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Reducing Distance to Increase Action: How psychological proximity drives political activism

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Doctor of Philosophy
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by

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For Emily and Anne.

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Education

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P. Ehret, **A. Sparks**, & D. Sherman. (2017). "Support for Environmental Protection: An integration of ideological-consistency and information-deficit models." *Environmental Politics*, 26(2), 153-177.

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Abstract

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by

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I propose the *psychological proximity hypothesis* to shed additional light on our understanding of the motivation behind political participation. When people directly experience a political issue, that is, when the political issue is psychologically proximate, they are more likely to become involved. There are two mechanisms contained within this hypothesis. First, psychological proximity leads to higher levels of issue public membership, which in turn leads to activism. Second, because psychological proximity often leads to thinking of the issue in concrete terms, people are better able to match specific political activities to address the problem. I develop the *psychological proximity hypothesis* in relation to issue-based activism across a variety of political domains in chapter two by using a combination of representative survey data from the American National Election Studies and the General Social Survey along with original data and a survey-experiment collected through Mechanical Turk. In chapter 4, I apply the hypothesis to the environment and climate change in order to examine the mechanisms more closely. In both chapters, the two mechanisms linking proximity to activism are empirically supported.

In addition to the *psychological proximity hypothesis*, in this dissertation I present a novel measure of environmental attitudes that does not suffer from a confound with liberal ideology as existing scales do. The Moral Environmentalism Scale is constructed by incorporating a mix of liberal and conservative moral language. The

MES is the only scale analyzed that is able to predict Republican environmental behavior. Furthermore, the MES is psychometrically valid. All items load on a single factor, the scale detects low and high levels of moral environmentalism, and the MES discriminates between someone who is at the low end of the scale from someone who is very pro-environment.

Contents

Chapter 1

Introduction

Political participation and psychological proximity

The conversation around police killings and systemic racism is generally occurring the nations larger cities and urban areas. Until sheriffs deputies shot and killed a white rancher in rural Idaho, police shootings were not something many residents in rural Adams County of Idaho thought about. According to one activist, a 60 year old trucker named Michael McLaughlin, "until Jack Yantis (the rancher killed), I kind of ignored [the issue]" (quoted in (Kaste, 2016)). The issue was distant, out there, in the cities, and mostly affected people from a different social group. The distance is illustrated by a quote from another activist from Idaho, "I went to St. Paul, and I had made a poster sign. And I went there worried to death, as my friends worried for me to go to that environment" (quoted in (Kaste, 2016)). Now one white truck driver is getting involved in working against police brutality and attending rallies with Black Lives Matter across the country (Kaste, 2016).

The killing of Jack Yantis suggests that when an issue becomes psychologically proximate, people can be motivated to become politically active on the issue. When

a focusing event occurs and a more abstract or distant issue becomes more local and concrete, people affected by the issue may then become politically active, even if their ideological or partisan commitments do not align with the other activists. In this dissertation, I examine how psychological proximity can motivate political participation using large-N quantitative data and survey-experiments.

The psychological proximity hypothesis

While much work has been done addressing the psychological motivation behind political participation, our understanding is incomplete. Previous work used personal issue engagement and the Civic Voluntarism Model (Verba et al., 1995) to explain who gets involved in politics and why they do so (Han, 2009), but the puzzle remains as to why someone is engaged with one issue and not another. Understanding this is crucial to optimizing mobilization strategies and to achieving greater levels of democratic engagement on issues in the face of organized political and economic power. This dissertation begins developing and testing a theory of participation that provides additional insight into this puzzle by drawing on Construal Level Theory (CLT) from research in social psychology (Trope and Liberman, 2003, 2010).

CLT has two core theoretical claims or hypotheses. The first core claim posits that a referent object, that is, an event, political issue, problem, or thing, is perceived on a continuum of psychological distance (Trope and Liberman, 2003, 2010). What is "distance" in CLT? There are four types of distance: spatial, temporal, social, and hypothetical. Spatial distance is literally geographic distance (Trope and Liberman, 2010). How many miles does a person live from the place or places that face the problem? For example, for a person living in Santa Barbara, CA, the site of the Dakota Access Pipeline protests is approximately 1,600 miles away. For that same

person, the problems of urban decay in central cities are 75 miles away in South Central Los Angeles, and the problem of potential oil spills from offshore oil platforms is within view across 16 miles of ocean and any spilled oil might wash up on the shore only a mile away. In other words, spatial distance is a spectrum, moving from proximate, direct experience, to very distant. A recent study in political science showed that people who live closer to the Keystone XL pipeline tweet about the issue using more concrete language and people living farther away use more abstract langauge (Hodges and Stocking, 2016).

Temporal distance is the amount of time until the problem occurs or the consequence of the problem must be faced (Trope and Liberman, 2010). For example, climate change is often spoken of in terms of future impacts. Consider the difference between a person who hears that continuing carbon emissions will cause a 2 degree Fahrenheit increase in temperature in 100 years in comparison to a person who hears that climate change is already causing an increase in extreme weather events. Another example of temporal distance from a recent book in political science, shows that planning for post-war operations in the more distant future often lack the detail necessary for an effective strategy (Krebs and Rapport, 2012).

Social distance is the perceived distance for how a problem affects people different from the individual (Trope and Liberman, 2010). That is, how far removed, socially, is the individual from those affected by the problem. For example, a person living in the Hollywood Hills of Los Angeles is spatially close to South Central Los Angeles. However, for the Hollywood dweller, racial profiling in South Central may feel very socially distant because of how different the two social groups are from each other. But, for a problem like traffic congestion that affects both social groups similarly, there would be little difference in social distance between the two groups.

Hypothetical distance is the probability a person assigns to whether or not a problem will affect him or her (Trope and Liberman, 2010). In other words, when given a potential event or impact, the individual will assess how likely it is to impact him or her. Again, an appropriate example comes from climate change. The inherent uncertainty associated with predicting specific events, such as a hurricane, based on a warming planet tends to convey a lower likelihood of a climate change-induced hurricane affecting people in a hurricane prone area. An opposite case would be the high degree of certainty a person has that if she drops a ball, gravity will cause the ball to fall to the ground.

The second core claim of CLT is that the spectrum of proximate to distant tends to map onto a continumm of concrete to abstract thinking about the referent object (Trope and Liberman, 2010). Generally, psychologically proximate issues are construed concretely and distal issues are construed abstractly. Concrete ways of thinking tend to be detail-oriented (Trope and Liberman, 2010). For example, if you live in Santa Barbara, you will think about the details of an oil spill in the Santa Barbara Channel near your home. You may think of not being able to enjoy the beach on a sunny Friday afternoon or seeing your favorite species of seabird struggling to take flight because its wings are covered in crude oil.

Abstract ways of thinking are not detail oriented, and instead rely on thinking in terms of worldviews (Trope and Liberman, 2010). Abstract, higher level construals, tend to be related to ideology (Fujita, 2008). As such, CLT is an important causal mechanism explaining how public opinion is formed on political issues. For example, if you are a liberal and live in Minnesota, you may reason from a liberal perspective about how an oil spill may be prevented by additional regulation or better enforcement of existing regulations. Or, instead, if you are a conservative, you may reason that oil

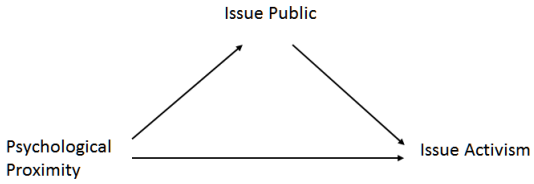
companies have an economic incentive to prevent oil spills and will thus take action to self-regulate.

I hypothesize that psychological proximity often precedes the decision to act, on a specific political issue. This is obvious in one sense; an issue typically becomes personally important before one is motivated to act. Consider several examples. One may be part of a conservative Christian social group and see that her peers are active on the abortion issue and so become active herself (Munson, 2009). A close friend could be diagnosed with AIDS, and then you may become an AIDS activist (Jennings and Andersen, 2003). A nuclear plant could be slated for approval nearby, and then one may become an anti-nuclear activist. A school shooting may occur, which results in many that were affected to become advocates for a stricter gun access law. Or conversely, many may support the NRA to oppose stricter regulations. In all of these examples, an event that is psychologically proximate preceded political action.

The *psychological proximity hypothesis* states that when an issue is proximate, people are more likely to engage in political activism on the issue. As the path diagram in Figure 1.1 illustrates, there are two causal mechanisms at play with psychological proximity leading to activism. The first mechanism, what I call the issue public mechanism, relies on issue public membership to moderate the relationship. When an issue is proximate, people tend to care more about it. Once their concern reaches a certain threshold, specified by membership in the issue public, they are sufficiently motivated to act. Given the research on participation leading to policy (Griffin and Newman, 2005), psychological proximity then is an important factor affecting policy outcomes.

The second mechanism, what I call the concrete mechanism, connects proximity directly to activism. When an issue is proximate, people tend to construe the issue

Figure 1.1: Simple path diagram illustrating the *psychological proximity hypothesis*



concretely. People are then more likely to take a specific action, when presented with one, because they are able to perceive the link between a concrete problem and a specific action that addresses it.[1]

To illuminate the issue public mechanism of the *psychological proximity hypothesis* consider once again the story of Michael McLaughlin, the white truck driver from rural Idaho, who organized protests against police brutality after was shot. When Jack Yantis was killed the issue became proximate, and in McLaughlin's own words, he could no longer ignore it. He became very concerned about police killings and militarization, that is, he joined the police brutality issue public and became a local organizer for the protests.

The second mechanism, the concrete mechanism, may also be at work in this example, although it is harder to measure. The protests McLaughlin organized, dubbed 'Justice for Jack' focused on specific policy changes, namely ensuring that body cameras are turned on when deputies interact with the public, to hold police more accountable (Kaste, 2016). Thus, it seems reasonable to assume that when police brutality became proximate, people like McLaughlin began thinking concretely about solutions to the problem. Then, he organized protests around the specific goal of improving accountability for the sheriff's department.

[1]Regardless of whether or not an issue is proximate, if someone is politically involved in it, the issue will then become more proximate (more directly experienced), or more directly tied to ideological goals. Because of this inherent difficulty in identifying causality, experimentation becomes especially important.

Explaining political participation

Although decisions to participate, what issue to be involved with, and what type of action to engage in, are shaped largely by structural and organizational factors, ultimately an individual has to make the conscious decision to act or not. Trying to understand this decision making process leads to the field of political psychology and making sense of the cognitive processes that lead to political action. Before digging into the cognitive processes involved in this decision, it is important to take account of the context outside the individual that shapes participation.

Political participation involves an individual engaging in behaviors that are aimed at expressing a political voice. In addition to voting, traditionally this has meant attending public meetings, joining civic organizations, signing petitions, attending rallies or protests, giving money to campaigns, and writing to an elected official. Creating an index of these activities has been a standard way to measure participation as a dependent variable, for example, in (Han, 2009). However, given the decline in group memberships and corresponding behavior (Putnam, 2000) it has been suggested that citizenship norms are changing (Dalton, 2008). Whether or not the norms are changing, it is clear, as a section below highlights, that modes of participation are changing, so when I measure activism in this dissertation I include an item relating activity on social media.

The *psychological proximity hypothesis* fits into a more comprehensive model of political activism. The Civic Voluntarism Model (Verba et al., 1995) is constructed from three pieces: "resources, psychological engagement, and access to networks" for political action (p. 267). Resources are the first component. Resources refer to the time, money, education, and skills an individual is able to commit to civic voluntarism. Psychological engagement with politics requires an individual to have

both knowledge about political events and believe there is something to be done about current political problems. Recruitment is important because people will often get involved if someone asks them to. The effect of this is stronger if they know the person well. The practical consequences of this model are that voice and equality are not distributed evenly among the American population. Because resources play such an important role in the model, those who are most politically active have tended to be upper-middle class, educated, and white.

A key factor in political participation, as demonstrated in the *psychological proximity hypothesis* is membership in an issue public (Han, 2009). Since Converse's 1964 important work on belief systems, political scientists have known that the there is little structure to the beliefs held by the mass public. It was also in this work that Converse described issue publics as an exception to this general finding. Issue publics are groups of individuals that pay close attention to an issue and are quite knowledgeable about it.

In a definitive work on issue publics Krosnick 1990 suggests that an individual is a member of an issue public for three possible reasons. First, the issue concerns their material self-interest. Second, the social group they belong to recognizes the issue as being very important. And third, someone is in an issue public when the issue concerns their deeply held values (Krosnick, 1990). The issue public mechanism of the *psychological proximity hypothesis* does not ignore these factor[2] but instead adds psychological proximity as an important driver of issue public membership.

Issue public membership has important effects beyond political activism. Being a member of an issue public leads to preferentially seeking out information about that issue (Iyengar et al., 2008). As a result, if someone is in an issue public at all they tend

[2]In my analysis in the following chapters I include these variables as controls.

to only be in one. However, there is a group of multi-issue activists that care about multiple issues (Andersen and Jennings, 2010). Members of an issue public evaluate candidates based on their position on that issue (Anand and Krosnick, 2003).

Of course, the decision to participate does not happen in a vacuum, social context provides another powerful predictor of action (Sinclair, 2012). When people in an individual's social network are politically active, they are more likely to be active as well. This is in part due to the influence friends and family members can have on each other's lives. Individuals are motivated to act in accordance with social norms and behaviors to affirm their place in the group. So, if their group is composed of activists, they will be more likely to be active as well (Sinclair, 2012).

In addition to social factors, the strategies organizations use to engage their membership create the types of opportunities people have to get involved. What issues are prioritized? What tactics are used to mobilize? These questions are decided by strategic actors within organizations, and these decisions can have profound impacts on who gets involved and what they do once they are.[3]

It is within this broader literature where I situate the *psychological proximity hypothesis*. To provide evidence for this hypothesis, I control for factors postulated by the CVM. In the next section, I summarize each chapter to outline how I make the case for psychological proximity as an important predictor of political activism.

[3]For a complete discussion of these factors see (Han, 2016).

Dissertation Chapter Summaries

Chapter 2: Issue-Based Activism: The Psychological distance of an issue predicts action

The purpose of this chapter is to parse both mechanisms of the *psychological proximity hypothesis*. In Study 1, I use a proxy for psychological proximity to predict issue public membership. In Study 2, I examine the extent to which the psychological proximity of specific issues leads to activism on those issues. In Study 3, I apply original data and novel measures of psychological distance to show how psychological proximity boosts participation. Embedded within this survey is a randomized experiment that allows for a test of the causal effect of psychological proximity on participation. In line with expectations, all three studies support the argument that psychological proximity leads to higher levels of participation on particular issues.

In this chapter I look broadly at political activism, both generally and in terms of specific issues. In Study 1, I investigate the issue public mechanism of the *psychological proximity hypothesis* by estimating models for 16 issue publics using proxies for proximity as the independent variable. The results are mixed, in some cases, proxies of psychological proximity are associated with issue public membership and on other issues the opposite is true. This is likely due to inexact measurement. I also look at the next step in the issue public mechanism by using issue public membership to predict general political participation.

Study 2 looks specifically at activism on race relations and women's rights in order to examine the concrete mechanism of the *psychological proximity hypothesis*. Variables approximating proximity to these issues are associated with higher levels of activism on each issue even when controlling for other important factors.

I integrate original data, novel measures of psychological proximity, and an experimental condition to demonstrate evidence for the causal connection between psychological proximity, issue public membership, and issue activism in Study 3. First, measures of psychological proximity predict membership in a particular issue public, and issue public membership predicts action. In this way, I support the issue public mechanism of the *psychological proximity hypothesis*. Second, an experimental prime to remind participants of their personal connection to the issue they stated as being the most important is shown to lead to higher levels of observed political activism. Participants were given the opportunity to write a message to their member of congress. The experimental group randomly assigned to the prime of personal connection to the political issue participated at a higher rate than the placebo group. Therefore, this result provides causal evidence for the concrete mechanism of the *psychological proximity hypothesis*.

Taken altogether, this chapter demonstrates support for the *psychological proximity hypothesis*. Simply, evidence shows that psychologically proximate issues correlate with higher levels of issue public membership which in turn lead to more political activism on that particular issue. And, even when controlling for this relationship, psychological proximity exerts a positive effect of political activism. Hence, both mechanisms find support.

Chapter 3: The Moral Environmentalism Scale: Using Moral Foundations theory to develop an unbiased measure of environmental attitudes

Before positing a model of environmental activism in Chapter 4, I develop a novel measure of environmental attitudes - the Moral Environmentalism Scale (MES)

- using Moral Foundations Theory (Graham et al., 2009; Iyer et al., 2012). This measure serves as a key part of the theoretical model I propose in Chapter 4 that looks specifically at environmental activism. While existing measures of environmental attitudes have been proven to explain a range of pro-environmental behavior, they likely suffer from a confound with liberal ideology. The MES seeks to avoid the liberal confound by incorporating language typically associated with conservative morality, in addition to words relating to liberal morality as is seen in the existing scales.

The case for a new measure is made in Chapter 3, along with findings demonstrating that the MES is theoretically strong and psychometrically valid, and it better predicts pro-environmental behavior among Republicans better than the New Ecological Paradigm scale (Dunlap et al., 2000) and the Connectedness to Nature Scale (Mayer and Frantz, 2004). In each study, I use factor analysis and Item Response Theory to assess items within the scale. Over the course of four studies, some items are dropped, others are added, and some are revised to address concerns flagged in the psychometric analysis. The end result is a 27 item scale with a Cronbach's alpha of 0.94. Factor analysis reveals a single underlying construct. Findings from a generalized partial credit model, from IRT, demonstrate a range in difficulty and adequate levels of discrimination. And most importantly, the final scale predicts environmental behavior among Republicans and the alternative scales do not.

Chapter 4:Climate Change in Your Backyard: When climate is proximate people take action

This chapter further develops the *psychological proximity hypothesis* by looking specifically at environmental activism. In the first study, GSS 2010 data is used to replicate the correlational findings from Chapter 2 in the environmental domain. A

psychological proximity variable predicts membership in the environment issue public. And environmental issue public membership positively predicts environmental activism, demonstrating support for the issue public mechanism. Additionally, proximity remains an independent factor of environmental activism, lending support for the concrete mechanism.

Study 2 uses original data from a Mechanical Turk sample of Californians to provide additional evidence for the *psychological proximity hypothesis*. This study also allows me to incorporate the MES into a broader study of climate activism. The issue public mechanism is sustained by results showing that proximity predicts issue public membership and issue public membership predicts climate activism. When people perceive climate change to be more psychologically proximate, they are more likely to say they will take action. An embedded experiment using a California map of climate change temperature increases compared to a global map of temperature increases and a control group did not yield significant results.

Chapter 5: Conclusion

In the final chapter I review the findings from the previous three empirical chapters. I also lay out the next steps for research to further develop this theory of psychological proximity leading to issue public membership and activism. Lastly, I discuss practical implications of the findings presented in the preceding chapters.

Chapter 2

Issue-based Activism: The psychological proximity of an issue predicts action

Abstract

The *psychological proximity hypothesis* provides additional insight into what motivates people to take political action. Personal issue engagement provides the motivation to get involved (Han, 2009). But, the puzzle remains as to why an individual is a member of an issue public in the first place, and why they are a member of a certain issue public, and not another. The question, as to what drives issue public membership, is an important step in developing a fuller understanding of the individual-level drivers of political participation. I argue that psychological proximity (Trope and Liberman, 2003, 2010) can help answer this question. In Study 1 of this chapter, I find mixed results for psychological proximity being associated with issue public membership with data from the 2008 ANES. In Study 2, I use data from the 1983 GSS -

the only year when issue specific participation questions were asked[1] to test the direct effect of psychological proximity on activism on women's rights and race relations. This analysis shows that the psychological proximity of the issue is correlated with activism on that issue specifically. Lastly, Study 3 uses an online sample and novel measures of psychological proximity to test the relationship further. Experimentally priming psychological proximity provides support for a causal relationship between the personal connection to an issue and taking action on it.

Introduction

Organizations across the political spectrum build power by recruiting new members and engaging their members in some form of collective action, whether it be a letter writing campaign or attending a rally. There are many ways organizations try to get people more involved. One commonly used tactic is to frame the issue in a way that causes people to feel personally connected to that issue. This tactic operates on several levels. Priming identity, increasing empathy, and providing information that may be useful for a cost-benefit analysis are just a few of the mechanisms that are likely at play. Another less understood mechanism, especially in the political science literature, is psychological proximity, which comes from Construal Level Theory (CLT) (Trope and Liberman, 2003, 2010).

The first proposed mechanism of the *psychological proximity hypothesis* is that the relationship between proximity and activism is moderated by issue public membership, what I refer to as the issue public mechanism. When a political problem is directly experience by an individual, he or she is likely to care more about that issue.

[1]GSS does ask questions about environmental activism in other years. I use data from 2010 GSS in Chapter 4.

As previous work has shown, when people care deeply about an, when they are in the issue public, they are more likely to take action (Han, 2009).

The *psychological proximity hypothesis* holds that when an issue is experienced in the 'here and now' by the individual (Trope and Liberman, 2010), the individual will tend to think about the issue in concrete, rather than abstract terms, hence the concrete mechanism. Thinking concretely about how an issue affects the individual makes it easier to think about what types of concrete actions could be performed to address the issue. So, if organizations are able to decrease the psychological distance between a member and a particular issue, they make it easier to motivate the member to take part in a particular action that is part of their campaign.

This chapter investigates the *psychological proximity hypothesis* by looking at issue-specific activism. I use three studies to examine this relationship. In Study 1 I examine the second mechanism, that proximity leads to higher levels of concern, which then leads to activism. I employ data from the 2008 American National Election Study. I use variables that serve as proxies for measures of psychological proximity to test their relationship to membership in a particular issue public. Results are mixed. On some issues, proxies for psychological proximity positively predict issue public membership, but on others they do not. I then show that issue public membership does predict political participation.[2]

In Study 2, I use data from the 1983 General Social Survey to look specifically at activism concentrated on two issue areas: women's rights and race relations. Membership in the issue public was not a significant predictor of activism of either issue. However, measures related to psychological proximity positively correlate with activism. The analysis in Study 2 allows me look correlationally at both of the proposed

[2]Han 2009 showed this previously, but not with these data.

mechanisms of the *psychological proximity hypothesis*. The psychological proximity of both issues predicts action and membership in the issue public. However, issue public membership, when including proximity in the model, does not predict activism.

Study 3 incorporates data collected using Amazon's Mechanical Turk to look more directly at the causal mechanisms behind the *psychological proximity hypothesis*. By gathering original data, I am able to measure psychological proximity and embed an experiment within the survey. Results provide strong evidence for the hypothesis. First, my measures of psychological proximity predict issue public membership which also predicts activism. Second, the experiment provides causal support for the first mechanism, that proximity causes activism when linked to a specific activity. Respondents in the treatment condition, which primed them to think specifically about a political problem and how it affected them, were more likely to write a message to their member of Congress than respondents assigned to the placebo condition.

Study 1: Examining proximity and issue public membership

The purpose of Study 1 is to develop a model of participation incorporating psychological proximity. However, because the data do not include variables for specific issue activism, I must do this in several steps. I investigate the *psychological proximity hypothesis* by looking at how proxy measures of proximity relate to membership in specific issue publics. Then, I show that issue public is indeed a predictor of political participation on two separate measures of activism. The two-stage analysis provides a test of the issue public mechanism.

The data in this analysis come from the 2008 American National Election Study

(ANES). This survey included an embedded experiment wherein respondents were randomly assigned to two groups one using the old wording of questions and the other half using new question wording. These two versions were combined in this analysis in order to maintain a large sample size.[3] Ordinary least squares regression is performed using both the pre- and post-election surveys. Accordingly, the sample size is approximately 2100 before NAs are omitted. The post-election survey weight variable is used to ensure a representative sample.

Issue Public Membership

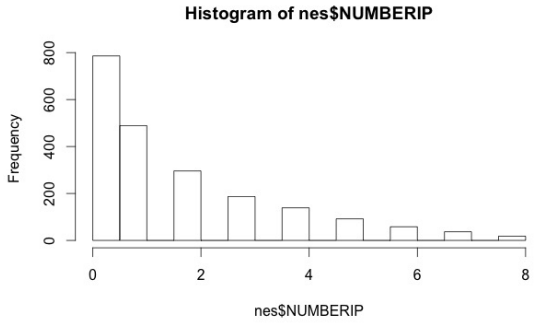
Issue public membership is the key independent variable in this analysis and is created in multiple steps. First, respondents were asked to indicate how important several issues were to them, from "Not important at all" to "Extremely important." Respondents who answered "extremely important" were placed into the category of being a member of the issue public, following Han 2009. Twelve separate issues are included. Four issues are asked of all respondents: spending on social services, aid to blacks, defense spending, and gun access. Eight more are asked, splitting the sample randomly by the old and new questions. From the old questions: government insurance, guaranteed job and income, environment and jobs trade-off, and the role of women. From the new questions: universal health coverage, illegal immigrant work period, citizenship for illegals [sic], and drug coverage for seniors.

I added all eight dummy variables together to create a new variable. Effectively, the range of this variable counting the number of issue publics each person is a member of is zero to eight. The mean is 1.61, indicating that on average, people are in less than two issue publics. A histogram, Figure 2.1, of the variable for the number of issue publics indicate that zero is the largest category and eight is the smallest. The

[3]The information sheet at www.electionstudies.org states that this is a valid way to use the data

modal value among people in an issue public is one. From there, the frequency drops so that very few people indicate they are members of all eight issue publics. A new dummy variable for membership in an issue public is created by placing respondents into that category if they were in at least one issue public. Over half of the sample, 61% are members of at least one issue public.

Figure 2.1: Histogram of number of issue publics a person belongs to



Does psychological proximity predict issue public membership

The ANES data allow for a cursory test of the *psychological proximity hypothesis*. Using each issue public as a separate dependent variable, I build a set of 16 simple OLS models to test the association of psychological proximity and ideology with membership in that issue public. The ANES does not contain many satisfactory items that tap into psychological distance. I use individual characteristics - for example race, gender, and employment - to approximate psychological proximity to race, gender, and employment issues, respectively. I include the seven point liberal-conservative scale as a single measure of ideology. I also test the interaction of proximity and ideology to see the conditional effects of proximity. The hypothesis I test is that when an issue is psychologically proximate and in line with ideological preferences, the individual is more likely to be a member of that issue public. The ANES asks

about 8 issues. I test this hypothesis across 16 separate models to include both ideological sides of each issue. The results from all 16 OLS models to determine the relationship between proximity, ideology, and membership in those particular issue publics can be found in the Appendix.

Table 2.1 shows results from an OLS regression on membership in the citizenship issue public and the defense spending issue public.[4] The ANES first asks, "Do you favor, oppose, or neither favor nor oppose the U.S. government making it possible for illegal immigrants to become U.S. citizens?" Then, the respondent is asked, "How important is this issue to you personally?" Response categories range from "Not important at all," to "Extremely important." Respondents who selected extremely important are place into the issue public membership. I use a dummy variable for Latino as a proxy measure of psychological proximity. People tend to associate undocumented immigration with people from Central and South America, so a Latino should be more likely to view citizenship as psychologically proximate. Some may be immigrants themselves, and at the very least, they may see immigrants as a socially proximate group because they share the same heritage.

The defense spending question stem begins with, "Some people believe that we should spend much less money for defense. Others feel that defense spending should be greatly increased. Where would you place yourself on this scale or haven't you thought much about this?" Respondents are then asked, "How important is this issue to you personally?" Being a member of the defense spending issue public means that the respondent selected that defense spending is an 'extremely important' issue. I use a dummy variable, indicating whether or not the respondent is currently or formerly a member of the military, as a proxy for psychological proximity. Current and former

[4]I include these two in the main text because they are indicative of the mixed findings.

members of military have direct experience in the military, and thus should perceive the military as being psychologically proximate.

Table 2.1: Impact of psychological proximity and ideology on citizenship and defense spending issue public membership

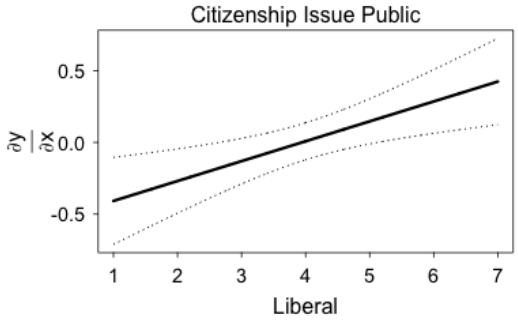
	Citizenship(1)	Defense(2)
Latino	−0.547**	
	(0.236)	
Liberal (1-7)	−0.047***	
	(0.015)	
Liberal*Latino	0.139**	
	(0.055)	
Military		0.278***
		(0.104)
Conservative (1-7)		0.005
		(0.008)
Cons.*Military		−0.051**
		(0.022)
Constant	0.469***	0.168***
	(0.060)	(0.036)
Observations	396	1,190
Adjusted R^2	0.023	0.004

Note: OLS regression coefficients. Standard errors in parentheses.
Source: 2008 ANES.*p<0.1; **p<0.05; ***p<0.01

Interestingly, Latinos in general are significantly unlikely to be in the citizenship issue public. Yet, as demonstrated in Figure 2.2, liberal Latinos are significantly likely to be in the issue public for citizenship. At higher levels of liberalism, Latinos view citizenship for undocumented immigrants as extremely important. These findings

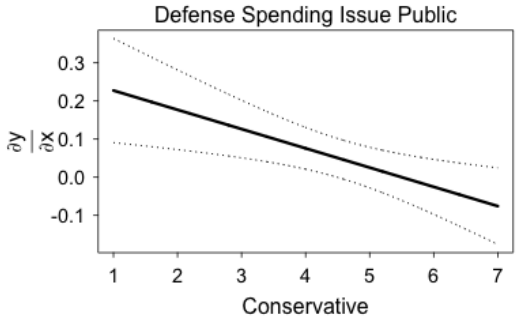
suggest that more conservative Latinos do not see citizenship as an extremely important problem. One reason for this may be because they believe immigration should occur legally. It is likely that Latinos included in the ANES immigrated legally or have since become citizens themselves; otherwise they would not be included in the ANES sampling frame.

Figure 2.2: Marginal effects of Latino*Liberal on being in the citizenship issue public (with 90% confidence interval)



In model 2, current and former members of the military are significantly more likely to be in the issue public for defense spending. However, and surprisingly, conservative members of the military are less likely to be in the issue public as shown by Figure 2.3. One potential reason for this finding is that members of the military who are also conservative have the experience to know that there is sufficient funding for the military in addition to holding conservative attitudes about government spending in general.

Figure 2.3: Marginal effects of Military*Conservative on being in defense spending issue public with 90 % confidence interval



Results and Discussion

The results are mixed. On some issues the *issue public hypothesis* mechanism linking proximity to issue public membership is supported. For example, Latinos who are also liberal are more likely to be members of the issue public of citizenship for undocumented migrants, but only among the most liberal. This is shown by figure 2.2. The marginal effect plot, with 90% confidence intervals, shows an upward sloping line. The y axis value is only significantly distinct from zero at the most liberal end of the scale. On many issues, shown in the appendix, there are not significant findings. In some cases, the results appear to contradict the hypothesis. Figure 2.3 shows that as conservatism increases for a member of the military, the respondent is less likely to be in the issue public. The 14 additional models can be found in the Appendix and also show mixed and contradictory results.

Another problem is that these models are only able to test one side of the issue at a time. Both liberals and conservatives may be in the issue public for citizenship, even though their position on the issue may be at opposite ends of the political spectrum.

So, a model that uses Latino and liberal as the predictors for the citizenship issue public only capture individuals who would be more likely to be in the issue public from the side that citizenship access should be expanded for immigrants. But many conservatives would also be in the issue public, even though they are likely to oppose the expansion of citizenship. In this example, the ANES does not contain an adequate proxy for proximity in order to capture the conservatives in the citizenship issue public. This absence sets up a difficult hypothesis test because only one partisan side of the issue is captured in the issue public variable. The threshold for positive results is much higher than it would be if there was a measure of distance for both liberals and conservatives on citizenship and some of the other issues ares.

Issue publics and participation

The previous section looked at how psychological proximity predicts issue public membership, this section fills in the model between proximity and activism. In this section, I extend test of test of the *psychological proximity hypothesis* to examine the correlation between issue public membership political participation. The single dichotomous item for issue public membership is used as I specified above.

Political Participation

I operationalize political participation in two ways. The first measure is an index, bound between zero and one, of participatory acts during the 2008 Presidential election. These are voting in the 2008 election, wearing a campaign button or having a campaign sign, attending a meeting, rally, or speech, doing campaign work, contributing to a candidate, contributing to a party, and contributing to another political group. The election index scale has a mean of 0.18 with a standard deviation of 0.17, meaning, people on average perform about one activity. The Cronbach's alpha is 0.64

and factor analysis shows that all items load on a single factor (see Table A.1 in the Appendix).

The second indicator, the activity index, is measured in the standard way, using the ANES items that ask if the respondent has ever attended a protest, attended a city meeting, signed a petition, given to a political organization, attended a political meeting on a specific issue, invited others to a political meeting, and distributed political information (Verba et al., 1995). The activity index, also bound between zero and one, has a mean of 0.31 with a standard deviation of 0.30 meaning that people on average engage in about two activities. The index is reliable with a Cronbach's alpha of 0.83 and factor analysis shows that all items load strongly on a single factor (See Table A.1 in the Appendix).

The operational hypothesis I test is, *ceteris paribus,* individuals who are members of an issue public participate in politics at higher levels than those who are not member of an issue public. Ordinary least squares regression estimates the coefficient representing this relationship. I specify control variables as suggested by the civic voluntarism model (Verba et al., 1995). Table 2.2 presents the results.

Table 2.2: Impact of issue public membership on two activism scales, controlling for other factors

	Election Index(1)	Activity Index(2)
Issue public member	0.015^{**}	0.027^{**}
	(0.007)	(0.012)
Strong party	0.044^{***}	-0.011
	(0.008)	(0.013)

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Table 2.2 – continued from previous page

	Election Index(1)	Activity Index(2)
Political interest	0.023***	0.027*
	(0.008)	(0.014)
Political efficacy	0.003**	0.002
	(0.001)	(0.002)
Political attention	0.015***	0.031***
	(0.004)	(0.007)
Attention to campaign	0.010**	0.018***
	(0.004)	(0.007)
Political knowledge	0.021***	0.039***
	(0.004)	(0.007)
Education	0.013***	0.054***
	(0.003)	(0.004)
Income	0.004	0.007
	(0.003)	(0.004)
Defend opinion	0.005	0.020***
	(0.003)	(0.005)
Recruitment	0.033***	0.051***
	(0.003)	(0.005)
Native parents	−0.0003	0.052***
	(0.009)	(0.016)
Employed	−0.009	0.026*

Continued on next page

Table 2.2 – continued from previous page

	Election Index(1)	Activity Index(2)
	(0.009)	(0.015)
Retired	−0.005	−0.062***
	(0.013)	(0.022)
Catholic	−0.0004	0.006
	(0.008)	(0.014)
Age	−0.001**	0.0003
	(0.0003)	(0.0005)
Know where to vote	0.011	−0.026*
	(0.008)	(0.013)
Often vote	0.025***	0.042***
	(0.004)	(0.006)
Care about election	0.016*	−0.001
	(0.009)	(0.016)
Observations	1,834	1,834
Adjusted R^2	0.360	0.408

Note: OLS regression coefficients. Robust standard errors in parentheses.

Source: 2008 ANES.*p<0.1; **p<0.05; ***p<0.01

Consistent with expectations, being a member of an issue public is a positive and significant predictor of political participation, even while controlling for the effects of the factors known to be strong predictors of participation in the Civic Voluntarism

Model (Verba et al., 1995). The small size of the coefficients is not surprising given the zero to one bounds of the dependent variable.

Results and Discussion

The results from this regression analysis show that issue public membership is indeed an important predictor of political participation, especially in the case of general political activity, rather than campaign specific participation that may be more driven by the particulars of any given campaign, which is why the coefficient is smaller. In 2008, the Obama campaign organized a record amount of grassroots activists, in part because of the campaign's presence on social media and emphasis on grassroots organizing (McKenna and Han, 2014). This campaign strategy is not well captured by the 2008 ANES items.

The results from Study 1 suggest that being a member of an issue public is a predictor of general political participation. The 2008 ANES does not provide adequate measures of potential covariates of issue public membership; however, the mixed results do suggest that additional study is warranted. More importantly, the 2008 ANES, asks about membership in specific issue publics, but does not ask about activism on those particular issues. Instead, only general political participation is measured. So, it is not possible to examine the relationship between a specific issue public with political actions related to that specific issue.

Overall, Study 1 provides partial evidence for *psychological proximity hypothesis* mechanism that proximity leads to issue public membership, which then leads to activism. There is mixed evidence that the proxy variables of proximity available in the ANES are associated with specific issue publics. Yet, being a member of an issue public is related to political activism. What these data do not allow, is an

examination of issue public membership and activism on that particular issue. I turn to this question in Study 2.

Study 2: Issue-Specific Activism

The 1983 General Social Survey provides specific measures of issue-based activism on two issues: race relations and women's rights. For both of these issues, the GSS asks three questions about participation. It also asks the issue importance question that is used to capture issue public membership. Half of the survey sample was asked about race, and the other half was asked about women's rights. Approximately 1500 respondents are in each group. Despite this large sample size, fewer than 100 respondents reported activist behavior on either issue. Because this number is so small the model is under-powered statistically, making it difficult to identify significant factors. The OLS model from Study 1 is replicated as closely as possible, including measures of issue public membership and psychological proximity for each issue. Unlike the ANES, and other years of the GSS, efficacy questions were not asked in the 1983 iteration, so they are not included in the model. Study 2 allows for an indirect test of both of the proposed mechanisms of the *psychological proximity hypothesis*. Multivariate regression tests the relationship between issue public membership and participation, as well as psychological proximity and participation while controlling for other individual characteristics.

Issue Public Membership

Issue public membership is operationalized in a similar way as in Study 1. I create a dummy variable from each issue importance question. This question was asked for both the race relations issue and the women's rights issue. The item in the GSS is slightly different in that the highest category is "the most important," instead

of "extremely important" as the ANES uses. Item wording is more restrictive in the GSS because it suggests that the respondent would have to believe that race relations or women's rights is the the most important issue facing the country. This is more restrictive because it takes a higher level of concern to say that an is issue the most important rather than extremely important. Many issues may be extremely important to someone, but only one issue, by definition, can be the most important.

Psychological Proximity

For both issues, there are four items that tap a construct related to psychological proximity. The first asks about how much information that respondent has about the issue. The second asks, "how concerned are you personally" about the issue. The third asks about how firm the respondent's opinion is on the issue. The fourth asks "how often ... you and your friends think" about the issue. Each of these items are included as ordinal variables in the analysis.[5]

Operationalizing psychological proximity in this way differs from the approach typically seen in the psychology literature. Those studies are experimental and rely on a manipulation to alter psychological distance, rather than an item in a survey. Other studies use geocoded data to measure the physical distance between a subject and the referent object (Hodges and Stocking, 2016). However, these GSS questions do ascertain how closely the respondent would place the political issue to them personally. For example, frequently thinking about race relations would indicate a more psychologically proximate relationship of the individual to race relations than infrequently thinking about race relations.

Issue Specific Activism

A composite measure of activism on each issues is constructed by averaging three

[5]I also included these variables as an index, excluding the item about thinking about race relations, and the results do not change.

items. The first asks if the respondent has ever written a letter to a public official to express views on women/race. The second asks if the respondent has ever given money to organization that is concerned with women/race. The third asks if the respondent has ever joined an organization concerned with women/race. Responses to all three of these items are recorded as binary, yes or no. These three variables are then summed and divided by three, creating a continuous variable bound between zero and one, just like the dependent variable for participation in Study 1. Factor analysis shows that all items for each issue load on a single factor (see Table A.1 in the appendix).

Study 2 investigates the concrete mechanism of the *psychological proximity hypothesis*: *ceteris paribus*, the psychological proximity of an issue is associated with higher levels of participation related to that issue. An OLS regression is estimated for both issues and the results are presented in Table 2.3.

Table 2.3: Impact of proximity, issue public membership and other factors on race and women's activism

	Race(1)	Women(2)
Race Issue Public	−0.007	
	(0.017)	
Care about race	0.005	
	(0.022)	
Think about race	0.026*	
	(0.015)	
Have info on race	−0.003	
	(0.013)	
Women's rights issue public		0.0003
		(0.010)
Care about women's rights		0.013
		(0.009)
Think about women's rights		0.061***
		(0.008)
Have info on women's rights		0.004
		(0.008)
Firm beliefs on women's rights		0.007
		(0.008)
High Income (dummy)	−0.0004	−0.001*
	(0.001)	(0.0003)
Education	0.0003	0.002
	(0.003)	(0.002)
Democrat (dummy)	0.006	−0.007
	(0.016)	(0.008)
Religious attendance	−0.001	−0.005**
	(0.004)	(0.002)
Female	0.025	0.015
	(0.024)	(0.013)
White	−0.127***	0.021
	(0.034)	(0.018)
Liberal (1-7)	−0.005	0.005
	(0.008)	(0.005)
Observations	1,576	1,555
Adjusted R^2	0.018	0.078

Note: OLS regression coefficients. Standard errors in parentheses.
Source: 1983 GSS.*p<0.1; **p<0.05; ***p<0.01

Results and Discussion

There is support for the concrete mechanism of the *psychological proximity hypothesis*. For both issues, self-reports of thinking about the issue more frequently were associated with higher levels of activism. In both models, the coefficient is positive and significant. The more individuals think about race relations issues or women's rights issues the more likely they are to be activists on those issues. OLS cannot determine the causal direction of this relationship, however. The two variables are related while controlling for other factors, but the extent to which thinking about the issue causes activism, or activism causes the individual to think more about the issue cannot be assessed. To determine causality more clearly, experimental methods must be used. Whatever the direction of the relationship, these results do provide evidence of an association, while controlling for other factors.

The independent effect of proximity links thinking frequently about each issue with activism on the specific issue. It is unknown whether thinking frequently indicates concrete thinking, or if the respondent is thinking frequently about the issue in abstract terms. However, it seems reasonable to assume that when people think frequently about an issue and are taking political action to address the issue, they are likely thinking concretely, in a detailed way, about the issue.

Analysis of the above regression in Table 2.3 suggests some interesting findings. Having resources (income), being white, and attending religious services are factors that previous work has shown to positively correlate with general participation (Verba et al., 1995; Schlozman and Brady, 2012). On each dependent variable, this analysis shows the opposite. High income, white, and attendee of religious services are factors that are all actually negatively associated with activism on these issues. This finding is likely because these issues, race relations and women's rights are a challenge to the

hierarchical structure that has created a political environment where marginalized groups are left out of the game. As a result those in a position of power and privilege are less likely to be active, generally speaking. Additionally, it makes sense that minorities and women would be more involved on the issues that affect directly than their white, male counterparts.

Issue public membership is not a significant predictor of activism on either issue, revealing that when variables that are stronger measures of psychological engagement are included, thinking the issue is important may not alone contribute to activism on the issue. The lack of significance on the issue public coefficient may be a null result for the issue public mechanism of the *psychological proximity hypothesis*.

Alternatively, this finding may be because of the very small number of respondents who report the issue as being the most important and who are actually activists. This is one of the problems with using the general population as a sampling frame to identify activists. The number of activists in the general population is very small, and when identifying issue specific activists on only two issues, this number is even smaller.

Study 3: Activism across issues

Study 3 picks up where Study 2 left off, by examining more directly the relationship between psychological proximity and issue activism over 14 potential issues. To do this, Study 3 makes use of two important tools. The first is a set of novel measures of psychological proximity. The second is survey-experimental methods to allow for causal identification. In this way, both of the proposed mechanisms of the *psychological proximity hypothesis* can be tested. The experiment explores the direct link between proximity and activism, and the other variables allow for a cleaner

investigation of how proximity is related to issue public membership which in turn leads to higher levels of activism.

To get a better idea of the relationship between proximity and activism across issues, I use an internet sample (n=609) recruited through Amazon's Mechanical Turk service (MTurk). Although MTurk workers are not as representative as those recruited from a national sample, they are a major improvement over undergraduate students (Berinsky et al., 2012). Because the main purpose of this chapter is to experimentally test the effect of psychological proximity on participation, a representative sample is not required. Random assignment assures group equivalency, and thus treatment effects can be inferred from the differences in the outcomes for each experimental condition. MTurk workers can be poor subjects, so proper screening and manipulation checks are necessary (Goodman et al., 2012). Many of the items varied the order of the response categories to avoid response inertia.

The survey is designed to ask respondents specifically about a political issue that they report as being the most important. This is done by first providing a drop-down menu of political issues. Whichever issue the respondent selects then appears in the items that follow. Respondents who do not choose an item - a way of indicating that none of the items are important - are asked generic questions instead of the specifically tailored ones. The list of political issues was generated using the Gallup Most Important Problem (Gallup and Newport, 2010) as a guide and included unemployment, economic inequality, racial inequality, the tax rate, terrorism, gun control, crime, immigration, healthcare, foreign policy, education, the environment (including climate change), and poverty.

Issue public membership

After indicating which issue is most important to them, respondents are then asked

how important the issue is using the same language from the 2008 ANES. For example, "How important is issue X to you personally." Respondents answered on a five-point Likert scale from "not important at all" to "extremely important." Responses of "extremely important" are coded as a one for being in the issue public an all other responses are coded as zero.

Psychological proximity

Next, to capture psychological proximity, respondents are asked if the issue is a local, state, regional, national, or global issue as a way to indicate spatial distance. Subsequently, respondents are asked if the issue affects their everyday life. To measure the social distance of the issue, respondents are asked if family and friends also care about the issue. To assess temporal distance, I ask if the issue affects the current situation, the near future, or the more distant future. And finally, as a measure of hypotheticality, I ask how likely the issue is to affect the respondent personally. I combine these items into a single scale, with a Cronbach's alpha of .52, which is low and may be because the construct is in fact broader than what I measure with only a single item for each dimension. However, factor analysis shows that all items load on a single factor (See Table A.1 in the Appendix).

I test the link between proximity and activism with an experiment to prime psychological proximity. I use a simple treatment, placebo design with random assignment. The treatment group receive the following message, "You are making great progress! Thank you for carefully answering our questions! Up next, we will give you the opportunity to write a short message to your member of Congress. Please tell them how (the issue they selected as most important) affects you personally." The placebo group saw the same message, without the final sentence. Thus, the issue is tied to a specific, concrete action along with a psychological proximity prime to get

the respondents to think about how the issue affects them personally. To test this in the regression framework, I use a dummy variable for the experimental group.

Political participation

I create two different outcome variables. The first is a more traditional battery of items that ask about the likelihood of engaging in acts of political participation that are averaged to create an index. Specifically, I ask "How likely are you to: join an organization ; attend a political rally or protest; give money to an organization; vote in an upcoming election; and post on social media." In each case, with the exception of voting, respondents are asked about a specific issue that they reported to be the most important political problem. For example, if respondents selected the economy as the most important problem, they were then asked about how likely they are to join an organization or group that is working politically on the economy. Respondents who did not report an issue as being important to them were asked the same questions, but in generic form. For example, "how likely are you to join a political organization or group?" These items suffers from the problems that all survey questions do. They are self-reports and may be biased by social desirability and there is no way to confirm whether or not the respondent actually took action on the issue. Each of the participation questions are asked on a sliding scale from 0 to 100. All items load on a single factor (see Table A.1 in appendix) and the scale is reliable with a Cronbach's alpha of 0.87.

The second outcome variable is embedded within experimental conditions. For this dependent variable, respondents are given the opportunity to write a message to their member of Congress. The messages will be delivered to their MCs based on the zip code provided, excluding inappropriate or offensive messages. Before being given the opportunity to write, half of the respondents are given a basic message

telling them that they will have the opportunity to write a message. The other half of respondents are asked to write a message about how the political issue they marked affects them personally. This is a simple treatment and placebo experimental design. The variable is coded as 1 if there is a message and 0 if there is not a message. Of the 609 respondents 31 % recorded a message to their MC.

Respondents who chose not to write a message are asked why they did not. They are given four choices. Less than five percent said he or she does not care very strongly about the issue. Nearly 36% of the respondents indicated they would prefer to contact their representative directly. Low levels of political efficacy suggest that 40% of respondents believe elected officials do not listen to people like them. An 'other' category made up the remaining 14% of responses.

Respondents who said they would prefer to contact their MC directly were then given the option to click on a link that opens up a new window in their browser for a website that contains contact information of elected officials at all levels of government. [6] Only 18% of those 149 respondents clicked on the link, a quantity too small to do meaningful statistical analyses. It is possible that some of these people already had the contact information, which is why they did not write when given the opportunity nor did they click on the link. But it may be more likely that this simply exposed a distinction between words and action.[7]

Control variables

There are several competing explanations for why proximity may lead to activism that I control for in this study. One is that a proximate issue may lead to higher levels of information about the issue. A second is that proximity may lead to higher

[6]The website is www.usa.gov/elected-officials. It does not contain any partisan information or messages.

[7]Full instrument is provided in the appendix.

levels of empathy for those impacted by the issue. And finally, being close to an issue may mean that there is potential for financial gain. I include single items in the regression to control for these alternatives.

Linking proximity to specific issue publics

To get a better idea of how psychological proximity drives issue public membership, the first mechanism of the *psychological proximity hypothesis*, I use the novel items for proximity. Additionally, to control for competing factors to provide a robustness check, I also include indicators of empathy, a personal connection to the issue, and information. I estimate a model, displayed in Table 2.4, of the relationship between the psychological proximity of an issue and being a member of the issue public.

Table 2.4: Impact of psychological proximity on issue public membership, controlling for alternative explanations

	Issue Public
Issue affects everyday life	−0.105
	(0.064)
Family cares about issue	0.166**
	(0.077)
Hypothetical proximity (high is close)	0.063**
	(0.026)
Temporal proximity (high is close)	0.058*
	(0.031)
Geographic proximity (high is close)	−0.087***
	(0.021)
Information on the issue	0.080***
	(0.015)
Personal economic connection	−0.013
	(0.011)
Empathy for those affected	0.046***
	(0.014)
Observations	572
Adjusted R^2	0.159

Note: OLS regression coefficients. Standard errors in parentheses.
Source: 2016 MTurk.*p<0.1; **p<0.05; ***p<0.01

The findings in Table 2.4 provide mixed evidence for the issue public mechanism of the *psychological proximity hypothesis*. Having family that cares about the issue, and temporal, the issue affecting everyday life, and hypothetical proximity all positively and independently correlate with being in the issue public.

Geographic proximity, however, is negatively associated with issue public membership. It is possible that this finding is an artifact for how geographic proximity is measured. Respondents were asked to indicate if the issue is a local, state, regional, national, or global issue. While a local issue would be the most geographically proximate, it is not hard to imagine that the respondent may view local issues as less significant because it would affect fewer people, and therefore less likely to say the issue is extremely important. Indeed, geographic proximity is the one item that does not load strongly with the other psychological proximity items.

The control variables, empathy and information, are also positively related to issue public membership. Contrary to previous research, an economic connection to the issue is not related (Krosnick, 1990). By including these controls, there is strong evidence for the first half of the issue public mechanism of the *psychological proximity hypothesis*. Proximity does predict higher levels of issue public membership, even when considering alternative explanations.

Because the measures of psychological proximity are hypothesized to be related (Trope and Liberman, 2010) it is important address the potential problem of collinearity. I calculate a Variance inflation factor (VIF) to determine whether or not this model suffers from a multicollinearity problem. No variable in the model has a VIF value exceeding 2.0, suggesting that while the variables are correlated, they are not correlated enough to cause an estimation problem.

I also examine the relationships between psychological proximity of the issue and

empathy, knowledge, and personal economic considerations. Table 2.5 presents a correlation matrix including all the variables used in the regression from Table 2.4. The question asking if family and friends care about the issue is not strongly correlated with any of the other variables. The issue affecting everyday life correlates moderately strongly with hypothetical and temporal distance and moderately with gaining financially from a solution to the issue. Hypothetical distance correlates moderately with temporal distance and gaining financially. Temporal distance, issue level, knowledge about the issue, empathy for those affected by the issue, and gaining financially are only weakly correlated with the other variables. In general, the various measures of psychological proximity are moderately correlated with each with the exception of spatial proximity (issue level). These moderate correlations do not present a multicollinearity problem, but do suggest that the four dimensions of psychological proximity are related to each other.

Table 2.5: Pearson correlation matrix of psychological proximity and alternative explanations relating to specific issue

	Social	Everyday	Hypothetical	Temporal	Geo	Knowledge	Empathy	Economic
Social	1							
Everyday life	0.057	1						
Hypothetical	0.158	0.590	1					
Temporal	0.116	0.552	0.504	1				
Geographic	−0.014	0.079	0.015	0.031	1			
Knowledge	0.166	0.117	0.198	0.137	−0.126	1		
Empathy	0.091	−0.019	0.080	0.096	−0.136	0.189	1	
Economic gain	0.052	0.361	0.479	0.261	0.094	0.193	0.088	1

The above regression analysis supports the first half of the issue public mechanism of the *psychological proximity hypothesis*. Proximity corresponds to issue public membership. To complete the mechanism, I next examine the relationship between issue public membership and issue activism.

Issue activism model

The final analysis in Study 3 tests the*psychological proximity hypothesis* by examining the effects of both mechanisms, issue public membership and psychological proximity on issue activism. The hypothesis is tested on two participation dependent variables: the issue action variable, an index of likely actions specifically regarding the issue; and the dummy variable of whether or not the respondents wrote a message to their member of Congress. Results are found in Table 2.6.

Table 2.6: Impact of psychological proximity, issue public membership, and other individual factors on issue activism

	Likely Action(1)	Message(2)
Treatment (dummy)		0.104***
		(0.040)
Member of Issue Public (dummy)	4.486*	0.077*
	(2.374)	(0.044)
Information on issue	4.645***	0.022
	(0.898)	(0.017)
Psychological proximity (high is close)	0.847	−0.013
	(0.566)	(0.011)
Personal economic connection	0.844	0.033***
	(0.621)	(0.012)
Empathy for people affected	0.911	−0.017
	(0.827)	(0.015)
Democrat (dummy)	7.599***	0.011
	(2.237)	(0.042)
Education	−0.694	0.025
	(0.843)	(0.016)
Income	−0.760	−0.005
	(0.939)	(0.017)
Recruited (dummy)	6.158***	0.045
	(2.215)	(0.041)
Empathy	3.244***	−0.011
	(0.836)	(0.016)
Efficacy	1.008	−0.012
	(0.741)	(0.014)
Male (dummy)	1.406	−0.023
	(2.183)	(0.041)
Observations	559	559
Adjusted R^2	0.207	0.027

Note: OLS regression coefficients. Standard errors in parentheses.
Source: 2016 MTurk data. *p<0.1; **p<0.05; ***p<0.01

Although measures of psychological proximity are not significantly related to either of the outcome variables, the treatment condition that consisted of priming the respondent to write about their personal connection to the issue did lead to a higher probability of writing a message to their MC provides causal support for the *psychological proximity hypothesis*. The observed difference is especially interesting given that the experimental prime is not particularly heavy-handed.

The experimental prime linked personal connection to the issue, or psychological proximity, to the specific action of writing a member of Congress. In particular, this finding is evidence for the concrete mechanism of the *psychological proximity hypothesis*. By assuming respondents think concretely about the issue because of its proximity to the respondents, they then engaged in higher levels of a specific action on that issue than respondents in the placebo group.

The second part of the issue public mechanism is backed as well. Being a member of the issue public is a significant predictor of being active on the issue and writing a message to the member of Congress. First I demonstrated that proximity corresponds to higher levels of issue public membership, then I showed that issue public membership results in higher levels of activism on the issue.

There are some other findings of interest. In the likely action model (model 1), in addition to issue public membership there are four variables with positive and significant effects. First, respondents who report having knowledge about the issue are more likely to act on it. Second, respondents who were previously recruited to participate in politics were more likely to act. This finding could be attributed to having already been active and thus when asked how likely they are to act, they already have and answer in that way. Third, Democrats indicate a higher likelihood of taking action than do non-Democrats. Democrats may respond to social pressures

from their peers to be seen as activists. Yet, when given the opportunity to write their MC, Democrats do not partake any more frequently than non-Democrats. Finally, empathy, which may be an alternative explanation, for people affected by the issue is associated with higher levels of likely action.

When looking at the behavior of writing a message to the member of Congress, those four positive effects drop out. In addition to membership in the issue public and being in the treatment condition, only respondents who report that a "solution to [the issue] will help me financially" are more likely to write a message, which is not significant in the likely issue action model. One reason for these differences may be because the motivation of financial gain is greater when presented with an actual behavior, rather than committing to a hypothetical action. Second, being a member of the issue public does predict writing a message. The difference may be because more people said they are likely to take action, and not as many actually do when given the opportunity, thus distinguishing true members of the issue public. Third, education is associated with writing to the MC. One commonly cited reason for this is that those with more education feel more confident expressing themselves (Verba et al., 1995). It should also be noted that the effect of education is significant even while controlling for another measure of efficacy ("government listens to people like me").

In sum, these analyses in this MTurk study provide causal support for the *psychological proximity hypothesis*, although the index of proximity is not a significant predictor of activism. In combination with the first regression in Study 3 showing proximity relates to higher levels of issue public membership, the above regression links issue public membership with more issue activism, sustaining the issue public mechanism. The experimental results demonstrate the causal connection between

proximity and taking action by writing to a member of Congress.

Conclusion

The psychological motivations behind political participation are not fully understood. Being very concerned about a particular issue is correlated with higher levels of participation (Han, 2009). Using that as a jumping off point, I demonstrate that psychological proximity drives issue public membership which in turn leads to political participation. A second proposed mechanism of the *psychological proximity hypothesis* posits that proximity leads directly to action because proximity leads to a concrete construal which can then be mapped to a specific action. The results in this chapter are an important first step in describing how psychological proximity can be used to understand an individual's decision to become involved with one issue rather than another.

Some important questions remain. In chapter 4, I use climate activism as a test case for this theory. By focusing on a single issue, I can investigate the causal mechanism in greater depth. Chapter 4 takes up several primary questions. Does decreasing psychological distance lead to the perception of better or additional information about the issue? Does decreasing psychological distance lead to higher levels of empathy for those who may be more directly impacted by climate change? How does political ideology, and environmental attitudes interact with psychological proximity?

Chapter 3

The Moral Environmentalism Scale: Using Moral Foundations theory to develop an unbiased measure of environmental attitudes

Abstract

The measurement of environmental attitudes by widely used scales is likely confounded by liberal ideology because of the language used in the items. My measure, the Moral Environmentalism Scale (MES) is constructed using Moral Foundations Theory to ensure that the language used taps into both liberal and conservative views of morality as they relate to the natural environment. In this chapter, I present results from four separate studies, one using an undergraduate sample and three from online samples recruited using Amazon Mechanical Turk. I use psychometric techniques to explore the latent attribute, moral environmentalism. Each subsequent study refines

the scale based on the results of Item Response Theory and factor analysis. The full 27 item measure used in Study 4 is presented and has strong psychometric results, especially in terms of internal reliability with a Cronbach's alpha of .94. Compared to two competing scales, the Connectedness to Nature-Scale and the New Ecological Paradigm, the MES is preferable. Only the MES positively predicts Republican environmental behavior, even though it does not have a stronger effect in the general sample than the other scales.

Introduction

The Moral Environmentalism Scale (MES) is a novel measure proposed here and constructed based on Moral Foundations Theory (Graham et al., 2009) to ensure that the item language includes liberal and conservative views of morality in regards to the natural environment. In this paper, I present scale validation from a classroom sample (n=98) and three Mechanical Turk samples (n=332, 332, 448). The primary goal for developing this scale is to provide an index that taps into environmentalism over the breadth of the ideological spectrum, including conservatives. This goal is successfully met, when compared to the two scales most widely in use, only the MES predicts environmental behavior among Republicans.

Measuring environmental values and attitudes is an important step in better understanding individual level pro-environmental behavior that may serve to help overcome major environmental challenges like climate change. Current scales of environmental attitudes predict environmental behavior, but only weakly (Brügger et al., 2011). A second issue with current attitudes scales is that they are proposed to help explain the relationship between personality and values and behavior, but evidence for this mechanism is limited Brick and Lewis (2014).

An ideal measure of environmental attitudes should be based on theory. Moreover, it should include items that load strongly on a single factor, the latent psychological trait of environmentalism. Additionally, the items should range in difficulty, meaning some would be easy to endorse even for an ardent anti-environmentalist (everyone likes to have clean air and water), and some would be very difficult, only an extreme environmentalist would endorse a statement giving plant life moral standing over humans. And perhaps most importantly for political science and environmental psychology, an ideal scale should provide a strong prediction as to who would engage in pro-environmental behavior. The MES adequately meets this criteria, the items load strongly on a single factor, the difficulty of the items varies with good discrimination, and the MES predicts environmental behavior.

As alluded to above, there are scales purporting to measure environmentalism. Perhaps the most prominent measure of environmental attitudes is the New Ecological Paradigm (NEP) scale which was first introduced in 1978 and was revised in 2000 (Dunlap and Van Liere, 1978; Dunlap et al., 2000). A typical item is: "If things continue on their present course, we will soon experience a major ecological disaster." A common alternative instrument measuring environmental attitudes is the Connectedness to Nature Scale Mayer and Frantz (2004). The CNS indicates an individuals emotional connection to nature, and has more emotional content than the NEP. An example is: "I often feel like I am only a small part of the natural world around me, and that I am no more important than the grass on the ground or the birds in the trees."

These scales fail to explain much variance in pro-environmental behaviors may be because the wording of the attitude scales use moral language typically associated with American liberals. The CNS contains language that is more consistent with

liberal environmentalism, and so may fail to adequately capture the full dimensionality of environmental support across the political spectrum (Brick and Lewis, 2014). Although previous work often controlled for political ideology in their analyses, if conservatives were dissuaded from reporting pro-environmental attitudes because of scale wording, their behaviors would remain less well predicted. Many political conservatives also support pro-environmental policy positions (Ehret et al., 2017) and also likely engage in private behaviors that promote a healthier environment such as recycling or reusing a water bottle.

My approach is to construct an instrument with greater construct validity to tap into the moral foundations of environmentalism. Research in moral psychology has shown that liberals and conservatives are influenced by differing moral backgrounds (Graham et al., 2009) and respond to moral framing of the environment (Nisbet et al., 2012; Feinberg and Willer, 2013) as long as it is framed in a way that aligns with their moral foundation.

In this chapter I present the psychometric validation of a novel measure of moral environmentalism based on the six dimensions from Moral Foundations Theory (MFT) which are 1) harm/care, 2) fairness/cheating, 3) loyalty/betrayal, 4) authority/subversion, 5) Sanctity/degradation, and 6) liberty/oppression. I constructed the items using Graham's moral language dictionary.[1] In Study 1 the MES contains 36 items, with six in each foundation. Because the liberty items are challenging to write, I added two additional liberty items in Study 2. Using results from a generalized partial credit model,from Item Response Theory, and exploratory factor analysis, problematic items were either revised or removed. The final scale is composed of 27 items and is fully presented along with complete psychometric results in Study 4.

[1]found at http://www.moralfoundations.org.

In all four studies, exploratory factor analysis shows that the MES has a single-factor structure. Using a generalized partial credit model, I find that the items provide variance in terms of difficulty and good discrimination between low and high environmental attitudes. I also test convergent validity by correlating the MES with the NEP and CNS. In Studies one and two,the MES correlates closely with the NEP and CNS. The MES performs slightly better than the NEP and not quite as well as the CNS in predicting environmental behavior. In studies three and four, participants were randomly assigned to only take one of the environmental attitude scales. So, while I could not directly look at correlations, I can compare the substantive effects of each scale on environmental behavior. In both Study 3 and Study 4, the MES did not predict pro-environmental behavior as strongly as the established scales. But, in Study 4, the final version of the MES predicts Republican environmental behavior while the other scales do not.

Literature Review

New Ecological Paradigm

Before turning to the novel measure, it is important to understand the scales that come before it. The instrument used to measure an individuals environmental support, or in this case biospheric values, in Stern's well-known Value-Beliefs-Norms model (Stern, 2000) is the New Ecological (or Environmental) Paradigm (NEP) (See (Dunlap and Van Liere, 1978)). The scale includes 15 five-point Likert-scale items, to test five aspects of the environmental paradigm: reality of limits to growth, anti-anthropocentrism, fragility of natures balance, rejection of exemptionalism, and the

possibility of an eco-crisis (Dunlap et al., 2000).[2]

The NEP is not without its skeptics. One study applying scale analysis of the NEP based on a random sample of Norwegians found that the scale is not unidimensional as is often claimed. Little support was found to suggest that the NEP tapped into the 5 sub-dimensions. And perhaps more damning, there was no convergent validity because the NEP did not correlate with other measures of environmental concern (Grendstad, 1999). More broadly, the NEP has been the subject of an exhaustive meta-analysis that looked at 69 studies that took place in 36 countries (Hawcroft and Milfont, 2010). This analysis found that altering the number of items or the responses affects NEP scores. In some instances the instrument is deployed using only six items, which reduces the reliability of the measure (Hawcroft and Milfont, 2010).

One reason for these concerns may be that the questions require a high level of abstraction because they concentrate on the global ecological crisis. Environmentalists may have previous exposure to these abstract topics, but individuals who have not been exposed to these ideas may not have any familiarity with them. The MES I introduce is constructed to avoid these types of items and use wording that is more concrete to environmentalist and non-environmentalists.

Moreover, the items in the NEP align more closely to political liberalism than political conservatism, introducing a potential confound with political ideology. For example, "Humans are severely abusing the environment" is one of the items in the NEP. The words severely abusing are particularly striking as highly emotive language. The environment is anthropomorphized as something that can be abused. Abuse is also a keyword in the Harm moral foundation.[3] The harm foundation is a hallmark of liberal morality.

[2]For complete question wording, see the appendix which includes the instrument from Study 1.
[3]See the moral foundations dictionary linked above.

A second example is "Plants and animals have as much right as humans to exist." The right to exist taps the concept of fairness, which is of particular concern to liberals (Graham et al., 2009). Moreover, placing plants and non-human animals at equal footing with humans is contradictory to the notion of dominion over nature that many Christians believe in (White, 1967). Even environmentally inclined Christians hold on to the claim of dominion, but in terms of stewardship rather than exploitation (Van Dyke, 1996).

The NEP also includes some reversed items, such as "Human destruction of the natural environment has been greatly exaggerated." Most environmentalists are unlikely to agree with this statement. However, the word 'destruction' is a cognate for destroy which is a word listed in the MFT dictionary and corresponds to the Harm moral foundation which is very high among liberals. Not wanting to destroy something, not just nature, is playing into liberal ideology. None of the items seem to target a more conservative, or non-liberal, environmentalism.

Connectedness to Nature Scale

The CNS instrument is composed of 14 Likert-scale items (Mayer and Frantz, 2004).[4] Like the NEP, the key problem is that the construct it seeks to signify, the emotional connection to nature, likely suffers from a confound with liberal environmentalism. The wording of the questions would seem to be a natural fit with tree-hugging, Birkenstock-wearing, members of Greenpeace, but anathema to a more instrumental approach to environmental conservation as seen in groups like Ducks Unlimited or the Green Tea Coalition.

For example, the item "I feel as though I belong to the Earth as equally as it

[4]For the full scale see the instrument in the appendix.

belongs to me." While belonging to the Earth may relate to a sense of community which tends to be more important to conservatives (Nisbet et al., 2012), it could also be construed more abstractly as a global community which is far distant from the ingroup loyalty represented in conservative ideology. Moreover, the word equally suggests equality between the self and the rest of nature and equality is a liberal buzzword.

Another example is, "I often feel part of the web of life." The web of life is an ecological term and the item suggests humanity's place in the wider ecosystem. This is of course always factually accurate, humans are necessarily embedded within an ecosystem that supports agriculture. However, feeling 'part of this invokes a deeper solidarity with the natural world that most anthropocentric ideologies would neglect. This item clearly appeals to liberal environmentalists and much less so to instrumental conservationists.

A third example is, "I feel that all inhabitants of Earth, human, and nonhuman, share a common life force.' This item also has the solidarity between human and nonhuman living things component. Additionally, the words 'life force' conjure feelings of esoteric, new-age spirituality. One might believe that humans and other living things deserve equal moral standing, but life force adds another layer of extremism and likely biases responses especially among more traditional conservatives. All of this is not to say that the CNS does not measure environmental attitudes, it certainly does. However, with the item wording they use, the scale only captures respondents that are not turned-off by more spiritual-based environmentalism or deep ecology.

Both the NEP and the CNS are modestly predictive, but still leave large variance unexplained in pro-environmental behaviors. A recent study provides a comparison of the mediation effect of both the NEP and the CNS from individual differences predict-

ing environmental behaviors. The personality traits Openness and Conscientiousness uniquely predicted environmental behavior. The CNS showed stronger mediation of these personality differences, but the majority of the variance in Conscientiousness explaining behavior was left unexplained (Brick and Lewis, 2014), and those authors suggest that the liberal ideological framework of the NEP and CNS may be to blame. Political conservatism is associated with higher conscientiousness and more concern for duty (Graham et al., 2009), and neither the NEP nor CNS mention duty.

Connection with Nature

Building on the work by Mayer and Frantz 2004, a recent study found support for a 40-item scale assessing an individuals predisposition to connect with nature (Brügger et al., 2011). This scale contains items with strong face validity as a measure of connecting with nature, such as "I enjoy gardening." However, it also contains a number of more far-fetched items. For example, "I talk to plants" (adopted from Beckers 2005); "I help snails cross the street"; and "I cross meadows barefoot." These items refer mostly to harm and are likely to tap liberal environmentalism, but not the type of environmentalism that is of concern to conservatives. Most people do not engage in these behaviors, so it is not clear what these items are measuring if the respondent reports such behavior. Because this index is not widely used, it is not included the following studies as a comparison to the MES.

Moral Psychology

My approach to developing a new measure begins with moral psychology. The most cited definition of moral psychology comes from Turiel (Turiel, 1983), who defined the moral domain as "prescriptive judgments of justice, rights, and welfare

pertaining to how people ought to relate to each other" (p.3). Moral intuitions are thought to be innate and a product of co-evolution with social norms and rules. These intuitions become the moral foundation parents use to teach their children about the proper way to behave (Graham et al., 2009).

The moral foundations can be divided into two approaches individualizing and binding. Individualizing morality is focused on protecting the individual and binding morality focuses on group protection (Graham et al., 2009). Table 3.1 summarizes the six moral foundations. The individualizing binding bifurcation does not break down neatly along the left right political spectrum. Instead, the six foundations create six separate continua. Still, liberal morality emphasizes the harm/care and fairness/reciprocity dimensions over the other four. Conservatives, on the other hand, tend to have a more balanced morality with all six dimensions contributing fairly equally (Graham et al., 2009).

Table 3.1: Summary of moral foundations

Foundation	Approach	Summary
Harm/care	Individualizing	Concerned with caring for and protecting others
Fairness/cheating	Individualizing	Concerned with equality and justice; reciprocal altruism
Authority/subversion	Binding	Concerned with leadership, deference to authority, and respect for tradition
Loyalty/betrayal	Binding	Concerned with loyalty to group at local and national level
Sanctity/degradation	Binding	Concerned with purity and lack of degradation
Liberty/oppression	Individualizing	Concerned with personal freedoms

Source: based on Graham, Haidt, & Nosek 2009; Nisbet, Markowitz, & Kotcher 2012.

The libertarian foundation was not included in the earlier work on MFT. More recent scholarship includes it as one of six primary moral foundations (Iyer et al., 2012). The liberty foundation grapples with understanding the moral intuitions of political libertarians who tend to be conservative Republicans and hold conventionally liberal views on individual freedom. Because libertarians do not fall neatly along the traditional left-right political spectrum their moral foundation is also more difficult to place. Cluster analysis reveals that libertarians have a unique moral framework. Libertarians value individual freedom above other moral concerns (Iyer et al., 2012).

In sum, liberals, in the colloquial American sense of the word, base their morality chiefly on the harm/care and fairness/cheating foundations. Conservatives care about these foundations but also show concern in four other foundations: Ingroup/Loyalty; Authority/Respect; Purity/Sanctity; and Liberty (Garcia-Valinas et al., 2012; Gra-

ham et al., 2009; Iyer et al., 2012). As shown below, the NEP and CNS use language consistent with harm/care and fairness/cheating moral foundations setting up the possibility that they may not be attractive to conservatives.

Moral Environmentalism

Liberals and conservatives respond differently to messages with different types of moral frames in regards to the environment (Nisbet et al., 2012; Feinberg and Willer, 2013). Liberals frame environmental appeals in terms of the harm/care, fairness/cheating, and to a less extent, the liberty/oppression foundations. This language appeals to other liberals, but fails to convince conservatives of the urgency needed for action. For example, Al Gore's "An Inconvenient Truth" is a prime example (Nisbet et al., 2012). The documentary focuses on the destructive forces of a warming planet. This keys in on the liberal concern for the harm/care moral foundation. The authors suggest an alternative approach that also uses conservative moral frames, such as the threat to local communities. By framing environmental issues in terms of purity/sanctity there is little difference between liberal and conservative attitudes (Feinberg and Willer, 2013).

I use these findings as a framework to compose questions that capture environmental attitudes. Because I also include items based on the moral foundations that correlate more closely with political conservatism,[5] the MES is designed to avoid a liberal bias. I argue that a scale based on this theory will provide a more accurate measure of environmental attitudes and better predictions about pro-environmental behavior across the political spectrum.

[5]See Table 3.2 for the question wording of the original 38 items.

Scale construction

Moral Foundations Theory is a useful theoretical basis for developing a measure because the six foundations map roughly to different portions of the ideological spectrum. By using language that is consistent with these moral foundations, the items should tap the moral aspects of environmentalism that are cued with the specific matching words. I wrote statements adopting the language from the six moral domains. There are five, Likert-scale, response categories, ranging from 'strongly disagree,' to 'strongly agree,' with 'unsure' at the middle point.

I propose a battery of moral environmentalism items based on the six moral foundations that varies in terms of item difficulty. In practice, this means I have a series of items that tap into moral environmentalism across the six dimensions and over the breadth of the construct, from low to high levels, of the each of six dimensions. University of California, Santa Barbara experts in environmental psychology and politics were also consulted in the development of the items. [6] Study 1 includes 36 items. Because the liberty items were especially difficult to write, and did not perform well in the psychometric tests, Study 2 incorporates two additional liberty items. The 38 item scale, from Study 2, is presented in Table 3.2.

The questions were asked in two blocks to reduce fatigue. In each block, the items were randomized to avoid order effects. In each of the six dimensions, two of the items were reversed to avoid response set bias. In Studies 2, 3 and 4, I also randomized the order in which respondents answered the MES, NEP, CNS, and the behavioral battery to limit consistency bias.

[6]The items were developed through several iterations of brainstorming, using key moral words from the moral foundations dictionary. After coming up with an initial list, the number of items was pared down to include six in each moral dimension.

Table 3.2: Moral Environmentalism items (38) used in Study 2

Item	Moral Foundation	Wording
1.	Care	We should take care of human needs before other living things. (r)
2.	Care	Humans have an overall positive effect on the natural environment.(r)
3.	Care	Unregulated economic growth harms the natural environment.
4.	Care	The natural environment is being harmed by humans.
5.	Care	Untouched natural areas should be preserved.
6.	Care	Humans have the right to change wild places in nature.
7.	Fairness	Humans treat other living things fairly.
8.	Fairness	We should keep the natural environment clean for future generations.
9.	Fairness	Humans should be more tolerant of the rights of other animals and plants.
10.	Fairness	Future generations have the responsibility to adapt to changing living conditions on earth.(r)

Continued on next page

Table 3.2 – continued from previous page

Item	Morality	Wording
11.	Fairness	The environment is being disproportionately harmed by a minority of individuals.
12.	Fairness	Rich people deserve more access to natural resources than do poor people.(r)
13.	Loyalty	Protecting the earth protects our children.
14.	Loyalty	Protecting the environment does not benefit my community (r).
15.	Loyalty	It is patriotic to consider the environment in our decisions.
16.	Loyalty	The United States should not reduce pollution when other nations aren't helping (r).
17.	Loyalty	United States parks and green spaces are national treasures.
18.	Loyalty	It is patriotic to preserve natural resources.
19.	Authority	It is our duty to protect the earth.
20.	Authority	Respecting the earth means not polluting.

Continued on next page

Table 3.2 – continued from previous page

Item	Morality	Wording
21.	Authority	Dominion over the earth means we should protect nature.
22.	Authority	It is not our responsibility to conserve the earth's resources.(r)
23.	Authority	Reducing our use of fossil fuels will make the United States more independent.
24.	Authority	It should be our tradition to conserve natural resources.
25.	Sanctity	Seeing litter in nature doesn't bother me. (r)
26.	Sanctity	Nature is sacred.
27.	Sanctity	The purity of nature is threatened by human activities.
28.	Sanctity	Nature should be kept wild and free from human encroachment.
29.	Sanctity	Pollution is gross.
30.	Sanctity	People do not benefit from a pristine natural environment. (r)
31.	Liberty	Protecting the earth does not protect my freedom (r).

Continued on next page

Table 3.2 – continued from previous page

Item	Morality	Wording
32.	Liberty	The government has too much control over the natural environment.(r)
33.	Liberty	Taking care of nature can be done better by individuals than governments.(r)
34.	Liberty	Private ownership is the best way to preserve nature. (r)
35.	Liberty	Being in nature makes me feel free.
36.	Liberty	Having wild places increases our liberty.
37.	Liberty	Private land owners should be forced to stop development that threatens an endangered species.
38.	Liberty	Our personal freedoms are more important than environmental protection (r).

Psychometric validation

Factor Analysis

I use exploratory factor analysis to evaluate the underlying factor structure of the MES. There are three competing hypotheses for this structure. If moral sentiments between foundations are related, this test should reveal separate factors for the six moral dimensions. Another hypothesis is that shared variance in pro-environmental attitudes across moral dimensions would lead to a single underlying factor. A third

possibility is a non-definitive structure where items do not convincingly load on any factor.

Item Response Theory

I employ a generalized partial credit model (GPCM) from Item Response Theory (IRT) to further analyze the instrument. The partial credit model is to test whether or not the items vary in difficulty. In this application, difficulty can be thought of in terms of a variance in how strongly environmental the item is.

Figure 3.1: Generalized Partial Credit Model

$$P\left(x_j = i \middle| \theta_k, a_j, b_j, d_{j,1}, \ldots, d_{j,m_j-1}\right) = \frac{\exp\left(\sum_{i=0}^{j} 1.7a_j\left(\theta_k - b_j + d_{j,i}\right)\right)}{\sum_{g=0}^{m_j-1} \exp\left(\sum_{i=0}^{g} 1.7a_j\left(\theta_k - b_j + d_{j,i}\right)\right)} \equiv P_{ji}(\theta_k)$$

Partial credit is appropriate because the response categories are polytomous, not a dichotomous scale with only right and wrong answers. A scale should have a range in item difficulty, demonstrated by category thresholds, as a way to distinguish individuals with low and high levels of moral environmentalism. GPCM estimates the probability that an item will be answered correctly (Muraki, 1992). To do that it solves three other terms simultaneously, item difficulty, expressed in threshold estimates, item discrimination, and person ability, in terms of logits, based on each of the 38 (36 in study 1) scale items. The higher the value for item discrimination, the better the item is at determining where a person fits along the construct continuum.

Study 1

Methods

Participants and procedures

The sample for Study 1 comes from an undergraduate general education course in political science at the University of California, Santa Barbara. The survey was conducted during the normal lecture time under permission from the instructor of record. Students brought their laptops or portable electronic devices to class in order to voluntarily participate in a survey. Respondents participated electronically using a link from Qualtrics. The link to the survey was emailed out at the beginning of class time and displayed using power point in the lecture hall. The students had approximately 25 minutes to complete the survey. Some only took around 10 minutes. I estimate that a little over a hundred students were present in the lecture hall and I collected 98 complete questionnaires.

To be sure, this is not a random sample of the university campus, and certainly not of all Americans. However, because the class is a general education course requirement there is a mixture of political science and other majors that reflects the racial and ethnic diversity of the campus. The sample is 27% male, 37% white, 73% Democrat (only 7% Republican), and 95% of participants are between the ages 18-22.

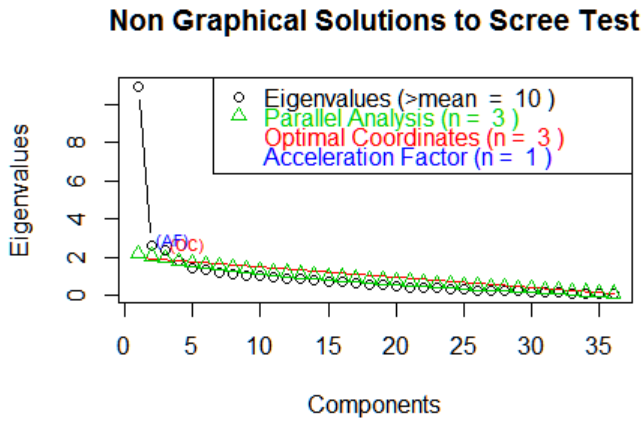
Psychometric Results

Factor Analysis of MES

Exploratory factor analysis (EFA) evaluates the dimensionality of the 36-item MES in this sample. The EFA produces a one-factor solution based on scree plot inflection and the first value above 3 (acceleration factor, single eigenvalue = 9.97;

c.f. (Guttman, 1950)). Figure 3.2 displays the scree plot.[7]

Figure 3.2: Scree plot of eigenvalues for MES



A second EFA constrained to one factor reveals most items loading at >0.3 (mean = 0.57) with the exception of items 10, 11, 12, 32, 33, 35, and 36. The factor loadings are presented in Table 3.3. The scale is highly reliable with a Cronbach's alpha of 0.91.

[7]Parallel analysis and optimal coordinates show three factors suggesting that some of the items loading poorly one the single-factor are better suited to additional factors. Subsequent studies show convergence on a single-factor once the poor items are removed or re-written. Furthermore, The second EFA finds the single-factor to be sufficient, $\chi^2 = 935.44$.

Table 3.3: 36 item MES EFA factor loadings and GPCM discrimination estimates

Item	loading	Discrimination
1.	**0.65**	1.29
2.	**0.48**	0.57
3.	**0.50**	0.53
4.	**0.73**	2.80
5.	**0.53**	0.83
6.	**0.31**	0.30
7.	**0.54**	0.59
8.	**0.79**	3.44
9.	**0.69**	1.36
10.	0.24	0.16
11.	0.17	0.15
12.	0.12	0.10
13.	**0.77**	1.88
14.	**0.58**	1.01
15.	**0.52**	0.53
16.	**0.58**	1.09
17.	**0.49**	0.73
18.	**0.59**	0.78
19.	**0.78**	2.68
20.	**0.72**	1.81
21.	**0.54**	0.78
22.	**0.58**	0.82
23.	**0.43**	0.41
24.	**0.67**	1.30
25.	**0.41**	0.58
26.	**0.57**	0.78
27.	**0.57**	0.74
28.	**0.51**	0.60
29.	**0.81**	3.23
30.	**0.55**	0.82
31.	**0.45**	0.40
32.	-0.02	0.12
33.	0.22	0.16
34.	**0.36**	0.24
35.	-0.03	0.13
36.	0.22	0.21

Note: bold font = loading >.3

Generalized Partial Credit Model

The GPCM estimates several parameters that are of interest when developing a novel scale.[8] In the better-known Rasch model, item difficulty is estimated. In the case of GPCM, category threshold parameters are estimated. The threshold estimate accounts for the relative difficulty of endorsing each response category of the five-point item, in relation to the other items (estimated in terms of logits) (Muraki, 1992). Specifically, the thresholds in this case indicate how much moral environmentalism is required to answer the question in each category of the Likert-scale. Higher threshold estimates correspond to items and categories of items that require more moral environmentalism to endorse higher response levels.

The final set of items range in difficulty from -4.41 to 4.6. This range is expected when items vary in difficulty. I flag items with especially low thresholds, even at the higher categories because they would be too easy to indicate any useful information. In study 1,this is the case for items 32 and 35; however, they are not statistically distinct from zero. They are also the only two items with negative factor loadings.

Another parameter of interest is the slope. The slope provides information about how well the item discriminates low and high ability respondents (Muraki, 1992). The discrimination values are shown alongside the factor loadings in Table 3.3. Items that load poorly on the factor are also have poor levels of discrimination. Items 10, 11, 12, 32, 33, 35, and 36 all load under 0.3 and have discrimination values below 0.3. Items 4, 8, 19, and 29 all have discrimination values greater 2 indicating they are particularly good at differentiating between an individual with low moral environmentalism and an individual with high moral environmentalism. Overall, values for discrimination range from 0.10 to 3.44 with a mean of 1.09.

[8]GPCM parameters are presented with the final set of items and their factor loadings in Table 3.16 in Study 4.

Regression results

My questionnaire includes items that help provide evidence of convergent validity. I employ the NEP and CNS to use as comparisons to predict a battery of pro-environmental behaviors ranging from refraining from eating meat to regularly carrying a reusable water bottle. The pro-environmental behavior scale is developed in Brick 2017. Table 3.4 summarizes correlations between the three competing attitude measures and the behavioral index.

Table 3.4: Summary statistics and Pearson's correlations of Moral Environmentalism Scale, New Ecological Paradigm, Connectedness to Nature, and pro-environmental behavior scales

	Mean	Std. Dev.	Cronbach's alpha	Behavior	MES	NEP
Behavior	2.99	0.05	.78	-		
MES	5.5	0.06	.91	.42*	-	
NEP	3.8	0.05	.81	.33*	.72*	-
CNS	3.26	0.10	.85	.31*	.42*	.33*

Note: * $p > .05$

MES is highly correlated with the NEP: $r(98) = 0.72$. Yet, MES is only moderately to strongly correlated with the CNS, $r(98) = 0.48$. Part of the convergence between the MES and NEP may be a methodological artifact of asking so many environment-related questions in a single survey, which may have lead to a response fatigue and inability to properly distinguish the content of the questions. However, all three indexes are likely tapping into the same latent construct, so their correlations provide evidence that MES is measuring the same thing as the other two scales. The key question is whether or not MES is picking up environmentalism among conservatives who are not being measured by the other scales. To answer this question, regression analysis must be used.

The motivation behind creating a new measure of environmental values was to

provide a theory-driven measure that also better predicts pro-environmental outcomes especially among Republicans. Table 3.5 indicates the results of a linear regression with a battery of pro-environmental behaviors as the dependent variable. In this sample, the MES barely outperforms the NEP, but not the CNS. Because the sample is small, and contains very few students who report being Republican, I am not able to test the interaction between each scale and party identification in this study.

Table 3.5: Impact of MES, NEP, and CNS on environmental behavior

	21 item environmental behavior index		
	(1)	(2)	(3)
MES	0.379***		
	(0.074)		
NEP		0.351***	
		(0.089)	
CNS			0.448***
			(0.067)
Observations	98	97	97
Adjusted R^2	0.206	0.131	0.311

Note: Standard errors in parentheses.*p<0.1; **p<0.05; ***p<0.01

The relative strength of each environmental attitude scale can be seen by comparing the the R^2 for each bivariate regression equation. The MES explains 21% of the variation observed in the 21 item environmental behavior index. The NEP explains only 13% of the variation in pro-environmental behavior. The most variance in behavior is explained by the CNS at 31%.

In another set of regressions, Table B.1 in the appendix, when both the MES, CNS, and the NEP are included in the same regression predicting behavior, both the MES and NEP fall out due to colinearity. The CNS is the only significant predictor.

Without the NEP, MES and CNS are both independent predictors of behavior. Without CNS, NEP and MES are independently predictors. This pattern suggests that all three share the central, critical variance of attitudes that predict behaviors, and CNS has the most unique portion. However, unique does not mean most important or largest. The pattern of excluding one or the other suggests that of the three, if you could have only one, CNS is better at predicting behavior than the others. Yet, the MES provides a stronger theoretical grounding based on moral foundations and similar empirical results.

Discussion

Results from Study 1 partially confirm expectations for the MES. The MES is constructed from a careful theoretical approach using Moral Foundations Theory. Exploratory factor analysis suggests a single underlying construct the MES measures what I call moral environmentalism, but is likely similar to a more general pro-environmental orientation because it correlates highly with the NEP. The category threshold estimates generated by the GPCM demonstrate a range in item difficulty. This range from easier to more difficult suggests that the MES is identifying individuals at the low end of the moral environmentalism spectrum as well as the high end. The items that load poorly on the single factor are also poor at discriminating between high and low moral environmentalism individuals as given by the the GPCM.

Regression analysis shows that the MES predicts slightly more variation in the 21-item measure of environmental behavior than the NEP, but not as much as the CNS. This study does not address one important feature of this approach to measuring environmental attitudes using disparate moral language - to provide a better measure among conservatives or anti-environmentalists. Subsequent studies do this by building

models with additional covariates.

Study 2

I have three goals for Study 2. First, I test the psychometrics, factor analysis and IRT, of a slightly revised MES, incorporating an additional two liberty items, with a larger and more diverse sample. Second, with the more diverse sample, I test the predictive capability of the MES among Republicans by using an interaction term. Third, I compare the predictive power of each scale.

Methods

Participants and procedures

Participants are recruited from Amazons Mechanical Turk (MTurk). Although MTurk workers are not as representative as those recruited from a national sample, they are a major improvement over undergraduate students (Berinsky et al., 2012). Because the main purpose of this study is to validate a novel measure of moral environmentalism, a representative sample is not required. With this sample, I am not trying to generalize to a broader population, but simply test the instrument with the sample I have.

Because MTurk workers can be poor subjects, proper screening is necessary (Goodman et al., 2012). I employ several techniques to reduce any potential bias that could result. First, I record how long each respondent took to complete the survey. There are not any meaningful differences in outcomes between fast and slow survey-takers. Second, I use an attention test item that required respondents to write in the proper response. Respondents who failed to do so are dropped from the sample. Third,

I reverse-coded about half of the MES items meaning that the item wording was written in the negative a true environmentalist would not agree with the item.

After dropping several participants I am left with a sample size of 332. Descriptive statistics are presented in Table 3.6. The sample is better in some ways than the undergraduate sample used in study 1. It is not as diverse in terms of race, but there is a greater age range represented as well as education and ideology.

Table 3.6: Descriptive statistics of sample

Variable	Mean	Std. Dev.	Percentage
Education	4.11	1.31	–
Ideology (lib-Con)	3.6	1.28	31.7% (Liberal)
Party ID	–	NA	46.7% (Democrat)
Race	–	NA	79.2% (White)
Gender	–	NA	44.3% (Female)
Age	36.0	11.52	–
N	332		

Using the results from Study 1, I modified the items that were flagged as being problematic (i.e.: factor loadings below 0.3), negative factor loadings, or low item discrimination levels. I also attempted to re-write items that were highly correlated with the NEP in order to gain greater separation from that measure. Two additional liberty questions were added because so many items from that domain loaded poorly in Study 1. The number of response categories in the MES was also reduced from seven to five, to better match the NEP and CNS.

Psychometric results

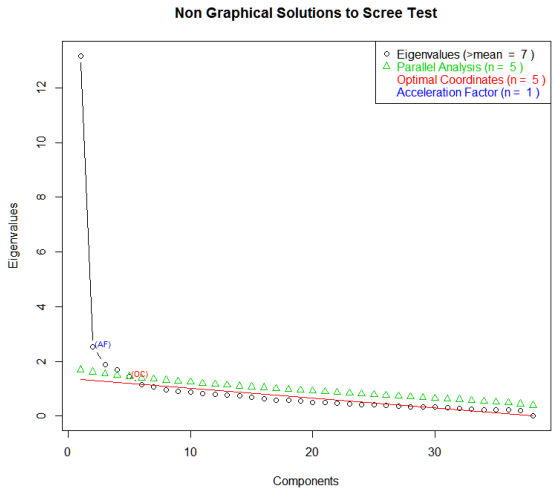
Using this larger, and in some important ways, more diverse sample I again use a psychometric approach to scale validation. First, I present results from exploratory

factor analysis and then from an IRT model, the generalized partial credit model.

Factor Analysis of MES

Exploratory factor analysis (EFA) evaluates the dimensionality of the 38-item revised MES. The EFA results in a one-factor solution based on scree plot inflection and the first value above 3 (single eigenvalue = 13.9; c.f. (Guttman, 1950)) as shown in Figure 3.3.

Figure 3.3: Scree plot of eigenvalues for MES



A second EFA constrained to one factor reveals a majority of items load at > 0.3, mean of all items = 0.32. Table 3.7 presents factor loadings and item discrimination estimates from GPCM. There are 14 items that do not load above 0.3. Item number nine shows a strong negative loading, indicating that a high score on this item is negatively associated with the latent trait. This is interesting because the wording of the question is not, on its face, too different from other items. The statement is "Humans should be more tolerant of the rights of other animals and plants." Perhaps it is confusing as to what it means to be tolerant of the rights of other animals and plants. It is also double-barreled by asking about both plants and animals. Despite

this high number of items loading poorly on the single factor, the scale is highly reliable with a Cronbach's alpha of 0.93.

Table 3.7: 38 item MES EFA factor loadings and GPCM discrimination estimates

Item	loading	Discrimination
1.	**0.94**	0.50
2.	**0.42**	0.75
3.	**0.33**	1.00
4.	**0.46**	1.94
5.	**0.36**	1.45
6.	**0.48**	0.57
7.	**0.43**	0.54
8.	0.28	2.54
9.	**-0.93**	0.22
10.	0.03	0.17
11.	**0.31**	0.42
12.	0.23	0.54
13.	**0.38**	2.80
14.	**0.40**	1.14
15.	**0.38**	1.15
16.	**0.37**	1.40
17.	0.19	1.42
18.	**0.34**	1.36
19.	**0.37**	2.39
20.	**0.34**	2.30
21.	0.28	1.33
22.	0.21	0.30
23.	0.26	0.83
24.	**0.38**	2.54
25.	0.30	1.07
26.	**0.36**	1.02
27.	**0.43**	2.04
28.	**0.46**	1.55
29.	0.30	1.2
30.	**0.36**	1.35
31.	**0.40**	1.14
32.	0.28	0.48
33.	-0.14	0.10
34.	0.26	0.35
35.	0.30	1.19
36.	**0.31**	1.03
37.	**0.46**	0.97
38.	**0.47**	0.03

Note: bold font = loading >.3

In comparison to Study 1, there are fewer items with high loadings. This may be a result of the larger and more diverse sample. And, simply adding new items raises the probability of getting items that load poorly.

Generalized Partial Credit Model

Study 2 also uses the Generalized Partial Credit Model to obtain item threshold estimates (difficulty). The threshold estimates range from -7.91 to 7.47, which shows that the items vary in difficulty. Similar to the results in Study 1, the items that load poorly also have low values for discrimination. Overall, the estimates for discrimination vary from 0.03 to 2.54. The discrimination estimates near zero are concerning as these estimates indicate that the item is not able to distinguish between anti-environmentalists and very pro-environmentalists. In other words, item 38 especially, provides very little information about each respondent.

Regression Results

Study 2 also compares the MES to the NEP and CNS to further probe convergent validity and to see if the MES adequately measures Republican environmental attitudes to predict their behavior. The Pearsons correlations presented in Table 3.8 indicate a very strong correlation between the MES and NEP at .78. This is higher than was observed in Study 1, despite revisions to MES that were aimed at reducing the similarity between the two scales. However, the comparison between the two studies may not be all that meaningful given the different sample. The MES and CNS are also strongly correlated at 0.67. These statistics are summarized in Table 3.8.

Table 3.8: Summary statistics of key measures

	Mean	Std. Dev.	Cronbach's alpha	Behavior	MES	NEP
Behavior	2.97	0.54	.85	-		
MES	3.88	0.54	.92	.46*	-	
NEP	3.63	0.79	.91	.45*	.78*	-
CNS	3.59	0.74	.91	.52*	.67*	.58*
Republican	17%					

Note: All correlations are r(df) & * p > .05

Because MES is designed to predict environmental behavior better than the other scales when it comes to non-liberals, I include a dummy variable for Republican party identification. In this sample, Republicans make up 17% of the total. I use Republican party identification because identifying as a member of that group has been shown to reduce pro-environmental behaviors (Brick et al., 2017). So, I expect the interaction between MES and Republican party identification to be positive and significant, with no effects for the interactions between Republicanism and NEP or CNS because those scales use the language of liberal environmentalism. Results from four OLS regression analyses are presented in Table 3.9.

Table 3.9: Impact of MES, NEP, CNS, and Republican Party Id on environmental behavior

	Environmental Behavior			
	(1)	(2)	(3)	(4)
MES	0.057	0.187***	0.277***	
	(0.090)	(0.070)	(0.087)	
NEP	0.128**		0.172***	0.151***
	(0.057)		(0.059)	(0.044)
CNS	0.297***	0.311***		0.309***
	(0.049)	(0.049)		(0.045)
Republican	0.094	−0.017	−0.043	0.293
	(0.538)	(0.494)	(0.555)	(0.324)
MES*Republican	0.127	0.152	0.023	
	(0.270)	(0.202)	(0.237)	
NEP*Republican	−0.011		−0.052	0.028
	(0.141)		(0.147)	(0.105)
CNS*Republican	−0.190	−0.201		−0.150
	(0.139)	(0.140)		(0.117)
Observations	351	351	351	351
Adjusted R^2	0.303	0.295	0.232	0.305

Note: Standard errors in parentheses. *p<0.1; **p<0.05; ***p<0.01

Contrary to expectations, the MES does no better than the NEP or CNS among Republicans. The coefficient for all three interaction terms is not significant. However, the interaction term is positive for the MES and negative for both the NEP and CNS suggesting that it may be significant with a larger sample size. When looking at each scale the CNS emerges as the strongest predictor of environmental behavior. When all three measures are included in the same model (model 1) the CNS has the highest coefficient. Because all three scales are five-point Likert scales it is possible to compare the relative magnitudes of the coefficients. The CNS is the strongest predictor, and the NEP is statistically significant, but with a coefficient of nearly half the size. The MES is not predictive, likely because it is colinear with the NEP.

In model 2, without the NEP included, MES is significantly predictive of behavior, but at lower levels than CNS. In model 3, CNS is excluded and both the MES and NEP are equally, and significantly predictive. Overall, the regression analysis demonstrates the high correlation between MES and NEP. However, there is some evidence that the MES is providing some additional leverage on predicting behavior beyond what the NEP does alone (model 3). Further evidence of this can be seen by looking at three bivariate regressions (see Table B.2 in the Appendix). The MES has a slightly higher R^2 than the NEP, but lower than the CNS.

Another way to compare the predictive capability of each scale is to use a one-way analysis of variance (ANOVA). ANOVA provides a nested F test to compare the strength of the coefficients when removing one of the scales from the regression equation. Table 3.10 shows the ANOVA comparing the model with all three scales (model 1) with the model without NEP (model 2.

Table 3.10: One-way analysis of variance for model 1 and model 2(dropping NEP)

Statistic	N	Mean	St. Dev.	Min	Max
Residual Df	2	344.000	1.414	343	345
Residual sum of sq.	2	73.853	0.893	73.222	74.485
Df	1	−2.000		−2	−2
Sum of Sq.	1	−1.263		−1.263	−1.263
F	1	2.959		2.959	2.959
Pr(>F)	1	0.053		0.053	0.053

Results of the above ANOVA demonstrate that dropping the NEP from the model, but still including MES and CNS makes no difference in terms of the difference in the sum of squared errors for each model which is given by the F statistic, 3.0 and $p > .05$. In other words, NEP does not add any predictive ability not already accounted for by the MES and CNS.

A second ANOVA to look at the effect of removing the CNS from the equation is presented in Table 3.11. In this case, the F statistic, 18.5 is highly significant $p < 0$. Including the CNS in the model (model 1) significantly reduces the amount of error in the estimate. Clearly stated, the model loses predictive capability when the CNS is not included. As shown in the first ANOVA, this is not the case for the NEP.

Table 3.11: One-way analysis of variance for model 1 and model 2 (dropping CNS)

Statistic	N	Mean	St. Dev.	Min	Max
Residual Df	2	344.000	1.414	343	345
Residual sum of sq.	2	77.171	5.586	73.222	81.121
Df	1	−2.000		−2	−2
Sum of Sq	1	−7.900		−7.900	−7.900
F	1	18.503		18.503	18.503
Pr(>F)	1	0.00000		0.00000	0.00000

Finally, to assess the effect of MES, a third ANOVA is conducted and presented

in Table 3.12. Similar to the results in the first ANOVA, removing the MES from the regression has no significant effect on the predictive capability of the model. The results from these three ANOVAs corroborate the results from the regression analyses - the CNS is the strongest predictor of pro-environmental behavior in this sample.

Table 3.12: One-way analysis of variance for model 1 and model 4 (dropping MES)

Statistic	N	Mean	St. Dev.	Min	Max
Residual Df	2	344.000	1.414	343	345
Residual sum of Sq.	2	73.320	0.140	73.222	73.419
Df	1	−2.000		−2	−2
Sum of Sq.	1	−0.197		−0.197	−0.197
F	1	0.462		0.462	0.462
Pr(>F)	1	0.630		0.630	0.630

In bivariate regressions, each of the three environmental attitudes scales predicts pro-environmental behavior. But, when compared against each other in multiple regression and ANOVA, the CNS emerges as the most powerful predictor, with the NEP and MES only slightly reducing the error in the estimate. None of the three scales predict environmental behavior among Republicans.

Discussion

My attempt to re-write MES items that correlated too closely with NEP was largely unsuccessful. Table 3.8 provides the Pearsons correlations between environmental behavior, MES, NEP, and CNS. Instead of reducing correlation between MES and NEP, the data from this sample indicate an increase from 0.72 in study 1 to 0.78 in Study 2. This could be due to several reasons.

The first relates to the respondents themselves. Many respondents took a very short amount of time to answer all of the questions in the survey. I dropped everyone

from the sample in the lowest 10% of completion time to see if this could have driven similar answers among these respondents. The results do not change, and the correlation actually ticks slightly up to 0.81. It does not appear that faster survey-takers were responsible for this high correlation.

The second reason is the design of the survey. Between the three attitudinal measures and the behavioral index, respondents answered nearly 90 items about the environment. Even though the order was randomized and all three attitudinal measures include reversed items, it is certainly possible that many respondents simply did not read each question carefully and responded to them all in a similar fashion. Answering so many environmental questions may have been less of a problem for the undergraduate sample because they were using class time, not just trying to rush through the survey to collect their small payment through MTurk. In subsequent studies, I address this issue by having the respondents randomly assigned to only one of the attitudinal scales and then comparing each independently in terms of predicting environmental behaviors. Another option would be to offer a higher payment in the hopes that respondents would be more willing to take additional time answering the questions.

Study 3

As with Study 2, for this study I collect a sample using Amazon's Mechanical Turk. In this study I include the HEXACO personality inventory (Lee and Ashton, 2004) to test mediation of environmental behaviors. This iteration of the MES also allowed me to drop or tweak the items that loaded poorly on the underlying factor and/or had poor results in the IRT analysis. These statistical tests flag problematic items to be corrected in future surveys. I also hope to improve upon the factor

structure and item discrimination of the MES. There are 28 items in the MES in this iteration after removing the worst items from Study 2 and re-writing others.

Previous research has shown that Conscientiousness and Openness to new experiences (the C and O in HEXACO) positively predict pro-environmental behaviors (Brick and Lewis, 2014). These factors allow me to further test the convergent validity of the MES. These personality measures were included in the survey, along with a single-item measure of pro-environmental behavior and a second dependent variable measured by whether or not the respondents clicked on a link to learn more about things they could do to be more environmentally friendly. None of the three environmental attitude scales predicted either dependent variable. Thus, these regression results are not included in what follows. Only the psychometric results are presented.

Methods

Participants and procedures

377 participants were recruited through Mechanical Turk. Sample descriptive statistics are summarized in Table 3.13. One reason there may have been such high correlations among the three measures of environmentalism in Study 2 is because respondents took all three one after the other. To avoid the problem of response inertia, in Study 3 the participants were randomly assigned to take only one of environmental attitude batteries. This, of course, makes it impossible to directly test the correlation among the three measures.

All participants answered the HEXACO items, a single-item environmental behavior measure, and a measure of actual behavior. All participants were given the opportunity to click on a link to learn about more ways to be environmentally friendly. This behavior was recorded as a dichotomous variable.

Table 3.13: Descriptive statistics of sample

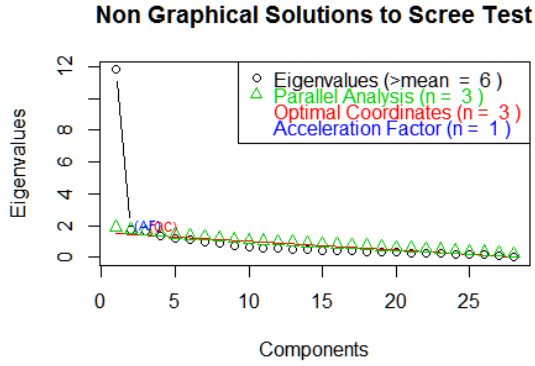
Variable	Mean	Std. Dev.	Percentage
Education (1-5)	2.75	1.09	–
Income (1-6)	2.29	1.14	–
Party ID	–	NA	16.7% (Republican)
Race	–	NA	72.7% (White)
Gender	–	NA	40.8% (Female)
Age	33.4	11.12	–
N	332		

Psychometric Results

Factor Analysis of MES

Once again, exploratory factor analysis reveals a single underlying factor as shown by the inflection point of the scree test in Figure 3.4. In preceding studies, parallel analysis and optimal coordinates suggested three and five factor solutions, respectively, even though the single factor was shown to be sufficient. In this case, parallel analysis and optimal coordinates only show three factors, evidence that the factor structure of MES is improving by removing and/or re-wording problematic items.

Figure 3.4: Scree plot of eigenvalues for MES



A second EFA calculates the factor loadings; the findings are presented in Table

3.14. Most items load above 0.3, with the exception of numbers 1,2,3,9,15,16, and 21. The mean of all 28 items is 0.42. Overall, the 28 item scale is highly reliable with a Cronbach's alpha of 0.95.

Table 3.14: Factor loadings and discrimination estimate for 28 item MES

Item	Loading	Discrimination
1.	0.26	0.88
2.	0.23	1.09
3.	0.29	1.09
4.	**0.34**	1.17
5.	**0.46**	4.23
6.	**0.35**	1.63
7.	**0.53**	3.16
8.	**1.00**	0.91
9.	0.25	0.75
10.	**0.51**	1.38
11.	**0.41**	1.93
12.	**0.37**	0.81
13.	**0.42**	1.97
14.	**0.72**	2.12
15.	0.24	1.74
16.	0.28	1.21
17.	**0.37**	1.91
18.	**1.00**	0.91
19.	**0.44**	1.13
20.	**0.35**	1.26
21.	0.28	1.41
22.	**0.37**	1.86
23.	**0.49**	0.95
24.	**0.49**	0.91
25.	**0.31**	0.70
26.	0.21	0.71
27.	**0.36**	0.79
28.	**0.41**	1.03

Note: bold font = loading above 0.3

Generalized Partial Credit Model

Results from the GPCM indicate that the scale contains items that vary in item

difficulty, with threshold estimates ranging from -3.44 to 56.581. Item discrimination shows modest improvement, with generally higher values than were found in Studies 1 and 2 with a range of 0.71 to 4.23 and mean of 1.42.

Results from both the EFA and the GPCM indicate an improved MES. The factor structure is more coherent, and items do a better job of discriminating between low and high levels of moral environmentalism among respondents.

Discussion

Results from Study 3 show continued progression of the MES as a measure of environmental attitudes. Factor analysis, the GPCM, and the Cronbach's alpha demonstrate a psychometrically valid scale. As stated in the introduction to this study, regression analysis on two dependent variables failed to yield significant findings for any scale, so I am unable to compare the MES to the NEP and CNS in this study.[9] There are two reasons why this may be the case. For one, by splitting the sample into three groups, each model only had approximately 120 respondents. Thus, the study may have been under-powered. Another problem could be poor measures for the dependent variables. Going from a 21 item battery to a single-item measure of environmental behavior is likely not as good of a measure. And the click dependent variable was worded in a way that likely does not appeal to those who are already doing a lot of pro-environmental behavior. Study 4 corrects the click dependent variable.

[9]The regression analysis with these results can be found in Table B.3 in the appendix.

Study 4

The purpose of Study 4 is to further test the psychometrics of the Moral Environmentalism Scale with a final version of the battery. This entails dropping one item that was shown to be ineffective in Study 3. In Study 4, participants are randomly divided into two groups. Half the participants only answered the MES items, and the other half only answered the NEP items. The CNS was left out to reduce cost and keep the sample size large for the respondents answering the MES questions, and the NEP provides a better comparison given the colinearity found between the NEP and MES in the previous studies. From Study 3, only a single-item is dropped because it is similar to other items and is very easy to disagree with, "Seeing litter in nature doesn't bother me." With that subtraction, the final version of the MES includes 27 items.

All participants answered three questions to measure anti-environmentalism. These are: "I identify as an anti-environmentalist;" "If I had to choose between the environment and the economy, I would choose the economy;" and "I am not an environmentalist." This allowed me to identify a group of people that may reject liberal environmentalism, but nevertheless affirm support for moral environmentalism the way I measure it.

The dependent variables in Study 4 are very similar to those used in Study 3. Once again, the single-item self-reported pro-environmental behavior item is used. In Study 4, I improved the click-on-link dependent variable. In both studies, participants were shown a message, "There are a number of easy things you can do in your home to lower your environmental impact. Are you interested in learning more about the steps you can take to be more pro-environmental? We can share resources with you right now. Just follow the link provided below. This is optional." In Study 3, the

hyperlink read, "17 easy ways to save the earth (opens new window)." In Study 4 the hyperlink read, "Additional ways to help the environment (opens new window.") This was done to make it less specific and more appealing to someone who is already doing a lot of pro-environmental behaviors. In other words, the more generic text may sound more enticing to people who already think they are doing a good job in terms of private environmental behavior.

Methods

Participants and procedures

Using Mechanical Turk, 448 participants were recruited. MTurk workers who completed previous surveys are excluded from this sample. Generally, the sample in Study 4 is similar to that used in studies 2 and 3. Descriptive statistics are summarized in Table 3.15. The sample is slightly older, whiter, more Republican, and 12% more Female.

Table 3.15: Descriptive statistics of sample

Variable	Mean	Std. Dev.	Percentage
Education (1-5)	2.85	1.08	–
Income (1-6)	2.46	1.12	–
Party ID	–	NA	17.4% (Republican)
Race	–	NA	74% (White)
Gender	–	NA	52% (Female)
Age	35.3	11.58	–
N	448		

Psychometric Results

Factor analysis of MES

Once again, exploratory factor analysis reveals that all 27 items load on a single underlying factor as shown by the inflection point of the scree test in Figure 3.5. Parallel analysis and optimal coordinates suggest a two-factor solution, which is lower than observed in Studies 1-3, providing further evidence that the factor structure of MES is improving by removing the single item.

Figure 3.5: Scree plot of eigenvalues for MES

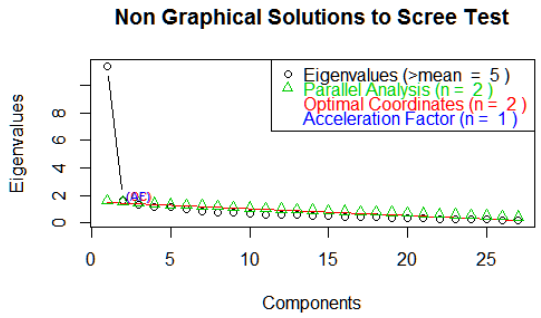


Table 3.16 presents the full psychometric results of the final set of MES questions and indicates which moral foundation the item belongs to, and the verbatim item wording. All items load strongly, ranging from 0.35 to 0.77 with a mean of 0.63. In fact, all but one item load above 0.5. The scale is highly reliable with a Cronbach's alpah 0.94. To the extent that there is a latent moral environmentalism trait, the MES provides an adequate measure of it.

Table 3.16: Moral Environmentalism items (27) with category threshold estimates, discrimination, and factor loadings, standard errors in parentheses (Study 4: Final version)

			Threshold					
	Morality	Wording	1	2	3	4	Dsc.	Loading
1.	Care	Humans have an overall positive effect on the natural environment (r).	−4.41* (1.323)	−1.90* (0.70)	−2.24* (0.66)	2.54* (0.80)	0.359* (0.08)	0.35
2.	Care	Unregulated economic growth harms the natural environment.	−4.50* (1.21)	−1.71* (0.44)	−2.20* (0.40)	0.99* (0.28)	0.68* (0.12)	0.50
3.	Care	The natural environment is being harmed by humans.	−1.80* (0.29)	−1.82* (0.22)	0.06 (0.14)		1.34* (0.19)	0.68

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Table 3.16 – continued from previous page

			Threshold					
	Morality	Wording	1	2	3	4	Dsc.	Loading
4.	Care	Untouched natural areas should be preserved.	−2.51* (0.79)	−2.78* (0.45)	−1.16* (0.21)	−0.06 (0.12)	1.50* (0.22)	0.64
5.	Fairness	We should keep the natural environment clean for future generations.	−2.13* (0.29)	−2.04* (0.19)	−0.46 (0.09)		2.26* (0.33)	0.71
6.	Fairness	Humans should be more tolerant of the rights of other animals and plants.	−3.28* (0.72)	−2.02* (0.25)	−1.22* (0.15)	−0.004 (0.13)	1.53* (0.21)	0.71
7.	Fairness	Protecting the earth protects our children.	−2.32* (0.30)	−1.78* (0.16)	−0.42* (0.09)		2.10* (0.29)	0.69

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Table 3.16 – continued from previous page

			Threshold					
	Morality	Wording	1	2	3	4	Dsc.	Loading
8.	Loyalty	Protecting the environment does not benefit my community (r).	−3.14* (0.75)	−1.92* (0.31)	−2.01* (0.23)	−0.11 (0.12)	1.48* (0.21)	0.66
9.	Loyalty	It is patriotic to consider the environment in our decisions.	−2.83* (0.70)	−2.64* (0.41)	−0.70 (0.21)	0.76* (0.23)	0.85* (0.13)	0.52
10.	Loyalty	The United States should not reduce pollution when other nations aren't helping (r).	−2.96* (0.55)	−1.18* (0.30)	−1.93* (0.27)	−0.66* (0.16)	1.24* (0.18)	0.62

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Table 3.16 – continued from previous page

		Threshold					
Morality	Wording	1	2	3	4	Dsc.	Loading
11. Loyalty	United States parks and green spaces are national treasures.	−1.87* (0.27)	−2.09* (0.22)	−0.49* (0.09)		2.14* (0.31)	0.70
12. Loyalty	It is patriotic to preserve natural resources.	−2.19* (0.58)	−2.80* (0.41)	−0.85 (0.18)	0.29 (0.16)	1.07* (0.16)	0.60
13. Authority	It is our duty to protect the earth.	−2.32* (0.24)	−1.43* (0.12)	−0.45* (0.08)		2.78* (0.42)	0.76
14. Authority	Respecting the earth means not polluting.	−2.05* (0.22)	−1.67* (0.15)	−0.31* (0.08)		2.63* (.40)	0.77

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Table 3.16 – continued from previous page

		Threshold					
Morality	Wording	1	2	3	4	Dsc.	Loading
15. Authority↓	Dominion over the earth means we should protect nature.	−3.38* (0.89)	−2.18* (0.34)	−1.73* (0.22)	0.18 (0.15)	1.24* (0.18)	0.62
16. Authority↓	Reducing our use of fossil fuels will make the United States more independent.	−3.51* (0.81)	−1.87* (0.32)	−1.43* (0.23)	−0.13 (0.18)	1.00* (0.15)	0.61
17. Authority↓	It should be our tradition to conserve natural resources.	−2.25* (0.55)	−2.64* (0.36)	−1.67* (0.15)	−0.05 (0.09)	2.34* (0.34)	0.73

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Table 3.16 – continued from previous page

			Threshold					
	Morality	Wording	1	2	3	4	Dsc.	Loading
18.	Sanctity	Nature is sacred.	−2.08*	−2.06*	−1.30*	−0.54*	1.38*	0.69
			(0.42)	(0.30)	(0.18)	(0.14)	(0.20)	
19.	Sanctity	The purity of nature is threatened by human activities.	−2.49*	−1.87*	−1.48*	−0.13	2.30*	0.78
			(0.38)	(0.21)	(0.14)	(0.09)	(0.36)	
20.	Sanctity	Nature should be kept wild and free from human encroachment.	−3.10*	−1.82*	−0.88*	0.60*	1.42*	0.70
			(0.56)	(0.22)	(0.14)	(0.15)	(0.19)	
21.	Sanctity	Pollution is gross.	−2.28*	−1.97*	−2.48*	−0.78*	1.52*	0.60
			(0.59)	(0.42)	(0.32)	(0.13)	(0.25)	

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Table 3.16 – continued from previous page

			Threshold					
	Morality	Wording	1	2	3	4	Dsc.	Loading
22.	Sanctity	People do not benefit from a pristine natural environment.	−2.40* (0.61)	−1.56* (0.42)	−2.28* (0.36)	−0.52* (0.19)	0.91* (0.15)	0.54
23.	Liberty	Protecting the earth does not protect my freedom (r).	−3.51* (0.71)	−1.77* (.31)	−0.64* (0.23)	0.35 (0.23)	0.84* (0.12)	0.55
24.	Liberty	Being in nature makes me feel free.	−2.47* (0.44)	−2.00* (0.28)	0.36* (0.18)		.99* (0.15)	0.51
25.	Liberty	Having wild places increases our liberty.	−4.05* (1.07)	−2.37* (0.33)	−0.85* (0.18)	0.61* (.19)	1.02* (0.14)	0.57

Continued on next page

Table 3.16 – continued from previous page

			Threshold					
	Morality	Wording	1	2	3	4	Dsc.	Loading
26.	Liberty	Private land owners should be forced to stop development that threatens an endangered species.	−2.04* (0.53)	−2.02* (0.40)	−1.01* (0.26)	0.62* (0.26)	0.72* (0.11)	0.55
27.	Liberty	Our personal freedoms are more important than environmental protection. (r).	−2.70* (0.53)	−1.62* (0.31)	0.05 (0.27)	0.75* (0.30)	0.71* (0.11)	0.57

Generalized Partial Credit Model

Item discrimination is also improving. The 27 item scale ranges from 0.36 to 2.78 with a mean of 1.42. There are fewer items with low discrimination. Taken altogether, this suggests that MES does a good job of discriminating between people with low levels of moral environmentalism from people with high levels of moral environmentalism.

Most items contain four threshold estimates. There are several that only have three categories. The threshold is the amount of logits required to bump the respondent from the lowest response category into the next highest. In the cases of items with only three thresholds it is the case that even with an effective sample size of 223, there was one response category left blank. The more negative the estimate for the threshold the easier it is to endorse. Threshold estimates range from -4.41 to 2.54.

The main takeaway from these psychometric analyses is that across all moral foundations, the MES items vary in difficulty, as demonstrated by the ranging item threshold estimates. And, all items load, above 0.5, with one exception, on a single underlying factor. This indicates a psychometrically valid scale.

Regression Results

Summary statistics for the key variables are presented in Table 3.17. Respondents were randomly assigned to take one of the two environmental attitude batteries. This makes it impossible to look at their correlations, but the means are similar. The MES has a mean of 4.11 (sd = 0.56). The NEP has a mean of 3.96 (sd=0.95). Both the MES and NEP are all very internally consistent with Cronbach's alphas of 0.94 and 0.93, respectively.

Table 3.17: Summary statistics of key measures

	Mean	Std. Dev.	Cronbach's alpha
Behavior	3.56	0.86	NA
Clicked	0.27	0.44	NA
MES	4.11	0.56	.94
NEP	3.96	0.95	.93
Anti-Env.	0.93	1.25	NA

Results from a regression analysis on the single-item measure of pro-environmental behavior are presented in Table 3.18. Again, the main goal of this analysis is to provide a comparison of the MES and NEP based on how strongly they predict pro-environmental behavior and if MES predicts environmental behavior among people who identify as Republicans. To examine the moderated relationship, I use interaction terms by multiplying the MES and the NEP with the dichotomous Republican variable. In effect, this allows me to see the impact of increasing environmental attitudes among Republicans on environmental behavior.

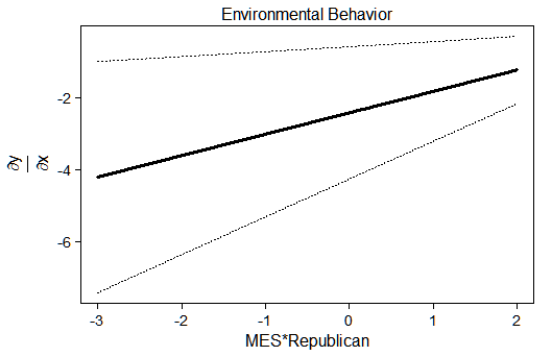
Table 3.18: Impact of MES, NEP, and Republican Party Id on environmental behavior

	Environmental behavior	
	(1)	(2)
MES	0.268**	
	(0.105)	
NEP		0.274***
		(0.072)
Republican	−2.423**	0.052
	(0.934)	(0.576)
MES*Republican	0.595**	
	(0.234)	
NEP*Republican		0.004
		(0.159)
Observations	223	224
Adjusted R^2	0.091	0.068

Note: Standard errors in parentheses.*p<0.1; **p<0.05; ***p<0.01

As expected, both the MES and NEP are positive and significant predictors of environmental behavior. The anti-environmentalist variable is not significant and was dropped from the equations in these analyses.[10] In model 1, Republicans are less likely to report engaging in pro-environmental behavior. To further investigate this relationship, Figure 3.6 displays the marginal effects. Marginal effects show that the standard errors decrease at the higher ends of the interaction term, meaning that the relationship is only significant at higher levels of MES among Republicans. The NEP does not provide any leverage in predicting Republican environmental behavior.

Figure 3.6: Marginal effects of interaction between MES and Republican on environmental behavior



To compare the MES and the NEP, I look at the change in the dependent variable when moving from the first quartile to the third quartile for both scales multiplied by the regression coefficient. For the MES, there is a 0.209 change in environmental behavior. For the NEP, there is a 0.353 change.[11] Thus, when holding all the other values constant, the NEP has a larger effect than the MES on pro-environmental

[10]The anti-environmentalist variable was too negatively colinear with both environmentalism variables, making it impossible to include in the regression equation

[11]MES: first quartile = 3.778, third quartile = 4.556. NEP: first quartile = 3.383, third quartile = 4.673.

behavior.

The second set of models in Study 4 use the observed behavior of clicking on the link to learn more about environmental behaviors. I estimate a model using the same specifications[12] to compare the MES and NEP on the link-click dependent variable. As in Study 3, neither the MES nor the NEP predicted the link-clicking behavior. In fact, none of the variables are significant predictors, so I do not show the results. Even with improvements to the measurment of the dependent variable, there is no pattern to who clicked and who did not.

Discussion

The MES in its final iteration successfully predicts Republican environmental behavior and the NEP does not, providing evidence for the core claim of the MES. By writing items using conservative moral language, I am able to measure environmentalism among Republicans that the other scales cannot.

The NEP is slightly stronger at predicting environmental behavior. However, a key part of the argument in this chapter is that the MES is superior because it can better measure pro-environmental attitudes among conservatives. Evidence from the regression results supports this claim. Even among Republicans, the higher they are on MES, the more likely they are to report pro-environmental behavior. The same was not true for the NEP. Additionally, for the MES, all 27 items load strongly on a single factor, demonstrate an adequate range in difficulty, and distinguish between low and high levels of moral environmentalism.

[12]Results do not differ with logistic regression.

Conclusion

I constructed the Moral Environmentalism Scale by applying Moral Foundations Theory to environmental attitudes. I mapped items to the moral environmentalism construct to develop a theoretically rigorous measure of environmental attitudes. Because these moral foundations roughly map to ideology, it is possible to use the language of each domain to generate items that tap into both liberal and conservative ideology, all the while focusing on the environment. This is my approach with the MES. The items present in the NEP and CNS are not designed to measure environmental attitudes across the ideological spectrum.

Moral Foundations Theory (Graham et al., 2009) lays out six dimensions of morality. The MES items are meant to measure environmentalism using the six dimension framework. However, this does not mean that there are six dimensions of moral environmentalism that the MES seeks to assess. Indeed, factor analysis shows that the MES models a single latent trait, environmentalism. The benefit of MES over other scales is that it picks up on a part of environmentalism that is associated with conservative moral foundations.

Throughout the progression of the four studies, the psychometrics of the MES were improved upon by dropping or re-writing problematic items. The final 27 item scale includes items that tap into both low and high amounts of environmental attitudes. Additionally, all 27 items load strongly on a single underlying construct. The MES is also internally consistent across all four samples, with a Cronbach's alpha exceeding 0.9 in all four studies.

The results from regression analyses are more mixed. The CNS was consistently a stronger predictor of environmental behavior, but it did not predict among Republicans. In Studies 1,2,3 the MES was stronger than the NEP. In Study 4, the NEP was

slightly stronger. The key finding, however, was that the MES predicts environmental among Republicans, lending support to the idea that a new measure is needed that does not confound with liberal environmentalism.

Overall, these results suggest that future research could use the MES as an adequate measure of environmental attitudes, especially in cases where researchers are particularly interested in Republican or conservative environmental behavior. Findings from this chapter may provide important insight into how best to convince anti-environmentalists of the need to support higher levels of environmental protection and motivate them to do their part in private.

The utility of the MES should be tested on a wider range of dependent variables, such as support for policy goals or engaging in explicitly political environmental activism. And, while the Mechanical Turk samples are adequate for testing the psychometric validity of the scale and providing a preliminary analysis of its predictive impact on pro-environmental behavior, a larger representative sample would provide a more externally valid test.

Chapter 4

Climate Change in Your Backyard: When climate is proximate, people take action

Abstract

This chapter explores the hypothesis that when the environment generally, and climate change specifically, is more psychologically proximate there is a greater willingness among respondents to take action for greater protections. In the first study, I use data from the General Social Survey 2010 which included items looking at environmental activism. Building on the findings in chapter 2, the *psychological proximity hypothesis* is supported. In a second study, using data collected through Mechanical Turk, I explore the hypothesis while looking specifically at climate change activism. This study uses an embedded experiment to see how priming a respondents with a local map of climate change and a global map of climate change affects engaging in climate related activism. The experimental condition resulted in null findings, how-

ever, measures of psychological proximity predict two different measures of climate activism. As the evidence from both studies show, environmental issues are proximate, people tend to care more about them, and are more likely to take political action to address the problem.

Introduction

There is little scientific debate that drastic action is required to address climate change. Even with a majority of the US public believing that climate change is a problem, there has been little legislative activity on the national level to address the problem of carbon emissions. Early in President Obama's first term, the US House of Representatives passed H.R. 2454, the American Clean Energy and Security Act, that would have capped and carbon emissions and constructed a market for trading carbon credits. This cap and trade scheme had previous bipartisan support in the Senate, but with the election of Obama, all Republicans opposed the measure. Democratic leadership had to wrangle 16 moderate Democratic Senators in order to end a Republican filibuster. They were unable to do so, and the bill died without a vote on the Senate floor (Skocpol, 2013). That was in 2009, and since then, there has not been a major effort to pass a federal level climate or energy policy.[1]

The legislative process is complex, and there is no easy answer as to why the bill failed. However, political scientist Theda Skocpol places a great deal of blame on environmental groups for failing to mobilize their membership in states with Democratic, or even moderate Republican, senators that may have been persuaded to vote for the bill if their constituency was actively pushing for their support (Skocpol, 2013). In

[1]It should be noted that through executive action, President Obama implemented the Clean Power Plan, which would have cut carbon emissions from power plants by 30%. However, President Trump is currently working to dismantle the plan through executive actions of his own.

this case, the decisions environmental organizations made were important, but motivating action on climate change is a difficult task. One reason is that for a long time climate change was talked about as being something that would happen in the future and mostly to people far away (Spence et al., 2012).

I use Construal Level Theory (Trope and Liberman, 2003, 2010) to generate the *psychological proximity hypothesis,* that is, that when people perceive climate change to be psychologically proximate, they are more likely to take action. In this chapter, I show that psychological proximity helps motivate climate activism. Additionally, I use a novel measure of environmental attitudes to uniquely predict climate activism. Within this framework, indicators of psychological proximity predict higher levels of climate activism.

The environment generally (Study 1) and climate change specifically (Study 2) serve as appropriate test cases for the *psychological proximity hypothesis* because these issues naturally vary in the psychological distance an individual may perceive either environmental problems or climate change. There are two mechanisms of the the *psychological proximity hypothesis*. The issue public mechanism: the psychological proximity of the environment predicts membership in the environment issue public which in turn predicts environmental activism. The concrete mechanism: when the environment is proximate, people are more likely to take action because they tend to perceive the environment in concrete terms and thus directly link the concrete problem to a specific action to mitigate it.

Study 1 probes both mechanisms of the *psychological proximity hypothesis* with 2010 General Social Survey data that included a module of environmental questions. OLS regression analysis shows that both environmental issue public and proximity of environmental issues positively predict environmental activism. Additionally, prox-

imity corresponds to higher levels of environmental issue public membership.

In Study 2, I further investigate the *psychological proximity hypothesis* by considering the specific case of climate change activism among Californians. I collect data through Amazon's Mechanical Turk. Both mechanisms of the hypothesis are supported by the findings. When climate change is proximate, people are more likely to be in the climate change issue public. People in the issue public are more likely to take action on the climate. And in support of the concrete mechanism, when climate change is proximate, people are more likely to take action. I also report null results from an embedded survey-experiment.

Modeling environmental activism

In their seminal work on civic voluntarism, *Voice and Equality*, Verba, Schlozman, and Brady 1995 present a model that seeks to understand the bases of civic engagement. Their work is sweeping and broad, covering much of American society, and has informed scholarship on participation for 20 years.[2] Yet, only one study directly tests the CVM (Verba et al., 1995) using environmental activism as the dependent variable (Barkan, 2004). Barkan aggregates several environmental activist behaviors. Specifically, these activities are environmental group membership, signing a petition about an environmental issue, giving money to an environmental group, and participating in a protest over an environmental issue. The model contains variables for environmental attitudes, ideology, and religiosity. Liberals had higher rates of environmental activism and the religiously devout had lower rates. Women and people with higher income and higher education also participated more frequently in these acts of environmental activism (Barkan, 2004).

[2]For a more complete explanation of the CVM, see chapter 1.

To further understand environmental activism, the Collective Interest (CI) model (Lubell, 2002; Lubell et al., 2007) predicts that participation is more likely to occur when costs are low and benefits are high. In light of this, environmental activism can be readily understood as a function of individuals achieving a greater share of the collective benefit in relation to their personal cost. Building on this work, the CI model has also been shown to effectively explain global warming activism. It explains both policy support and the willingness for individuals to change their own behavior to implement these changes (Lubell et al., 2007).

In a specific case, the CI model was applied to air quality policy in Texas. The authors find, "citizens who perceive a high risk from air pollution, trust environmental groups, have environmental values, and believe they can make a difference are more likely to support stricter air quality policies and express willingness to engage in air-friendly behaviors" (p. 158). Costs and benefits may be localized to explain varying behavior. In opposition to the basic CVM there is greater support for activism among minorities, probably in response to environmental justice concerns of unequal siting of pollution generating industry. The higher risk faced by poorer minority groups then outweighs the higher cost of collective action needed to overcome educational and social barriers (Lubell and Vedlitz, 2006). Though the authors do not use this language, psychological proximity may help motivate action. However, it is important to be able to distinguish between a benefits outweighing the costs and other psychological motivations. Study 2 addresses this by controlling for financial benefits as a result of climate mitigation/adaptation.

The CVM has to do with individual characteristics, most notably socio-economic status. The CI model relies on the logic of collective action. Neither model does much to incorporate environmental attitudes or values which I expect to be an important

contributor to environmental activism. The Values Beliefs Norms (VBN) model was conceived to look at why people support social movements, and more specifically, environmental movements (Stern et al., 1999). The base for this support is made of "values, beliefs, and personal norms" and how those lead to an awareness of obligation for the individual to act (p.83).

Values are a set of stable, underlying psychological attributes that are related to personality and contribute to attitude formation. These converge in some individuals who accept the new ecological paradigm (NEP). An individual must then become aware of the consequences of inaction, then undergo a process of ascription of responsibility wherein the individual believes his/her actions can make a difference. This leads into the development of what the authors call a pro-environmental personal norm. This connection is consistent with Schwartz's norm activation theory (Schwartz, 1977). Norms that drive behavior are activated by beliefs about adverse consequences. In this case, holding this norm leads to pro-environmental activities such as environmental activism, environmental citizenship, policy support, and private-sphere behaviors (p. 84). As different types of the underlying values are manipulated, it is possible to predict which kinds of actions the individual would engage in. It is essential that people feel a sense of responsibility and efficacy to move them from being environmental sympathizers to environmental activists. There are also three other types of causal variables in addition to the attitudinal ones already discussed that play an important role in the updated model (Stern, 2000). These are personal capabilities, contextual factors, as well as habit and routine.

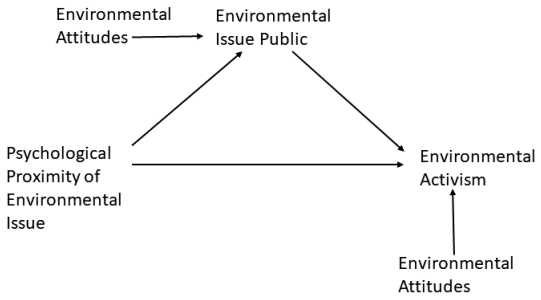
Elsewhere, contextual factors have been shown to be the most important factor for whether or not the person is a member of an environmental organization (McFarlane and Hunt, 2006). This still leaves out where the altruistic, egoistic, or biospheric

values come from. One way to investigate values in greater depth is to use in-depth interviews with people who are already engaged in pro-environmental behaviors. One such study uses a sample of people who are taking steps to reduce their carbon footprint (Howell, 2013). This research is concerned with the values and motivations that these individuals expressed as the reasons for their behavior (Howell, 2013) which helps shed light on the VBN model. Concern for social justice emerged as a stronger motivator for their actions than biospheric concerns (Howell, 2013). This research is helpful in understanding how to target messages to motivate behavior (see (Heberlein, 2012)). Even if some individuals could not be motivated to change their actions based on concern for the natural environmental it may be possible to encourage some people to change based on their already existing concern for social equality. However, this study may suffer from selection bias. The sixteen participants were recruited through two groups and from among of group of people that showed up to a watch a film on climate change (Howell, 2013). With this small sample, and with related subjects, it is possible that they all were uniquely motivated by social justice concerns because of some other social connection not environmental justice alone.

Environmental Activism Model

The literature on modeling environmental activism can be summarized in the following way: As with general political participation, individual characteristics highlighted by the CVM (Verba et al., 1995) remain important factors (Barkan, 2004). Many people are motivated to act when the benefits of acting outweigh the costs (Lubell, 2002; Lubell and Vedlitz, 2006; Lubell et al., 2007). And, when values align to form a pro-environmental worldview, people are more likely to engage in environmental action (Stern et al., 1999; Stern, 2000).

Figure 4.1: Simple path diagram of *psychological proximity hypothesis* applied specifically to environmental activism



In this chapter, I posit a model of environmental activism which focuses on psychological proximity. Therefore, in addition to signifiers of resources, recruitment into the movement, psychological engagement from the CVM (Verba et al., 1995), and environmental attitudes from the VBN (Stern, 2000), I include indicators of the psychological proximity of the environment in the environmental activism model. In essence, the *psychological proximity hypothesis* is the novel contribution to this literature. I present a simple path diagram that illustrates the *psychological proximity hypothesis* as it relates to environmental activism specifically in Figure 4.1. Because this model is used to predict environmental activism specifically, I also include the environmental attitude variable.

When controlling for resources, recruitment, and other sources of psychological engagement the *psychological proximity hypothesis* operates on two proposed mechanisms. First, the issue public mechanism: the psychological proximity of the environment predicts membership in the environment issue public which in turn predicts environmental activism. Second, the concrete mechanism: when the environment is proximate, people are more likely to take action because they tend to perceive the environment in concrete terms and thus directly link the concrete problem to a specific

action to mitigate it.

Study 1: Environmental Activism

In this study, I test the *psychological proximity hypothesis* in the case of environmental activism, which is a close replication of Barkan 2004 but with the addition psychological proximity variables. The GSS 2010 ISSP Environmental module (N=1400) data allow for the possibility of including psychological proximity and environmental attitudes as explanatory factors in the model. With these data, I test both mechanisms of the *psychological proximity hypothesis*. First, I use an indicator of psychological proximity of the environment to predict issue public membership while controlling for other factors. Then I include environmental issue public as an independent variable in a regression of environmental activism. Also included in that regression is the variable for psychological proximity, thus testing the concrete mechanism.

I expect the coefficients for psychological distance, environmental attitudes, and environmental issue public to be positive and significant, indicating higher levels of environmental activism, even while controlling for the other factors in the CVM. More formally, I am testing the hypotheses that *ceteris paribus,* individuals who perceive environmental problems to be more psychologically proximate, hold pro-environmental attitudes, and are members of the environmental issue public will report higher levels of environmental political activities.

Measurement of key independent variables Psychological Proximity

Psychological proximity is operationalized using a single question that asks the level of agreement with the statement: "environmental problems have a direct effect on my everyday life." Responses range from agree strongly to disagree strongly. Although

this is only a single item, and a battery of items would do better, it should work as a measure of psychological distance because it asks about the respondent to relate his or her everyday experience to the environment. So, responding that one strongly agrees that environmental problems affects his or her everyday life suggests that he or she has personal experience, or at least the perception of personal experience with environmental problems which is at the core of psychological proximity.

Environmental Attitudes

Environmental attitudes are operationalized using two items. The 2010 GSS includes a two items that tap into environmentalism in a similar way as the NEP (Dunlap et al., 2000). The questions ask about harming the environment and the sustainability of population growth. I average them to create a two-item index for environmental attitudes. Certainly, I expect these measures to suffer from some of the same problems as the NEP and CNS (Mayer and Frantz, 2004),[3] but it is the best possible way to include environmental-oriented attitudes in the model.

Environmental Issue Public

Environmental issue public is operationalized using three separate items. The GSS asks a version of the most important problem question. It also asks how concerned the respondent is about about environmental problems. I create a dummy variable that includes anyone who placed the environment as the first or second most important problem or who indicates that they are very concerned about the environment into the issue public. Unfortunately, the GSS does not ask the same "how important is this issue" question that the ANES does meaning that that the operationalization for membership in an issue public is not a direct comparison to chapter 2.

Despite differences in item wording, there are two reasons to think it is indicating

[3]See chapter 3 for complete discussion of these scales.

something similar. The GSS item asks about environmental concern on a five-point Likert scale. First, concern and thinking the issue is important are similar constructs. Second, the five-point response scale is also the same. This operataionalization does have a higher mean than any of the single issues in the ANES from chapter 2. However, a more encompassing issue public definition should make it more difficult to find a significant coefficient in the regression analysis. In other words, this is a more conservative test.

Measurement of dependent variable

Environmental Activism Index

The environmental activism index is based on yes or no responses to four questions relating to environmental activism. The four actions included in the index are participating in an environmental demonstration or protest, being a member of an environmental group or organization, giving money to an environmental group or organization, and signing a petition on an environmental issue. Only 26 % of the sample had participated in at least one of these action, and less than 1 % had completed all four. All items load on a single factor (see Table C.1 in the appendix). The scale is somewhat reliable with a Cronbach's alpha of 0.62.

Proximity and issue public membership

In this section, I delve into the causal mechanism that may be at work in the relationship between psychological proximity, environmental attitudes, and issue public membership which is the first part of mechanism A of the *psychological proximity hypothesis*. Using OLS I estimate a model of environmental issue public membership. Included in the model are variables for psychological proximity, environmental attitudes, and a seven point liberalism scale as a control to better isolate the effect of

environmental attitudes. The results are presented in Table 4.1.

Table 4.1: Impact of psychological proximity, environmental attitudes on environmental issue public membership, controlling for ideology

	Environmental issue public
Psychological proximity	0.108***
	(0.013)
Environmental attitudes	0.071***
	(0.016)
Liberal (1-7)	0.045***
	(0.009)
Observations	1,328
Adjusted R^2	0.108

Note: OLS regression coefficients. Standard errors in parentheses.
2010 GSS data.*p<0.1; **p<0.05; ***p<0.01

As the results demonstrate, the psychological proximity of the environment correlates with membership in the environment issue public. Holding pro-environmental attitudes and liberal ideology also both independently predict environmental issue public membership. In sum, these results provide partial support the issue public mechanism of the *psychological proximity hypothesis*. The next step is to connect issue public membership to environmental activism. I turn to the full model of environmental activism in the following section to address this relationship in addition to the direct independent effect of proximity.

Environmental Activism

In this section, I evaluate the complete model of environmental activism specified above. Specifically, I test the *psychological proximity hypothesis* using multivariate

ordinary least squares regression within the framework of the CVM. This analysis seeks to explain the link between issue public membership and environmental activism which is the second part of the issue public mechanism. And, perhaps more critical to the *psychological proximity hypothesis*, regression analysis makes it possible to look at the direct effect of proximity on environmental activism, that is, the concrete mechanism. I estimate a model with psychological proximity, environmental attitudes, environmental issue public membership as the key independent variables. I include controls from the CVM for psychological engagement (strong partisan and efficacy), resources (income, education, and gender, and recruitment (employed).[4] The results are presented in Table 4.2.

[4]The employed variable is a proxy for recruitment rather than resources because people who are employed are more likely to have access to networks of political activity.

Table 4.2: OLS regression of environmental activism on psychological proximity, environmental issue public, environmental attitudes, and other predictors, 2010 GSS data

	Environmental activism
Psychological proximity	0.025^{***}
	(0.006)
Environmental attitudes	0.020^{***}
	(0.008)
Environmental issue public	0.043^{***}
	(0.013)
Environmental Efficacy	0.016^{***}
	(0.003)
Strong partisan (dummy)	0.026^{**}
	(0.013)
Liberal	0.022^{***}
	(0.004)
Income	0.018^{***}
	(0.005)
Education	0.037^{***}
	(0.008)
Employed (dummy)	-0.006
	(0.012)
Female	-0.034^{***}
	(0.012)
Observations	1,120
R^2	0.183
Adjusted R^2	0.176
Residual Std. Error	0.190 (df = 1109)
F Statistic	24.869^{***} (df = 10; 1109)

Note: OLS regression coefficients. Standard errors in parentheses.
2010 GSS data.*p<0.1; **p<0.05; ***p<0.01

Both mechanisms of the *psychological proximity hypothesis* are supported. First, membership in the environment issue public predicts environmental activism when controlling for the other factors. This completes the issue public mechanism. In the section above, proximity correlated with an increase in issue public membership. Here, issue public membership is associated with higher levels of reported environmental activism.

Secondly, the concrete mechanism finds empirical support. The measure of psychological proximity, "The environment effects my everyday life," positively predicts environmental activism while controlling for environmental issue public membership, environmental attitudes, and other factors known to be covariates of political activism. When people perceive the environment to impact their everyday life, they are more likely to say that they would take part in environmental activism, even when controlling for other important factors. More specifically, this finding supports the concrete mechanism of the hypothesis. When the environment is proximate, people are more likely report engaging in specific political activities related to the environment.

Discussion

Psychological proximity is a significant predictor of environmental activism even when accounting for competing explanations. Holding pro-environmental attitudes, maintaining a sense of efficacy in the face of environmental problems, and socioeconomic status relate to environmental activism as well.

Overall, the results from this study using 2010 GSS data support the *psychological proximity hypothesis*. There is evidence for both of the proposed mechanisms. The issue public mechanism is demonstrated in two stages. First, psychological proximity

of the environment corresponds with higher levels of issue public membership. second, in a separate analysis, issue public membership positively predicts environmental activism.

The concrete mechanism is validated with results from the second regression. There is an independent relationship between the psychological proximity of the environment and higher levels of environmental activism while holding everything else constant. Even when accounting for issue public membership, proximity is associated with an increase in activism providing evidence for the dual mechanisms of the *psychological proximity hypothesis*.

Study 2: Climate change activism

In this study, I look specifically at political activism around the issue of climate change. Climate change is an excellent test case of the *psychological proximity hypothesis* because the impact of climate change varies by geographic location. Over the past year, during which the survey was in the field, California experienced an end to a record drought and massive snowfall totals. The extent to which people perceive weather events to be a function of climate change may have important implications for how willing they are to take part in political action to address the climate.

Furthermore, by focusing on a single issue and using novel measures of psychological proximity and a survey-experiment, I am able to get a more nuanced understanding of the *psychological proximity hypothesis*. The analysis follows a familiar path, first I investigate the first half of the issue public mechanism by modeling climate change issue public with psychological proximity and environmental attitudes. I then include the issue public variable as an independent variable in a second multivariate regression analysis to test the second part of the issue public mechanism.

The second mechanism, the concrete mechanism, is tested by including psychological proximity as an independent variable in the same multivariate regression. This provides the ability to detect the un-moderated effect of the psychological proximity of climate change on climate activism.

To carry out this study, I recruited 604 participants in California through Amazon's Mechanical Turk service (MTurk). I chose to limit the sample to California in order to make a more effective experimental prime. California's population is also diverse and generally thought to be more environmentally conscious, making it a good place to look for climate activists. Although MTurk workers are not as representative as those from recruited random sampling, the main purpose of this study is to test for correlation between psychological proximity and activism and an experiment. Results cannot be generalized to California as a whole, but they do provide support for the hypotheses being tested.

Table 4.3 summarizes the descriptive statistics for the sample. In general, the sample is fairly well educated, with the average participant having a two-year college degree. The sample is fairly young, racially diverse, and balanced between Democrats and Republicans and liberals and conservatives. Slightly more males participated than females.

Table 4.3: Descriptive statistics of MTurk sample

Variable	Mean	Std. Error	Percentage
Education	4.24	1.23	–
Age	35.9	12.25	–
Ideology (lib-Con)	3.30	1.74	43.2% (Liberal)
Party ID	–	NA	47% (Democrat)
Race	–	NA	54.6% (White)
Gender	–	NA	52% (Male)
N	604		

Measurement of key variables

Independent Variables:

The survey instrument contains three sections. The first part of the survey measures environmental attitudes using the 27 item Moral Environmentalism scale (MES), as developed in the previous chapter. Measures of other attitudes related to climate change specifically are also included in this section. The second part of the survey contains the embedded experiment and measurement of the dependent variables. Finally, the third section asks demographic questions used as control variables. Table 4.4 summarizes the key variables used in the regression analysis.

Environmental Attitudes

Environmental attitudes are important predictors of environmental behavior. In this study, I measure environmental attitudes using the Moral Environmentalism Scale (MES). The previous chapter contains the individual item wording as well as results from estimating a generalized partial credit model and factor analysis that demonstrate favorable psychometrics. The scale is highly reliable with an alpha of 0.95. The measure ranges from 1.3 to 5 with a mean of 4.11.

Psychological proximity

Psychological proximity is measured by using five items written to tap into the four dimensions of CLT. To measure social distance, I ask, "Do any of your friends and/or family members care about climate change?" To measure spatial distance, I ask, "for the most part, is climate change a local, state, regional, national, or global issue?" To measure temporal distance, I ask, "does climate change affect you currently, in the near future, or the more distant future?" To measure hypothetical distance, I ask, "how likely is climate change to affect you personally?" I also ask, "does climate change affect your everyday life?"

Four of the five items are averaged to create a single index of psychological proximity. Factor analysis reveals that four items load on a single factor (shown in Appendix Table A.1. The spatial distance indicator does not load on this factor, the scale is not very reliable with an alpha of 0.59. Because the spatial distance variable does not load on the same factor as the other four variables, it is excluded from the scale used in the primary regression analysis. [5] By removing the spatial distance variable, the scale becomes much more reliable with a Cronbach's alpha of 0.75.

Psychological proximity experimental prime

The second part of the survey includes an embedded experiment in which participants were randomly assigned to one of three conditions to manipulate the psychological proximity of climate change. In the first condition, participants were shown a map depicting global temperature projections through 2099. This is the global condition and is included to prime respondents to perceive climate change more psychologically distant and potentially in a more abstract manner. The second experimental condition presents participants with a map depicting California temperature projections also through 2099. This condition is intended to prime psychological proximity and a more concrete construal. A third experimental condition acts as a control, respondents assigned to this condition received a short statement, thanking them for their continued attention to the survey.

Issue Public Membership

Issue public membership is measured using the same wording that is used in the National Election Studies; "How important is climate change to you personally?" Respondents select from a five point scale, ranging from not important at all, to extremely important. Following Han 2009, I then create a dummy variable by coding

[5] When included, there is no difference in the regression findings.

each respondent answering extremely important as a member of the issue public. All other responses are coded zero.

Dependent Variables:

Climate action index

This study employs two separate measures of climate activism. The first is the self-reported likelihood of engaging in a particular action, mirroring the GSS 2010 items used in Study 1. Participants answered four questions on a sliding scale from zero (very unlikely) to 100 (very likely. They are: "How likely are you to join an organization or group that is working politically on climate change?" "How likely are you to attend a political rally or protest about climate change?" "How likely are you to give money to an organization that focuses on climate change?" And, "How likely are you to post on social media about climate change?" Responses are averaged to create the index with a range of 0-100 and a mean of 41.9. All items load on a single factor (see Table C.1 in the appendix). The measure is highly reliable with a Cronbach's alpha of 0.90.

Observed climate action

The second measure of climate activism is based on the observation of climate activism. First, all participants are given the opportunity to write their member of congress a letter. If the participant does not write a letter, he or she is asked why not. If the participant selects the choice, "I would prefer to contact my elected official directly," he or she is given an opportunity to click on a link to get the contact information for their representative. 36% of the participants wrote a message. An additional 114 participants clicked on the link to get contact information. Combining these two measures of activism results in a dummy variable coded as 0 for non-activism and 1 for activism. Overall, 55% participants took action.

Table 4.4: Summary statistics of key measures

	Mean	Std. Dev.	Cronbach's alpha	Action	MES	Proximity
Action	41.88	28.78	.90	-		
MES	4.11	0.62	.95	.39*	-	
Proximity	1.96	0.56	.75	.45*	.42*	-
Issue Public	0.26	0.44	NA	.42*	.44*	.38*

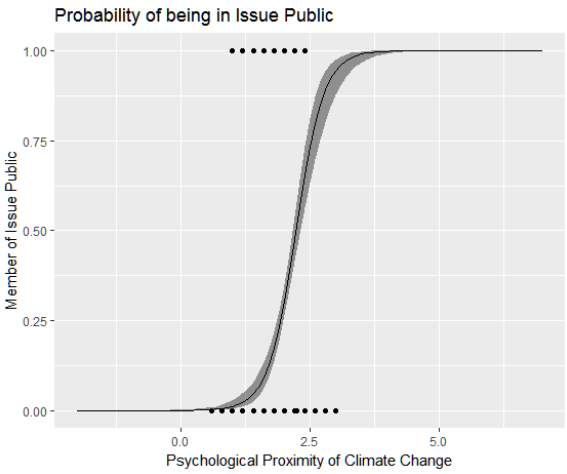
Note: Pearson's correlations & * $p < .05$

Climate change issue public

In this chapter, I argue that psychological proximity of climate change correlates to membership in the climate change issue public and that in turn leads to action. This is what I call the issue public mechanism of the *psychological proximity hypothesis*. In this section, I look at the drivers of membership in the climate change issue public. There is no difference in the mean level of issue public membership among the three treatment groups so they are not included in the analysis.

First, to get an idea of how the composite measure of psychological proximity is associated with issue public membership, I estimate a bivariate logistic regression and plot the predicted probabilities in Figure 4.2.

Figure 4.2: Predicted probability of climate change issue public membership as issue becomes more proximate



The sharp curve demonstrates how strongly psychological proximity of climate change correlates with climate change issue public membership providing support for the first part of the issue public mechanism of the *psychological proximity hypothesis*. An individual who perceives climate change to be more psychologically distant, low levels of proximity, has nearly a zero percent probability of being in the issue public. Yet, an individual that perceives climate change to be more proximate has nearly a 100 percent probability of also being in the issue public for climate change. These results provide strong evidence that psychological proximity is closely related to issue public membership. To demonstrate the full path from proximity, to issue public membership, to activism I turn to developing the full model of climate change activism.

In the following analysis, I use each of the variables for psychological proximity to estimate a linear model of issue public membership.[6] In addition to psychological proximity, I control for alternative explanations by including indicators of self-reported climate knowledge, gaining economically from climate policy, and empathy

[6]Significance and sign do not differ using a logistic regression.

for those affected by climate change. By including these controls, I am able to test the issue public mechanism of the *psychological proximity hypothesis* Results are presented in Table 4.5.

Table 4.5: Impact of psychological proximity on climate change issue public while controlling for alternative explanations

	Climate issue public	
	(1)	(2)
Climate affects everyday life	−0.093	−0.072
	(0.057)	(0.055)
Social proximity	0.050	−0.032
	(0.047)	(0.045)
Hypothetical proximity	0.148***	0.095***
	(0.022)	(0.023)
Temporal proximity	0.069**	0.053**
	(0.028)	(0.026)
Geographic proximity	−0.050**	−0.013
	(0.023)	(0.022)
MES		0.183***
		(0.035)
Knowledge about climate		0.057***
		(0.011)
Gain economically		0.014
		(0.011)
Empathy for those affected		−0.001
		(0.015)
Observations	601	598
Adjusted R^2	0.198	0.290

Note: OLS regression coefficients. Standard errors in parentheses.
2017 MTurk data. *p<0.1; **p<0.05; ***p<0.01

The above regression shows that some dimensions of psychological proximity drive issue public membership more than others. Not all the items I use to measure psychological proximity have significant effects on issue public membership. In model 1,only temporal proximity, and hypothetical proximity have positive and significant

effects. Model 1 also shows that geographic proximity has a negative effect, probably because most people who are in the issue public think climate change is a global problem rather than merely a local one.[7]

One reason why some of the factors are significant and other are not may be because of the high level of correlation with the other variables in the model. Any independent effect that social proximity or the climate affecting everyday life have is masked by the other variables with stronger effects such as hypothetical proximity. Indeed, variance inflation factors show hypothetical proximity as the only proximity variable above two, at 2.28. A vif of 2.28 is not a sign of major multicollinearity problems but could explain why not all proximity variables are significant.

Model 2 demonstrates that other factors contribute to issue public membership as well. Having empathy for those affected by climate change, as measured by the question, "I feel sorry for people who are affected by climate change," is significantly related to issue public membership. Additionally, self-reported knowledge about climate change is also positively related to issue public membership. As expected the MES is a positive and significant factor of membership the climate change issue public.

Results from this analysis provide support for first leg of the issue public mechanism of the *psychological proximity hypothesis*. People who perceive climate change to be psychologically proximate are more likely to be in the climate change issue public. The next step is to test whether or not people in the climate change issue public participate more than those who are not.

[7]The geographic proximity item is the only one that does not load on the single factor and it is not included in the index used in subsequent analyses.

Climate change activism model

I test the second part of the issue public mechanism of the *psychological proximity hypothesis* by including issue public membership as an independent variable in a multivariate regression equation.[8] analysis framework to analyze the results. I explore the concrete mechanism by including psychological proximity in the regression as an independent variable. Support for these mechanisms would be demonstrated by positive and significant coefficients on the issue public and psychological proximity variables.

Model one and two regresses the climate action index on psychological proximity, issue public membership and the MES. In order to look at the effects of the MES, the issue public dummy, and the measures of psychological proximity, the treatment conditions and other climate related control variables are left out. Model two expands this model and adds in the additional climate related control variables and dummy variables for the California treatment and the global treatment as well as interactions between MES and the treatment conditions. Model three is the expanded model using the observed climate action as the dependent variable. None of the variance inflation factors exceed two indicating no cause for concern about multicollinearity. Results from three separate regressions are presented in Table 4.6.

[8]On the dichotomous dependent variable, I also ran a logistic regression. The sign and significance on the coefficients is the same as OLS. I report OLS results here because the interpretation is more transparent and straightforward.

Table 4.6: Impact of psychological proximity, issue public membership, and environmental attitudes one climate activism, controlling for other factors

	Activism(1)	Activism(2)	Write
MES	4.588**	2.575	−0.012
	(2.153)	(2.405)	(0.069)
Climate issue public (dummy)	13.478***	10.870***	0.110**
	(2.611)	(2.660)	(0.055)
California Treatment		2.930	−0.343
		(2.449)	(0.358)
Global Treatment		0.622	−0.092
		(2.382)	(0.335)
Proximity low to high	7.816***	6.727***	0.058
	(2.380)	(2.440)	(0.051)
Know about climate		2.330***	0.044***
		(0.717)	(0.015)
Gain financially		2.205***	−0.006
		(0.721)	(0.015)
Empathy for those affected		1.215	−0.015
		(0.992)	(0.021)
Democrat (dummy)	1.049	1.530	−0.027
	(2.488)	(2.451)	(0.051)
Ideology (7pt. Lib-Con)	−2.424***	−2.191***	−0.007
	(0.838)	(0.828)	(0.017)
Education	−0.543	−0.749	−0.016

Continued on next page

Table 4.6 – continued from previous page

	Activism(1)	Activism(2)	Write
	(0.865)	(0.856)	(0.018)
Income	0.847	0.842	0.035**
	(0.851)	(0.841)	(0.018)
Recruited previously to act	6.497***	5.116**	0.175***
	(2.078)	(2.068)	(0.043)
General empathy	3.408***	1.967**	0.016
	(0.849)	(0.888)	(0.019)
Efficacy	2.468***	2.120***	0.014
	(0.696)	(0.696)	(0.015)
Male	−6.615***	−7.974***	−0.024
	(2.046)	(2.029)	(0.042)
MES*Ca treat.			0.067
			(0.085)
MES*Global treat.			0.004
			(0.080)
Observations	558	555	557
Adjusted R^2	0.361	0.386	0.081

*Note:*OLS Regression coefficients. Standard errors in parentheses.

2017 MTurk data. *p<0.1; **p<0.05; ***p<0.01

First, I test the *psychological proximity hypothesis,* that perceiving climate change as impacting the individual more directly, in two ways. First, the four-item index measuring psychological proximity. This variable is positive and significant in both

likely action models, providing support for the hypothesis. When looking at the climate action index, a one unit change in proximity is associated with 8.4 % (model 2) to 9.7% (model 1) increase in the likelihood of participating.

The second way I test the *psychological proximity hypothesis* is by including each experimental condition as an independent variable in the regression. The expectation is that the psychologically proximate condition - the California treatment - will yield the highest level of activism and the psychologically distant condition will have a lower impact. However, neither treatment conditions have significant effects on either the climate action index or the observed climate action variable. This may be because the treatment was in the middle of the survey, after all participants had already answered several questions relating to climate change. In other words, the preceding questions in the survey may have primed the participants to think about climate change and thus attenuated the effect of the treatment.

Another reason why the experiment failed to produce significant results could be because the condition also primes an increase in temporal distance, thus negating the effects of reducing spatial distance by focusing on California. It is difficult to come up with equivalent experimental primes that operate on the same type of psychological distance. The data do not allow for any additional parsing as to the reason why there is no effect.

I also look at how being a member of the climate change issue public is associated with higher levels of climate activism, by including a dummy variable for issue public membership in the regression. Results are presented in Table 4.6. Expectations are supported across all three models. Being a member of the climate issue public is related to a 10.9% (model 2) to 13.5% (model 1) increase in the self-reported likelihood of engaging in climate related political activism.

Additionally, I analyze the effect of environmental attitudes, as measured by the MES, on behavior. In model, MES has a modest, compared to psychological proximity, effect on the likelihood of taking action on climate. A one unit increase in the 5 point MES scale correlates with a 5.1 % increase in the likelihood of participating in climate activism. When the the climate related controls are included in the model, they are positive and significant, and the effect of the MES disappears. This suggests that information about climate change and benefiting economically from a solution outweigh the effects of environmental attitudes when it comes to actually taking action.

In line with expectations from the CVM (Verba et al., 1995; Schlozman and Brady, 2012) and findings in chapter 2, being recruited to participate previously, being empathetic, and having efficacy all positively predict climate action. Males are less likely to take action than females. Conservatism negatively relates to the climate action index, but interestingly has no effect on the observed action variable. Income and party identification have no effect.

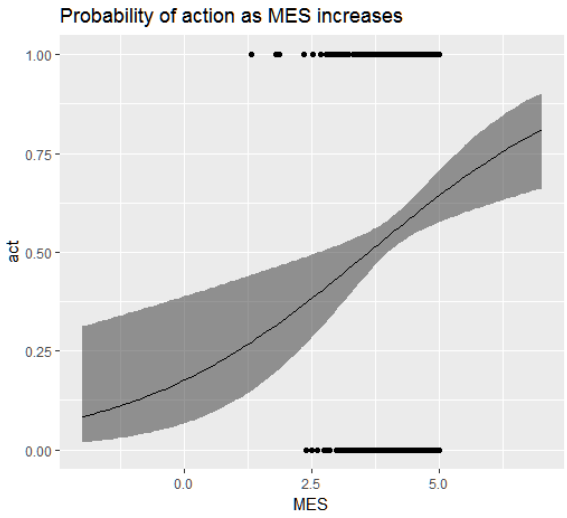
Taken altogether these results support both mechanisms of the *psychological proximity hypothesis*. Membership in the climate change issue public is positively related to higher levels of climate activism, completing the issue public mechanism. Moreover, the psychological proximity variable is also strongly related to higher levels of climate activism thus shedding light on the concrete mechanism. When climate change is proximate, people are more likely to care more about it and then get involved politically. Even when accounting for that relationship, when climate is proximate people are more likely to take action, I suggest because they link proximity with a concrete construal which is more easily matched with a specific action.

Another way to look at the effect of MES[9] is to plot a predicted probability curve,

[9]While this is not substantively important for the *psychological proximity hypothesis* I include the

showing how the probability of engaging in the observed climate action increases as MES increases. This is shown in 4.3. The curve is based on a bivariate logistic regression, regressing the observed action variable only on the MES. This shows a significant variation in the likelihood of action for low and high individuals on the MES. However, as demonstrated in the multivariate regression, these effects disappear when additional, climate related variables are included.

Figure 4.3: Predicted probability of climate activism as MES increases



Overall, these results support the *psychological proximity hypothesis*, although the experiment has null findings. The MES predicts action, but when other variables relating to climate change are included, it is no longer significant. Given the significant, and substantial effect of membership in the climate issue public, it is important to look at that variable more closely and understand how psychological proximity relates to it.

Model 3 employs the observed climate action as the dependent variable. Variance in this variable is very poorly explained by the model. Being in the climate

additional analysis on the MES to provide further evidence for its usefulness to support the findings in chapter 3.

issue public, reporting knowledge about climate, and being previously asked to act politically on climate change all correspond to a higher likelihood of writing a letter to Congress. However, none of the other variables thought to influence activism are significant. This finding diverges from previous studies and may be because so many people, 55% of the sample, took action. Generally, activism among the public is low. So, either activism within a survey is not externally valid, or a better theory as to why people write a letter on an MTurk survey, but not in their everyday life is needed to understand these results.

Conclusion

This chapter provides correlational support for both of the mechanisms of the *psychological proximity hypothesis*. In the first study, the issue public mechanism is supported by first demonstrating that when the environment is psychologically proximate people are more likely to be in the issue public. In a second regression, I then show that issue public membership predicts higher levels of environmental activism. Furthermore, there is evidence to suggest that proximity positively covaries environmental activism in support of the concrete mechanism.

In the second study, I mirror the results from Study 1 with unique items and data. Experiment results were null. But with survey measures I found that psychological proximity is a strong predictor of issue public membership and being in the climate change issue public is positively correlated with climate activism. Plus, perceiving climate change to be more psychologically proximate also predicts higher levels of action.

Future research should better address causality. Unfortunately, it is very difficult to experimentally prime psychological proximity using online surveys. Results from

psychology, summarized in Trope and Liberman 2010, suggest that it may be possible in a laboratory setting where participants may be less likely to rush through the tasks.

Another way to look at causality would be to use geographic data to measure actual spatial distance. Then using an appropriate identification strategy it may be possible to causally link geographic distance of a negative climate impact with higher levels of activism. For example, do residents who are more affected by sea level rise become more active than people who do not directly experience it while controlling for other factors.

Even without evidence of causality, this research has important implications for environmental organizations trying to motivate people to take action on climate change. A mobilization strategy should include messaging to frame climate change as an issue that is happening now and in the United States. This should be done without making climate change too negative because that can lead to de-motivation by reducing efficacy (Feinberg and Willer, 2011). Instead organizations should frame climate change using present tense and focus on the concrete actions that will help solve the problem. By linking psychological proximity with concrete actions, organizations will be able to encourage greater participation in their activities, whether it be a letter writing campaign or showing up at a pro-climate policy rally.

Chapter 5

Conclusion

In this dissertation, I provided evidence to support the *psychological proximity hypothesis*. Analyses show that, in general, the more psychologically proximate a political issue is to people, the more likely they are to be in the issue public. Members of the issue public then participate at higher rates than those who are not members. Additionally, psychological proximity is causally related directly to political activism by linking the issue, which tends to be construed concretely, to a specific political action that can be taken to address the problem. Some questions remain to stimulate future research.

Experimental results in chapter 2 provide some evidence of the causal connection between proximity and activism by what I call the concrete mechanism. However, part of the mechanism is assumed. The data used here do not indicate if the people are thinking concretely or abstractly about the issue. Yet, even when controlling for the impact of issue public membership, psychological proximity variables are significant predictors of higher levels of activism.

Future research

Further experimentation should be done to better elucidate causality. One way to do this would be record response times for respondents connecting a proximate issue with a specific action in comparison to distal issues. Because proximity tends to lead to concrete construals, response time should be shorter (Trope and Liberman, 2010). Concrete thinking happens more quickly than abstract thinking, so the response time experiment would provide evidence for the type of thinking that is present. Lodge and Taber 2013 perform similar experiments, but they are not connecting issue proximity to issue activism.

Another way to test the concrete mechanism that does not require a sophisticated laboratory would be to experimentally prime either proximity or distance and then allow people to write about the issue. The text could then be coded for whether or not it includes concrete or abstract language, much in the way other research has done (Hodges and Stocking, 2016). Using detailed, concrete language would then need to be connected to more frequent participation.

One important next step to provide further evidence for the issue public mechanism of the *psychological proximity hypothesis* is to investigate the link between issue public membership and issue activism with panel studies. The 1980 and 2010 ANES include issue importance items in each wave of the survey, making it possible to test how stable issue public membership is in the individual over the course of several months.

If issue importance, or issue public membership, is indeed a causal factor of issue activism, I expect this link should persist over time. If the relationship is not stable over time it would be difficult to point to issue public membership as a cause of activism. If issue public membership is caused by psychological proximity, then as

people are impacted by different issues, they should move around issue publics and become active on whichever issue is proximate to them at the time.

A lack of stability would indicate a problem with the causal connection. Or, it may indicate a more fundamental problem with survey-based measurement of political attitudes and behavior. If issue importance is simply a a result of randomly drawing from the top of one's mind a la Zaller (Zaller, 1992), then it is possible, or likely, that self-reported behavior results from a similar mechanism. This potential problem with snapshot, self-reported survey data, highlights the importance of observing actual behaviors in the way that chapters 2,3, and 4 do. However, positive evidence of stability over time would be beneficial to the argument.

To overcome the inherent problems with surveys, additional evidence should be provided by in-depth qualitative interviews with political activists. By starting a conversation about why an individual became active, it is possible to get a richer understanding of the causal mechanism. As previous research has shown, the reasons someone gets involved are myriad. Yet, in conjunction with the evidence provided in this dissertation, personal accounts of getting involved because of a close personal connection to a political issue would be telling.

Concluding thoughts

As the white trucker from rural Idaho explained, it can be easy to ignore political issues until they hit close to home. This cliche is indicative of the presumption behind the *Psychological Proximity Hypothesis*, that political issues experienced in the here and now are more likely to garner attention and gain importance from the individuals affected by them. Then, as the findings in this dissertation suggest an individual is more likely to get involved with political action on that issue.

Organizers could leverage psychological proximity in several ways that map to the four types of distance. First, organizers should try to lower the social distance between the political issue they are working on and the people they are trying to mobilize. For example, using people from similar social groups to tell personal stories about how the issue affects them is one way to accomplish this.

Second, organizers should avoid using hypothetical language to describe the political issue of interest. By speaking in certain terms, they would be able to reduce the hypothetical distance of the issue to those they are trying to mobilize. Insofar as reducing distance leads to more concrete ways of thinking, and vice versa, speaking concretely and providing details about the issue should also reduce psychological distance. In this way, organizers could directly link a specific problem to a particular political action to address it.

Third, by emphasizing time-immediacy, organizers could reduce temporal distance to spur action. The more messaging can emphasize how a particular issue is already affecting people, the more likely people can be mobilized to address it.

Fourth, although people and political issues cannot be physically relocated for the purposes of building a social movement, campaigners can use local manifestations of bigger issues to mobilize local support. Instead of talking about how an issue affects the world, or even the country, an emphasis should be placed on how the issue affects people where they live.

In general, talking about how the issue is happening right now, right here, to people like you and me should lead to people being more concerned about the issue and taking action. As people think concretely about the issue, they ought to be better able to see how specific political actions can help solve it. Fixing entrenched socio-political problems is an extremely difficult task and organizations should use

an all-of-the-above approach to do so. Reducing distance to motivate activism is one such tool organizers have available.

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Appendix A

Chapter 2 Appendix

Ch 2: Appendix A

Table A.1: Factor loadings for items indexes

Data Source	Index	Item	loading	
ANES 2008	Election Index	Vote 2008	0.200	
		Campaign button	0.344	
		Campaign rally	0.373	
		Campaign work	0.385	
		Contribution to cand.	0.891	
		Contribution to party	0.743	
		Contribution (other)	0.197	
	Activity Index	Distribute political info	0.656	
		Invite others to meeting	0.783	
		Attend political meeting	0.835	
		Give money to political org.	0.609	
		Sign paper petition	0.579	
		Sign online petition	0.426	
		Attend city meeting	0.557	
		Attend protest/rally	0.539	
1983 GSS	Race activism	Letter	0.979	*Note:* MLE,
		Donate	0.965	
		Join org.	0.929	
	Women's activism	Letter	0.781	
		Donate	0.890	
		Join org.	0.980	
MTurk	Psychological Proximity	Family care	0.139	
		Everyday life	0.797	
		Hypothetical distance	0.740	
		Temporal distance	0.689	
		Issue level	<0.1	
	Issue action	Join org.	0.894	
		Attend rally	0.873	
		Give money	0.741	
		Post on social media	0.658	

one factor is sufficient for each index

Ch. 2 Appendix B: additional models predicting various issue public memberships from Study 1

Table A.2: Impact of psychological proximity and ideology on issue public membership for aid to blacks, citizenship, and immigrant rights

	Aid Blacks	Citizenship	Immigrant
	(1)	(2)	(3)
Black	0.046		
	(0.099)		
Latino		−0.547**	−0.221
		(0.236)	(0.260)
Liberal	−0.010	−0.047***	−0.010
	(0.008)	(0.015)	(0.015)
Black * Liberal	0.056**		
	(0.022)		
Latino * Liberal		0.139**	0.047
		(0.055)	(0.058)
Observations	1,134	396	443
Adjusted R^2	0.051	0.023	−0.005

*Note:*OLS regression coefficients. Standard errors in parentheses.
2008 ANES data. *p<0.1; **p<0.05; ***p<0.01

Table A.3: Impact of psychological proximity and ideology on issue public membership for women's issues and abortion

	Women's issues		Abortion
	(1)	(2)	(3)
Female	0.106		−0.021
	(0.086)		(0.080)
Liberal	0.032**		−0.022
	(0.016)		(0.015)
Female * Liberal	0.026		0.032
	(0.021)		(0.020)
Male		−0.315***	
		(0.097)	
Conservative		−0.058***	
		(0.014)	
Male * Conservative		0.026	
		(0.021)	
Observations	720	720	688
Adjusted R^2	0.084	0.084	0.015

*Note:*OLS regression coefficients. Standard errors in parentheses.
2008 ANES data. *p<0.1; **p<0.05; ***p<0.01

Table A.4: Impact of psychological proximity and ideology on issue public membership for gun control and auto emissions

	Gun Control		Auto Emissions
	(1)	(2)	(3)
Gun Owner	-0.175^{**}	0.201^{***}	
	(0.077)	(0.064)	
Conservative	-0.029^{***}		
	(0.010)		
Gun owner * Conservative	0.047^{***}		
	(0.017)		
Urban			0.121
			(0.125)
Liberal		0.029^{***}	0.075^{***}
		(0.010)	(0.016)
Urban * Liberal		-0.047^{***}	
		(0.017)	
Urban * Liberal			-0.045
			(0.028)
Observations	1,172	1,172	427
Adjusted R^2	0.007	0.007	0.048

*Note:*OLS regression coefficients. Standard errors in parentheses.
2008 ANES data. *p<0.1; **p<0.05; ***p<0.01

Table A.5: Impact of psychological proximity and ideology on issue public membership for job creation, government health insurance, and healthcare

	Jobs	Government Insurance	Healthcare
Unemployed	0.015		
	(0.173)		
Uninsured		0.101	0.308*
		(0.128)	(0.160)
Liberal	−0.012	0.022*	0.024*
	(0.010)	(0.012)	(0.015)
Unemployed * Liberal	−0.022		
	(0.043)		
Uninsured * Liberal		−0.009	−0.012
		(0.030)	(0.038)
Observations	727	729	509
Adjusted R^2	0.0001	0.005	0.042

*Note:*OLS regression coefficients. Standard errors in parentheses.
2008 ANES data. *p<0.1; **p<0.05; ***p<0.01

Table A.6: Impact of psychological proximity and ideology on issue public membership for defense spending, drug coverage for seniors, and social services

	Defense spending	Drug coverage	Social services
Military	0.278***		
	(0.104)		
Conservative	0.005		
	(0.008)		
Military * Conservative	−0.051**		
	(0.022)		
Over 55		−0.079	
		(0.112)	
Income			0.017
			(0.023)
Liberal		−0.010	0.009
		(0.018)	(0.017)
Over 55 * Liberal		0.011	
		(0.028)	
Income * Liberal			−0.004
			(0.006)
Observations	1,190	488	1,107
Adjusted R^2	0.004	−0.004	−0.002

Note: OLS regression coefficients. Standard errors in parentheses.
2008 ANES data. *p<0.1; **p<0.05; ***p<0.01

Table A.7: Impact of psychological proximity and ideology on issue public membership for social services, and the environment

	Social Services	Environment
Income	−0.011	
	(0.028)	
Unemployed		−0.183
		(0.161)
Conservative	−0.009	−0.034***
	(0.017)	(0.008)
Income * Conservative	0.004	
	(0.006)	
Unemployed * Conservative		0.058
		(0.036)
Observations	1,107	725
Adjusted R^2	−0.002	0.021

*Note:*OLS regression coefficients. Standard errors in parentheses.
2008 ANES data. *p<0.1; **p<0.05; ***p<0.01

Ch. 2 Appendix C: Survey instrument for ch. 2 Study 3

Consent

You are being asked to take part in a survey related to your opinions about public policy. The survey should take approximately 15 minutes. Taking part in this study is completely voluntary. You do not have to participate if you don't want to. You will not be penalized if you choose not to participate in the study. Your responses will be completely anonymous. We will not collect any identifying information that is connected with your responses to the study. Please note that you must be at least 18 to participate in this study. By completing the survey and answering the following questions, you are indicating that you are at least 18 years old and that you agree to participate. In exchange for completion of this study, you will receive payment of $ .60

- ○ I am over 18 years of age and I acknowledge that my participation is voluntary and that I may choose to terminate my participation at any point.

gender

Thank you for taking the survey. Your honest answers are really important to us.

Gender

- ○ Male
- ○ Female
- ○ Transgender or other

svsMale

Here we briefly describe some people. Please read each description and think about how much each person is or is not like you.

	Very much like me	Like me	Somewhat like me	A little like me	Not like me	Not like me at all
Thinking up new ideas and being creative is important to him. He likes to do things his own original way.	○	○	○	○	○	○
It is important to him to be rich. He wants to have a lot of money and expensive things.	○	○	○	○	○	○
He thinks it is important that every person in the world be treated equally. He believes everyone should have equal opportunities in life.	○	○	○	○	○	○

	Very much like me	Like me	Somewhat like me	A little like me	Not like me	Not like me at all
It's important to him to show his abilities. He wants people to admire what he does.	○	○	○	○	○	○
It is important to him to live in secure surroundings. He avoids anything that might endanger his safety.	○	○	○	○	○	○
He likes surprises and is always looking for new things to do. He thinks it is important to do lots of different things in life.	○	○	○	○	○	○

	Very much like me	Like me	Somewhat like me	A little like me	Not like me	Not like me at all
He believes that people should do what they're told. He thinks people should follow rules at all times, even when no-one is watching.	○	○	○	○	○	○
It is important to him to listen to people who are different from him. Even when he disagrees with them, he still wants to understand them.	○	○	○	○	○	○
It is important to him to be humble and modest. He tries not to draw attention to himself.	○	○	○	○	○	○
Having a good time is important to him. He likes to "spoil" himself.	○	○	○	○	○	○
It is important to him to make his own decisions about what he does. He likes to be free and not depend on others.	○	○	○	○	○	○
It's very important to help the people around him. He wants to care for their well-being.	○	○	○	○	○	○

	Very much like me	Like me	Somewhat like me	A little like me	Not like me	Not like me at all
Being very successful is important to him. He hopes people will recognize his achievements.	○	○	○	○	○	○
It is important to him that the government insure his safety against all threats. He wants the state to be strong so it can defend its citizens.	○	○	○	○	○	○

	Very much like me	Like me	Somewhat like me	A little like me	Not like me	Not like me at all
He looks for adventures and likes to take risks. He wants to have an exciting life.	○	○	○	○	○	○
It is important to him always to behave properly. He wants to avoid doing anything people would say is wrong.	○	○	○	○	○	○
It is important to him to be loyal to her friends. He wants to devote himself to people close to him.	○	○	○	○	○	○
It is important to himto get respect from others. He wants people to do what he says.	○	○	○	○	○	○

	Very much like me	Like me	Somewhat like me	A little like me	Not like me	Not like me at all
He strongly believes that people should care for nature. Looking after the environment is important to him.	○	○	○	○	○	○
Tradition is important to him. He tries to follow the customs handed down by his religion or his family.	○	○	○	○	○	○
He seeks every chance he can to have fun. It is important to him to do things that give him purpose.	○	○	○	○	○	○

svsFemale

Here we briefly describe some people. Please read each description and think about how much each person is or is not like you.

	Very much like me	Like me	Somewhat like me	A little like me	Not like me	Not like me at all
Thinking up new ideas and being creative is important to her. She likes to do things her own original way.	○	○	○	○	○	○
It is important to her to be rich. She wants to have a lot of money and expensive things.	○	○	○	○	○	○

	Very much like me	Like me	Somewhat like me	A little like me	Not like me	Not like me at all
She thinks it is important that every person in the world be treated equally. She believes everyone should have equal opportunities in life.	○	○	○	○	○	○
It's important to her to show her abilities. She wants people to admire what she does.	○	○	○	○	○	○
It is important to her to live in secure surroundings. She avoids anything that might endanger her safety.	○	○	○	○	○	○
She likes surprises and is always looking for new things to do. She things it is important to do lots of different things in life.	○	○	○	○	○	○

	Very much like me	Like me	Somewhat like me	A little like me	Not like me	Not like me at all
She believes that people should do what they're told. She thinks people should follow rules at all times, even when no-one is watching.	○	○	○	○	○	○
It is important to her to listen to people who are different from her. Even when she disagrees with them, she still wants to understand them.	○	○	○	○	○	○
It is important to her to be humble and modest. She tries not to draw attention to herself.	○	○	○	○	○	○
Having a good time is important to her. She likes to "spoil" herself.	○	○	○	○	○	○
It is important to her to make her own decisions about what she does. She likes to be free and not depend on others.	○	○	○	○	○	○
It's very important to help the people around her. She wants to care for their well-being.	○	○	○	○	○	○

	Very much like me	Like me	Somewhat like me	A little like me	Not like me	Not like me at all

	Very much like me	Like me	Somewhat like me	A little like me	Not like me	Not like me at all
Being very successful is important to her. She hopes people will recognize her achievements.	○	○	○	○	○	○
It is important to her that the government insure her safety against all threats. She wants the state to be strong so it can defend its citizens.	○	○	○	○	○	○
She looks for adventures and likes to take risks. She wants to have an exciting life.	○	○	○	○	○	○
It is important to her always to behave properly. She wants to avoid doing anything people would say is wrong.	○	○	○	○	○	○
It is important to her to be loyal to her friends. She wants to devote herself to people close to her.	○	○	○	○	○	○
It is important to her to get respect from others. She wants people to do what she says.	○	○	○	○	○	○

	Very much like me	Like me	Somewhat like me	A little like me	Not like me	Not like me at all
She strongly believes that people should care for nature. Looking after the environment is important to her.	○	○	○	○	○	○
Tradition is important to her. She tries to follow the customs handed down by her religion or her family.	○	○	○	○	○	○
She seeks every chance she can to have fun. It is important to her to do things that giver her purpose.	○	○	○	○	○	○

core survey

You are making good progress. Now, we will ask about some political issues.

There are a number of different political issues. In your opinion, what is the most important political problem? This could problem could be at the local, state, national, or global level.

Select other; none of these, if none of these issues is the most important to you.

unemployment
economic inequality
racial inequality
the tax rate
terrorism
gun control
crime
immigration
healthcare
foreign policy

In the previous question, you indicated that ${q://QID8/ChoiceGroup/SelectedChoices} is the most important political problem. How important do you think this problem is?

- Not important at all
- A little important
- Important
- Very important
- Extremely important

For the most part, is ${q://QID8/ChoiceGroup/SelectedChoices} a local, state, regional, national, or global issue?

- Local
- State
- Regional
- National
- Global

Does ${q://QID8/ChoiceGroup/SelectedChoices} affect your everyday life?

- Yes
- Yes, somewhat
- No

Do any of your friends and/or family members care about ${q://QID8/ChoiceGroup/SelectedChoices} too?

- Yes
- Yes, somewhat
- No
- Not sure; don't know

Does ${q://QID8/ChoiceGroup/SelectedChoices} affect you currently, in the near future, or the more distant future?

- ○ Currently
- ○ In the near future
- ○ In the more distant future

How likely is ${q://QID8/ChoiceGroup/SelectedChoices} to affect you personally?

- ○ Very likely
- ○ Likely
- ○ Neither likely, nor unlikely
- ○ Unlikely
- ○ Very unlikely

Please carefully consider each question.

	Strongly Disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agre
The government listens to people like me.	○	○	○	○	○	○
I can relate closely to people around the world.	○	○	○	○	○	○
Solutions to ${q://QID8/ChoiceGroup/SelectedChoices} will help me financially.	○	○	○	○	○	○
I feel sorry for people who are affected by ${q://QID8/ChoiceGroup/SelectedChoices}.	○	○	○	○	○	○
I know a lot about ${q://QID8/ChoiceGroup/SelectedChoices} as a political issue.	○	○	○	○	○	○

Now, we'd like to know about your political actvity.

	Very unikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Very likely
	0 10 20 30 40 50 60 70 80 90 100				
How likely are you to join an organization or group that is working politically on ${q://QID8/ChoiceGroup/SelectedChoices}?					
How likely are you to attend a political rally or protest about ${q://QID8/ChoiceGroup/SelectedChoices}?					

How likely are you to give money to an organization that focuses on ${q://QID8/ChoiceGroup/SelectedChoices}?

How likely are you to vote in the upcoming election?

How likely are you to post on social media about ${q://QID8/ChoiceGroup/SelectedChoices}?

likely action

Now, we'd like to know about your political actvity.

	Very unikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Very likely
	0 10 20	30 40	50 60	70 80	90 100
How likely are you to join a political organization or group?					
How likely are you to attend a political rally or protest?					
How likely are you to give money to a political organization?					
How likely are you to vote in the upcoming election?					
How likely are you to post on social media about politics?					

Experiment

You are making great progress! Thank you for carefully answering our questions! Up next, we will give you the opportunity to write a short message to your member of congress.

You are making great progress! Thank you for carefully answering our questions! Up next, we will give you the opportunity to write a short message to your member of congress. Please tell them how ${q://QID8/ChoiceGroup/SelectedChoices} affects your personally.

Dep Var

We would like to give you the opportunity to write a short message about your position on a political issue to your member of congress. We will compile responses based on your zipcode and send them to your representative. You will be kept anonymous in the process, your member of congress will just be told that this is a message from one of their constituents. Inappropriate or offensive messages will not be delivered. This is optional, if you do not want to write a message just leave the box blank.

You did not provide a written message to your member of congress. Please select which answer best describes the reason you did not.

- ○ I do not care very strongly about the issue.
- ○ I would prefer to contact my elected official directly.
- ○ Elected officials do not listen to people like me.
- ○ Other

You indicated that you would prefer to contact your elected official directly. We can share contact information with you right now. Just follow the link provided below to a non-partisan website that provides contact information for all levels of government. This is optional.

Contact elected officials now (opens new window)

We'd like to ask you a little bit about yourself. Please carefully consider each question.

	Strongly Disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The government listens to people like me.	○	○	○	○	○	○	○
I can relate closely to people around the world.	○	○	○	○	○	○	○
I know a lot about politics.	○	○	○	○	○	○	○

	Strongly Disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I feel sorry for people who are affected by political problems.	○	○	○	○	○	○	○

Before taking this survey, has anyone in the past two years asked you to participate in politics? For example: giving money to an organization or candidate, joining an organization, attending a rally, writing your representative.

- ○ Yes
- ○ No
- ○ Maybe; Not sure

You are making good progress. Thanks for paying attention while answering these questions.

We just have a final set of questions about your background. Your answers are important to us.

What is your five digit zipcode?

Generally speaking, do you usually think of yourself as a Democrat, a Republican, an Independent, or what?

- ○ Democrat
- ○ Republican
- ○ Independent
- ○ Green Party
- ○ Libertarian
- ○ _____ Other

You indicated you think of yourself as a ${q://QID28/ChoiceGroup/SelectedChoices}. Would you call yourself a not very strong ${q://QID28/ChoiceGroup/SelectedChoices} or a strong ${q://QID28/ChoiceGroup/SelectedChoices}?

Not very strong Democrat						Strong Democrat
○	○	○	○	○	○	○

You indicated you think of yourself as a ${q://QID28/ChoiceGroup/SelectedChoices}. Would you call yourself a not very strong ${q://QID28/ChoiceGroup/SelectedChoices} or a strong ${q://QID28/ChoiceGroup/SelectedChoices}?

Not very strong Republican						Strong Republican
○	○	○	○	○	○	○

Are your political beliefs closer to the Democrats or the Republicans?

Much closer to the Democrats			In the middle			Much closer to the Republicans
○	○	○	○	○	○	○

Generally speaking, do you consider yourself to be politically liberal or conservative, or somewhere in between.

- ○ Extremely liberal
- ○ Liberal
- ○ Somewhat liberal
- ○ Moderate; Middle of the road
- ○ Somewhat conservative
- ○ Conservative
- ○ Extremely conservative

Previous work has found that education and income relate to political participation, so it's necessary that we ask these two questions. This information is used only for research and you will remain anonymous. Thank you for helping.

What is your highest level of education?

- ○ Some High School or less
- ○ High School Graduate
- ○ Some College
- ○ Associate's Degree
- ○ Bachelor's Degree
- ○ Master's Degree or higher

What is the total income of your household?

- ○ $25,000 or less
- ○ $25,001-$60,000
- ○ $60,001-$95,000

- ○ $95,001-$130,000
- ○ $130,001-$165,000
- ○ $165,001 or more

Thank you for taking the survey. Is there anything else you would like to share with us?

debrief

Your participation in this research is very helpful. It is being used to better understand why people get involved in politics, or why they don't. There was an experimental condition embedded within the survey. This was in the section where we gave you the opportunity to write a message to your representative (only for those who chose a political issue). Half of respondents were given a general message the other half were told to indicate how the political issue affects them personally.

We thank you for your time. Please let us know if you have any questions or comments regarding this study by contacting Aaron Sparks at asparks@umail.ucsb.edu. Feel free to ask the researcher any questions you may have about this research, or if you are concerned about the data you entered. Finally, because this is an on-going study, we ask you refrain from sharing your experiences within the study with anyone you may participate in the future because this compromises the quality of our research. If you have concerns, please contact us directly. You have the option to withdraw your data. Thanks for your time. The study is now complete.

Appendix B

Chapter 3 Appendix

Ch. 3 Appendix B: Survey instrument from ch. 3 Study 1

Intro and consent

This study is being conducted on behalf of Aaron Sparks of the University of California, Santa Barbara. This study is a public opinion survey to find out more about social issues.

This survey should take approximately 10-15 minutes. No records will be collected which will allow the researcher to identify you. Participation in this survey is voluntary; you may skip questions or discontinue the survey at any time.
Your instructor and teaching assistant will not know whether you participated in the survey or not. The instructor and teaching assistant will not know how you responded to the questions in the survey. The instructor and teaching assistants will not be present while you are completing the survey.

If you have any questions regarding your rights and participation as a research subject in this survey, you may contact Aaron Sparks by email at asparks@umail.ucsb.edu, or the UCSB Human Subjects Committee at (805) 893-3807 or hsc@research.ucsb.edu. Or you may write to the University of California, Human Subjects Committee, Office of Research, Santa Barbara, CA 93106-2050.

Consent to continue

By clicking continue, you agree to consent to participate in this survey and certify that you are over 18 years of age. Do you want to continue?

- ○ Yes, continue.
- ○ No, do not continue.

MES items

First are some questions about your feelings on the environment. Please read each question carefully, and answer as honestly as you are able.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree

We should take care of human needs before other living things.	○	○	○	○	○
Humans have an overall positive effect on the natural environment.	○	○	○	○	○
Unregulated economic growth harms the natural environment.	○	○	○	○	○
The natural environment is being harmed by humans.	○	○	○	○	○
Untouched natural areas should be preserved.	○	○	○	○	○
Humans have the right to change wild places in nature.	○	○	○	○	○

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Humans treat other livings things fairly.	○	○	○	○	○
We should keep the natural environment clean for future generations.	○	○	○	○	○
Humans should be more tolerant of the rights of other animals and plants.	○	○	○	○	○
Future generations have the responsibility to adapt to changing living conditions on earth.	○	○	○	○	○
The environment is being disproportionately harmed by a minority of individuals.	○	○	○	○	○
Rich people deserve more access to natural resources than do poor people.	○	○	○	○	○

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Protecting the earth protects our children.	○	○	○	○	○

Protecting the environment does not benefit my community.	○	○	○	○	○
It is patriotic to consider the environment in our decisions.	○	○	○	○	○
The United States should not reduce pollution when other nations aren't helping.	○	○	○	○	○

You are making good progress. Please continue.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
United States parks and green spaces are national treasures.	○	○	○	○	○
It is patriotic to preserve natural resources.	○	○	○	○	○
It is our duty to protect the earth.	○	○	○	○	○
Respecting the earth means not polluting.	○	○	○	○	○
Dominion over the earth means we should protect nature.	○	○	○	○	○
It is not our responsibility to conserve the earth's resources.	○	○	○	○	○

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Reducing our use of fossil fuels will make the United States more independent.	○	○	○	○	○
It should be our tradition to conserve natural resources.	○	○	○	○	○
Seeing litter in nature doesn't bother me.	○	○	○	○	○
Nature is sacred.	○	○	○	○	○
The purity of nature is threatened by human activities.	○	○	○	○	○

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Nature should be kept wild and free from human encroachment.	○	○	○	○	○

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Pollution is gross.	○	○	○	○	○
People do not benefit from a pristine natural environment.	○	○	○	○	○
Protecting the earth does not protect my freedom.	○	○	○	○	○
The government how too much control over the natural environment.	○	○	○	○	○
Taking care of nature can be done better by individuals than governments.	○	○	○	○	○
Private ownership is the best way to preserve nature.	○	○	○	○	○

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Being in nature makes me feel free.	○	○	○	○	○
Having wild places increases our liberty.	○	○	○	○	○
Private land owners should be forced to stop development that threatens an endangered species.	○	○	○	○	○
Our personal freedoms are more important than environmental protection.	○	○	○	○	○

attention

Research in decision making shows that people, when making decisions and answering questions, prefer not to pay attention and minimize their effort as much as possible. Some studies show that over 50% of people don't carefully read questions. If you are reading this question, please select the box marked 'other' and type 'careful' in the box below. Do not select any other answer. Thank you for participating and taking the time to read through the questions carefully!

What was this study about?

- ○ Your attitudes and personality
- ○ The attitudes and personality of your friends
- ○ Political preferences
- ○ _____ Other (please specify)

attitude NEP & CNS

Please answer each of these questions in terms of the way you generally feel. There are no right or wrong answers. Using the following scale, in the space provided next to each question simply state as honestly and candidly as you can what you are presently experiencing.

	Strongly disagree		Neutral		Strongly agree
I often feel a sense of oneness with the natural world around me.	○	○	○	○	○
I think of the natural world as a community to which I belong.	○	○	○	○	○
I recognize and appreciate the intelligence of other living organisms.	○	○	○	○	○
I often feel disconnected from nature.	○	○	○	○	○

	Strongly disagree		Neutral		Strongly agree
When I think of my life, I imagine myself to be part of a larger cyclical process of living.	○	○	○	○	○

	Strongly disagree		Neutral		Strongly agree
I often feel a kinship with animals and plants.	○	○	○	○	○
I feel as though I belong to the Earth as equally as it belongs to me.	○	○	○	○	○
I have a deep understanding of how my actions affect the natural world.	○	○	○	○	○
I often feel part of the web of life.	○	○	○	○	○
I feel that all inhabitants of Earth, human, and nonhuman, share a common 'life force'.	○	○	○	○	○

	Strongly disagree		Neutral		Strongly agree
Like a tree can be part of a forest, I feel embedded within the broader natural world.	○	○	○	○	○
When I think of my place on Earth, I consider myself to be a top member of a hierarchy that exists in nature.	○	○	○	○	○
I often feel like I am only a small part of the natural world around me, and that I am no more important than the grass on the ground or the birds in the trees.	○	○	○	○	○
My personal welfare is independent of the welfare of the natural world.	○	○	○	○	○

Now we would like to get your opinion on a wide range of environmental issues. For each of the following statements please indicate the extent to which you agree or disagree.

	Strongly disagree	Mildly disagree	Unsure	Mildly agree	Strongly agree
We are approaching the limit of the number of people the earth can support.	○	○	○	○	○
Humans have the right to modify the natural environment to suit their needs.	○	○	○	○	○
When humans interfere with nature, it often produces disastrous consequences.	○	○	○	○	○
Human ingenuity will ensure that we do NOT make the earth unlivable.	○	○	○	○	○
Humans are severely abusing the environment.	○	○	○	○	○

	Strongly disagree	Mildly disagree	Unsure	Mildly agree	Strongly agree
The earth has plenty of natural resources if we just learn how to develop them.	○	○	○	○	○
Plants and animals have as much right as humans to exist.	○	○	○	○	○
The balance of nature is strong enough to cope with the impacts of modern industrial nations.	○	○	○	○	○
Despite our special abilities humans are still subject to the laws of nature.	○	○	○	○	○
Human destruction of the natural environment has been greatly exaggerated.	○	○	○	○	○

	Strongly disagree	Mildly disagree	Unsure	Mildly agree	Strongly agree
	Strongly disagree	Mildly disagree	Unsure	Mildly agree	Strongly agree
The earth has only limited room and resources.	○	○	○	○	○
Humans were meant to rule over the rest of nature.	○	○	○	○	○
The balance of nature is very delicate and easily upset.	○	○	○	○	○
Humans will eventually learn enough about how nature works to be able to control it.	○	○	○	○	○
If things continue on their present course, we will soon experience a major ecological disaster.	○	○	○	○	○

reminder

You're making good progress. Please stay focused: the quality of our research depends on you paying attention and being careful. Thank you, we appreciate it!

behavior frequency

Now, please respond to these questions about your behavior. Don't feel any pressure, just indicate what you choose to do.

	Never	Rarely	Sometimes	Often	Always
When you visit the grocery store, how often do you use reusable bags?	○	○	○	○	○

	Never	Rarely	Sometimes	Often	Always
How often do you walk, bicycle, carpool, or take public transportation instead of driving a vehicle by yourself?	O	O	O	O	O
How often do you drive slower than 60mph on the highway?	O	O	O	O	O
How often do you go on personal (non-business) air travel?	O	O	O	O	O
How often do you compost your household food garbage?	O	O	O	O	O
How often do you eat meat?	O	O	O	O	O

	Never	Rarely	Sometimes	Often	Always
How often do you eat dairy products such as milk, cheese, eggs, or yogurt?	O	O	O	O	O
How often do you eat organic food?	O	O	O	O	O
How often do you eat local food (produced within 100 miles)?	O	O	O	O	O
How often do you eat from a home vegetable garden (during the growing season)?	O	O	O	O	O
How often do you turn your personal electronics off or in low-power mode when not in use?	O	O	O	O	O
When you buy light bulbs, how often do you buy high efficiency compact fluourescent (CFL) or LED bulbs?	O	O	O	O	O

	Never	Rarely	Sometimes	Often	Always

	Never	Rarely	Sometimes	Often	Always
How often do you act to conserve water, when showering, cleaning clothes, dishes, watering plants, or other uses?	O	O	O	O	O
How often do you use aerosol products?	O	O	O	O	O
When you are in PUBLIC, how often do you sort trash into the recycling?	O	O	O	O	O
When you are in PRIVATE, how often do you sort trash into the recycling?	O	O	O	O	O
How often do you discuss environmental topics, either in person or with online posts (Facebook, Twitter, etc.)?	O	O	O	O	O
When you buy clothing, how often is it from environmentally friendly brands?	O	O	O	O	O

	Never	Rarely	Sometimes	Often	Always
How often do you carry a reusable water bottle?	O	O	O	O	O
How often do you engage in political action or activism related to protecting the environment?	O	O	O	O	O
How often do you educate yourself about the environment?	O	O	O	O	O

demographics

Now, please tell us about yourself. This section is critical for measuring who is participating in the research.

Age

Gender

- Male
- Female

Which of the following best describes your racial/ethnic background?

- Black/African-American
- Asian/Asian-American
- Hispanic/Latino
- White/Caucasian
- Other (Please Specify)

Generally speaking, do you usually think of yourself as a Democrat, a Republican, an Independent, or what?

- Democrat
- Republican
- Independent
- Green Party
- Libertarian
- Other

You indicated you think of yourself as a ${q://QID49/ChoiceGroup/SelectedChoices}. Would you call yourself a not very strong ${q://QID49/ChoiceGroup/SelectedChoices} or a strong ${q://QID49/ChoiceGroup/SelectedChoices}?

Not very strong Democrat | Strong Democrat

You indicated you think of yourself as a ${q://QID49/ChoiceGroup/SelectedChoices}. Would you call yourself a not very strong ${q://QID49/ChoiceGroup/SelectedChoices} or a strong ${q://QID49/ChoiceGroup/SelectedChoices}?

Not very strong Republican					Strong Republican
○	○	○	○	○	○

Are your political beliefs closer to the Democrats or the Republicans?

Much closer to the Democrats			In the middle		Much closer to the Republicans
○	○	○	○	○	○

Generally speaking, do you consider yourself to be politically liberal or conservative, or haven't you thought about it much?

- ○ Extremely liberal
- ○ Liberal
- ○ Somewhat liberal
- ○ Moderate; Middle of the road
- ○ Somewhat conservative
- ○ Conservative
- ○ Extremely Conservative

Previous work has found that education and income relate to how people think about the environment, so it's necessary that we ask these two questions. Your private data is protected and used only for deidentified research. Thank you for helping.

What is your highest level of education?

- ○ Some High School or less
- ○ High School Graduate
- ○ Some College

- ○ Associate's Degree
- ○ Bachelor's Degree
- ○ Master's Degree or higher

What is the total income of your household?

- ○ $25,000 or less
- ○ $25,001-$60,000
- ○ $60,001-$95,000
- ○ $95,001-$130,000
- ○ $130,001-$165,000
- ○ $165,001 or more

ending

What do you think was the purpose of this study?

Did you have any problems with the survey? Any technical issues or problems with questions? Other comments for our team? (optional)

Now, please tell us your favorite food and why you like it in one sentence. This is just a check for language ability: some participants aren't fluent, and we need to identify their data before analysis. Don't worry about spelling or grammar. Thanks for helping!

Thank you so much for taking the survey. The purpose of this research is to see how environmental beliefs relate to differences in environmental behaviors. If you are concerned about your data and might like to withdraw it from the study, please contact asparks@umail.ucsb.edu.

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Ch. 3 Appendix B: Regressions not shown in text

Table B.1: Study 1: Impact of MES, NEP, and CNS on 21 item pro-environmental behavior scale

	21 item environmental behavior scale		
	(1)	(2)	(3)
MES	0.149	0.200***	0.322***
	(0.100)	(0.073)	(0.103)
NEP	0.083		0.073
	(0.111)		(0.123)
CNS	0.352***	0.351***	
	(0.074)	(0.074)	
Observations	97	97	97
Adjusted R^2	0.351	0.354	0.205

*Note:*OLS regression coefficients. Standard errors in parentheses.
2016 MTurk data. *p<0.1; **p<0.05; ***p<0.01

Table B.2: Study 2: Impact of MES, CNS, and NEP on pro-environmental behavior

	Environmental Behavior		
	(1)	(2)	(3)
MES	0.491***		
	(0.051)		
NEP		0.321***	
		(0.034)	
CNS			0.392***
			(0.034)
Observations	353	353	353
Adjusted R^2	0.209	0.203	0.268

*Note:*OLS regression coefficients. Standard errors in parentheses.
2016 MTurk data. *p<0.1; **p<0.05; ***p<0.01

Table B.3: Study 3: Impact of MES, NEP, and CNS on click variable of environmental activism while controlling for other factors

	(1)	(2)	(3)
MES	0.164		
	(0.104)		
CNS		0.142	
		(0.106)	
NEP			0.091
			(0.118)
Age	−0.046	0.073	−0.013
	(0.101)	(0.102)	(0.102)
Education	0.021	−0.016	−0.107
	(0.096)	(0.099)	(0.101)
Income	−0.091	−0.028	0.267**
	(0.094)	(0.110)	(0.117)
Republican	0.188	−0.169*	−0.051
	(0.116)	(0.093)	(0.125)
Openness	0.032	0.018	−0.064
	(0.107)	(0.108)	(0.099)
Conscientiousness	0.166*	0.102	−0.116

Continued on next page

Table B.3 – continued from previous page

	(1)	(2)	(3)
	(0.094)	(0.115)	(0.109)
MES*Rep	0.060		
	(0.113)		
MES*Conscientiousness	0.045		
	(0.078)		
MES*Openness	0.055		
	(0.112)		
CNS*Republican		0.031	
		(0.099)	
CNS*Conscientiousness		−0.009	
		(0.112)	
CNS*Openness		−0.002	
		(0.105)	
NEP*Republican			−0.101
			(0.098)
NEP*Conscientiousness			0.024
			(0.104)
NEP*Openness			−0.059
			(0.113)
Observations	106	122	106
Adjusted R^2	0.018	−0.006	−0.010

*Note:*OLS regression coefficients. Standard errors in parentheses.
2016 MTurk data. *p<0.1; **p<0.05; ***p<0.01

Table B.4: Study 4: Impact of MES and NEP on environmental behavior controlling for party identification and anti-environmentalism

	Environmental Behavior	
MES	0.033	
	(0.316)	
NEP		0.347
		(0.236)
Republican	−2.361**	0.107
	(0.995)	(0.706)
Anti-environmentalism	−0.282	−0.005
	(0.457)	(0.338)
MES*Republican	0.580**	
	(0.249)	
MES*Anti-environmentalism	0.016	
	(0.105)	
NEP*Republican		0.052
		(0.190)
NEP*Anti-environmentalism		−0.064
		(0.079)
Observations	182	181
Adjusted R^2	0.124	0.137

*Note:*OLS regression coefficients. Standard errors in parentheses. 2016 MTurk data. *p<0.1; **p<0.05; ***p<0.01

Appendix C

Chapter 4 Appendix

Ch. 4: Appendix A: Index factor loadings

Table C.1: Factor loadings for items in indexes

Data Source	Index	Item	Factor loading
2010 GSS	Environmental Activism		
		Attend environmental demonstration	0.278
		Member of environmental org.	0.537
		Give money to environmental org.	0.735
		Sign petition for environmental cause	0.626
MTurk	Psychological Proximity		
		Family care	0.530
		Everyday life	0.746
		Hypothetical distance	0.860
		Temporal distance	0.760
		Issue level	<0.1
	Climate activism		
		Join org. working on climate	0.919
		Rally on climate	0.865
		Give money to climate org.	0.786
		Post on social media	0.749

Note: MLE, single factor is sufficient for all indexes