THE MOTIVATION TO DEFEND SHARED BELIEFS: A FUNCTIONALIST ACCOUNT

by

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Abstract

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by

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Past research shows that political and ideological disagreements with affiliatively-relevant others tend to be experienced as aversive and potentially damaging to the relationships in which the disagreement arises. While social psychology offers many proximate explanations for this tendency, the more ultimate evolutionary explanations of this automatic, pervasive, and "hot cognition" phenomenon have been under-explored. The current research argues that because high levels of belief consensus within groups increase trust, cooperation, and prosociality among group members, and because these group-level features were adaptively advantageous especially in the context of intergroup competition, then people should be motivated to defend shared beliefs with other ingroup members – and thus find disagreements aversive – when faced with fitness-relevant threats to the group that require high levels of ingroup cohesion. Two experiments tested this prediction by manipulating participants exposure to evolutionarily relevant and non-relevant intergroup threats and then measuring participants' aversion to ideologically-inconsistent beliefs (Exp. 1 & 2), their desire to share beliefs with other ingroup members (Exp. 1), and their attitudes toward ingroup members who challenged shared beliefs (Exp. 2). Results from Experiment 1 showed that in a national intergroup context (American ingroup vs. Chinese outgroup), participants demonstrated greater aversion to ideologically opposing beliefs and greater desire to share beliefs with other ingroup Americans when faced

with the evolutionarily-relevant threat of highly-cohesive male outgroup. Results from Experiment 2 showed that in a political intergroup context (Republicans vs. Democrats), somewhat contrary to predictions, participants showed greater aversion to ideologically-inconsistent beliefs and less favorable attitudes toward ingroup members who challenge shared beliefs when primed with highly-creative (vs. high power) male outgroups. Implications for potential ways to reduce political polarization are discussed.

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Table of Contents

Introduction

The popular injunction against discussing politics in polite company may be more than just a matter of manners, at least if one is worried about keeping social interactions pleasant, positive, and even-keeled. Differences of opinion over political attitudes and ideology have the potential to be highly divisive and psychologically discomforting, perhaps especially so when we discover that people who are similar to us in many ways and who lay claim to many of the same group memberships as us *don't* share our political beliefs, values or preferences. Research shows that being in ideological disagreement with an affiliatively-relevant other causes a number of psychologically aversive experiences, such as dissonance-related discomfort (Glasford, Pratto & Dovidio, 2008; Matz & Wood, 2005), arousal characterized by feelings of anxiety, uneasiness, uncertainty and even disgust (Byrne & Clore, 1967; Ritter & Preston, 2011; Stapert & Clore, 1969), physiological indicators of stress (Gormly, 1974), increases in negative emotion (Parsons, 2010), and decreases in state self-esteem (Pool, Wood & Leck, 1998). Not only is ideological disagreement psychologically aversive, but also it can be potentially damaging to the relationship in which it is experienced. ideological disagreement has been shown to motivate a number of cognitions and behaviors that can exacerbate interpersonal conflict, including increased disliking (Byrne & Clore, 1967; Byrne & Wong, 1962), decreased perceptions of closeness (Baxter & West, 2003; Norton, Frost & Ariely, 2007), attributions of bias and incompetence (Pronin, 2008), prejudice (Duckitt, 2001), and ostracism (Festinger, Schacter, & Back, 1951). Further, research on social tuning (Higgins, Echterhoff, Crespillo & Kopietz, 2007; Sinclair, Huntsinger, Skorinko & Hardin, 2005; Sinclair, Lowery & Hardin, 2005) attitude conformity (Asch, 1954; Stangor, Sechrist & Jost, 2000), and false-consensus biases (Krueger & Zieger, 1993; Norton, Frost & Ariely, 2007) shows that attitude formation and change processes are sensitive to the attitudes of

affiliatively-relevant others, suggesting a motivation for minimizing the likelihood of disagreements arising in the first place. On the whole, it is clear that disagreements over matters of ideology and value-based preferences have the tendency to be aversive, motivationally arousing, and potentially damaging to the relationships in which they are experienced.

However, findings regarding the consequences of disagreement do not necessarily help us explain *why* ideological disagreement is so motivationally potent. Why should being in either ideological *agreement or disagreement* with other people matter in the first place? What is so *valuable* about sharing beliefs with affiliatively-relevant others that justifies the observed degree of psychological motivation invested in doing so? And, finally, under what circumstances are people especially likely to place a psychological premium on belief-sharing?

This is not necessarily a new question in social psychology, and theoretical explanations have tended to focus on validity concerns (Festinger, 1954; Hardin & Higgins, 1996; Mannetti, Levine, Pierro & Kruglanski, 2010), uncertainty reduction concerns (Mullen & Hogg, 2000); social learning processes (Bar-Tal, 2000) and affiliative concerns (Hardin & Higgins, 1996; Higgins et al., 2007; Magee & Hardin, 2010) to name a few. The current research builds on this last set of concerns and frames the affiliative role of belief-sharing in the context of *ultimate causes* as proposed by evolutionary theory. Building on research in evolutionary psychology, it is argued that the motivation to share value-based and ideological beliefs with others may have more ultimate, fitness-relevant origins that extend beyond the proximate, intrapsychic needs for epistemic validity and uncertainty reduction. One of the reasons why people are motivated to share ideological beliefs and values with affiliatively-relevant others (especially other ingroup members) is because shared ideological beliefs are instrumental for binding people together into

psychologically meaningful, trusting, and cooperative groups, and being a member of such a group has adaptive advantages (Brewer, 2004; Caporael & Brewer, 1995; Graham & Haidt, 2010; Haidt, 2012; Henrich et al., 2005; Navarette, 2005; Van Vugt & Van Lange, 2006). Therefore, it is likely that the motivation to establish and defend shared beliefs with other group members gains some of its psychological value – and ideological disagreements derive some of their aversive potential – as a consequence of the instrumental, fitness-enhancing function that belief-sharing serves for binding people into trusting, effective, cohesive, and cooperative groups.

By taking this adaptationist view of the value of shared beliefs, I argue that we can gain insight into one of the motivations that keeps people psychologically invested in and bound to certain ideological beliefs, which enables us to identify situations that increase the likelihood of defensive and destructive disagreement and potentially enables us to identify new means of minimizing this defensive and destructive disagreement.[1] The current research aims to accomplish this goal in three ways. First, we will review the literature on what social functionalist accounts add to our understanding of belief defense and aversion to disagreement in order to support the argument that belief defense becomes more valuable (and disagreements become less tolerable) when people are in situations that cue the adaptive value of being included in a prosocial group.

[1] A June, 2012 Pew Research Center survey recently found political polarization among US citizens to be at a 25-year high as measured by the average consensus between republicans and democrats on key issues, the average disparity between republicans' and democrats' ratings of the importance of a number of values, and the importance that party identification (compared to race, class, or education) plays in driving political attitudes. Interestingly, the same survey showed that the number of people self-identified as independents was also at a 25 year high (34%), potentially indicating that the divisive culture identified by citizens in earlier polls (see previous footnote) is indeed something that Americans are looking to remedy.

The second goal will be to provide an original test of this logic by measuring people's aversion to ideological disagreement under conditions in which a group-advantaging mentality would likely be especially advantageous (as theoretically predicted from an evolutionary psychology perspective). This first set of experiments is primarily meant to add to our theoretical understanding of the topic of belief defense, because it tests predictions that are derived specifically from an evolutionary perspective (in comparison to symbolic conflict and social identity perspectives) – the prediction being that the salience of male outgroup members (compared to female or mixed-sex outgroup members) more strongly cues the need for ingroup cohesion and belief sharing.

Finally, the third goal of this project will be to extend the implications of this adaptationist logic to determine whether it can be employed in a novel way to experimentally create situations in which people will actually be *more* tolerant of disagreement and ideological diversity.

The Motivation to Establish and Defend Shared Ideological Beliefs

One of the collective projects of social psychology has been to explain why certain individuals are more likely to agree with, endorse, and defend one set of political beliefs or ideologies at the expense of others, and why alternative beliefs—and often times those who endorse them – are evaluated unfavorably. Interestingly, researchers show that the substantive or *principled* content of many political beliefs and ideologies is only one factor that affects the attractiveness and endorsement of such beliefs (Adorno, Frenkel-Brunswick, Levinson & Sanford, 1950; Altemeyer, 1996; Duckitt, 2001; Haslam, Ryan, Postmes, Spears, Jetten & Webley, 2006; Jost, Glaser, Kruglanski & Sulloway., 2003; Pratto & Cathey, 2002; Tetlock, 1986). Instead, beliefs are often endorsed and defended as a function of at least two broad

categories of psychological motives: intrapsychic motives and affiliative motives. The current research focuses on the latter.

A significant body of research in social psychology evidences the basic claim that endorsing and defending certain beliefs over certain others serves as an important means for establishing, maintaining, and regulating both interpersonal relationships and social group memberships (Bar-Tal, 2000; Festinger, 1950; Hardin & Conley, 2001; Higgins, Echterhoff, Crespillo, & Kopietz, 2007; Terry, Hogg & Duck, 1999). For instance, at the interpersonal level of analysis, research shows that ideological beliefs tend to be endorsed and protected when they are shared with close others, because shared beliefs serve an affiliative function in close interpersonal relationships (Cheung, Noel & Hardin, 2011; Ledgerwood, Jost & Hardin, 2009; Magee & Hardin, 2010). People will tune their ideological attitudes toward those of individuals with whom they are motivated to affiliate and will distance their attitudes away from those of individuals with whom affiliation is undesirable (Cheung, Noel & Hardin, 2011; Sinclair, Huntsinger, Skorinko & Hardin, 2005). Affirming shared beliefs has positive (i.e. rewarding) relational and psychological consequences. Not sharing ideological beliefs with important close others is often a threatening and aversive experience, and so long as the relationship is important, this perceived disagreement tends to motivate processes that protect or bolster the relationship (Hardin, 2004).

One's ideological beliefs are also of consequence to one's group memberships. Individuals are motivated to endorse and defend the beliefs of their social groups, especially if they are looking to increase their status or acceptance within the group (Noel, Wann & Branscome, 1995). Considerable evidence from Social Identity Theory research indicates that

simply making group membership psychologically salient to an individual causes increases in the *motivation* to establish, maintain and affirm consensual shared reality with other ingroup members (Hogg, 2005). As Hogg and colleagues state, "the simple process of social categorization itself makes one's own and others' behavior predictable and allows one to avoid harm, plan effective action, and know how one should feel and behave" (Hogg, Meehan & Farquharson, 2010, p. 1062). Reminding people of their ingroup membership brings their attitudes about an outgroup in line with commonly shared stereotypes (Haslam & Wilson, 2000; Stangor, Sechrist & Jost, 2000). Similarly, when individuals believe they are going to communicate information about an issue or person to an audience – especially if that audience is a valued group (vs. an individual) – their own attitudes and their memory for that information is tuned toward the group's position (Haussman, Levine & Higgins, 2008).

People's confidence in their beliefs is affected by their social groups as well. When people believe their attitudes are consensually shared with a majority of ingroup members (but not outgroup members), they are more confident in those beliefs and are less likely to update their beliefs to accommodate new, countervailing evidence (Stangor, Sechrist & Jost, 2001). Finally, being in disagreement with one's group is psychologically aversive. People experience lowered self-esteem when they learn that their attitudes are not in consensus with valued groups (Wood, Pool & Leck, 1998), and this motivates a number of processes that have the end goal of restoring consensus, such as persuading others, changing one's own opinion, or ostracizing opinion deviates (Matz & Wood, 2005; Schacter, 1951; Wood, Pool & Leck, 1998). This is true even when the beliefs of one's group are not the beliefs of the majority: group membership is the driving factor, not just overall informational conformity (Stangor, Sechrist & Jost, 2001).

Thus, a prominent explanation for why individuals find ideological disagreement to be threatening and aversive is that disagreements threaten to disrupt or detract from valued interpersonal bonds and group memberships. However, this explanation still doesn't answer the question as to *why* belief sharing should be of consequence to relationships and to group memberships in the first place. Why are affiliative processes strengthened by belief sharing, and why is disagreement potentially threatening to one's affiliations?

Invoking Ultimate Explanations: Shared beliefs are instrumental for binding people into groups

Central to the proposed line of reasoning is the claim that there is something special and adaptively valuable about groups establishing shared ideological beliefs. The theoretical rationale for why shared ideological beliefs may be especially likely to be bolstered and defended rests on the claim that shared beliefs are one of the mechanisms that serve the adaptive function of increasing trust and prosocial cooperation among group members as well as fostering high levels of group cohesion among ever-larger groups. It is the adaptive value of ingroup cohesion and cooperation that causes shared beliefs to be so psychologically valuable.

Prior work that is beginning to integrate research on the evolution of cooperation with social psychological research on the functions of ideology (see Alford & Hibbing, 2004; de Waal, 2010; Graham & Haidt, 2010; Graham, Haidt & Nosek, 2009; Henrich et al., 2005; Navarette, 2005; Van Vugt & Van Lange, 2006) is converging on the idea that group cooperation – especially very large-group cooperation – has played a critical role in human evolution. Although group cooperation is by no means unique to humans, one recent line of theorizing in evolutionary psychology suggests that humans exhibit a degree of social organization that may be classed as eusocial (Wilson, 1979) or "ultra-social" (Bowles, 2004; de Waal, 2010; Haidt, 2012). Humans' willingness and ability to extend what Darwin called the "social virtues" –

empathy, compassion, cooperation, prosociality, and altruism — to non-kin, including strangers, and our ability to organize and psychologically identify with ever-larger ingroups are likely to have been adaptations that were central to our species' flourishing. We exhibit a degree of other-oriented and group-oriented concern and motivation that makes wholly self-interested, egoistic explanations for human psychology and human behavior limited and incomplete (see de Waal, 2010; Haidt, 2012; Higgins & Pittman, 2008). For humans, as altruistic and prosocially group-advantaging motives took root in populations, sustaining competitively larger and more cooperative groups became its own selective pressure that shaped our psychology and cultural institutions accordingly (Haidt, 2012; Wilson, Van Vugt & O'Gorman, 2008).

One of the biggest questions facing researchers and theorists who study the evolution of cooperation is how, exactly, group cooperation could evolve to the degree of ultra-sociality we observe in human groups today.[2] For small groups, the mechanisms sustaining cooperation have been effectively explained by theories of inclusive fitness (Hamilton, 1964), reciprocal altruism (Trivers, 1971), and indirect reciprocity (Nowak, 2006). However, there is a debate in the field about whether these same mechanisms and motives that enabled cooperation in groups of known and regularly-interacting members would have been sufficient to enable the large-scale cooperation observed among religious groups and nation-states. As groups get larger and larger, and as members become more and more anonymous and less directly interdependent and accountable, reciprocity norms and reputational concerns are unlikely to be sufficient to protect against freeriding or to continue to confer a selective advantage to those with altruistic motives (for modeling studies supporting this, see Boyd & Richerson, 1997; Fehr & Schmidt, 2006). It is

[2] And at least since the advent of agriculture, though some argue that the archaeological record supports the idea that for at least 50,000 years, hunter-gatherer tribes or "demes" would sustain ethnically- and linguistically-based societies or "macrodemes" that would meet variously (though repeatedly) over time to exchange, engage in rituals, exchange mates, and engage in violent intergroup raids (see Brewer & Gardner, 1996; Caporael, 2007).

likely that other mechanisms were necessary to enable large-scale cooperation and ultra-sociality to be evolutionarily advantageous. Enter shared beliefs.

Shared norms, shared moral values favoring cooperation, shared symbols, shared religious beliefs, and – I will add to the list – shared ideological beliefs are one family of mechanisms that people may be motivated to establish and protect. Further support for this claim can be demonstrated through? large-scale cooperation and group identification of the kind we see at the societal or national level (Graham & Haidt, 2010; Gervais, Shariff & Norenzayan, 2011; Mathew & Boyd, 2011). Some empirical evidence supports this line of reasoning. First, people's behavior in social dilemma situations is sensitive to the perceived norms of other group members, such that when people expect others to be cooperative, their own cooperation increases significantly (Henrich et al., 2005). Also, in experimental public donation games, groups that are allowed to pay a cost to punish others *and* to establish norms of "moralistic punishment" (i.e. punishing those who fail to punish cheaters) experience greater rates of altruistic donations compared to groups who do not have these options or who use them less frequently (Fehr, Fischbacher & Gachter, 2002). Further, in a field test examining 86 pastoral nomadic tribes in East Africa who seasonally band together to raid other outgroups, Mathew and Boyd (2011) found that ethnolinguistic groups are more successful in these raids to the extent that they have strong norms of punishment and moralistic punishment for those who freeride on the raids, and that these punishment norms motivate altruistic cooperation in wartime without any centralized sanctioning body.

Similar findings extend to research on shared religious beliefs as well. Cultures that have strong shared beliefs in moralistic, punitive and omniscient gods are found to have lower crime rates (Shariff & Rhemtulla, 2012), greater generosity in anonymous economic games (Henrich et

al., 2005), and larger group sizes (Roes & Raymond, 2002). Also, one of the drivers of anti-atheist prejudice among religious individuals is distrust, and religious individuals are willing to allow other religious individuals (but not atheists) to take over division of labor roles (i.e. extra-familial childcare) that require high levels of trust (Gervais, Shariff & Norenzayan, 2011), thus showing the important role that shared beliefs play in promoting trust and cooperation. Finally, religions often use the language of family to refer to other members of the religious ingroup, and priming religious concepts has been shown to make concepts related to kin and family more accessible (Shariff, 2008), which may partially explain its power to elicit people's prosocial tendencies. Therefore, if religious and moral beliefs of these kinds can gain a foothold, they can enable larger and more cooperative groups to form, which can then introduce group-level selective pressures that favor groups with more prosocially oriented individuals.[3]

But religious and moral beliefs are unlikely to be unique in this function. One of the central arguments of this paper is that political ideologies may also serve a similar function. Though not researched or theorized as explicitly, it is likely that ideological belief systems may function as cooperation-enhancing mechanisms that help to solve recurring social dilemma-type problems by regulating the delicate balance between people's self-advantaging versus group-advantaging and system-advantaging motives. Ideologies are value-based belief systems that normalize, justify, and work to psychologically legitimize solutions to many large-group cooperation and coordination problems, including issues regarding the fair distribution of resources, power, and burdens; the defining and appropriate punishment of antisocial behaviors;

[3] This argument is made by both evolutionary social psychologists (Gervais, Shariff & Norenzayan, 2011; Graham & Haidt, 2010) and cultural anthropologists (Heinrich et al., 2010), and it tends to be supported by an indirect kind of syllogistic evidence: If religion increases prosociality among group members, and if groups with highly prosocial members are more competitive against other groups, then group-selection pressures are likely to have shaped people's religious orientations, motives, and emotions.

the appropriate division of labor and social roles among group members; the development and maintenance of normative status systems; and the definition, boundaries, and permeability of group membership (see Sidanius, Pratto, Stallworth & Malle, 1994). In essence, ideologies work to justify and legitimize the distribution of "positive social value" and "negative social value" among group members and between groups in intergroup contexts (Sidanius et al., 1994).[4]

As insightfully argued by a number of theorists of ideology (for review see Sidanius & Pratto, 2001), one of the functions of ideological beliefs is to foster *consensus* among members of a society that a particular system for distributing social value is legitimate, preferable, moral, and worth reifying. Such consensus works to stabilize social relations among members of large groups (Sidanius & Pratto, 2001), to justify and rationalize the distribution of positive and negative social value in societies, and to keep group members psychologically invested in and trusting of both each other and of the broader sociopolitical system (Jost, Banaji & Nosek, 2004). For instance, a number of studies show that the extent to which people endorse system-justifying ideologies strongly corresponds to their support for status-quo institutions of power, like the police, the government and the military (Carter, Ferguson & Hassan, 2011; Duckitt, 2001; Jost et al., 2004), especially when the consensus surrounding the validity of the status quo is challenged or threatened (Kay, Jost & Young, 2005; Liviatan & Jost, 2011). Further, ingroup members who challenge normative ideologies surrounding immigration and national identity are especially derogated and stigmatized when ingroup cohesion is perceived to be especially necessary (as in the case of intergroup threat; see Crano & Alvaro, 1998; Hornsey, 2005; Scheepers, Branscombe, Spears, & Doosje, 2000; Wellen & Neale, 2006). Also, the perceived ingroup

[4] "Positive social value" includes things like material resources, political influence, status, education, and trust, whereas "negative social value" includes things like inferior resources, disease, undesirable work, punishment, and stigma (Sidanius et al., 1994).

consensus surrounding a number of ideological beliefs predicts both the perceived objectivity and the perceived moral righteousness of those beliefs (Goodwin & Darley, 2012), which makes consensually shared ideologies especially likely to serve as group-defining and group-binding beliefs (Haidt, 2012). And perhaps the most convincing evidence of the system-advantaging or national-group-advantaging power of consensual ideologies is the considerable evidence suggesting that the majority of those most disadvantaged by social inequality, including the poor (Napier & Jost, 2008) and ethnic minorities (Sidanius & Pratto, 2001), endorse and defend pro-system ideologies and institutions; further, to the extent that they do, they are more accepting of their own lowered distribution of social value.

On the flip side of the coin, research also shows that when ideological consensus breaks down, people are less likely to engage in group-advantaging altruistic behavior. Research on political deliberation suggest that exposure to political opinion disagreement within communication networks (i.e. people with whom participants speak about politics) causes increased attitude ambivalence and hinders political participation, potentially minimizing people's willingness to act on behalf of their group's interest, even as measured by something as simple as voting likelihood (Huckfeldt, Johnson, & Sprague, 2005; Levitan & Visser, 2009; Mutz, 2006; Wojcieszak, 2011). For instance, in a series of quasi-experiments in which Polish citizens deliberated with other citizens about sexual minority rights, deliberation that produced opinion disagreements caused all but the most attitudinally extreme participants to report lowered levels of intended political participation on behalf of their original opinion as well as lowered intentions to persuade others of their original opinion (Wojcieszak, 2011). Similar findings have been found in online discussion settings (Wojcieszak, 2009), and measured

exposure to opinion disagreements via political deliberation within social networks has been shown to negatively predict political participation (Mutz, 2006).

Therefore, if group cooperation and coordination problems are to be successfully solved with minimal conflict, it would have been valuable to have higher levels of consensus over which ideologies should be invoked and followed, because ideologies not only direct people's behavior, they also legitimize outcomes and procedural decisions. However, if such problems are unsuccessfully solved, the group as a whole fails to reap the benefits of cooperative social living and would be less competitive than groups that do. Thus, as one of the evolved mechanisms functionally valuable to sustaining large-group cooperation, people should be sensitive to the perceived degree of agreement over ideological beliefs, just as they are other religious and normative beliefs.[5]

Overview of the Proposed Research

Two questions remain unresolved. First, the current theoretical rationale predicts that specifically adaptively-relevant cues, especially those that cue the fitness-enhancing value of stable, cohesive, and competitive ingroups, should increase people's shared reality motives surrounding ideological beliefs. The question of whether evolutionary theory is needed to understand the defense of group-normative cognitions (including shared ideologies) is a valid one. Other theories predict increases in the bolstering and defense of group-normative

[5] This is not to suggest that the content of ideological beliefs is insignificant. Surely, some ideological tenets, if followed, will have better or worse consequences in different social dilemma situations, and different ideologies espouse beliefs that are intuitively more or less appealing to certain individuals (Riketta, 2008); however, many of these group cooperation problems are likely to have multiple viable solutions rather than a singular ideal solution. Therefore, as it pertains to the adaptive relevance of ideological beliefs, what may be at least as important for sustaining advantageous ultra-sociality in groups is not that groups necessarily develop the *perfect* solution to these social dilemma problems, but rather that they establish, maintain and enforce *consensus* over which approach is normative to the group (see Henrich et al., 2005; Sidanius & Pratto, 2001, ch. 4). As Jonathan Haidt suggests about the power of shared beliefs, it matters less whether currency trades in gold, silver, or paper; what matters more is that we all buy into the same shared belief that one of them has real value (Haidt, 2012).

cognitions in response to situational cues *without* invoking evolutionary explanations. For instance, Self-Categorization Theory (Turner, Hogg, Oakes, Reicher & Wetherell, 1987) predicts that as individuals' group identity becomes more salient (such as in intergroup contexts), they will tend to align their sense of identity, including their normative beliefs, with the ingroup. Further, both Realistic Conflict Theory (Jackson, 1993; Levine & Campbell, 1972) and Symbolic Conflict (Kinder & Sears, 1981) predict that outgroup challenges to ingroup resources and values, respectively, should cause individuals not only to derogate the outgroup but also to defend the ingroup's resources and values. These theories make many predictions that are empirically consistent with the one's argued thus far *without* invoking evolutionary ultimate causes.

However, there is a growing argument from evolutionary psychologists – one which I intend to further test in this research – that these theories work as well as they do in predicting empirical effects because their primary manipulations are overlapping with and congruent with fitness-relevant cues. For instance, Navarrette and Fessler (2005), as a critique of Terror Management Theory, argue that mortality salience primes increase worldview defensiveness *not* because individuals achieve symbolic immortality by defending cultural worldviews *but rather* because priming adaptive challenges that may have been best dealt with via seeking out coalitional support (like protection from death) causes a normative bias in thought and behavior. The increased bolstering of normative beliefs, they argue, functions to minimize the risk of losing the social support and coalitional benefits of the ingroup, and they show that mortality primes are not unique in predicting ideological defensiveness (the same effects of derogating an anti-American essay are found when people are primed with threats of social isolation and with needing to cooperatively work with others to secure shelter).

Therefore, as a first test of the current theoretical rationale, it is important to conduct an experiment in which people's defensiveness of shared ingroup ideologies is measured specifically in response to an adaptively-relevant cue that would not otherwise be theoretically meaningful from a non-evolutionary perspective. To do so, our first experiment will build on the "male warrior hypothesis" (McDonald, Navarrete & Van Vugt, 2012), which claims that because of the presence of threats from coalitions of outgroup males throughout humans' evolutionary history, outgroup males and, especially, outgroup male coalitions, are perceived as especially threatening and especially likely to motivate individuals to adopt a competitive intergroup mentality. For instance, ambient darkness (a threat manipulation) increases the stereotyping of outgroup males as dangerous (Schaller, Park & Muller, 2003), and outgroup male faces are *more* likely to be remembered under threat (which is contrary to the outgroup homogeneity hypothesis; see Ackerman, Shapiro, Neuberg, Kenrick, Becker, Griskevicius, Maner & Schaller, 2006). Further, in a public contribution game in which participants received a group bonus if a certain percentage of group members contributed part of their own personal earnings to a common pot, participants (but especially men) were more altruistic toward their own groups when they believed they were being compared to all-male outgroups (as compared to mixed-sex outgroups, all female-outgroups, or other members of their own group; Bailey, Winegard, Oxford & Geary, 2012; Van Vugt, De Cremer & Jansen, 2007). Thus it seems that outgroup males, especially coalitions of outgroup males, are an especially salient cue that activates the need for people to be part of a cohesive and cooperative (and thus competitive) group.

Therefore, Experiment 1 tests the prediction that the salience of cohesive outgroup male coalitions (compared to non-gendered outgroups) should uniquely increase participants' shared reality motives as operationalized by measuring their aversion to ideologically-inconsistent

beliefs as well as their aversion to ideological disagreements. By manipulating only the gender composition of the outgroup, but keeping constant the symbolic and social identity-relevant threat that the outgroup poses, we can determine if this specifically adaptively-relevant cue affects people's responses to ideological disagreements.

Experiment 1 will simultaneously begin to answer a second unresolved question as well: might this adaptationist perspective on the value of shared ideological beliefs enable us to understand (and increase) tolerance of disagreement and ideologically conflicting views? A relatively novel, under-examined, and testable implication extending from the current theoretical rationale is that experimentally making participants feel that they are part of a sufficiently bonded and cooperative group (one that is internally cohesive, prosocial, and/or sufficiently able to compete with other groups) will cause participants to be more open to disagreement and alternative ideological perspectives. This prediction is derived from the theoretical rationale that shared beliefs serve an instrumental function in increasing people's trust that they are part of a bonded and cooperative group, but if this perception of group-bondedness can be satisfied through other means, then disagreement and conflicting beliefs should be less aversive. Therefore, Experiment 1 will also include a set of conditions in which participants are lead to believe that their own ingroup is comparatively *more* cohesive and prosocially-oriented than a threatening rival male (vs. gender-neutral) outgroup, and that in this condition (relative to the threatening and neutral conditions), participants will show less aversion to ideologically-inconsistent beliefs and will be more tolerant of disagreements.

Experiment 1: Method

Participants

To increase the representativeness of the sample, participants were recruited via Amazon's MTurk, an online site though which "requesters" are able to recruit and compensate "workers" for completing online tasks, including online surveys.[6] The description of the survey posted to MTurk read as follows: "This short 5 minute survey asks participants to read a brief prompt and then to answer 20 questions regarding attitudes toward volunteering and community service as well as some political opinion questions and some demographic information." Participants were offered $.50 per survey response for the 5 minute survey based on recommendations from the literature suggesting that an effective $6.00/hr wage (which is more than double the MTurk average; see Paolacci, Chandler & Ipeirotis, 2010) yields psychological survey data that equals lab-based data both in terms of internal reliability (average Cronbach's α = .87) and test-retest reliability (average r's = .88; Buhrmester, Kwang & Gosling, 2011). Participants also had to have a 95% approval rating or higher based on the quality of their past work on MTurk as well as an IP address that originated in the United States before they were allowed to view the posted survey. No participants were able to participate in the survey twice.

An original sample of N = 300 participants was recruited. Three sets of quality control decision criteria were used to create the final sample. First, participants were asked to report their geographic location, and any non-US-based respondents were dropped. No participants were dropped based on this criterion. Second, participants completed a manipulation check at the end

[6] Participants respond to MTurk requests for a number of reasons, with anecdotal evidence suggesting most do it to earn a little extra spending money while killing time (Mieszkowski, 2006, retrieved from www.Salon.com) and with more systematic analyses suggesting that the leading reason for participating is "enjoyment" (Buhrmester et al., 2011). According to Buhrmester and colleagues (2011), MTurk users tend to perform similarly on many cognitive and attitudinal measures, and they may be a more representative sample in that they tend to be more diverse (a greater percentage are non-white compared to standard samples and, on average, are 10 years older).

of the survey that asked them to report what they had read in the experimental prompt in the beginning. Fifty-nine participants were dropped based on this criterion for failing to correctly report the content of the experimental prompt. Finally, any participants who completed the study in less than three minutes were dropped, as this was considered insufficient time to respond thoughtfully to the experimental prompt and the ensuing items. Eighty participants were dropped based on this criterion.[7] All participants were still paid for their participation regardless of the quality of their responses.

The final sample for analysis consisted of N = 149 subjects (N = 80 males and N = 79 females). Of the final sample, 78% self-identified as liberals or Democrats and 22% self-identified as conservatives or Republicans. All self-reported currently living in the United States. The mean age of participants was M = 31.20 years old.

Procedure

Participants read the MTurk prompt as described above and those who volunteered to participate were directed to an online survey hosted by www.SocialSci.com. After agreeing to an informed consent prompt, the survey hosting website randomly directed participants to a page containing one of the six experimental conditions, thus ensuring random assignment to condition. All experimental prompts contained a written summary of purported past research on volunteering rates in the US and China, and all experimental prompts also contained an image representing the target outgroup engaging in volunteer work.

Manipulation of Outgroup Cohesion (IV1) and Outgroup Gender (IV2)

To manipulate both the degree of perceived outgroup cohesion and the gendered nature of the outgroup, participants were exposed to a prompt that read as follows: "A recent cross-

[7] See Supplemental Analyses (Appendix E) for data comparing similarities and differences between the full sample and the inclusion-criteria sample.

national study on community service and volunteering rates found that [*men/people*] in China volunteer [*three times more / at about the same rate / three times less*] compared to the average American. We are curious to hear more about your opinions on this topic and this trend." Those exposed to information suggesting that the Chinese outgroup volunteers three times as often as Americans (and thus were a more cohesive group) were considered to be in the "outgroup threat" condition. Those exposed to the prompt suggesting that Chinese outgroup volunteers at about the same rate as Americans were considered to be in the "neutral" condition. Those exposed to the prompt suggesting that Americans volunteer more than the Chinese outgroup were considered to be in the "ingroup affirmation" condition.

Finally, all prompts were coupled with a picture to reinforce the salience of the gendered outgroup. In the male outgroup conditions, the prompts were also coupled with an image of three Chinese men cleaning up a natural disaster site. In the gender-neutral outgroup conditions, the prompts were coupled with an image of Chinese men and women filling disaster relief bags with supplies. Thus, all participants were exposed to verbal and visual outgroup cues.

Participant Political Orientation

In order to determine which set of later statements would be ideologically-inconsistent for participants, we had to determine their political orientation. Participants' were asked to respond to two items assessing their political orientation. First, participants were asked to self-identify with a political party in an open-ended response. Second, participants were asked to rate their political orientation on a scale from 1 – 6, with 1 = Very Conservative and 7 = Very Liberal. All participants who reported being Democrats or above the midpoint on the political orientation item were categorized as liberals and all participants who reported being Republican or below the midpoint on the political orientation item were categorized as Conservatives.

Twelve participants reported being either conservative Democrats or liberal Republicans and thus their political orientation was not coded.

Measuring Aversion to Ideologically-Inconsistent Statements

To assess whether the need for ingroup cohesion increases participants' degree of disagreement toward ideologically-inconsistent statements, participants completed 8 items modified from the Social Dominance Orientation Scale (Sidanius & Pratto, 1994) that were rephrased so as to make the items specific to the issue of volunteering. The SDO scale measures participants' agreement or disagreement with statements that either justify social inequality and hierarchy (a.k.a. hierarchy-enhancing statements) or that justify social equality and egalitarianism (a.k.a. hierarchy-attenuating statements). For example, hierarchy-enhancing items from the original scale such as *"It is OK if some groups have more of a chance in life than others"* were modified to focus on volunteering, such as "*It is OK if poorer areas have more poorly funded community service programs."* Similarly, hierarchy-attenuating statements such as *"We should do what we can to equalize conditions for different groups"* were modified to read "*Better-off individuals should be responsible for volunteering to help the disadvantaged*" (see Appendix B for full list of modified scale items). Responses were recorded on a 1 – 7 scale with 1 = Strongly Disagree and 7 = Strongly Agree.

Past research has shown that SDO scores correlate significantly with measures of political conservatism (r's range from .35 to .60; Sidanius & Pratto, 2001); therefore, hierarchy-attenuating statements were considered ideologically inconsistent for conservative and Republican participants while hierarchy-enhancing statements were considered ideologically inconsistent for liberal and Democratic participants. Thus, in the final analyses, there is a single mean "aversion to ideologically-inconsistent statements" score for the sample that includes

liberals' mean response to the hierarchy-enhancing statements and conservatives' mean response to the hierarchy-attenuating statements. Internal reliability for the ideological-inconsistency measure with final sample was Crohnbach's $\alpha = .62$. Indeed, in our sample as well, the 1-7 measure of political orientation (with 1 = Very Conservative, 7 = Very Liberal) correlated $r(126) = .34$, $p < .001$ with the modified SDO scale, and Liberals reported, on average, significantly stronger hierarchy attenuating responses ($M = 3.54$, $SD = .82$) compared to Conservatives ($M = 3.87$, $SD = .79$), $t(128) = 1.86$, $p = .06$.

Measuring Desire for Shared Beliefs

To assess whether the need for ingroup cohesion causes a greater desire to have one's beliefs shared by others, participants responded to two questions on a 1 – 7 scale, with higher scores indicating greater desire for shared beliefs: 1) *"I would be pleased to learn that most Americans' opinions are similar to my own;"* and *2) "I would find it frustrating to learn that other Americans don't share my own values."*

Experiment 1: Results

DV1: Aversion to Ideologically-inconsistent Beliefs as a Function of Outgroup Cohesion and Outgroup Gender

To test whether the salience of cohesive outgroup male coalitions (compared to non-gendered outgroups) uniquely increased participants' aversion to ideologically-inconsistent beliefs, a 2x3 factorial ANOVA was conducted with outgroup gender and outgroup cohesion as the independent variables and the mean of the 8-item modified SDO scale serving as the dependent measure of aversion to ideologically-inconsistent beliefs (lower scores mean greater aversion to ideologically-inconsistent beliefs). First, there was a main effect of the outgroup cohesion manipulation, with participants showing the strongest aversion to ideologically-

inconsistent beliefs in response to the highly-cohesive "threatening" outgroup (M = 4.45, SD = .98) compared to the "neutral" condition (M = 3.99, SD = .64) and the "affirmation" condition (M = 3.57, SD = .79), F(2, 122) = 5.20, p = . 007. Thus, the threat caused by a highly cohesive outgroup does seem to cause participants to express greater aversion toward beliefs that are inconsistent with their predominant ideological worldview.

There was also a main effect of the outgroup gender manipulation in that participants expressed the most aversion to ideologically-inconsistent beliefs when primed specifically with thoughts of male outgroup members (M = 3.45, SD = .85) as compared to outgroup members in general (M = 4.00, SD = .74), F(1,122) = 9.64, p = .002. Thus, the salience of outgroup males similarly seems to cause participants to be more aversive toward ideologically inconsistent beliefs.

However, both of these main effects were qualified by the predicted interaction effect. Consistent with the primary hypothesis, analyses showed that compared to the neutral outgroup condition, the cohesive outgroup threat manipulation caused increased aversion to ideologically-inconsistent statements when the threat was posed specifically by outgroup males (M = 3.80, SD = .57 for the neutral group vs. M = 3.03, SD = .95 for the threat group) but not when the threat came from a gender-neutral outgroup (M = 4.20, SD = .66 for the neutral group vs. M = 4.07, SD = .65 for the threat group), F(2,122) = 5.77, p = .004 (see Figure 1). Thus, it seems that the threat from outgroup males specifically and not from the outgroup in general caused the greatest aversion to ideologically-inconsistent beliefs.

Finally, although inconsistent with the corollary hypothesis of Experiment 1, participants did not show greater tolerance for ideologically-inconsistent beliefs when their own relative ingroup cohesion was affirmed (via being exposed to info affirming that Americans volunteer

more relative to the outgroup). This was true both for the male outgroup and non-gendered outgroup conditions, and if anything, when comparing the affirmation condition relative to the neutral condition, aversion to ideological disagreement actually seemed to increase when participants were reminded that their ingroup was more cohesive than the outgroup (see Figure 1).

As evidenced by the non-significant three-way interactions, the abovementioned effects did not differ for male versus female participants, $F(2,114) = .86$, $p = .42$, nor did they differ as a function of whether the participants were liberals versus conservatives, $F(2,116) = .62$, $p = .54$.[8]

DV2: Desire for Shared Beliefs as a Function of Outgroup Threat and Outgroup Gender

To test whether the salience of cohesive outgroup male coalitions (compared to non-gendered outgroups) uniquely increased participants' expressed desire to have high levels of shared beliefs with other ingroup Americans, the same 2x3 factorial ANOVA was conducted using the mean of the two items assessing desire for shared beliefs as the dependent variable. While there were no significant main effects of the outgroup threat manipulation or the outgroup gender manipulation (F's < 2.80, p's $> .11$), there was a significant interaction effect. Relative to both the neutral condition and the affirmation condition, participants expressed significantly greater desire for ingroup members to share their beliefs when they were exposed to a more cohesive and thus threatening male outgroup ($M = 5.15$, $SD = 1.33$) but significantly *less* desire for shared beliefs among ingroup members when exposed to a threat from a gender-neutral

[8] It is worth noting that all reported main and two-way interaction effects for this DV and for the second DV below remain statistically significant when including the participants' gender as an interaction term in the three-way model. Further, when including participants' political orientation as an interaction term in the three-way model, all reported effects for the aversion to ideological inconsistency DV remain statistically significant, and the desire for shared beliefs interaction below is the only finding that drops to marginal significance ($p = .07$). This (and a look at the separately graphed results for men vs. women and for liberals vs. conservatives) further corroborates the finding that the main effects and interaction effects hold similarly for both men and women and for both liberals and conservatives.

outgroup (M = 4.15, SD = 1.02), F(2,143) = 3.24, p = .04 (see Figure 2). Again, it seems that the desire for high levels of consensus among ingroup Americans is strongest when participants are faced with the evolutionarily-salient prime of a highly cohesive male outgroup.

As was true for the aversion to ideologically-inconsistent beliefs DV, the above interaction was not qualified by any three-way interactions with participant gender, F(2,135) = .03, p = .97, nor with participant political orientation, F(2,116) = .30, p = .74. Men and women alike as well as liberals and conservatives alike all showed the same pattern of desiring the highest levels of ingroup shared reality when faced with a cohesive male outgroup.

Experiment 1 Discussion & Experiment 2 Overview

Experiment one finds initial support for the idea that people show a stronger aversion to ideologically-inconsistent beliefs and an increased desire to share beliefs with other ingroup members when they are exposed to an evolutionarily-relevant threat suggesting that outgroup males (vs. gender-neutral outgroups) may be more prosocial and more cohesive and thus better able to successfully engage in intragroup cooperation and intergroup competition. The effect does not seem to depend on the political orientation of the participants, and, somewhat surprisingly, it does not seem to hold differently for men versus women. The evolutionary perspective on male intergroup conflict would suggest that the effect should hold especially strongly for men, though there is reason to believe that women similarly have evolved sensitivity to the presence and capabilities of outgroup males, though for evolutionarily different reason (see Schaller, Park & Mueller, 2003)

Experiment 2 aims to extend the paradigm established in Experiment 1 in three ways. First, Experiment 2 tests the proposed primary theoretical predictions in a different intergroup context, looking at intergroup comparisons made between Republicans and Democrats (as

opposed to Americans and Chinese, as in Experiment 1). While shared ideological beliefs are likely to be valuable to any group that requires high levels of ingroup cohesion and cooperation, it is likely that they will be especially necessary to groups that are formed largely on the basis of ideological orientation. Therefore, to increase the conceptual power of the test of the current theoretical rationale, Experiment 2 examines responses to threatening outgroup comparisons among political party members.

Second, Experiment 2 operationalized the outgroup comparison dimensions manipulation differently. Whereas participants in Experiment 1 were lead to believe that the outgroup was comparatively more (vs. less vs. similarly) prosocially oriented (as operationalized by manipulating volunteering rates), participants in Experiment 2 will be exposed to outgroup comparisons on the dimensions of outgroup power and influence (versus outgroup creativity and individualism). It is predicted that the salience of high power male outgroups will evoke the greatest need for ingroup cohesion and agreement (see Cottrell & Neuberg, 2005) relative to the salience of creative and individualistic male outgroups (which should evoke more social contrast and divergent-thinking and thus a belief-tolerant mindset; see Oyserman & Lee, 2008) and relative to the salience of female and gender-neutral outgroups.

Third, in addition to replicating Experiment 1's assessment of participants' aversion to ideologically inconsistent beliefs, Experiment 2 also assesses participants' hypothetical reactions to ideologically consistent ingroup members. Participants are asked to rate their liking for and willingness to socially exclude political party members who disagree with the ingroup ideology and ingroup leaders. It is predicted that when participants are exposed to a more powerful (vs. more creative) outgroup, especially when the outgroup is predominantly male, they will express

more dislike for ideologically-inconsistent statements and for ingroup members who threaten party cohesion and consensus.

Experiment 2: Method

Participants

Participants were recruited in a manner similar to Experiment 1. An original sample of 480 participants was recruited via Amazon's MTurk. Participants were asked to respond to a short 5-minute survey regarding recent issues brought up in the 2012 election campaign. Participants were offered the same $.50 compensation rate for survey completion. All participants were required to have a 95% approval rating or higher based on the quality of their past work on MTurk as well as an IP address that originated in the United States before they were allowed to view the posted survey.

Similar to Experiment 1, three sets of quality control decision criteria were used to create the final sample. First, participants were asked to report their geographic location, and any non-US-based respondents were dropped. No participants were dropped based on this criterion. Second, participants completed a manipulation check at the end of the survey that asked them to report what they had read in the experimental prompt in the beginning. Forty participants were dropped after providing an incorrect response based on this criterion. Third, any participants who completed the study in less than three minutes were dropped, as this was considered insufficient time to respond thoughtfully to the experimental prompt and the ensuing items. Fifty-eight participants were dropped based on this criterion. All participants were paid for their participation regardless of the quality of their responses.

Finally, because participants' own political party determined whether the experimental outgroup was the Republican party or the Democratic Party, the final inclusion criterion for the

sample was that only participants who explicitly self-identified as either as a Republican or as a Democrat were included. Forty participants failed to do so and thus were dropped from the final sample.

The final sample for analysis consisted of N = 142 subjects (N = 72 males and N = 68 females). Of the final sample, 73% self-identified as Democrats and 27% self-identified as Republicans. All self-reported currently living in the United States. The mean age of participants was M = 33.40 years old.

Procedure

Participants read the MTurk prompt as described above, and those who volunteered to participate were directed to an online survey hosted by www.SocialSci.com. After agreeing to an informed consent prompt, the survey hosting website randomly directed participants to a page containing one of the six experimental conditions. All experimental prompts contained a written summary of purported past research on either Republican-leaning or Democratic-leaning organizations.

Manipulation of Outgroup Threat (IV1) and Outgroup Gender (IV2)

To manipulate the need for a more cohesive ingroup via a perceived outgroup threat, participants read the following prompt: "We have recently been researching differences between Republican-leaning and Democrat-leaning groups and organizations. One interesting initial trend from this research suggests that groups scoring highest on indicators of *influence and commitment* [vs. *creativity and individualism*] tend to be 1) primarily *male-dominated* [vs. *female-dominated* vs. *no gendered statement*] and 2) primarily *Republican-leaning* [vs. *Democrat-leaning*]." Participants were then asked to respond to questions regarding this trend and other political opinions on the following page. Thus, this single prompt manipulated the

threat the outgroup posed (*powerful vs. creative outgroup*) and the gender of the outgroup (*male vs. female vs. no gendered info*).

Because participants were randomly assigned to condition, roughly half of the participants were actually exposed to a prompt about an ingroup (e.g. self-identified Republicans reading about Republican-leaning groups) rather than an outgroup (e.g. self-identified Republicans reading about Democrat-leaning groups). Because the current theoretical focus is on participants' reactions to threats from a political outgroup, only participants who were exposed to an outgroup prompt (e.g. self-identified Republicans exposed to findings about Democrat-leaning groups) are included in the data analyses presented below. These are the same N = 142 participants as described above.

DV1: Measuring Aversion to Ingroup Dissent

Immediately after exposure to the experimental manipulations, participants were asked to respond to the trend described in the prompt and to give their opinions regarding political parties more generally. Four filler questions regarding the prompt were asked in order to minimize suspicion, and then items measuring the key dependent variable were introduced. To measure participants' aversion to dissent and disagreement within their own party, participants responded to eight likert-type items on a 1-7 scale, with higher scores representing stronger aversion to ingroup dissent (Cronbach's $\alpha = .64$). Sample items include, "*In an election season, it's important for everyone in my party to be on the same page*;" "*Individuals who criticize their own political party are untrustworthy;"* and "*I believe my party's leaders should be more willing to compromise"* (reverse scored).

DV2: Measuring Aversion to Ideologically Inconsistent Statements

To measure participants' aversion to ideologically-inconsistent statements, the same 8-item modified SDO scale used in Experiment 1 and focusing on volunteering attitudes was used. Four hierarchy-enhancing and four hierarchy-attenuating questions were asked on a 1-7 scale, with 1 = Strongly Disagree and 7 = Strongly Agree. As in Experiment 1, hierarchy-enhancing statements were considered ideologically-inconsistent for Democrats and hierarchy-attenuating statements were considered ideologically-inconsistent for Republicans. The overall internal reliability for the aversion to ideological inconsistency scale was Cronbach's $\alpha = .61$.

Experiment 2: Results

Aversion to Ideologically-Inconsistent Beliefs (DV2)

To test whether participants exposed to a more powerful (vs. more creative) male outgroup express greater aversion for ideologically-inconsistent beliefs, a 2x3 factorial ANOVA was conducted with outgroup comparison dimension and outgroup gender as the independent variables and the aversion to ideologically-inconsistent statements serving as the dependent variable (lower scores mean more aversion). Somewhat contrary to predictions, participants exposed to the powerful male outgroup expressed less aversion toward ideologically-inconsistent beliefs ($M = 4.04$, $SD = 1.23$) than when exposed to the creative male outgroup ($M = 3.75$, $SD = 1.31$), however this pattern was reversed for both the female outgroups ($M = 3.55$, $SD = 1.02$ for the powerful female outgroup vs. $M = 4.45$, $SD = 1.20$ for the creative female outgroup) and the gender-neutral outgroups ($M = 3.85$, $SD = .94$ for the powerful gender-neutral outgroup vs. $M = 4.10$, $SD = 1.31$ for the creative gender-neutral outgroup), $F(2, 134) = 3.45$, $p = .04$ (see Figure 3). Thus, while it was true that the salience of a male outgroup did cause effects that were unique from the other two gender compositions, it seems that participants aversion to ideologically-inconsistent beliefs decreases in response to high-power male outgroups but

increases in response to creative and individualistic male outgroups (relative to female and gender-neutral outgroups).

Aversion to Ingroup Dissent (DV1)

To test whether participants exposed to a more powerful (vs. more creative) male outgroup express greater aversion toward ingroup members who threaten party cohesion and consensus, the same 2x3 factorial ANOVA was conducted with outgroup comparison dimension and outgroup gender as the independent variables and aversion to ingroup dissent serving as the DV. A similar pattern emerged that was conceptually parallel to the prior analysis. Again somewhat contrary to predictions, participants exposed to the powerful male outgroup expressed less aversion toward ingroup dissent ($M = 2.61$, $SD = .74$) than when exposed to the creative male outgroup ($M = 2.83$, $SD = .67$), however this pattern was reversed for both the female outgroup ($M = 3.22$, $SD = .85$ for the powerful female outgroup vs. $M = 2.59$, $SD = .86$ for the creative female outgroup) and the gender-neutral outgroup ($M = 2.92$, $SD = .94$ for the powerful gender-neutral outgroup vs. $M = 2.70$, $SD = .72$ for the creative gender-neutral outgroup), $F(2, 134) = 4.82$, $p = .01$. Again, salience of the evolutionarily-relevant male outgroup caused unique effects, but it seemed to be the more creative (vs. more powerful) male outgroups that increased aversion to ingroup dissent, and the greatest increase in aversion to ingroup dissent came in response to the powerful female outgroup (see Figure 4).

Discussion, Limitations & Future Directions

Overall, as predicted from an evolutionary psychology perspective, participants' desire for ingroup belief sharing and their aversion to ideological disagreements were sensitive to cues suggesting the need for cohesive and cooperative ingroups, specifically in response to the salience of male outgroup coalitions. Experiment 1 showed this effect when the need for ingroup cohesion was elicited by cues suggesting that a male outgroup at the national level was highly cohesive (and thus, assumedly, more competitive in intergroup competition). Experiment 2 showed this effect when participants were exposed to information suggesting that male political outgroup members were highly creative and individualistic; however, the reverse trend was found when male political outgroup members were characterized as highly powerful and influential. Thus, the salience of outgroup males seems to activate shared reality motives in ways that are distinct from the salience of female and non-gendered outgroups, though the specific salient features of these male outgroups seem to moderate participants' aversion to ideological disagreements and inconsistencies in potentially different ways. It will be important for future research to systematically determine that the cognitive salience of outgroup males (even in a generalized sense) is indeed the causal mechanism driving these effects, though the initial evidence seems to suggest that this stimuli is indeed functionally unique relative to females or non-gendered groups in eliciting shared reality motives.

Interestingly, these findings held for both male and female participants, as none of the three-way interactions with participant gender were significant, and the main effects and two-way interaction effects remained significant even when gender was included in the three-way model. The Outgroup Male Warrior hypothesis predicts that these sensitivities to intergroup threat should be especially keenly felt by male participants (who were anthropologically more

likely to engage in intergroup conflict), and yet other research in this area has also failed to find gender differences in sensitivity to specifically outgroup males (see Navarrete, Olsson, Ho, Mendes, Thomsen & Sidanius, 2009; Schaller, Park, & Mueller, 2003). As mentioned in the intermediary discussion above, women similarly faced adaptively salient threats from outgroup males and thus are similarly if not equally as likely to have evolved a similar suit of psychological sensitivities to the their presence and the threats they pose.

One of the unexpected findings from these experiments was the tendency for participants' shared reality motives to be stronger in the face of creative and individualistic male outgroups but weaker in the face of powerful and influential male outgroups. One potential explanation for this finding is that it is possible that priming people to perceive an outgroup as more powerful may actually increase participants tolerance of ideological diversity. Past research shows that groups that both are more powerful and that are perceived to be more powerful are perceived as behaviorally and characteristically more heterogeneous and idiosyncratic, because having power is perceived as freeing group members from some degree of normative constraint (Fiske, 1993; Guinote, Judd & Brauer, 2002). Therefore, it is possible that the power prime caused participants to perceive the outgroup as more heterogeneous and flexible, and thus perhaps the need for a unifying ingroup ideology may have been less motivationally necessary. Similarly, it is possible that the creativity and individualism prime served not as cues for a divergent-thinking outgroup but instead as cues that the outgroup met value-based American ideals, and thus the need to bolster ingroup ideological ideals may have increased in response. Or, further, "creativity" may have been associated with cunning and persuasive power; thus, while 21st century citizens in the United States may not be as sensitive to or threatened by the risk of abuses of overt power on behalf of parties and the government, it may be that more subtle, cunning,

insidious and "creative" ploys serve as the more salient threat from those who may not have our interests in mind.

A second explanation could be that participants were socially tuning or conforming to the ideological attitudes of the more dominant group. This would potentially account for the decrease in aversion to inconsistent SDO statements, though it would less sufficiently explain why participants also expressed decreased desire for fellow political party members to "tow the line" when exposed to a powerful male outgroup. If this explanation were the case, then it would be likely that those who are more politically invested and committed to their Republican or Democratic identities would be least likely to show the effect, whereas those with weaker party identification attitudes would be more prone to tuning and conformity effects.

Both of these points, however, need to recognize that not all power primes increased participants' tolerance for ideological disagreements and inconsistencies equally. In Experiment 2, participants actually showed the greatest aversion to ideologically inconsistent ideas and others when primed with the salience of a powerful and influential *female* political outgroup (as well as a non-gendered outgroup, though to a lesser degree). From a social cognitive perspective, this pattern could be accounted for by a number of expectancy violation or "backlash" theories (Rudman & Fairchild, 2004) which show that female targets are derogated and perceived as more threatening when they fail to possess the expected communal traits and instead are characterized as more agentic. Thus, the powerful female outgroups may have been perceived as a greater threat than the powerful male outgroups and thus may have elicited the motivation to defend and protect shared ingroup ideology. However, from an evolutionary psychology perspective, little research or theorizing has been done to suggest what role females as a group, especially as a powerful outgroup, may have played in humans' evolutionary past.

Further work exploring the possibility that powerful females represent an adaptively-relevant cue that is distinct from powerful males (and that thus motivates a different suite of cognitive and motivational responses) needs to be explored in future research.

A second prediction that was found to be unsubstantiated was the prediction that participants would show *increased* tolerance for ideologically inconsistent beliefs and *decreased* shared reality motives when they were primed to believe that their own ingroup was already highly cohesive (and thus competitive in intergroup situations). This prediction was theoretically derived from the rationale arguing that sharing ideological beliefs with ingroup members is an instrumental goal, a means to increasing ingroup cohesion and prosociality *especially when* these ingroup features would be adaptively valuable. Thus, the prediction was that when perceived ingroup cohesion and prosociality were already high (relative to a rival outgroup), the instrumental need to protect and bolster shared beliefs would be minimized and potentially reversed, motivating greater openness and tolerance. Ingroup beliefs are not stagnant, and understanding the contexts in which group norms and ideologies are open to changes and shifts is an important goal of a number of subfields in psychology. However, initial evidence from Experiment 1 suggests that ingroup members do not become more tolerant of ideological diversity and disagreements when they are primed to make intergroup comparisons, even if those intergroup comparisons reflect favorably on the ingroup. It appears that when intergroup comparisons are salient, even if they are positive, it may not be worth risking high levels of ingroup cohesion and prosociality by entertaining ideological diversity.

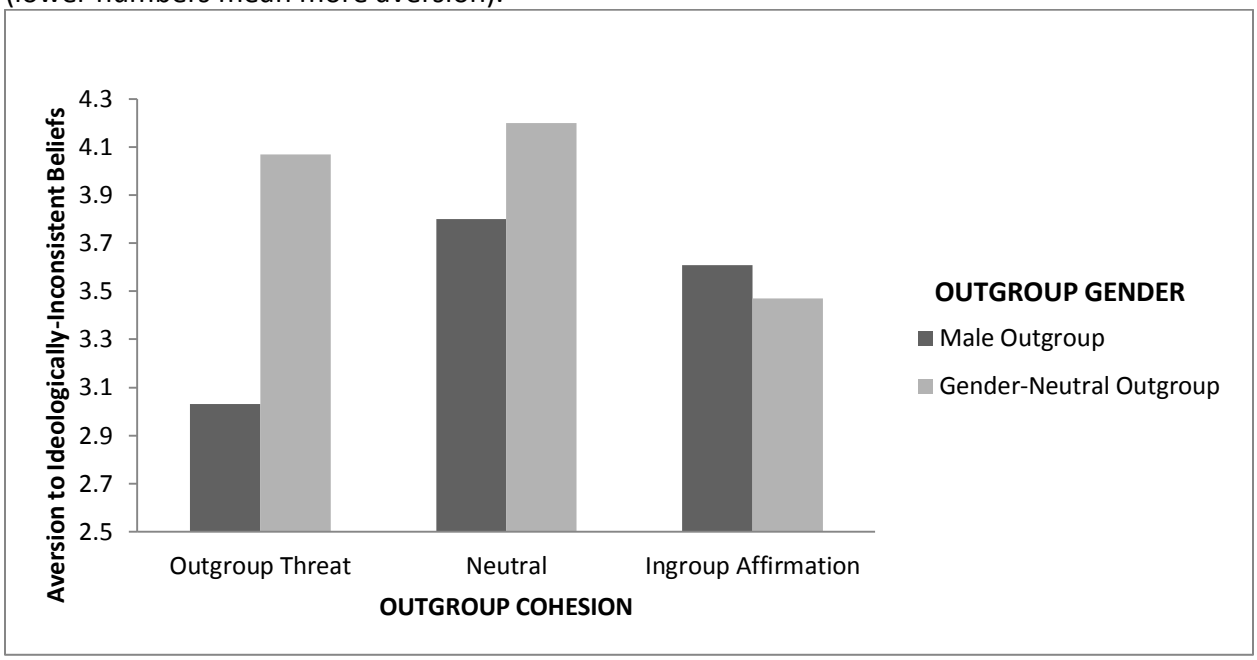
Finally, the current theoretical rationale needs to be further tested in the context of real ongoing relationships and group dynamics rather than in the more abstracted context of online responses to abstract groups. Not only did the current studies drop a significant number of

participants due to response quality exclusion criteria, but also the theory predicts that disagreements should matter most when people perceive high levels of interdependence with ingroup members in the context of real ongoing relationships. The greater the degree of perceived interdependence and the greater stake one has in one's actual ingroup standing and ingroup strength, the more salient ideological shared reality motives should be. Exploring these theoretical dymanics in real world groups and with ongoing social relationship partners will be an important set of test cases for the current theory.

The overall contribution of these studies is that they provide initial evidence to suggest that ideological shared reality motives and the aversive nature of ideological disagreements are rooted in part in an evolved psychology that is responsive to intergroup dynamics and the adaptively-relevant value of bonded and cohesive ingroups. The theory holds implications not only for why shared beliefs are psychologically valued but also for when disagreements and ideological diversity should be especially threatening. Future research should explore other evolutionarily-relevant cues signaling the need for ingroup cohesion and prosociality, as these situational cues are likely to have implications for the extent to which people may be willing to entertain ideologically diverse viewpoints and to engage in productive versus defensive debate and dialogue.

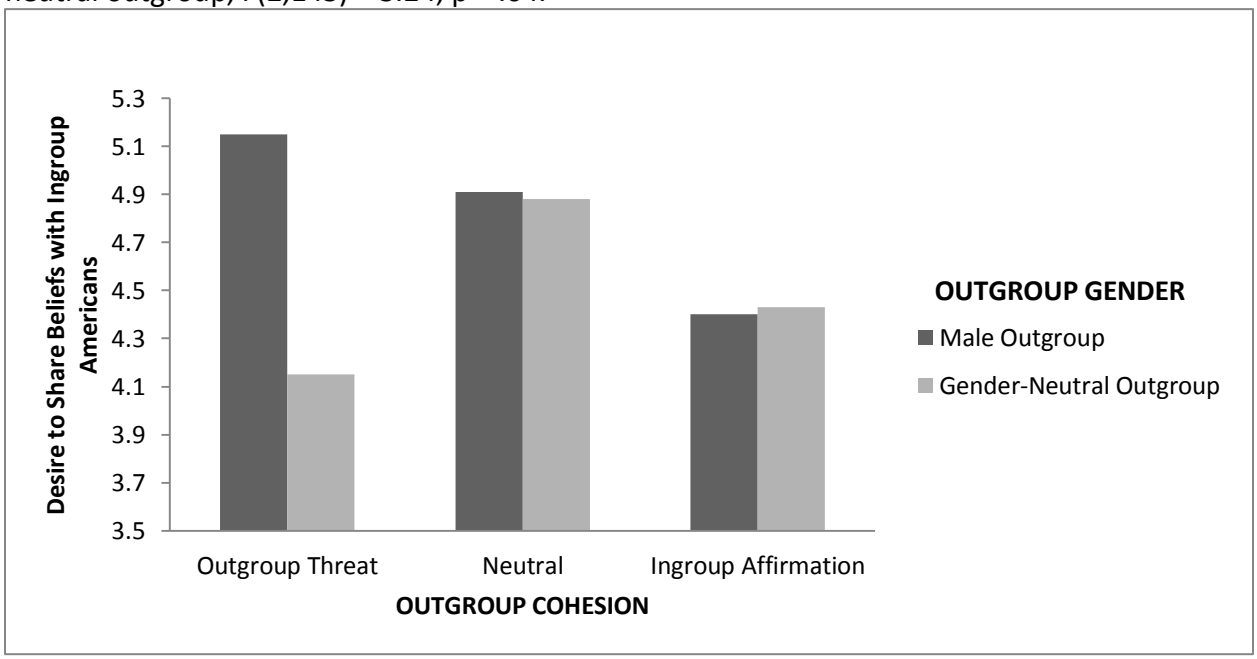
Appendix A

Figure 1: Participants showed the greatest aversion to ideologically-inconsistent beliefs (lower scores) under the Outgroup Threat condition (compared to Neutral and Ingroup Affirmation), but only under the evolutionarily-salient male-outgroup condition, F(2,122) = 5.77, p = .004 (lower numbers mean more aversion).



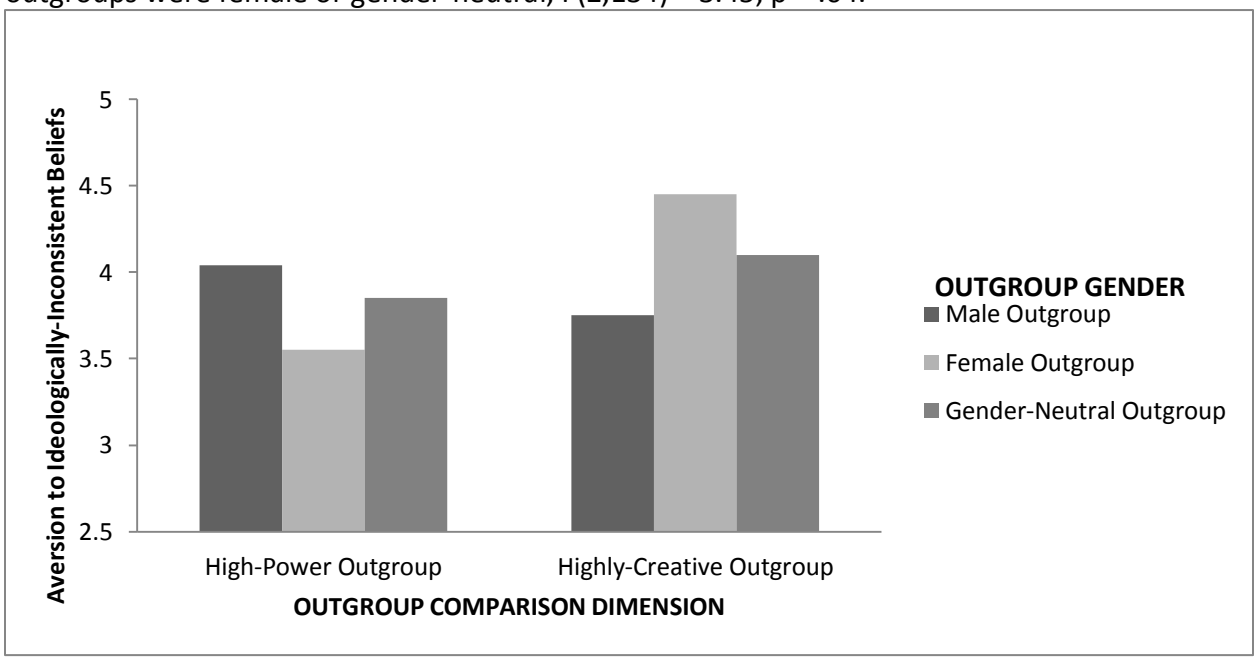
Appendix B

Figure 2: Relative to both the neutral condition and the affirmation condition, participants expressed significantly greater desire for ingroup members to share their beliefs when they were exposed to a more cohesive and thus threatening male outgroup but significantly *less* desire for shared beliefs among ingroup members when exposed to a threat from a gender-neutral outgroup, $F(2,143) = 3.24$, $p = .04$.



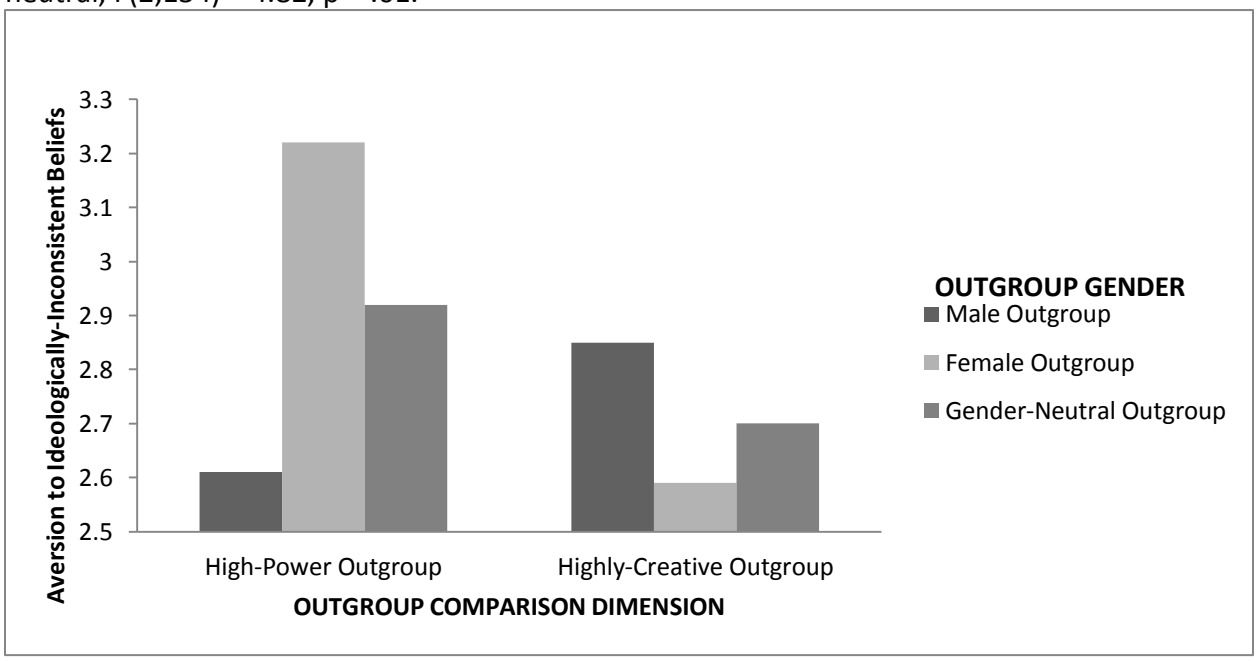
Appendix C

Figure 3: Relative to the highly-creative outgroup manipulation, the high-power outgroup manipulation caused participants to show less aversion to ideologically-inconsistent beliefs when the outgroup was male but more aversion to ideologically inconsistent beliefs when the outgroups were female or gender-neutral, $F(2,134) = 3.45$, $p = .04$.



Appendix D

Figure 4: Relative to the highly-creative outgroup manipulation, the high-power outgroup manipulation caused participants to show less aversion to ingroup dissent when the outgroup was male but more aversion to ingroup dissent when the outgroups were female or gender-neutral, $F(2,134) = 4.82$, $p = .01$.



Appendix E

Supplemental Analyses

At the request of the review committee, it was suggested that since there was no empirical reason to exclude participants who finished in under three minutes other than that it seemed likely to indicate inattention (under 1 minute was deemed reasonable to drop due to inattention, but 25 questions in 1 to 2 minutes was deemed a potentially valid response time, at least worth considering), the two primary analyses from Experiment 1 were to be reexamined with these participants included, since Experiment 1 had the greatest number of participants dropped for this reason and enough statistical power to begin to examine this group systematically.

For the first result in Experiment 1, the overall interaction pattern remains nearly the same when participants responding between 1-2 minutes are included, with participants aversion to ideologically inconsistent statements being stronger when under male outgroup threat (M = 3.38, SD = 1.34) relative to the gender-neutral outgroup threat (M = 3.82, SD = 1.50) and relative to both of the equal cohesion conditions (M = 3.72 for Male Outgroups and M = 3.97 for Neutral Outgroups) and the affirmation conditions (M = 3.57 for Male Outgroups and M = 3.55 for Neutral Outgroups). However, the main effects and the interaction effect no longer reach statistical significance when these participants are included (all F's < 2.01, all p's > .16).

Interestingly, and worth exploring in further research using this online data collection paradigm, there was a significant three way interaction for this DV when those between 1 and 2 minutes vs. those over 2 minutes were entered as a categorical moderating variable, $F(2,226) = 5.16$, $p < .05$. As the results reported in the main results section above indicate, the two main effects and the interaction effect hold when looking at the over two minute participants alone, yet when looking at the under two minute participants alone, no main effects nor interaction effects reach statistical significance (all F's < 1.50, all p's > 2.25). Still, the pattern of the means is dissimilar, with the Outgroup Male Threat condition producing the *least* aversion to ideological disagreement (M = 3.91, SD = 1.85) relative to the Gender Neutral Outgroup Threat (M = 3.35, SD = 1.40) and relative to the other conditions (the next highest mean is the Neutral Affirmation condition, M = 3.60, SD = 1.33).

A nearly identical pattern of results holds for the second DV, participants' self-reported desire to share beliefs with other ingroup Americans. The main and interaction effects reported in the primary Results section above follow a similar pattern but no longer reach statistical significance (all F's < 2.02, all p's > .14). However, the overall threeway interaction using Completion Time as a moderating variable does reach statistical significance, $F(2,226) = 3.26$, $p < .05$. However, again, looking at the 1-2 minute group alone does not yield any significant effects (all F's < 1, all p's > .32). The patterns between the 1-2 minute and over 2 minute groups, however, are not identical, with the biggest difference occurring in the Outgroup Threat conditions (the key experimental condition). Future research in this paradigm must clarify whether or not it is appropriate to assume that those responding in 1-2 minutes are simply introducing noise into the study or whether their quick response time reflects a qualitatively distinct reaction to the experimental manipulations.

Appendix F

Modified SDO Scale with volunteering specific items

1. U.S. society wouldn't need such high levels of community service if there were more public assistance programs for the disadvantaged.
2. People should volunteer for their country in order to make sure America remains on top.
3. People are right to focus their volunteering in their own communities, even if that means wealthier volunteers helping members of already well-off communities.
4. It is OK if poorer areas to have more poorly funded community service programs.
5. People should volunteer where there is the most need, regardless of whether it helps a group that they are part of directly.
6. Some groups in need simply need to help themselves first.
7. Better-off individuals should be responsible for volunteering to help the disadvantaged.
8. It would be more fair if the disadvantaged received the majority of volunteering resources.

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