POLITICAL VIEWS, MORALITY, AND ATTITUDES TOWARD MARIJUANA LEGALIZATION

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Abstract

In this paper, we examine why attitudes toward marijuana legalization are split along ideological lines. In a survey, we found that conservatives were more likely to oppose this policy partly because of their greater reliance on the *authority* and *purity* foundations of morality. Curiously, concerns about *harm* were found to play no role in determining attitudes toward marijuana legalization, even though those who were against this policy frequently explained their views with harm-related accounts. In an experiment, we found that opponents of legalization were more likely to adopt a more favorable view towards it when exposed to arguments and sources that were consistent with the *authority* and *purity* dimensions of morality. Precisely, subjects who initially opposed legalization were more likely to change their attitudes when exposed to arguments that were based on the *purity* (*vs.* *harm*) foundation of morality, and when they were led to believe that these arguments were given by religious (*vs.* business) leaders.

Keywords: Morality, Moral Foundations Theory, Marijuana Legalization, Attitude Change
A wave of prohibition set the tone of marijuana laws worldwide for most of the last century. Nowadays, this trend has begun to reverse. In 2001, Portugal decriminalized the use of all drugs. In 2012, the US states of Colorado and Washington voted in favor of legalizing marijuana for recreational use and, as of 2017, marijuana was legal in six other US states (Alaska, California, Maine, Massachusetts, Nevada, and Oregon), in addition to Washington, D.C. In 2014, Uruguay became the first country to legalize marijuana for recreational purposes. In 2018, Canada is expected to become the second nation to legalize marijuana for recreational use at a federal level. A dramatic shift in attitudes towards marijuana has accompanied this trend towards legalization. In the US, for instance, estimates suggest that over 60% of Americans now support marijuana legalization, while only 12% did so in 1969 (Gallup, 2017; Pew Research Center, 2017).

Attitudes about marijuana nonetheless remain a source of great political divisiveness. In Uruguay, laws legalizing marijuana passed in spite of low public support (Boidi, Cruz, Queirolo, & Bello-Pardo, 2015). In the United States, support towards marijuana legalization is much more prevalent among Democrats than Republicans (Pew Research Center, 2015a). Indeed, few public policy issues give rise to such polarized attitudes as marijuana legalization. Consider the example of the current US attorney general, Jeff Sessions. In a recent drug hearing in the US Senate, Mr. Sessions said that “good people don’t smoke marijuana” (Ingraham, 2016). An even more extreme example comes from Rodrigo Duterte, the president of the Philippines, who was recently elected on an anti-drug platform. In response to drug trafficking accusations against his son, Mr. Duterte promised to have him killed if the accusations were true (“Philippines’ Rodrigo Duterte says son will be killed if involved in drugs,” 2017). Others, in contrast, support marijuana legalization enthusiastically, pointing out that prohibition is more harmful than legalization (Hari, 2015; Miron & Zwiebel, 1995).
In spite of the growing public debate about drug policies, little is known about the factors that affect people’s opinions about marijuana legalization. This gap is in sharp contrast with the vast literature looking at the pros and cons of marijuana legalization (Chatwin, 2016; Gonçalves, Lourenço, & Nogueira, 2015; Kalant, 2016; Maag, 2003) and the determinants of drug use (Borodovsky, Crosier, Lee, Sargent, & Budney, 2016; Francis, 1997; Gomes, Andrade, Izbicki, Moreira-almeida, & Oliveira, 2013; Parfrey, 1976; Thomson, 2016; Wallace et al., 2007). In this paper, we attempt to fill his gap. In particular, we investigate why opinions about marijuana legalization seems to be divided along ideological lines. In the US, Democrats and Republicans differ significantly with respect to their support of marijuana legalization, with the former being more likely to support it than the latter (Pew Research Center, 2015a). Further, among Democrats, those who identify themselves as liberals are more likely to support marijuana legalization than those who identify themselves as conservatives; the same is true among Republicans. But why are attitudes about marijuana legalization so deeply divided along ideological lines? More specifically, if morality plays a role, what moral dimensions best explain the relationship between political ideology and opinions about marijuana legalization? In this paper, we draw on Moral Foundations Theory (Graham et al., 2011, 2013; Graham, Haidt, & Nosek, 2009; Haidt, 2012; Haidt & Graham, 2007; Haidt & Joseph, 2004) to look at how endorsement of different moral values explains such divergent attitudes about marijuana legalization.

We conducted two studies: a survey and an experiment. In the survey, we looked at how reliance on different moral foundations by self-reported liberals and conservatives explained their divergent opinions about marijuana legalization. We also examined potential discrepancies between the endorsement of different moral values extracted unobtrusively from the survey and those extracted from the verbal explanations the respondents gave for their opinions. After we identified the moral values that best explained their opinions about
marijuana legalization, we conducted an experiment with a sample of opponents of marijuana legalization. We investigated whether these individuals were more likely to adopt a more favorable view about it when exposed to arguments and sources that targeted the relevant moral values previously identified in the survey.

**Moral Foundations Theory**

Moral Foundations Theory (MFT; Graham et al., 2011, 2013, 2009; Haidt, 2012; Haidt & Graham, 2007; Haidt & Joseph, 2004) rests on the idea that moral judgments are primarily intuitive, rather than rational (Haidt, 2001). That is, it posits that what determines people’s evaluation of a given action is their immediate affective reaction to it, instead of deliberate, effortful cognitive processing. Though people often rationalize their motives for condemning or approving of certain actions, this reasoning is usually post-hoc, and plays no causal role in their judgments (Haidt, 2001, p. 815).

Building on this idea, MFT classifies the intuitions that give rise to people’s moral judgments into five separate, but related, dimensions. The first dimension, harm/care, refers to acts that individuals condemn on the basis that they cause either emotional or physical suffering to others. The second dimension, fairness/reciprocity, refers to issues of justice. That is, something is perceived as a violation of this dimension to the extent to which it is perceived as unjust or a violation of one’s rights. These two dimensions of morality are closely related to one another, and are usually referred to as the individualizing foundations, because they center on the “individual as the locus of moral value” (Graham et al., 2009, p. 1030). The third foundation of morality, ingroup/loyalty, refers to issues of betrayal of one’s group. Acts of treason against one’s group may be deemed morally wrong on the basis of this moral foundation, irrespective of issues of harm or justice. The fourth foundation of morality, authority/respect, refers to the subversion of the authority structures of one’s group, such as a child who disobeys a parent or a devotee who challenges the religious leader’s words.
Finally, the last foundation of morality refers to acts that are considered wrong insofar as they violate the body as a sacred entity. This foundation – purity/sanctity – is closely related to the emotion of disgust (Horberg, Oveis, Keltner, & Cohen, 2009). Actions such as incest, abortion, and same-sex relations are closely related to this moral foundation. These three foundations of morality are closely related to one another in that they “focus on the group as the locus of moral value”(Graham et al., 2009, p. 1030), and are usually referred to as the binding foundations.

**Political Views and Morality**

Individuals differ in the extent to which they rely on each foundation of morality when they make moral judgments. These differences may be partly innate (Haidt & Joseph, 2004) and partly cultural. Liberals and conservatives have been found to systematically differ with respect to which moral foundations they endorse. Liberals tend to endorse harm and fairness more than the other foundations, whereas conservatives tend to endorse all five foundations equally (Graham et al., 2009; Haidt & Graham, 2007). Reliance on different moral foundations, in turn, has been shown to influence attitudes in several domains. For example, endorsement of the purity/sanctity foundation is related to attitudes about several morally-charged issues including cloning, euthanasia, gambling (Koleva, Graham, Iyer, Ditto, & Haidt, 2012), stem cell research (Clifford & Jerit, 2013), and suicide (Rottman, Kelemen, & Young, 2014). Likewise, all five moral foundations have been found to affect attitudes about foreign policy issues (Kertzer, Powers, Rathbun, & Iyer, 2014). In a similar vein, the endorsement of different moral foundations by liberals and conservatives explains their divergent attitudes about the environment (Feinberg & Willer, 2013; Wolsko, Ariceaga, & Seiden, 2016). Perhaps even more surprising, reliance on different moral foundations predicts tie formation in social networks (Dehghani et al., 2016) and actual conservation (Kidwell, Farmer, & Hardesty, 2013), and donation behaviors (Winterich, Zhang, & Mittal, 2012).
Morality and Drug Policy Attitudes

Morality is at the core of the drug policy debate (Courtwright, 1997; Meier, 1994; Smith, 2002), and moral arguments have been used to justify the positions held by those on both sides of the debate (Lovering, 2015). Some opponents of drug legalization argue that drug use is an immoral act in itself. This justification is aptly exemplified by a comment made by William Bennett, a former director of the Office of National Drug Control Policy in the US: “I find no merit in the legalizers’ case. The simple fact is that drug use is wrong. And the moral argument, in the end, is the most compelling argument” (Bennett, 1990). In this type of argument, the very act of using marijuana, rather than its consequences, is perceived as immoral, and that should be enough to justify its prohibition. Those who favor legalization also offer moral arguments. However, for them, the source of the immorality is the harm and injustice caused by drug prohibition – i.e., it punishes those who need treatment, increases violence, disproportionately penalizes minorities, and violates individual rights (Lovering, 2015; Pew Research Center, 2015a).

The moral dimensions of Moral Foundations Theory apply well to the drug legalization context. The individualizing foundations of morality relate to the direct consequences of drug consumption on others. For instance, if one holds the belief that drug legalization will increase drug consumption, this policy will be considered immoral to the extent that (a) it is perceived to increase harm and foment unfair treatment of others, and (b) the individual values these two moral foundations. The binding foundations of morality, in contrast, relate to the act of drug consumption. If one holds the belief that drug legalization will increase drug consumption, it will be perceived as immoral to the extent that (a) drug consumption, of itself, is seen as a betrayal of in-group norms, disrespect to authority, and/or an impure, unnatural act, and (b) the individual values these three moral foundations.
In this paper, therefore, we draw on Moral Foundations Theory to investigate whether endorsement of different moral foundations can explain divergent attitudes about marijuana legalization along ideological lines. We first conduct a survey in which we examine which moral foundations are associated with attitudes about marijuana legalization and, crucially, whether they explain the link between political ideology and attitudes toward marijuana legalization. Next, we conduct an experiment with a different sample of individuals who reported being against marijuana legalization. We examine whether exposure to arguments and sources that are coherent with the dimensions of morality previously identified in the survey increase the likelihood that they will adopt a more favorable view of this policy.

We contribute to the literature on a few fronts. First and foremost, we contribute to the literature on political and moral psychology by identifying the moral dimensions that best explain that relationship between political ideology and attitudes toward marijuana legalization, a culture war issue that has been largely neglected by psychological research in spite of its increasing prominence in the public debate. Second, by analyzing individuals’ post-hoc explanations, we look at the interplay of moral intuition and reasoning. In doing so, we provide evidence that individuals’ verbal explanations for their views on marijuana legalization can significantly differ from the actual reasons underlying their opinions. Finally, we contribute to the literature on attitudes and attitude change by showing that opponents of marijuana legalization are more likely to change their views about it when they are exposed to arguments and sources that resonate with their moral values.

**Study 1**

In this study, we investigate the role of the moral foundations in explaining the effect of political views on attitudes towards marijuana legalization. We also look at people’s overt explanations for their opinions, and examine what moral concerns they reflect. We then
investigate the extent to which these moral concerns obtained from people’s verbal explanations predict their attitudes about this policy.

**Method**

Four hundred three Americans were recruited on Amazon’s Mechanical Turk to participate in a survey in exchange for a small payment. Six participants did not finish the questionnaire and were excluded, leaving a final sample of three hundred ninety-seven individuals (225 female, $M_{\text{age}} = 38.90$, $SD_{\text{age}} = 12.64$, range: 18-80). It took participants seven minutes on average to complete the survey. Participants were mostly white (78.34%) and had completed an undergraduate degree or higher (64.98%).

We recruited individuals from the fifteen most religious US states. The reason for that is twofold. First, we did not want participants from states where marijuana was legalized for recreational purposes (at the time, eight states plus the District of Columbia). Second, m-Turk samples have been shown to be more politically liberal than the general population (for an analysis of the characteristics of m-turk samples, see Berinsky, Huber, & Lenz, 2012 and Paolacci & Chandler, 2014); limiting our sample to the most religious US states allowed us to have a well-balanced sample with respect to political ideology. Indeed, our sample was well-distributed in terms of political views (129 conservatives, 101 moderates, and 167 liberals).

**Procedure**

Participants were first given a definition of marijuana legalization and were then asked their opinion about it on a 5-point scale labeled 1 = I’m strongly against it, 2 = I’m slightly against it, 3 = I’m uncertain about it, 4 = I’m slightly in favor of it, and 5 = I’m strongly in favor of it. We randomly assigned the order in which participants saw the answer choices. That is, approximately half of the participants saw the option “I’m strongly against it” at the

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1 Alabama, Mississippi, Tennessee, Louisiana, Arkansas, South Carolina, West Virginia, Oklahoma, Georgia, North Carolina, Texas, Utah, Kentucky, Virginia, and Missouri (Pew Research Center, 2015b).
top, and the other half saw that option at the bottom. There were no significant order effects (M_{bottom} = 3.93, M_{top} = 3.87, t(395) = 0.45, p = .65). Next, participants were asked to explain their opinion in an open-ended question. On average, they spent eighty-five seconds explaining their opinion (SD = 80.06, range: 6.11 – 640.89), and wrote 32.04 words (SD = 22.24, range: 2 – 165).

Next, participants completed the Moral Foundations Questionnaire (Graham et al., 2011), a 30-item measure of five different moral concerns individuals take into account when they make moral judgments (harm/care, fairness/reciprocity, ingroup/loyalty, authority/respect, purity/sanctity). The MFQ comprises two subscales, each containing fifteen items. In the moral relevance subscale, individuals are asked about the extent to which several considerations are important when they judge whether something is right or wrong. They report their answers in a 6-point scale anchored by 0 = not at all relevant, and 5 = extremely relevant. In the moral judgment subscale, individuals are asked to indicate the extent to which they agree/disagree with several morally-related statements. They give their answers on a 6-point scale anchored by 0 = strongly disagree, and 5 = strongly agree. While closely related, the two subscales of the MFQ differ in that the former refers to what principles an individual deems important when making moral judgments, and the latter assesses individuals’ reactions to actual violations of these principles (Graham, Haidt, & Nosek, 2009, p. 1033). The full scale is available in Appendix A. In our survey, we randomly assigned the order in which individuals completed the two subscales of the MFQ. That is, individuals completed either the moral relevance or the moral judgment subscale first. The order significantly impacted participants’ scores. Precisely, participants who completed the moral relevance subscale first scored lower in all moral foundations than those who completed the moral judgment subscale first. The order effect was significant for the harm (M_{mr,first} = 3.62, M_{mj,first} = 3.83, t(395) = 2.54, p = .012) and ingroup dimensions (M_{mr,first} = 2.51, M_{mj,first} = 2.70, t(395) = 1.99, p =
.047) and marginally significant for purity dimension ($M_{mr\_first} = 2.51$, $M_{mj\_first} = 2.76$, $t(395) = 1.82$, $p = .070$). If we collapse all foundations in a single score, an order effect is still observed ($M_{mr\_first} = 3.03$, $M_{mj\_first} = 3.20$, $t(395) = 2.58$, $p = .010$). Therefore, in the subsequent analysis, we control for the order in which the participant completed the moral foundations questionnaire. Additionally, we separated the items relative to each dimension in different screens in order to eliminate proximity effects (Podsakoff, Mackenzie, & Podsakoff, 2012). Within each screen, the order of the items was randomly assigned across participants.

Participants then reported key demographic information including age, gender, the highest level of education they completed, ethnicity, religious affiliation, religious attendance (1 = never, 6 = more than once a week), and political view (1 = very conservative, 2 = conservative, 3 = moderate, 4 = liberal, 5 = very liberal). Next, they reported the state where they live, whether they live in the capital of their state, and whether they know how the law about marijuana in their state is (69.27% correctly knew the law about marijuana in their state). Finally, participants reported whether they had ever used marijuana, and whether they had used marijuana in the past year. We report all measures collected in this study.

**Results**

As expected, political views were significantly correlated with attitudes about marijuana legalization, such that individuals who reported being more politically liberal were more in favor of it ($\beta = 0.30$, $p < .001$). Support for marijuana legalization was nonetheless high in our sample. Among conservatives, 57.36% reported being in favor of marijuana legalization; this number jumped to 70.29% among moderates, and to 85.63% among liberals. Means, standard deviations, Cronbach’s alpha and correlations between the key variables are reported in Table 1.
Table 1. Means, Standard Deviations, Cronbach’s Alpha, and Correlations among key variables in Study 1

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>α</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. marijuana legalization</td>
<td>3.90</td>
<td>1.37</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>2. harm</td>
<td>3.73</td>
<td>0.84</td>
<td>0.74</td>
<td>0.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3. fairness</td>
<td>3.62</td>
<td>0.81</td>
<td>0.72</td>
<td>0.17</td>
<td>0.60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. ingroup</td>
<td>2.61</td>
<td>0.98</td>
<td>0.77</td>
<td>-0.24</td>
<td>0.16</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>5. authority</td>
<td>2.97</td>
<td>0.97</td>
<td>0.77</td>
<td>-0.32</td>
<td>0.09</td>
<td>-0.08</td>
<td>0.65</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. purity</td>
<td>2.64</td>
<td>1.32</td>
<td>0.88</td>
<td>-0.39</td>
<td>0.16</td>
<td>-0.02</td>
<td>0.54</td>
<td>0.67</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>7. political view</td>
<td>3.16</td>
<td>1.19</td>
<td></td>
<td>0.30</td>
<td>0.17</td>
<td>0.43</td>
<td>-0.37</td>
<td>-0.51</td>
<td>-0.48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. religious attendance</td>
<td>2.62</td>
<td>1.60</td>
<td></td>
<td>-0.40</td>
<td>0.06</td>
<td>-0.14</td>
<td>0.28</td>
<td>0.33</td>
<td>0.50</td>
<td>-0.30</td>
<td></td>
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<tr>
<td>9. age</td>
<td>38.90</td>
<td>12.64</td>
<td></td>
<td>0.01</td>
<td>0.13</td>
<td>0.06</td>
<td>0.07</td>
<td>0.08</td>
<td>0.09</td>
<td>-0.06</td>
<td>-0.03</td>
</tr>
</tbody>
</table>

**Confirmatory Factor Analysis.** To evaluate the measurement model of the moral foundations scale, we performed a confirmatory factor analysis estimated by maximum likelihood. We compared the five-factor structure proposed by moral foundations theory with two more parsimonious models: one with a single factor affecting all the items, and one with two factors (one affecting the items relative to the two individualizing foundations, i.e. *harm* and *fairness*, and the other affecting the items relative to the three binding foundations, i.e. *ingroup*, *authority*, and *purity*). The model with a single factor accounting for all the items in the scale fit the data poorly, $\chi^2(405) = 3324.3$, CFI = 0.46, RMSEA = 0.14. The two-factor model fit the data better significantly better, $\chi^2(404) = 2093.9$, CFI = 0.68, RMSEA = 0.10, LR $\chi^2(1) = 1230.44$, $p < .001$. Similarly, the five-factor model fit the data better than the two-factor model, $\chi^2(395) = 1608.4$, CFI = 0.77, TLI = 0.75, RMSEA = 0.09, SRMR = 0.09, LR $\chi^2(9) = 485.50$, $p < .001$, providing support for the five-factor structure proposed by the theory. The fit of the five-factor structure was also better than the two other factor structures when we use the items from the two subscales separately. The fit indices of the models are presented in Table 2.
### Table 2. Fit Indexes of the moral foundations scale

<table>
<thead>
<tr>
<th>Model</th>
<th>df</th>
<th>$\chi^2$</th>
<th>$p (\Delta \chi^2)$</th>
<th>CFI</th>
<th>RMSEA</th>
</tr>
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<tbody>
<tr>
<td><strong>Only Moral Relevance Items</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>single factor</td>
<td>90</td>
<td>1453.6</td>
<td>-</td>
<td>0.49</td>
<td>0.20</td>
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<tr>
<td>two factors</td>
<td>89</td>
<td>642.2</td>
<td>&lt; .001</td>
<td>0.79</td>
<td>0.13</td>
</tr>
<tr>
<td>five factors</td>
<td>80</td>
<td>309.9</td>
<td>&lt; .001</td>
<td>0.91</td>
<td>0.09</td>
</tr>
<tr>
<td><strong>Only Moral Judgment Items</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>single factor</td>
<td>90</td>
<td>776.3</td>
<td></td>
<td>0.59</td>
<td>0.14</td>
</tr>
<tr>
<td>two factors</td>
<td>89</td>
<td>524.8</td>
<td>&lt; .001</td>
<td>0.74</td>
<td>0.11</td>
</tr>
<tr>
<td>five factors</td>
<td>80</td>
<td>340.2</td>
<td>0.005</td>
<td>0.84</td>
<td>0.09</td>
</tr>
<tr>
<td><strong>Complete Scale</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>single factor</td>
<td>405</td>
<td>3324.3</td>
<td>-</td>
<td>0.46</td>
<td>0.14</td>
</tr>
<tr>
<td>two factors</td>
<td>404</td>
<td>2093.9</td>
<td>&lt; .001</td>
<td>0.68</td>
<td>0.10</td>
</tr>
<tr>
<td>five factors</td>
<td>395</td>
<td>1608.4</td>
<td>&lt; .001</td>
<td>0.77</td>
<td>0.09</td>
</tr>
</tbody>
</table>

**Structural Equation Modeling.** To test the role of the moral foundations in mediating the relationship between political views and opinions about marijuana legalization, we performed several structural equations models. Because the moral foundations are highly correlated with one another, we ran five structural equations models, each with one of the five moral foundations as a mediating variable. In each model, we estimated a path from political view to the moral foundation (path A), and another path from the moral foundation to attitudes toward marijuana legalization (path B). In the two paths, we controlled for age, gender, and religious attendance. In path A, we also controlled for the order in which the moral foundations questionnaire was presented – that is, either the moral judgment or the moral relevance subscale presented first; and in path B, we also controlled for past marijuana use – a dummy indicating whether the person reported having ever used marijuana. The model is illustrated in Figure 1.
The results are presented in Table 3. Political view was positively related to harm ($\beta = 0.21, p < .001$) and fairness ($\beta = 0.42, p < .001$), such that the more liberal someone reported to be, the more likely he or she was to rely on these two dimensions when making moral judgments. In contrast, political view was negatively related to ingroup ($\beta = -0.21, p < .001$), authority ($\beta = -0.48, p < .001$), and purity ($\beta = -0.39, p < .001$), such that the more conservative an individual reported to be, the more likely he or she was to endorse these three foundations of morality. Furthermore, harm ($\beta = 0.05, p = .305$), fairness ($\beta = 0.06, p = .250$), and ingroup ($\beta = -0.06, p = .180$) were not significantly related to attitudes toward marijuana legalization. In contrast, the moral foundations of authority ($\beta = -0.14, p = .019$) and purity ($\beta = -0.15, p = .012$) were significantly related to people’s opinions of marijuana legalization, such that the more they endorsed these dimensions, the more likely they were to oppose it. Not surprisingly, in all models past marijuana use and religious attendance were strongly related to attitudes toward marijuana legalization, such that individuals who reported having ever (never) used marijuana were more (less) likely to favor legalization (all ps < .001), and the more often one reported attending religious services, the less likely one was to favor it (all ps < .001).
Table 3. Structural Equation Modeling: Separate Moral Foundations

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
</tr>
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<tr>
<td>political view</td>
<td>harm</td>
<td>mar. leg.</td>
<td>fairness</td>
<td>mar. leg.</td>
<td>ingroup</td>
</tr>
<tr>
<td></td>
<td>0.21***</td>
<td>0.18***</td>
<td>0.42***</td>
<td>0.16**</td>
<td>-0.21***</td>
</tr>
<tr>
<td>Mediators</td>
<td>harm</td>
<td></td>
<td>fairness</td>
<td>mar. leg.</td>
<td>ingroup</td>
</tr>
<tr>
<td></td>
<td>0.05</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>fairness</td>
<td></td>
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<td></td>
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<td></td>
<td>ingroup</td>
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<tr>
<td></td>
<td>authority</td>
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<td></td>
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<tr>
<td></td>
<td>purity</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
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<td>0.37***</td>
<td>0.37***</td>
<td>0.37***</td>
<td>0.37***</td>
</tr>
<tr>
<td></td>
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<td>-0.09</td>
<td>-0.25***</td>
</tr>
<tr>
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<td>0.17**</td>
<td>-0.03</td>
<td>0.15**</td>
<td>-0.03</td>
</tr>
<tr>
<td></td>
<td>gender</td>
<td>-0.26***</td>
<td>0.10*</td>
<td>-0.15**</td>
<td>0.10*</td>
</tr>
<tr>
<td></td>
<td>order mfq</td>
<td>-0.16**</td>
<td>-0.12*</td>
<td>-0.12*</td>
<td>-0.12*</td>
</tr>
<tr>
<td>Fit Indices</td>
<td>χ² (df)</td>
<td>121.49 (46)</td>
<td>189.25 (46)</td>
<td>360.72 (46)</td>
<td>206.74 (46)</td>
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<tr>
<td></td>
<td>CFI</td>
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<tr>
<td></td>
<td>RMSEA</td>
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<td>0.089</td>
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<td>0.094</td>
</tr>
<tr>
<td></td>
<td>SRMR</td>
<td>0.043</td>
<td>0.055</td>
<td>0.081</td>
<td>0.056</td>
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</tbody>
</table>

*** p < 0.001, ** p < 0.01, * p < 0.05
**Mediation.** To test the role of each moral foundation in mediating the relationship between political view and attitudes toward marijuana legalization, we performed a bootstrapping procedure with 1,000 replications for each model. That is, for each moral foundation, we bootstrapped the product of path A (from political view to the moral foundation) and path B (from the moral foundation to attitudes toward marijuana legalization). The results, displayed in Table 4, suggest that authority ($\beta = 0.076$, $p = .049$, 95% CI: 0.005 to 0.1513) and purity ($\beta = 0.066$, $p = .029$, 95% CI: 0.0066 to 0.1263) significantly mediate the effect of political view on attitude about marijuana legalization. That is, the more conservative someone is, the more he or she relies on these two dimensions of morality when making moral judgments, which in turn makes him or her more likely to oppose marijuana legalization.

<table>
<thead>
<tr>
<th>Moral Foundation</th>
<th>Coefficient</th>
<th>Bootstrapped Standard Error</th>
<th>p-value</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harm</td>
<td>0.012</td>
<td>0.014</td>
<td>0.391</td>
<td>-0.0159 to 0.0406</td>
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<tr>
<td>Fairness</td>
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<td>0.031</td>
<td>0.349</td>
<td>-0.0319 to 0.0900</td>
</tr>
<tr>
<td>Ingroup</td>
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<td>0.019</td>
<td>0.407</td>
<td>-0.0212 to 0.0524</td>
</tr>
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<td>Authority</td>
<td>0.076</td>
<td>0.038</td>
<td>0.049</td>
<td>0.0005 to 0.1513</td>
</tr>
<tr>
<td>Purity</td>
<td>0.066</td>
<td>0.031</td>
<td>0.029</td>
<td>0.0066 to 0.1263</td>
</tr>
</tbody>
</table>

We also estimated a model with the moral foundations grouped in a two-factor structure – i.e. one factor representing the individualizing foundations (*harm* and *fairness*), and another factor representing the binding foundations (*ingroup*, *authority*, and *purity*). We controlled for age, gender, and religious attendance. In the path from political view to the individualizing and binding foundations, we also controlled for the order in which the participant completed the moral foundation questionnaire (i.e., moral relevance subscale first vs. moral judgment subscale first). In the path from the moral foundations to attitudes toward
marijuana legalization, we also controlled for whether the individual reported having ever used marijuana. This model is represented in Figure 2.

Figure 2. Structural Equation Modeling: Model with Individualizing and Binding Foundations

![Diagram showing the relationships between Political View, Individualizing Foundations, Binding Foundations, and Attitudes about Marijuana Legalization, with control variables.]  

Political view was positively associated with reliance on the individualizing foundations ($\beta = 0.35, p < .001$), and negatively associated with reliance on the binding foundations ($\beta = -0.45, p < .001$). That is, the more liberal individuals reported to be, the more they endorsed the individualizing foundations; the more conservative they reported to be, the more they endorsed the binding foundations. In addition, both the individualizing and the binding foundations were significantly associated with attitudes toward marijuana legalization. The more someone relied on the individualizing foundations, the more he or she favored marijuana legalization ($\beta = 0.10, p = .040$); the more someone relied on the binding foundations, the more he or she opposed it ($\beta = -0.20, p = .001$). The direct effect of political view on marijuana legalization was not significant ($\beta = 0.06, p = .254$). The results are displayed in Table 5.
To test for the role of the individualizing and binding foundations in mediating the effect of political view on attitudes toward marijuana legalization, we performed a bootstrapping procedure with 1,000 replications analogous to those performed for the models with the separate moral foundations. The results suggest that the indirect effect of political view on attitude toward marijuana legalization through the binding foundations is significant ($\beta = 0.10, p = .004, 95\% \text{ CI: } 0.03116 \text{ to } 0.1685$), and that the indirect effect through the individualizing foundations is not significant ($\beta = 0.04, p = .078, 95\% \text{ CI: } -0.0046 \text{ to } 0.0874$). In other words, the more conservative someone is, the more he or she relies on the binding foundations of morality when making moral judgments, which in turn makes him or her less likely to favor marijuana legalization. These results are consistent with the previous analyses.
**Explanations.** Remember that participants were asked to explain their opinion about marijuana legalization in an open-ended question. We coded the moral content of their explanations. Precisely, we coded whether participants’ reasons for their opinions conveyed each of the five moral foundations. Three hundred twenty-eight participants (82.62%) provided arguments that conveyed at least one foundation of morality; fifty-four participants (13.60%) provided arguments that conveyed two or more moral foundations.

The most common moral foundation in participants’ explanations was *harm*. These arguments pondered whether marijuana causes harm to people – either considering it harmful, harmless, or as/less dangerous as/than other legal drugs. For example: “it is toxic and harmful to health”; “it is not harmful. It has many beneficial qualities”; “marijuana is harmless especially when compared to alcohol, tobacco, and other substances”. Two hundred eighty-four participants (71.54%) offered arguments that fell into this category. The second-most frequent category focused on issues of *fairness* (13.10%; n = 52). These arguments emphasized that the current drug policy is unfair and punishes minorities disproportionately. Examples include “The minorities charged with possession of this drug face harsh charges and jail time”; “it should not be kept a crime”. Interestingly, arguments that mentioned the individualizing foundations of morality – especially harm – were more frequent among both individuals who favored and opposed marijuana legalization.

Arguments conveying the binding foundations of morality were far less common. Those classified in the *ingroup* foundation of morality focused on the role of marijuana in impairing individuals’ functioning within the group. For example: “I feel it would make people lazy”, “it may attract undesirable people to the area (no job, lazy, etc.)”. Only eight people offered explanations that were classified in this category. Arguments related to the *authority* foundation of morality were also uncommon. These arguments focused on setting example to others, particularly children, e.g. “I feel like it’s a bad idea because it sends kids
the wrong message”, “If it is legal then young people will think it is alright to use”. Finally, arguments related to the purity foundation stated that marijuana is natural, or an intoxicating/disgusting substance. For example: “It is really a natural herb that helps a lot of people medically”, “I think it is a plant”, “It is an intoxicating substance”. Thirty people gave arguments that were related to this dimension of morality.

We estimated five structural equation models similar to that illustrated in Figure 1, with the moral foundations obtained from the content of participants’ explanations as mediators. That is, each model contained one moral foundation extracted from participants’ explanation mediating the path from political view to attitude about marijuana legalization. The results are displayed in Table 6. Although political view was strongly related to all moral foundations extracted from the scale, the same was not true for the moral foundations extracted from participants’ explanations. Precisely, it was significantly related only with fairness: more liberal participants were more likely to explain their opinion about marijuana legalization with arguments based on the fairness foundation ($\beta = 0.11, p = .032$).

Furthermore, participants whose explanation contained arguments focused on fairness were more likely to favor marijuana legalization ($\beta = 0.11, p = .007$), and those whose explanations contained arguments based on the ingroup ($\beta = -0.17, p < .001$) or the authority ($\beta = -0.19, p < .001$) dimensions were less likely to favor it.

We also tested the role of the moral content of participants’ explanations in mediating the relationship between political view and attitudes about marijuana legalization. To do so, we performed a bootstrapping procedure analogous to the previous one: we bootstrapped the product of the path from political ideology to the moral content of the explanations (path A) and the path from the moral content of the explanation to attitudes about marijuana legalization (path B). The results, shown in Table 7, suggest that with the exception of the
indirect effect through fairness, which was significant at 10% ($\beta = 0.014, p = .067, 95\% 0.0010$ to $0.0296$), no other indirect effects were significant ($ps > .20$).

**Discussion**

The results of Study 1 indicate that political views are strongly correlated with attitudes toward marijuana legalization, such that more liberal individuals are more likely to support this policy. Importantly, it indicates that this relationship is explained, at least in part, by two binding foundations of morality: *authority* and *purity*. That is, the more conservative (i.e., less liberal) someone is, the more he or she tends to endorse these two foundations of morality, which in turn drives his or her opinion about marijuana legalization. Interestingly, moral concerns about *harm* play no role in explaining this relationship. This is surprising, especially because much of the debate about marijuana legalization is focused on its potential harm (e.g. Smith, 2002) – indeed, concerns related to harm were the most common moral concern in participants explanations of their opinion. Our data also suggest that moral concerns communicated through individuals’ verbal explanations of their attitudes about marijuana legalization do not explain liberals and conservatives’ discrepant views of this policy. This finding resonates with recent literature about other morally charged issues. For instance, in spite of the strong relationship between purity concerns and attitudes about stem cell research, opponents rely more frequently on harm-based than on purity-based moral language (Clifford & Jerit, 2013). Likewise, whereas moral rhetoric on environmental issues resides primarily on the *harm/care* domain, purity-focused arguments are more likely to influence conservatives (Feinberg & Willer, 2013).
Table 6. Structural Equation Modeling: Moral Foundations Extracted from Participants’ Explanations

<table>
<thead>
<tr>
<th>Mediators</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
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<td>harm</td>
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<td>-0.01</td>
<td>-0.05</td>
<td>-0.10</td>
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<tr>
<td>mar. leg.</td>
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<td>-0.11*</td>
<td>0.19***</td>
<td>0.18***</td>
<td>0.19***</td>
</tr>
<tr>
<td>Mediators</td>
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<td></td>
<td></td>
</tr>
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<td></td>
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<td></td>
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<tr>
<td>fairness</td>
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<td></td>
<td></td>
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<tr>
<td>ingroup</td>
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<td>-0.19***</td>
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<tr>
<td>authority</td>
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<td>purity</td>
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<td>0.12*</td>
</tr>
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<td>0.09*</td>
<td>0.04</td>
<td>0.08*</td>
<td>0.10*</td>
</tr>
<tr>
<td>Fit Indices</td>
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<td></td>
</tr>
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<td>$\chi^2$ (df)</td>
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<td>3.39 (1)</td>
<td>0.19 (1)</td>
<td>4.03 (1)</td>
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<td>0.016</td>
<td>0.004</td>
<td>0.017</td>
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</table>

*** p < 0.001, ** p < 0.01, * p < 0.05
Table 7. Indirect effect of political view on attitudes about marijuana legalization through each moral foundation obtained from participants’ explanations

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Bootstrapped Standard Error</th>
<th>p-value</th>
<th>95% CI</th>
</tr>
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<td>Harm</td>
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<tr>
<td>Ingroup</td>
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</tr>
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<td>0.858</td>
<td>-0.0128 to 0.0106</td>
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</table>

Study 2

Drawing on the findings from our first study, Study 2 serves two purposes. First, it attempts to corroborate conceptually the importance of purity and authority as key moral foundations that explain discrepant attitudes toward marijuana legalization between liberals and conservatives. Furthermore, Study 2 empirically assesses whether these “moral barriers” can be overcome. To conduct this assessment, we examined whether the content of the moral argument (purity-based vs. harm-based), as well as the moral authority of the messenger (religious leader vs. business leader), are more likely to persuade those who oppose marijuana legalization.

Method

This study adopted a 2 (Moral argument: purity-based vs. harm-based) x 2 (Moral authority: religious leader vs. business leader) between-subjects design. Participants were randomly assigned to one of the four treatments. A power analysis using G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) indicated that a sample size of 309 individuals was necessary for us to have a power of 80% to identify an effect that explained 2.5% of the variance ($\eta^2 = .025$), given a significance level of 5%. Therefore, we recruited three hundred thirty-five individuals who reported being not in favor of marijuana legalization. Fourteen individuals did not complete the survey and were excluded, leaving a final sample of three
hundred twenty one individuals (M<sub>age</sub> = 37.80, SD<sub>age</sub> = 12.85, range: 18 - 74). These individuals were either strongly against (n = 124), slightly against (n = 74), or uncertain about (n = 123) marijuana legalization. For the same reasons outlined in Study 1, we only recruited participants from the fifteen most religious US states. The majority of the participants were white (75.70%) and had completed an undergraduate degree or higher (68.22%).

**Procedure**

Individuals first reported the highest level of education they have completed, their ethnicity, the state and the city where they live, and how is the law about marijuana in their state (76.64% correctly reported that marijuana was illegal in their states). They then reported whether they had ever used marijuana on an at least occasional basis, and whether they had ever used any other drug on an at least occasional basis; 24.61% and 8.72%, respectively, answered yes. In the next screen, participants completed the 7-item Centrality of Religiosity Scale, a one-to-five measure of the centrality, importance, or salience of religious meanings in personality (Huber & Huber, 2012), and reported their religious affiliation. The order of the CRS items was randomized across participants.

The CRS was included to test the assumption that our sample was rather religious, which would allow us to rely on religiosity to implement the moral authority manipulation (see next paragraph). Indeed, religiosity was significantly above the mid-point of the Centrality of Religiosity Scale (M = 3.73, t(320) = 11.41, p < .001) in this sample. This is not a surprise given that the sample comprised those who were not in favor of marijuana legalization, who are much more likely to be conservative and religious, as shown in study 1 and in other publications (Pew Research Center, 2015a).

*Moral authority manipulation.* After filling out the CRS, participants were randomly assigned to one of the two treatments of moral authority (higher moral authority = religious
leader vs. lower moral authority = business leader). Participants read that “Many religious [vs. business] leaders have recently spoken in favor of marijuana legalization. Here are a few quotes. Because we want you to focus on the message rather than on the messenger, we will not reveal the sources of these actual quotes.” The last sentence was inserted to justify why we did not identify the religious or business leaders by name.

Moral argument manipulation. Participants were then randomly assigned to read one of two sets of arguments, each containing three arguments from religious [vs. business] leaders in favor of marijuana legalization. Two arguments were constant across the two sets (see Appendix B). A third argument was based either on the purity or the harm foundation of morality. We used three arguments instead of only the target argument in order to minimize demand effects.

The purity-based argument said that…

“Cannabis is a plant, a herb which has been cultivated and consumed for centuries around the world. It is natural and it is pure. I do not vainly cite the bible. This passage of the book of Genesis seems appropriate: and God said ‘Behold, I have given you every herb bearing seed which is upon the face of all the earth… To you it will be for meat [that is, to consume]’ (Genesis, 1:29).”

The harm-based argument, in contrast, said that…

“Adults should be allowed to consume what they deem fit as long as they (a) are aware of the risks and (b) do not harm others or violate their rights.”

The order of presentation of the argument within each set was randomized across participants, and only one argument was presented per screen. No order effects were observed (all ps > .10).
**Reasonableness of the arguments.** We did not want one argument to be perceived as more reasonable (or foolish) than the other, which would compromise the interpretation of the results. Put simply, it was important to manipulate the content of the message and the source without changing the overall reasonableness of the argument. Thus, all participants were asked (1) “In general, how reasonable are the arguments presented?” (1 = totally unreasonable, 7 = totally reasonable), (2) “In general, how persuasive are the arguments presented?” (1 = not at all persuasive, 7 = very persuasive), and (3) “In general, how foolish are the arguments presented?” (1 = not foolish at all, 7 = completely foolish, reverse-coded). The order of presentation of the questions was randomized across participants.

**Likelihood of changing opinion.** We then measured the main outcome variable. On a subsequent screen, participants were asked: “You indicated that you were [strongly against/ slightly against/ uncertain about] marijuana legalization. In the future, how likely are you to change your opinion to a more positive (less negative) view about marijuana legalization?” Participants indicated their answer on a 5-point scale (1 = it is very unlikely, 2 = it is unlikely, 3 = it is possible (around 50% chance), 4 = it is likely, 5 = it is very likely).

Finally, before finishing the survey, we checked if participants remembered correctly (1) whether the arguments they read were (ostensibly) made by either religious or business leaders, and (2) whether they had read either the purity-based or the harm-based argument. Most participants remembered correctly whether the arguments they read were made by religious or business leaders (93.5%), and whether they read the purity-based or harm-based argument (97.5%). We report all measures collected in this study.

**Results**

**Reasonableness of the arguments.** The answers to the three questions assessing the overall reasonableness of the arguments were averaged to form an index ($\alpha = 0.83$). To test if
the manipulations affected the perceived reasonableness of the arguments, we performed a
two-way ANOVA with the reaction index as the outcome variable. There was no main effect
of either the argument (F(1, 317) = 0.35, p = .553) or the source (F(1, 317) = 0.20, p = .656).
The interaction between the two factors was not significant either (F(1, 317) = 0.01, p = .904).
The results do not change if the items that formed the reaction index are analyzed separately.
These results suggest that the manipulations did not affect how reasonable/foolish/persuasive
the arguments were perceived to be.

Likelihood of changing opinion. To investigate whether the manipulations affected
individuals’ willingness to adopt a more positive view of marijuana legalization in the future,
we conducted a two-way ANOVA with opinion change as the main outcome variable and the
two manipulations as factors. The results showed a significant main effect of the moral
argument manipulation (F(1, 317) = 8.06, p = .005, \(\eta^2 = .024\)), such that those who read the
purity-based argument reported being more likely to change their opinion about marijuana
legalization in the near future (M = 2.64, SD = 1.12) than did those who read the harm-based
argument (2.31, SD = 0.96). There was also a significant main effect of the moral authority
manipulation (F(1, 317) = 6.09, p = .015, \(\eta^2 = .018\)), such that those who were told that the
arguments were made by a religious leader reported being more likely to change their opinion
(M = 2.61, SD = 1.06) than did those who were told that the arguments were made by a
business leader (2.33, SD = 1.03). The effects were additive. The interaction between the two
manipulations was not significant (F(1, 317) = 0.12, p = .728). The results are illustrated in
Figure 3.
Interaction with strength of the initial opinion. We conducted a two-way ANOVA to assess whether the impact of the moral argument (purity vs. harm) on the likelihood of changing the opinion was contingent on the strength of the initial opinion about marijuana legalization (strongly against it vs. slightly against it vs. uncertain about it). Beyond the effect of the moral argument previously reported, there was also a main effect of strength of initial opinion ($F(2, 315) = 53.75, p < .001, \eta^2 = .25$), such that those with weaker initial preferences were more likely to change their minds. There was, however, no significant interaction between the two factors ($F(2, 315) = 0.28, p = .754$). That is, those who read the purity (vs. harm) argument were more likely to change their views of marijuana legalization in the near future, irrespective of the strength of their initial opinion about it. Figure 4 illustrates the results.
We conducted the same analysis to assess whether the impact of moral authority (business vs. religious leader) on the likelihood of changing opinion was contingent on the strength of the initial opinion of marijuana legalization. Again, beyond the main effect of the moral argument previously reported, a main effect of the strength of initial opinion was also observed ($F(2, 315) = 45.03, p < .001, \eta^2 = .25$), such that those with weaker initial preferences were more likely to change their opinion. A two-way interaction was observed ($F(2, 315) = 3.49, p = .032, \eta^2 = .016$), in a counterintuitive way. The impact of the moral authority manipulation was stronger among those who had a priori reported a stronger, rather than weaker, opinion about marijuana legalization. That is, among those who reported being uncertain about marijuana legalization ($n = 123$), the moral authority manipulation had no impact whatsoever ($M_{\text{religious}} = 3.08, M_{\text{business}} = 3.09, F(1, 315) = 0.00, p = .956$). The impact of manipulation was stronger for those who were slightly against marijuana legalization ($M_{\text{religious}} = 2.62, M_{\text{business}} = 2.23, F(1, 315) = 3.46, p = .064$), and even stronger for those who reported being strongly against marijuana legalization ($M_{\text{religious}} = 2.17, M_{\text{business}} = 1.59, F(1, 315) = 13.27, p < .001$). Interestingly, there were no significant differences in religiosity.
between individuals who were uncertain (M = 3.61, SD = 1.17), slightly against (M = 3.79, SD = 1.05), and strongly against (M = 3.82, SD = 1.19, F(2, 318) = 1.12, p = .328) marijuana legalization. The results are displayed in Figure 5.

**Figure 5. Effect of the moral authority manipulation across individuals with different initial opinions about marijuana legalization**

![Bar chart showing the likelihood of changing opinion for different initial opinions about marijuana legalization, with bars for business leaders and religious leaders.](image)

**Discussion**

Results from study 2 suggest that, despite the equivalent reasonableness of the arguments, individuals who a priori did not favor marijuana legalization were highly sensitive to the moral content of the argument and the moral authority of the messenger. Participants who were told that the arguments were made by a religious (vs. business) authority were more willing to adopt a more favorable view of marijuana legalization in the future, and so were participants who read the argument that emphasized purity of cannabis as a natural plant, rather than an argument that emphasized the absence of harmful effects to others.

Interestingly, the effect of the moral argument was robust across individuals with different initial views on marijuana legalization. Curiously, the moral authority manipulation did not impact individuals who were initially uncertain about marijuana legalization, but only those
who were initially either strongly or slightly against it. Given that these groups did not differ with respect to their religiosity, future research may want to address the robustness of this interaction and the underlying mechanism behind this particular phenomenon.

**General Discussion**

The debate about marijuana legalization is gaining momentum. Even though support for legalization is increasing, it remains a great source of political divisiveness. While some claim that an overhaul of prohibition policies is long overdue, others are skeptical about the benefits of legalization. Consistent with this increasing debate, a growing body of literature has looked at the determinants of drug use and the pros and cons of legalization. It is surprising, then, that marijuana legalization has been largely absent from socio-psychological research. With the exception of descriptive population surveys, little is known about people’s attitudes in this domain. This is even more surprising given the recent increase in psychologists’ interests in morally charged issues such as climate change (Wolsko et al., 2016), stem cell research (Clifford, Iyengar, Cabeza, & Sinnott-Armstrong, 2015), suicide (Rottman et al., 2014), foreign policy (Kertzer et al., 2014), donations to charity (Winterich et al., 2012), and several other culture war issues, from abortion and same-sex marriage to gambling (Koleva et al., 2012). In this paper, we attempted to fill this gap by examining which moral concerns can explain discrepant attitudes toward marijuana legalization held by individuals on both sides of the political spectrum, and whether those who are against this policy are more likely to be persuaded by messages and sources that are consistent with these concerns.

We found that although harm-based moral rhetoric dominated arguments for and against marijuana legalization, harm concerns did not explain individuals’ divergent attitudes toward it. Instead, moral concerns related to the *authority* and *purity* dimensions of morality – i.e., concerns about obedience and respect for authority and about keeping one’s body sacred
and pure, respectively – explained liberals’ and conservatives’ discrepant attitudes toward this policy. Drawing on this finding, we conducted an experiment to investigate whether arguments and sources favoring marijuana legalization that were consistent with these two dimensions of morality (vs. arguments and sources that were not) were more likely to persuade individuals who were against it to adopt a more favorable view about it in the future. Our data suggests that they were. Precisely, individuals were more willing to adopt a more positive view about marijuana legalization when they were told that the arguments were made by a religious (vs. a business) leader, and when one of the arguments reflected purity-related (vs. harm-related) values. This happened even though the manipulations did not affect the reasonableness of the arguments, as reported by the participants.

Our findings resonate with results in other morally relevant contexts that show that concerns over the binding foundations of morality – especially purity – are more predictive of attitudes about several moral issues than are concerns over the individualizing foundations – in particular, harm. For instance, even though harm is at the center of the debate over stem cell research (Clifford & Jerit, 2013), attitudes in this domain are best predicted by purity concerns (Koleva et al., 2012). A similar pattern emerges in attitudes towards the environment: even though pro-environmental discourse is mostly framed in terms of harm-related concerns, conservatives express more pro-environmental attitudes when exposed to messages framed in terms of purity, rather than harm (Feinberg & Willer, 2013). In the same manner, condemnation of suicide, a moral violation often thought of in terms of harm, are better predicted by purity concerns (Rottman et al., 2014).

This paper contributes to the literature on political psychology by showing that different moral concerns explain conservatives’ and liberals’ divergent attitudes about an issue that has been largely absent from behavioral research, in spite of the growing public debate. Our findings also contribute to the literature on moral psychology, which shows that
moral rhetoric about moral issues often fails to reflect the moral concerns that actually motivate people’s opinions. Importantly, we also contribute to the literature on attitude change by showing that arguments and sources that target moral values cherished by conservatives are more likely to persuade the undecided and naysayers to have a more favorable attitude about marijuana legalization.

Our findings offer some directions and questions for future research. First of all, it is likely that factors not related to morality also affect people’s attitudes about marijuana legalization. Given the absence of research about the topic and its increasing relevance, uncovering the factors that affect people’s attitudes toward it – and how to change them – may be a fruitful avenue for research. Furthermore, our research is consistent with recent research that shows that the moral content of verbal explanations for morally-charged issues often diverges from the moral concerns that actually drive people’s attitudes about these issues. Nonetheless, no research has looked at the factors that determine whether the moral content of verbal explanations for morally-charged issues converges with or diverges from the moral concerns that actually drive people’s opinions about these issues. Aside from individual differences, situational and motivational factors are also likely to play a role. Exploring these factors could be an interesting area for research. Finally, although we found that people are more willing to change their attitudes about marijuana legalization when the moral content of the argument and the source are consistent with the moral values that drive their opposition to it, the mechanism for this effect is unclear. In other words: Why are individuals who oppose marijuana legalization more likely to adopt a more favorable view about it when they are exposed to arguments and sources that are coherent with the moral values that drive their opinion? One possibility is that these arguments and sources are perceived to be more trustworthy. Another possibility is that these arguments and sources signal to people that other members of their own group are adopting a more favorable view about this policy.
We hope that understanding the factors that influence public opinion on drug policy will encourage behavioral researchers to pay more attention to the issue, and also enrich the drug policy debate by helping people on both sides better to understand one another.
References


Hari, J. (2015). Chasing the scream: the first and last days of the war on drugs. Bloomsbury Publishing USA.


Appendix A: Moral Foundations Questionnaire

Moral Relevance (0 = not at all relevant, 1 = not very relevant, 2 = slightly relevant, 3 = somewhat relevant, 4 = very relevant, 5 = extremely relevant)

When you decide whether something is right or wrong, to what extent are the following considerations relevant to your thinking?

Harm:

- Whether or not someone has suffered emotionally.
- Whether or not someone cared for the weak and vulnerable.
- Whether or not someone was cruel.

Fairness:

- Whether or not some people were treated differently from others.
- Whether or not someone acted unfairly.
- Whether or not someone was denied his or her rights.

Ingroup:

- Whether or not someone’s actions showed love for his or her country.
- Whether or not someone did something to betray his or her group.
- Whether or not someone showed a lack of loyalty.

Authority:

- Whether or not someone showed a lack of respect for authority.
- Whether or not someone conformed to the traditions of society.
- Whether or not an action caused chaos or disorder.

Purity:

- Whether or not someone violated standards of purity and decency.
- Whether or not someone did something disgusting.
- Whether or not someone acted in a way God would approve of.

Moral Judgment (0 = strongly disagree, 1 = moderately disagree, 2 = slightly disagree, 3 = slightly agree, 4 = moderately agree, 5 = strongly agree)

Please indicate the extent to which you agree/disagree with the following statements.

Harm:

- Compassion for those who are suffering is the most crucial virtue.
- One of the worst things a person could do is to hurt a defenseless animal.
- It can never be right to kill a human being.
**Fairness:**

When the government makes laws, the number one principle should be that everyone is treated fairly.
Justice is the most important requirement for a society.
I think it’s morally wrong that rich children inherit a lot of money while poor children inherit nothing.

**Ingroup:**

I’m proud of my country’s history.
People should be loyal to their family members, even when they have done something wrong.
It is more important to be a team player than to express oneself.

**Authority:**

Respect for authority is something that all children need to learn.
Men and women each have different roles to play in society.
If I were a soldier and disagreed with my commanding officer’s orders, I would obey anyway because that is my duty.

**Purity:**

People should not do things that are disgusting, even if no one I harmed.
I would call some acts wrong on the grounds that they are unnatural.
Chastity is an important and valuable virtue.
## Appendix B: Arguments used in Study 2

<table>
<thead>
<tr>
<th>Argument 1 (constant across conditions)</th>
<th>Condition 1: Purity argument</th>
<th>Condition 2: Harm argument</th>
</tr>
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<tbody>
<tr>
<td>&quot;Don't get me wrong, I do not encourage marijuana use. Although it can be pleasant and relaxing, it can also be dangerous. But this is also true for many, if not most, dangerous legal drugs such as alcohol and tobacco. That is why I think a legal approach to marijuana is needed.&quot;</td>
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| Argument 2 (constant across conditions) | "The war on drugs is a waste of government's time and taxpayer's money. Basically, we should follow a model similar to that used to deal with a damaging but legal drug: nicotine." |

| Argument 3: purity vs. harm | "Cannabis is a plant, an herb which has been cultivated and consumed for centuries around the world. It is natural and it is pure. I do not vainly cite the bible. This passage of the book of Genesis seems appropriate: and God said 'Behold, I have given you every herb bearing seed which is upon the face of all the earth...To you it will be for meat [that is, to consume]' (Genesis, 1:29)." | "Adults should be allowed to consume what they deem fit as long as they (a) are aware of the risks and (b) do not harm others or violate their rights." |

*The order of the three arguments was randomized across participants.*