem				.04
Self-Monitoring		-.06		
Social Desirability		.01		
Extraversion		.16 [†]	.07	
Agreeableness		.11	-.03	
Conscientiousness		.27**	.06	
Neuroticism		.02	-.11	
Openness		.18 [†]	.23*	

Note. The analyses above included complete responses from participants in Study 1 ($n =$

615-620), Study 2 ($n = 112$), Study 3 ($N = 78$), and Study 4 ($n = 925-942$). Missing

numbers indicate that information was not available for that sample. NFC = Need for

Closure. MI = Moral identification. [†] $p < .1$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 4

Hierarchical Multiple Regression Analyses Predicting Attitude Thermometer Ratings of Social Targets as a Function of CTB and Ideologically-Relevant Belief Systems (Study 7)

Block Predictor	Social Target of ATR Rating						
	Black people ^a	White vs. Black bias ^a	Immigrants	Refugees	Poor people	Rich people	Rich vs. Poor bias
	ΔR^2	ΔR^2	ΔR^2	ΔR^2	ΔR^2	ΔR^2	ΔR^2
	<i>b</i>	<i>b</i>	<i>b</i>	<i>b</i>	<i>b</i>	<i>b</i>	<i>b</i>
Block 1: Covariates	.05***	.12***					
Block 2: CTB	.00	.00					
Block 3: MPEM	.00	.03***					
Block 4: CTB x MPEM	-1.23	5.24***					
	.02**	.01[†]					
	-3.94**	2.08[†]					
Total R^2	.07	.15					
Block 1: Covariates	.04**	.13***	.03**	.04**	.01	.02*	.02**
Block 2: CTB	.00	.00	.00	.00	.00	.00	.00
Block 3: SDO	-1.16	-1.32	-.37	.72	.21	-1.86*	-2.08**
Block 4: CTB x SDO	.01*	.02***	.08***	.06***	.03***	.02***	.06***
	-3.06**	3.60***	-6.81***	-6.49***	-4.24***	3.17***	7.49***
	.02**	.01*	.01*	<.01[†]	.01*	<.01[†]	.01**
	-3.43**	1.78*	-2.49*	-1.78[†]	-1.98*	1.54[†]	3.52**
Total R^2	.07	.16	.12	.10	.05	.05	.10

Note. Covariates = Sex, Self-Reported Religiosity, Self-Reported Religious Attendance, Political Orientation, and Moral identification. CTB = Commitment to Beliefs; ATR = Attitude Thermometer Rating; SDO = Social Dominance Orientation; MPEM = Modern Prejudice Toward Ethnic Minorities. ^a MPEM was an additional covariate for the CTB x SDO interaction and SDO was an

additional covariate for the CTB x MPEM interaction. $\Delta R^2 = R^2$ change. b = unstandardized beta weights in the final model; covariate statistics are available upon request. Hypothesized interactions are in boldface. † $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

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Highlights

- Commitment to beliefs(CTB): degree to which people follow their value-based beliefs
- Phase 1: Developed scale to assess CTB
- Phase 2: CTB scale showed strong convergent and discriminant validity (Studies 1-4)
- Phase 3: CTB scale showed strong predictive validity (Studies 5-7)