Right-Wing Authoritarianism and Social Dominance Orientation Predict Different Moral Signatures

**Petar Milojev · Danny Osborne · Lara M. Greaves ·
Joseph Bulbulia · Marc S. Wilson · Caitlin L. Davies ·
James H. Liu · Chris G. Sibley**

Abstract Moral Foundations Theory posits five distinct foundations of morality: Harm/Care, Fairness/Reciprocity, In-group/Loyalty, Authority/Respect, and Purity/Sanctity. In combination, this should yield between four-to-six *moral signatures*—distinct combinations or patterns of support for these aspects of morality. We extend previous research by examining the replicability of these moral signatures in a New Zealand-based national sample ($n = 3{,}635$). Latent Profile Analysis identified four distinct moral signatures: Individuators, Moderates, Neutrals, and High Moralists. We integrate these moral signatures within the Dual Process Model (DPM) framework and show that Social Dominance Orientation predicts membership in the Neutral moral signature (moderate/lukewarm support for multiple moral foundations); whereas Right-Wing Authoritarianism predicts membership in the High Moralist signature (undifferentiated high support across moral foundations). These findings were observed controlling for Big-Six personality and various demographics. Thus, the authoritarian and dominance-based motives identified by the DPM *independently* predict categorical differences in the signatures people use to judge morality.

Keywords Moral Foundations Theory · Dual Process Model ·
Latent Profile Analysis

Recent developments in the study of human morality have broadened traditional conceptualizations of morality beyond the principles of (no) harm and fairness

P. Milojev (✉) · D. Osborne · L. M. Greaves · C. G. Sibley
School of Psychology, University of Auckland, Auckland, New Zealand
e-mail: p.milojev@auckland.ac.nz

J. Bulbulia · M. S. Wilson · C. L. Davies · J. H. Liu
Victoria University of Wellington, Wellington, New Zealand

(Graham et al., 2011; Kohlberg, 1969, 1971; Turiel, 1983). Specifically, Moral Foundations Theory (MFT) argues that social and communal concerns should also be included within the domain of morality (Haidt & Graham, 2007; Haidt & Joseph, 2004). In doing so, MFT proposes the following five distinct moral foundations: Harm/Care, Fairness/Reciprocity, In-group/Loyalty, Authority/Respect, and Purity/Sanctity. The first two foundations function as *individualizing* concerns that relate to principles of harm and fairness. The remaining three concerns, in contrast, aim to bind communities together by fostering ingroup loyalty, respect for authority, and commitments to religious sanctity and purity (i.e., *binding* concerns; Haidt & Graham, 2007; Haidt & Joseph, 2004). MFT holds that these five moral foundations form the psychological basis of moral community-making (Haidt & Joseph, 2007).

MFT originally identified distinct relationships between the five moral foundations and various socio-political attitudes (particularly people's political ideology; Federico, Weber, Ergun, & Hunt, 2013; Graham, Haidt, & Nosek, 2009; Weber & Federico, 2013). As such, some suggest that the moral foundation framework can be conceived as a "moral equaliser" (Haidt, Graham, & Joseph, 2009, pp. 112) such that differences in people's reliance on the individualizing (versus binding) foundations are associated with different socio-political ideologies. Accordingly, an emerging literature suggests several broad profiles of morality that correlate with people's socio-political beliefs—a "liberal-type," a "conservative—type," several variations of a "moderate-type," and a "libertarian-type" (e.g., Federico et al., 2013; Haidt et al., 2009; Iyer, Koleva, Graham, Ditto, & Haidt 2012; Weber & Federico, 2013).

The purpose of the present study is twofold. First, we investigate the replicability of these moral profiles in a New Zealand-based national sample by using Latent Profile Analysis (LPA) to identify distinct ways in which people emphasize these five moral foundations (i.e., *moral signatures*). For example, some people may emphasize the two individualizing foundations at the expense of the binding foundations, whereas others may find all five moral foundations to be equally important. Such response patterns across the five foundations would reflect categorically distinct subtypes of people who value different combinations of the five moral foundations. Second, we investigate the relationships between MFT and motivational bases of social attitudes subsumed within the Dual Process Model (Duckitt, 2001). These motivational bases reflect a preference for hierarchical social relations that is indexed by Social Dominance Orientation (SDO; Pratto, Sidanius, Stallworth, & Malle, 1994) and a preference for conventional and punitive authority-oriented social systems that is indexed by Right-Wing Authoritarianism (RWA; Altemeyer, 1996, 1998). After identifying an appropriate latent profile model, we use the three-step modeling approach developed by Asparouhov and Muthén (2013) to estimate people's membership in these different latent *moral signatures*.

Originally conceived as a framework for understanding intergroup relations, Duckitt's (2001) Dual Process Model (DPM) implies that distinct *moral signatures* (i.e., ways of thinking about and making sense of morality) may be rooted in two distinct motivational processes. We elaborate upon and examine this possibility by identifying distinct moral signatures within a national probability sample and testing

the effects of SDO, RWA, and personality on profile membership. That is, rather than simply predicting higher or lower support for any one of the moral foundations, we use LPA to test how SDO and RWA predict membership in profiles that represent substantively distinct combinations of moral relevance. Our model complements previous research addressing this question (e.g., Federico et al., 2013; Graham et al., 2011; Haidt et al., 2009) by directly investigating group-level processes operating at the interface of the DPM (a broad model of social attitudes) and MFT (a specific model of moral community-making). By adjusting for the effects of the Big-Six personality markers (i.e., Extraversion, Agreeableness, Conscientiousness, Neuroticism, Openness to Experience, and Honesty–Humility; see Ashton & Lee, 2007, 2009), we provide a conservative test of the downstream effects of SDO and RWA. Before presenting our model, we review the literatures on MFT and the DPM.

Moral Foundations Theory

Moral Foundations Theory (MFT) draws on evolutionary and anthropological models to propose five universal moral foundations that provide a systematic framework for understanding human moral motivations (Haidt & Graham, 2007). Two of these moral foundations—*Harm/Care* and *Fairness/Reciprocity*—capture people's universal concerns with protection from harm and fair treatment. Such *individualizing* moral foundations relate to the traditional notions of morality in terms of individual rights and matters of social justice (Haidt & Graham, 2007; Haidt & Joseph, 2004). The remaining three moral foundations—*In-group/Loyalty*, *Authority/Respect*, and *Purity/Sanctity*—help to maintain the group and foster ingroup solidarity, thereby *binding* them together. In-group/Loyalty and Authority/Respect relate to concerns about group bonds and respect for norms and traditions. Purity/Sanctity, in contrast, relates to spiritual sanctity and the avoidance of contamination (Haidt & Joseph, 2004, 2007).

MFT has been supported by studies showing that moral foundations predict both political and religious orientations. Graham et al. (2009) demonstrated that the liberals and conservatives place different levels of emphasis on the individualizing and binding moral foundations. Whereas liberals tend to show greater reliance on the individualizing foundations than the binding foundations, and conservatives tend to equally value the individualizing and binding foundations. Such findings suggest that conservatives—but not liberals—recognize moral parameters beyond fairness and harm (Graham et al., 2009).

These findings are corroborated by cluster analyses conducted by Haidt et al. (2009). Specifically, the authors identified four broad clusters or moral profiles derived from responses to the Moral Foundations Questionnaire in a large internet-based sample in the US. The categorically different clusters were identified as Secular Liberals, Libertarians, Religious Left, and Conservatives. Again, liberals and conservatives emphasized different combinations of moral foundations. The Secular Liberal cluster was characterized by high scores on the two individualizing foundations, but low scores on the three binding foundations. In contrast, the

Conservative cluster showed relatively high scores across all five foundations. The Libertarian cluster displayed the lowest scores in the sample on all five moral foundations, yet still emphasized individualizing foundations relatively more than the binding foundations. The Religious Left—which was the largest sized cluster—had moderate scores on the five foundations, yet slightly emphasized the individualizing foundations over the binding foundations.

Recently, Weber and Federico (2013) investigated the extent to which different *types* of liberals and conservatives differ in terms of their moral motivations. Using LPA, the researchers identified six profiles of support for various policies related to liberal and conservative ideology: Consistent Liberal, Moderate, Inconsistent Liberal, Libertarian, Social Conservative, and Consistent Conservative. The researchers then examined the extent to which membership in these politically based profiles predicted the importance of participants placed on the five moral foundations posited by MFT. Specifically, membership in the liberal profiles generally had high scores on the individualizing foundations, but notably low scores on the binding foundations. In contrast, membership in the conservative profiles was associated with relatively high scores on all five moral foundations.

Such findings suggest that there are several broad profiles within the population that emphasize different moral foundations. To assess the replicability and generalizability of these broad *moral signatures* in a New Zealand sample, we take a different approach than Weber and Federico (2013) by examining how the moral foundations themselves fit into distinct profiles (rather than how different policy attitudes fit together into different profiles of political ideology). This provides a formal test of profiles derived strictly on the bases of beliefs about morality in a national probability sample that is culturally distinct from those used in the previous research.

The basic premise of our study is that MFT is an important theoretical perspective in its own right. MFT attempts to integrate cultural and evolutionary models with psychological models of moral cognition. It has been argued that, quite generally, conceptual integration across the different areas of the life sciences has provided a core impetus for scientific progress, yielding more empirically coherent and general explanatory theories (see Laland, Odling-Smee, Feldman, & Kendal 2009). MFT points out that it is among the first programmes of research to produce a literature on moral psychology that integrates findings derived from multiple domains of the life and social sciences (Haidt, 2007). Despite the relevance of moral psychology and political psychology, however, the extent to which core MFT categories correspond with latent political orientations has yet to be assessed. We address this gap by integrating different moral signatures derived from MFT with Duckitt's (2001) DPM of ideology and prejudice.

The Dual Process Model

Although the liberal-conservative dimension is useful when assessing the relationship between morality and politics, richer constructs are needed to investigate the moral paradigms underlying broader socio-political attitudes and intergroup

relations. To these ends, SDO (Pratto et al., 1994) and RWA (Altemeyer, 1996, 1998) correspond to two central dimensions in intergroup relations: those based on (a) dominance-based hierarchies, and (b) social conservatism, tradition, and group cohesion, respectively (Duckitt, 2001; Duckitt & Sibley, 2009). As such, RWA and SDO have clear implications for political processes (Jost, Federico, & Napier, 2009; Weber & Federico, 2007; Wilson & Sibley, 2013). Therefore, the moral underpinnings of these central dimensions are critical for understanding morality in a population.

Though there is strong support for the DPM, there is a relative shortage of information on the moral processes that result from SDO and RWA. After all, political actions frequently involve privileging issues such as harm (or protection), authority (or permissiveness), and equal opportunity (or meritocracy). Early work on the MFT has shown basic differences in levels of SDO and RWA across different moral foundations (e.g., Haidt et al., 2009). Specifically, those exhibiting a "liberal" pattern of moral reliance (i.e., high emphasis on Harm and Fairness, but low emphasis on Ingroup, Authority, and Purity) had the lowest levels of SDO and RWA. Conversely, those exhibiting a "conservative" moral profile (i.e., high emphasis on all five foundations) had the highest levels of SDO and RWA out of the four clusters identified. These relationships were later corroborated by Graham et al. (2011), who showed negative associations between SDO and the individualizing moral foundations, but positive associations between RWA and the three binding foundations.

Recent work by Federico et al. (2013) also investigated the relationships each of the five moral foundations had with SDO and RWA. Consistent with earlier findings, Federico et al. (2013) reported that SDO predicted decreased support for the individualizing moral foundations and was weakly—and negatively—related to the three binding moral foundations. In contrast, RWA was positively associated with in-group loyalty, respect for authority, and purity/sanctity. RWA also had weak, albeit still reliable, positive relationships with the two remaining individualizing moral foundations (i.e., [no] harm and fairness).

The general pattern of moral intuitions associated with SDO and RWA has also been seen in research examining the relationships between the two constructs of the DPM and measures of ethical ideology. Wilson (2003) found that SDO was negatively associated with the belief that actions should not harm others. On the other hand, RWA is associated with concerns for clearly defined and comparable moral rules (McHoskey, 1996). In terms of the moral foundations and the relationships identified by Federico et al. (2013) and others (i.e., Graham et al., 2011; Haidt et al., 2009), the differences in the associations between the binding foundations and both SDO and RWA might be rooted in processes outlined by the DPM. That is, SDO might be associated with *"ruthless"* evaluations of people's actions, lacking concern for potential harm to others, and being indifferent about whether actions are judged in terms of their morality (Wilson, 2003; Federico et al., 2013). Indeed, Iyer et al. (2012) found that, relative to liberal and conservative moral patterns, those identified as libertarian had lower levels of Agreeableness, a personality trait negatively associated with SDO (Duckitt, 2001; Sibley & Duckitt, 2008).

Personality

The DPM also focuses heavily on the effects of personality. Specifically, SDO and RWA are conceptualized as social attitudes mediating the effects of personality on intergroup outcomes (Duckitt, 2001). As such, the associations that personality has with both SDO and RWA are of central theoretical importance to the DPM.

In a meta-analytic review, Sibley and Duckitt (2008) assessed the relationships between the Big-Five (i.e., Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience; Goldberg, 1999) and both SDO and RWA from a sample of 71 studies conducted over two decades. Their findings indicate that SDO is reliably associated with low Agreeableness and weakly with Low Openness to Experiences, whereas RWA is associated with low Openness to Experience and high Conscientiousness. Furthermore, the effects of low Agreeableness on prejudice were consistently mediated by SDO, whereas the effects of low Openness to Experience on prejudice were mediated by RWA. This suggests that SDO and RWA should have direct effects on relevant outcomes beyond the effects of personality (i.e., when the effects of personality are controlled for). As such, controlling for the effects of personality on membership in the moral signatures provides a direct test of the DPM.

Haidt et al. (2009) further highlight the importance of controlling for personality when predicting people's moral signatures. These researchers used the Big-Five to validate the four different clusters of moral reliance. Results indicated that the Secular Liberals showed the highest scores on Openness to Experience, whereas the Social Conservatives had the lowest scores on this dimension. Iyer et al. (2012) also showed that libertarians were lower on Agreeableness, Conscientiousness, and Extraversion than either liberals or conservatives.

Overview of the Study and Predictions

The present study examines the latent profiles underlying people's endorsement of different moral beliefs (i.e., different *moral signatures*). Specifically, we integrate the DPM with the work by Federico et al. (2013) and Wilson (2003) to examine the impact that group-based and authoritarian-based motives have on people's membership in distinct response patterns to each of the five moral foundations posited by MFT. We do so using LPA in a national sample of New Zealanders to identify distinct moral signatures within the population. LPA is similar to cluster analysis in that the aim is to identify similar patterns of responses across multiple variables. Specifically, a latent categorical variable with a specified number of groups or profiles is estimated from people's responses to observed variables. In doing so, LPA identifies distinct response patterns (i.e., categories) and then creates a weighted score for each respondent's predicted membership in the given category. This approach allows us to formally identify categorical differences in how people combine the five moral foundations.

To test the effects of SDO and RWA (and our control variables) on membership in the distinct moral signatures, we used a three-step approach that specifies a

multinomial logistic regression on the categorical latent variable (i.e., profile membership). As a multiple regression model, this analysis tested the extent to which SDO and RWA predicted profile membership after controlling for the effects of the Big-Six, political orientation, and relevant demographic covariates (i.e., gender, age, socioeconomic status, ethnicity, religious status, parental status, relationship status, and employment status). This approach extends Haidt et al.'s (2009) previous work by allowing us to directly predict profile membership based on people's levels of SDO and RWA in a comprehensive model that controls for critical covariates.

Identifying profiles of moral signatures based on the participants' probability of membership also allows for tests of group-level dynamics—an approach that extends Federico et al. (2013) work. Rather than predicting levels of a particular moral foundation, an LPA allows one to estimate the probability that participants belong to a given profile characterized by a specific pattern of responses across all five moral foundations. Moreover, the use of data from a large, national-probability sample lends ecological validity to our investigation by allowing us to generalize our findings to the population with some confidence. This is particularly pertinent given the more restrictive sample frames in extant literature—Weber and Federico (2013) and Federico et al. (2013) used undergraduate student samples, whereas Haidt et al. (2009) used a large US-based sample who self-selected into the survey through the project's website. The fact that our sample is drawn from a population of New Zealand adults also lends a cross-cultural perspective to the extant literature on MFT in a relatively secular society. New Zealand, for example, has shown a steady linear decline in Christianity since 1966 (Hoverd, Bulbulia, Partow, & Sibley, 2013). Such a steady increase in secularism highlights just one critical feature of New Zealand that distinguishes it from the United States.

Several working hypotheses guided our investigation. On the basis of previous research (e.g., Haidt et al., 2009), we hypothesized that meaningful categorical differences exist in people's response patterns to the five moral foundations. Specifically, we expected to identify a moral signature corresponding to a *liberal* pattern of responses whereby participants who belong to this category would emphasize individualizing foundations over binding foundations (Graham et al., 2009; Haidt et al., 2009; Weber & Federico, 2013). Likewise, we expected to identify a moral signature corresponding to a *conservative* pattern of responses whereby respondents valued each of the five moral foundations equally. We also expected that there would be a moral signature representing a *moderate* pattern of reliance on the five moral foundations, akin to the Religious Left cluster identified by Haidt et al. (2009). Finally, we expected to find an additional moral signature representing overall low (or neutral) levels of emphasis on the five moral foundations, broadly corresponding to a *libertarian* moral profile. In other words, we expected the core broad moral profiles identified in previous research to be replicated in our New Zealand-based sample (Haidt et al., 2009; Iyer et al., 2012; Weber & Federico, 2013).

We also sought to identify critical predictors of people's category membership in these distinct moral signatures. Drawing upon the DPM, we expected that SDO would be negatively associated with the two individualizing moral foundations. As

such, SDO should predict greater likelihood of categorization within a moral signature that places little importance on the Harm/Care and Fairness/Reciprocity foundations. In contrast, previous research has shown that SDO tends to be weakly—if at all—associated with the three binding foundations (e.g., Federico et al., 2013; Graham et al., 2011). Therefore, we expected that SDO would have a largely neutral (or possibly weak negative) effect on membership in the moral signatures that value this cluster of moral foundations. Conversely, RWA was hypothesized to predict membership in moral signatures that emphasize the binding moral foundations.

To examine the robustness of our model, we controlled for the effects of the Big-Six and relevant demographics (including political orientation). We made no hypotheses or specific predictions about the effects of these control variables; however, we did have some general expectations in terms of personality and political orientation. Informed by the findings of Haidt et al. (2009), we expected that Openness to Experience would uniquely predict higher probability of membership in the profiles reflecting particularly liberal moral signatures (i.e., those that emphasize the individualizing foundations), but a lower probability of membership in the profiles reflecting particularly conservative signatures (i.e., those that emphasize the bounding moral foundations). We also expected that Agreeableness would negatively predict membership in the libertarian moral signature (see Iyer et al., 2012).

As mentioned above, research suggests that conservatives place a greater emphasis on the binding moral foundations and emphasize the five moral foundations more equally than do liberals (e.g., Federico et al., 2013; Graham et al., 2009; Haidt et al., 2009). Thus, we expected that political conservatism would predict belonging to moral signatures that are characterized by a relatively even pattern of emphasis across the five moral foundations. In contrast, we expected political liberalism to predict membership in moral signatures that differentiated between reliance on the individualizing and binding moral foundations. Finally, given the links between RWA and religion and the potential importance of both constructs for ingroup cohesion (see Altemeyer, 1996), we included participants' religious status as a control variable.

Method

Sampling Procedure

Participants who completed Times 3 and 3.5 of the New Zealand Attitudes and Values Study (NZAVS) were included in the current study. Time 3 (2011) of the NZAVS contained responses from 6,884 participants (3,927 retained, 3,208 new participants). This sample was drawn from two sources. The first source represented the retained sample from the initial Time 1 (2009) of the NZAVS ($N = 6,518$) who were randomly selected from the New Zealand electoral roll (a national registry of registered voters). The response rate in the initial Time 1 sample, adjusting for the accuracy of the electoral roll and including anonymous responses, was 16.6 %.

Time 3 (2011) of the NZAVS retained 3,927 from this initial sample (a 60.3 % retention rate over 2 years).

To compensate for sample attrition at Time 3, a non-random booster sample was recruited through an unrelated survey posted on the website of a major New Zealand newspaper in 2011. A total of 3,208 participants registered an initial expression of interest to be contacted to participate in the NZAVS. Participants in this non-random booster sample were emailed an invitation to participate in an online version of the NZAVS, and those who did not respond online were also sent a postal version of the questionnaire. A total of 2,959 participants completed the questionnaire when subsequently contacted (92.2 %). This yielded a total sample size for the Time 3 (2012) NZAVS of 6,884 (3,927 retained and 2,959 recruited from the newspaper website).

Time 3.5 (2012 mid-year) of the NZAVS contained responses from 4,515 participants who completed a follow-up online-only questionnaire administered roughly 6 months after the full Time 3 (2011) questionnaire was mailed out. The sample frame for Time 3.5 was supplementary to the full Time 3 (2011) NZAVS and only included participants who had provided an email address when completing the full Time 3 questionnaire, as well as approximately 400–450 participants who were of Pacific Island descent and were recruited informally via New Zealand Pacific community networks. The sample for Time 3.5 included 1,972 retained participants from Time 1 of the NZAVS, 2,356 participants from the booster sample collected at Time 3, and 187 additional Pacific participants recruited via New Zealand Pacific community networks.

Participant Details

The current study focused on the 3,635 participants (63 % women, 37 % men) who responded to the NZAVS questionnaire at Time 3 and completed the Moral Foundations questionnaire at Time 3.5. The mean age of the sample was 49.93 (SD = 15.65), 76.1 % ($n = 2,767$) identified as New Zealand European, and 34.7 % ($n = 1,261$) identified as religious. Most participants had at least one child (69.5 %; $n = 2,528$), and 69.9 % ($n = 2,540$) were in a romantic relationship. The majority of participants were in some form of paid employment (77.2 %; $n = 2,807$). In terms of education, data were available for only 1,607 (44.2 %) of participants. Of these participants, 11.2 % did not report their highest level of education or said they had no education ($n = 180$), 26.7 % reported at least some high school ($n = 429$), 17.8 % reported having studied toward a diploma or certificate ($n = 455$), 28.3 % reported having studied at undergraduate level ($n = 257$), and 16 % reported having pursued post-graduate study ($n = 257$).

Socioeconomic status was assessed using the New Zealand Deprivation index—a measure of residential neighborhood deprivation (see Salmond, Crampton, & Atkinson, 2007). Because participants' postal address was included in their contact details, we were able to use this information to identify the level of economic deprivation in their immediate neighborhood. Specifically, the New Zealand deprivation index allocates a deprivation score to each neighborhood-level meshblock based on a Principal Components Analysis of nine variables from

census data. These are (in weighted order) proportion of adults receiving a means-tested Government supplied benefit, household income, proportion not owning own home, proportion single-parent families, proportion unemployed, proportion lacking qualifications, proportion living under crowded household conditions, proportion with no telephone access, and proportion with no car access. The index thus reflects the average level of deprivation in different neighborhoods across the country. We used the percentile deprivation index, which gives an ordinal score from 1 (most affluent) to 10 (most deprived) for each mesh block area unit based on 2006 census data. The mean score on this measure of deprivation in our sample was 4.30 (SD = 2.62).

Because the estimation of latent profiles via the 3-step procedure requires listwise deletion, the LPA component of our model was limited to 3,103 participants (63.1 % women, 36.9 % men) who provided complete responses to the Moral Foundations Questionnaire.

Questionnaire Measures

The *Moral Foundations Questionnaire* (MFQ, Graham et al., 2011) was used to assess the five foundations specified by MFT (Haidt & Joseph, 2004; Haidt & Graham, 2007). Specifically, the moral foundations of Harm/Care, Fairness/Reciprocity, Ingroup/Loyalty, Authority/Respect, and Purity/Sanctity were assessed by six items each. Sample items include: "Respect for authority is something all children should learn" (Authority); "People should not do things that are disgusting, even if no one is harmed" (Purity); "I think it's morally wrong that rich children inherit a lot of money while poor children inherit nothing" (Fairness). These items were rated on a scale ranging from 1 (Strongly disagree) to 7 (Strongly agree). Also included were moral relevance items with the following instructions: "When I am judging right and wrong, the following consideration is…" These items were rated on a 1 (*Not at all relevant*) to 7 (*Extremely relevant*) scale. Sample items include: "Whether or not someone cared for someone weak or vulnerable" (Harm); "Whether or not someone's action showed love for his or her country" (Ingroup); "Whether or not someone violated standards of purity and sanctity" (Purity). All five Moral Foundation scales demonstrated satisfactory reliability: Harm $\alpha = .75$, Fairness $\alpha = .72$, Ingroup $\alpha = .79$, Authority $\alpha = .82$, Purity $\alpha = .89$.

Social Dominance Orientation (SDO) was assessed using Sidanius and Pratto's (1999) six-item SDO6 scale. This scale includes the following items: "It is OK if some groups have more of a chance in life than others," "Inferior groups should stay in their place," "To get ahead in life, it is sometimes okay to step on other groups," "We should have increased social equality" (reverse-scored), "It would be good if groups could be equal" (reverse scored), and "We should do what we can to equalize conditions for different groups" (reverse-scores). The items were rated on a scale ranging from 1 (strongly disagree) to 7 (strongly agree; $\alpha = .75$).

Right-Wing Authoritarianism (RWA) was assessed using six items from the 30-item scale developed by Altemeyer (1996). Example items included: "It would be best for everyone if the proper authorities censored magazines so that people could not get their hands on trashy and disgusting material," "It is always better to

trust the judgment of the proper authorities in government and religion than to listen to the noisy rabble-rousers in our society who are trying to create doubt in people's minds," and "People should pay less attention to the Bible and other old traditional forms of religious guidance, and instead develop their own personal standards of what is moral and immoral" (reverse-scored). The items were rated on a scale ranging from 1 (strongly disagree) to 7 (strongly agree; $\alpha = .73$).

The Big Six was assessed using the Mini-IPIP6 (Sibley et al., 2011). This scale contains four-item markers assessing Extraversion ($\alpha = .75$), Agreeableness ($\alpha = .69$), Conscientiousness ($\alpha = .65$), Neuroticism ($\alpha = .72$), Openness to Experience ($\alpha = .70$) and Honesty–Humility ($\alpha = .77$).

Demographic measures were also assessed including political orientation (1 = very liberal to 7 = very conservative), level of education (recoded to range from −2 to 2), gender (0 = female; 1 = male), age, neighborhood deprivation, religious status (0 = not religious; 1 = religious), and ethnicity (0 = minority, 1 = New Zealand European).

Results

Model Estimation

We conducted an LPA using M*plus* version 7.11 (Muthén & Muthén, 1998–2012) to examine different classifications of response patterns to the following five Moral Foundations: Harm/Care, Fairness/Reciprocity, In-group/Loyalty, Authority/Respect, and Purity/Sanctity. To do this, a latent categorical variable is estimated with a specified number of profiles (i.e., subgroups of distinct response patterns). Once an appropriate number of profiles was identified, we used Asparouhov and Muthén's (2013) 3-step procedure to predict membership in each of these profiles based on our auxiliary variables [i.e., SDO and RWA, as well as our control variables (e.g., the Big Six)]. Because our outcome (i.e., profile membership) is a categorical variable, this approach employs a categorical latent variable multinomial logistic regression. Thus, our model tests both (a) whether there are different profiles of respondents who place similar patterns of emphasis on the five moral foundations and (b) participants' membership in these distinct moral signatures as a function of our predictor variables. Descriptive statistics and bivariate correlations for the variables of interest are presented in Table 1.

Profiles of Moral Signatures

We specified a range of different latent profile solutions, with models ranging from 2 to 6 distinct profiles. Based on comparisons of the sample-size adjusted Bayesian Information Criterion (aBIC) across these alternative models, as well as previous research (see Haidt et al., 2009), we identified a four-profile model as the best combination of model fit, parsimony, and theoretical relevance. Models with five or more profiles represented profiles with additional points in the distribution of scores rather than meaningful categorically distinct response patterns. Moreover, the aBIC

Table 1 Descriptive statistics and bivariate correlations between the mean moral foundation scores and the relevant variables

	1	2	3	4	5	6	7	8	9	10	11
1. Harm/Care											
2. Fairness	.547*										
3. Ingroup	.318*	.306*									
4. Authority	.193*	.165*	.631*								
5. Purity	.262*	.213*	.558*	.668*							
6. Gender	−.249*	−.069*	.074*	.085*	.020						
7. Age	.053*	.147*	.262*	.285*	.292*	.210*					
8. NZDep	.066*	.070*	.017	−.017	−.005	−.068*	−.085*				
9. Ethnicity	−.025	−.047*	−.069*	−.037*	−.051*	−.004	−.028	−.066*			
10. Religious	.100*	.041*	.189*	.226*	.419*	−.038*	.128*	.000	−.052*		
11. Parenta	−.030	.007	.157*	.203*	.226*	.101*	.544*	−.062*	.049*	.059*	
12. Relationship	−.044*	−.040*	.072*	.130*	.107*	.133*	.261*	−.145*	.053*	.010	.396*
13. Employment	−.075*	−.097*	−.156*	−.180*	−.195*	−.046*	−.406*	−.006	.053*	−.091*	−.164*
14. Political Orientation	−.042*	−.095*	.292*	.469*	.470*	.075*	.186*	−.095*	.022	.216*	.181*
15. SDO	−.302*	−.309*	.152*	.293*	.176*	.244*	.138*	−.066*	−.013	.015	.113*
16. RWA	.097*	.020	.394*	.544*	.690*	−.023	.159*	−.041*	−.002	.451*	.172*
17. Extraversion	.030	−.012	.060*	.013	−.025	−.065*	−.023	−.002	.002	.012	.061*
18. Agreeableness	.277*	.141*	.014	−.049*	.017	−.297*	−.037*	.010	−.021	.077*	−.013
19. Conscientiousness	.061*	.024	.121*	.184*	.175*	−.052*	.149*	−.075*	.038*	.055*	.166*
20. Neuroticism	.065*	.038*	−.078*	−.052*	−.051*	−.146*	−.226*	.045*	.020	−.001	−.163*
21. Openess to Experience	.025	.037*	−.218*	−.302*	−.298*	−.005	−.124*	.033	−.056*	−.070*	−.100*
22. Honesty–Humility	.068*	.086*	−.081*	−.102*	−.027	−.092*	.217*	−.011	.060*	.017	.099*
M	5.519	5.229	4.236	4.531	3.900	.370	49.93	4.304	.761	.347	.695
SD	.843	.765	.993	1.064	1.363	.483	15.352	2.620	.426	.476	.460

Table 1 continued

	12	13	14	15	16	17	18	19	20	21	22
1. Harm/Care											
2. Fairness											
3. Ingroup											
4. Authority											
5. Purity											
6. Gender											
7. Age											
8. NZDep											
9. Ethnicity											
10. Religious											
11. Parenta											
12. Relationship											
13. Employment	-.040*										
14. Political Orientation	.139*	-.091*									
15. SDO	.123*	-.017	.345*								
16. RWA	.081*	-.128*	.525*	.256*							
17. Extraversion	.021	.039*	-.061*	.022	-.024						
18. Agreeableness	-.055*	-.020	-.088*	-.333*	-.020	.205*					
19. Conscientiousness	.160*	-.044*	.167*	.031	.164*	.062*	.141*				
20. Neuroticism	-.060*	.049*	-.031	-.056*	-.005	-.147*	-.045*	-.198*			
21. Openness to Experience	-.087*	.069*	-.321*	-.206*	-.335*	.194*	.241*	-.055*	-.046*		
22. Honesty–Humility	.047*	-.122*	-.068*	-.231*	-.038*	-.103*	.188*	.094*	-.189*	.064*	
M	.702	.784	3.563	2.359	3.065	3.929	5.460	4.977	3.344	5.099	5.152
SD	.454	.412	1.384	.959	1.144	1.186	.934	1.031	1.1612	1.099	1.193

Table 2 Model fit for the different profile solutions of the Latent Profile Analysis

	AIC	BIC	aBIC
Two profiles	47715.980	47815.154	47764.314
Three profiles	46495.787	46632.151	46562.246
Four profiles	45828.433	46001.987	45913.017
Five profiles	45431.952	45642.697	45534.662
Six profiles	45048.715	45296.649	45169.549

BIC Bayesian Information Criterion, *AIC* Akaike Information Criterion, *aBIC* sample-size-adjusted Bayesian Information Criterion

indicated that improvements in model-fit plateaued once four latent profiles were specified. The Bayesian Information Criterion (BIC), the Akaike Information Criterion (AIC), and aBIC statistics for different model specifications are presented in Table 2.

LPA specifies a formal model of the underlying or latent categorical structure theorized to produce the observed data. This approach calculates the sample-weighted probability that each participant belonged to each of the four moral signatures would be correctly categorized. The results indicate a high level of classification likelihood ($b \geq .829$) with a small average likelihood of misclassification ($b \leq .110$). The model also shows reasonably high Entropy (Entropy = .754), thereby lending confidence in the quality of classifications.

The estimated means for levels of endorsement of the five moral foundations across the four profiles (what we refer to as *moral signatures*) are presented in Fig. 1. The first profile (i.e., the *Individuator* signature) was characterized by high scores on the two individualizing foundations and very low scores on the three binding foundations. Individuators expressed the lowest level of support for the three binding foundations out of the four profiles identified in our LPA.
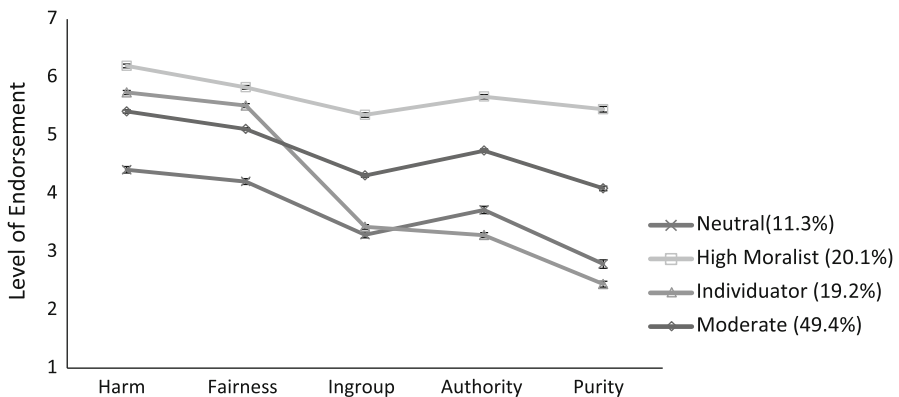

Fig. 1 Levels of each of the five moral foundations across the four moral signatures (standard errors are presented around the point estimates)

The second profile (i.e., the *Moderate* moral signature) showed a moderate pattern of responses across the five moral foundations. In comparison with the Individuator signature, the Moderate moral signature expressed less reliance on the two individualizing foundations, but more reliance on the three binding foundations. This pattern of responses was numerically the largest group out of our four moral signatures and included 49.4 % of the sample.

The third profile (i.e., *High Moralist* signature) showed uniformly high scores on all five moral foundations. As seen in Fig. 1, the mean scores observed for this group were the highest of the four identified profiles. High Moralists constituted 20.1 % of the sample.

Finally, the fourth profile identified in our model (i.e., the *Neutral* moral signature) showed uniformly low or neutral levels of support for all five moral foundations. This profile constituted 11.3 % of the sample.

Predicting Latent Profile Membership: SDO and RWA

After identifying our latent profiles, we used the three-step approach to conduct a latent categorical variable multinomial regression using SDO and RWA to predict participants' membership in each of our latent moral signatures (controlling for personality and demographic differences). The results of these analyses are presented in Table 3. Because the Moderate moral signature identified in our LPA constitutes about half of our sample (49.4 %), the results are presented using the Moderate profile as a reference category. When appropriate, alternative calculations based on different reference categories were obtained and are referred to in text.

As shown in Table 3, SDO predicted increased likelihood of membership in the Neutral (vs. Moderate) moral signature ($b = .526$, $se = .106$, $p < .001$). On the other hand, SDO predicted decreased likelihood of membership in the Individuator (vs. Moderate) moral signature ($b = -.862$, $se = .139$, $p < .001$). Finally, SDO predicted a decreased likelihood of membership in the High Moralist (vs. Moderate) profile ($b = -.521$, $se = .100$, $p < .001$). Thus, SDO predicted an increased probability of membership in the profile of moral signatures that deemphasized the individualizing moral foundations, but a decreased probability of belonging to the profiles that emphasized the individualizing moral foundations.

In terms of the authoritarian-based antecedents of profile membership, RWA predicted a decreased probability of belonging to the Neutral ($b = -1.187$, $se = .134$, $p < .001$) and Individuator profiles ($b = -1.491$, $se = .150$, $p < .001$) relative to the Moderate profile. Conversely, RWA predicted an increased likelihood of membership in the High Moralist (vs. Moderate) profile ($b = .885$, $se = .094$, $p < .001$). Importantly, RWA did not differentiate between membership in the Neutral and Individuator profiles ($b = -.304$, $se = .179$, $p = .089$). In other words, RWA was associated with an increased probability of belonging to the moral signatures characterized by a high reliance on the binding moral foundations, but a decreased probability of belonging to the moral signatures that deemphasized the binding moral foundations. That said, RWA was unable to predict people's membership in the two moral signatures that found the three binding foundations to be relatively unimportant (i.e., Neutral and Individuators).

Table 3 Results of the distal multinomial logistic regression with the auxiliary variables, using parameterization on the "Moderate" group as the reference category

	Neutral versus moderates				High moralists versus moderates				Individuators versus moderates			
	B	se	t	p value	b	se	t	p value	b	se	t	p value
Gender (0 female, 1 male)	.238	.197	1.209	.227	.169	.167	1.014	.311	−.332	.212	−1.567	.117
Age (years)	−.036*	.008	−4.295	.000	.061*	.007	8.277	.000	−.005	.008	−.633	.527
NZDep2006 (1 low–10 high)	−.073*	.035	−2.101	.036	.080*	.028	2.815	.005	−.025	.034	−.726	.468
Ethnic Group (0 minority, 1 majority)	−.173	.207	−.835	.404	−.557*	.171	−3.265	.001	.245	.223	1.102	.270
Religious status (0 non-religious,1 religious)	−.074	.226	−.327	.743	.144	.158	.907	.364	−.606*	.237	−2.552	.011
Parental status (0 no children, 1 at least one child)	.432	.242	1.785	.074	−.054	.226	−.240	.810	−.067	.237	−.285	.776
Relationship status (0 single, 1 in a relationship)	−.266	.220	−1.211	.226	−.020	.188	−.109	.914	−.201	.210	−.957	.338
Employment status (0 unemployed, 1 employed)	.012	.259	.045	.964	−.179	.176	−1.020	.308	.227	.249	.913	.361
Political Orientation (1 liberal to 7 conservative)	−.093	.077	−1.212	.225	.130*	.064	2.037	.042	−.500*	.089	−5.616	.000
SDO	.526*	.106	4.955	.000	−.521*	.100	−5.216	.000	−.862*	.139	−6.184	.000
RWA	−1.187*	.134	−8.865	.000	.885*	.094	9.413	.000	−1.491*	.150	−9.930	.000
Extraversion	−.096	.080	−1.204	.229	.070	.068	1.041	.298	−.107	.078	−1.372	.170
Agreeableness	−.230*	.105	−2.197	.028	.198*	.098	2.019	.043	−.052	.109	−.479	.632
Conscientiousness	−.191*	.093	−2.057	.040	.249*	.083	2.991	.003	−.200*	.090	−2.219	.027
Neuroticism	−.003	.082	−.035	.972	.044	.071	.617	.537	.193*	.080	2.429	.015
Openness to Experience	.149	.093	1.599	.110	−.144	.074	−1.954	.051	.380*	.096	3.962	.000
Honesty–Humility	.426*	.087	4.911	.000	−.118	.069	−1.717	.086	.291*	.084	3.442	.001

N = 3,103. Listwise deletion applied to the auxiliary variables in the analysis

* p < .05

Table 4 Effects of SDO and RWA on membership to each of the four identified profiles

	Regression coefficients		Predicted probabilities	
	B_{SDO}	β_{SDO}	Low SDO	High SDO
Neutral	.055*	.202	.060	.165
High Moralist	−.042*	−.115	.240	.195
Individuator	−.063*	−.180	.252	.132
Moderate	.050*	.118	.448	.544
	B_{RWA}	β_{RWA}	Low RWA	High RWA
Neutral	−.052*	−.231	.173	.053
High Moralist	.112*	.368	.071	.328
Individuator	−.086*	−.295	.290	.094
Moderate	.026*	.073	.466	.525

The coefficients and predictions are derived from the supplementary multiple regression models controlling for the effects of all of the relevant covariates. *Base probabilities* Neutral $p = .113$; High moralist $p = .199$; Individuator $p = .192$; Moderate $p = .496$. Low and High levels of SDO and RWA calculated based on ±1SD

* $p < .05$

To supplement the analysis of the effects of SDO and RWA on profile membership, we conducted additional analyses predicting participants' likelihood of belonging to each of the four profiles in multiple regression models that included our covariates. We then calculated the predicted probabilities of membership at low and high levels of SDO and RWA. The results of these analyses are presented in Table 4. As shown here, higher levels of SDO were associated with an increased probability of membership in the Neutral moral signature, and decreased probability of belonging to the High Moralist and Individuator moral signatures. Conversely, higher levels of RWA were associated with an increased probability of belonging to the High Moralist moral signature, but a decreased probability of belonging to the Neutral and Individuator moral signatures.

Personality Differences

As predicted, multiple dimensions of the Big Six were associated with the likelihood of differential profile membership after partialing out the effects of SDO and RWA. Specifically, Agreeableness and Conscientiousness predicted a decreased likelihood of belonging to the Neutral (vs. Moderate) moral signature ($b = −.230$, $se = .105$, $p = .028$; and $b = −.191$, $se = .093$, $p = .040$, respectively). Additionally, Honesty–Humility predicted an increased likelihood of belonging to the Neutral (vs. Moderate) moral signature ($b = .426$, $se = .087$, $p < .001$). In contrast, Agreeableness and Conscientiousness predicted an increased probability of belonging to the High Moralist (vs. Moderate) profile ($b = .198$, $se = .098$, $p = .043$; and $b = .249$, $se = .083$, $p = .003$, respectively), whereas Openness to Experience was marginally associated with a decreased likelihood of belonging to

the High Moralist (vs. Moderate) profile ($b = -.144$, $se = .074$, $p = .051$). Finally, Conscientiousness predicted a decreased probability of membership in the Individuator (vs. Moderate) profile ($b = -.200$, $se = .090$, $p = .027$), whereas Neuroticism ($b = .193$, $se = .080$, $p = .015$), Openness to Experience ($b = .380$, $se = .096$, $p < .001$), and Honesty–Humility ($b = .291$, $se = .084$, $p = .001$) all predicted an increased likelihood of belonging to the former (vs. the latter) profile.

In terms of the personality differences associated with the Neutral versus the Individuator moral signatures, results indicate that Neuroticism had the only reliable effect on profile membership. Specifically, Neuroticism predicts an increased likelihood of membership in the Individuator (vs. Neutral) profile ($b = .196$, $se = .097$, $p = .043$). No other personality differences were observed.

We used the same supplementary model described above to estimate the predicted probabilities of membership in each of the four profiles at high and low scores on the Big Six personality dimensions. For clarity, the regression coefficients and the predicted probabilities for the personality part of the model are presented in Table 5. As can be seen, higher levels of Agreeableness predicted an increased likelihood of membership in the High Moralist profile, but a decreased probability of membership in the Neutral profile. Similarly, higher levels of Conscientiousness were associated with an increased probability of belonging to the High Moralist profile, but a decreased probability of belonging to the Individuator profile. Moreover, higher levels of Openness to Experience and Honesty–Humility were both associated with an increased probability of belonging to the Individuator moral profile. Interestingly, higher levels of Honesty–Humility were also associated with an increased probability of belonging to the Neutral moral profile, but a decreased probability of belonging to the High Moralist and Moderate profiles.

Political Ideology and Demographic Differences

The effects mentioned above held in an integrated regression model that also included our demographic covariates and participants' self-reported political orientation. The results presented in Table 3 indicate that conservatism was positively associated with the likelihood of belonging to the High Moralist (vs. Moderate) profile ($b = .130$, $se = .064$, $p = .042$). On the other hand, conservatism was negatively associated with the likelihood of belonging to the Individuator (vs. Moderate) profile ($b = -.500$, $se = .089$, $p < .001$). Subsequent analyses also indicted that conservatism was negatively associated with the likelihood of belonging to the Individuator (vs. Neutral) profile ($b = -.407$, $se = .107$, $p < .001$). These findings suggest that the Individuator profile consistently represents a liberal moral signature relative to the three remaining moral signatures.

Our results also indicated that being religious predicts a decreased likelihood of belonging to the Individuator profile relative to both the Moderate ($b = -.606$, $se = .237$, $p = .011$) and High Moralist ($b = -.750$, $se = .265$, $p = .005$) profiles. No other effects of religious identification were observed. Additionally, New Zealand Europeans were less likely to belong to the High Moralist (vs. Moderate) profile ($b = -.557$, $se = .171$, $p = .001$), whereas ethnicity was unassociated with membership in the Neutral (vs. Individuator) profile. Furthermore, age was

Table 5 Effects of the Big Six personality dimensions on the probability of membership in each of the four identified profiles

	Regression coefficients		Predicted probabilities	
	b_E	β_E	Low E	High E
Neutral	−.004	−.016	.117	.108
High Moralist	.003	.011	.195	.203
Individuator	−.009*	−.033	.203	.181
Moderate	.010	.028	.484	.507
	b_A	β_A	Low A	High A
Neutral	−.015*	−.055	.127	.098
High Moralist	.030*	.080	.172	.227
Individuator	.001	.003	.191	.193
Moderate	−.015	−.036	.510	.481
	b_C	β_C	Low C	High C
Neutral	−.006	−.026	.119	.106
High Moralist	.016*	.046	.183	.215
Individuator	−.016*	−.048	.208	.176
Moderate	.006	.016	.489	.502
	b_N	β_N	Low N	High N
Neutral	−.003	−.014	.116	.109
High Moralist	.003	.009	.196	.203
Individuator	.011*	.040	.179	.205
Moderate	−.011	−.032	.509	.483
	b_O	β_O	Low O	High O
Neutral	.004	.019	.108	.118
High Moralist	−.017*	−.052	.218	.181
Individuator	.027*	.090	.162	.222
Moderate	−.015*	−.041	.513	.479
	b_H	β_H	Low H	High H
Neutral	.020*	.091	.089	.136
High Moralist	−.018*	−.061	.221	.178
Individuator	.021*	.074	.167	.217
Moderate	−.023*	−.061	.523	.469

Coefficients and predictions were derived from the supplementary multiple regression models controlling for the effects of all of the relevant covariates (*E* Extraversion, *A* Agreeableness, *C* Conscientiousness, *N* Neuroticism, *O* Openness to Experience, *H* Honesty–Humility). *Base Probabilities* Neutral $p = .113$; High Moralist $p = .199$; Individuator $p = .192$; Moderate $p = .496$. Low and high levels of SDO and RWA calculated based on ±1SD of the mean

* $p < .05$

positively associated with the likelihood of belonging to the High Moralist (vs. Moderate) profile ($b = .061$, $se = .007$, $p < .001$), but negatively associated with the likelihood of belonging to the Neutral (vs. Moderate) profile ($b = -.036$, $se = .008$, $p < .001$).

Finally, socioeconomic status was differentially associated with profile membership. Specifically, deprivation was negatively associated with the likelihood of belonging to the Neutral (vs. Moderate) profile ($b = -.073$, $se = .035$, $p = .036$), but positively associated with membership in the High Moralist (vs. Moderate) profile ($b = .080$, $se = .028$, $p = .005$). On the other hand, socioeconomic status was unassociated with the likelihood of belonging to the Individuator (vs. Moderate) profile ($p = .468$). Thus, wealth was associated with belonging to the Neutral profile—a moral signature also associated with greater SDO, lower RWA, and lower levels of both Agreeableness and Conscientiousness. Gender, parental status, relationship status, and employment status were all unassociated with profile membership.

Discussion

Previous research has identified reliable pathways between the five moral foundations posited by MFT and social, political, and religious attitudes. Indeed, the moral foundations of Harm/Care, Fairness/Reciprocity, Authority/Respect, Ingroup/Loyalty, and Purity/Sanctity provide a systematic way of examining individual (as well as group) differences in moral beliefs (Haidt et al., 2009). Recent research suggests that relative differences in the importance people place on these five foundations are associated with various socio-political attitudes (Federico et al., 2013; Graham et al., 2009; Haidt et al., 2009; Iyer et al., 2012; Weber & Federico, 2013).

In the current study, we build upon this literature by (a) identifying four different moral signatures within a national probability sample and (b) integrating the DPM (Duckitt, 2001) with MFT. By uniquely combining research on socio-political motivations with research on morality, our investigation of the effects of SDO and RWA on membership in distinct *moral signatures* provides an important advancement to the literature on intergroup relations. Specifically, we used the 3-step approach to LPA in MPlus 7.11 (Muthén & Muthén, 1998–2012) to predict participants' membership in distinct latent profiles as a function of their levels of SDO and RWA (after partialing out the effects of relevant covariates including the Big Six, political ideology, and demographic variables).

Moral Signatures

Consistent with previous research (i.e., Graham et al., 2009; Haidt et al., 2009; Weber & Federico, 2013), we identified a four-profile model as the optimal combination of model fit and theoretical relevance. Specifically, we identified a profile of High Moralists who had relatively high scores on all five moral foundations. This pattern of responses corresponds with the Conservative moral

cluster identified in previous research and reflects a particular type of moral beliefs that emphasizes a concern for actions that might cause harm to others, as well as concerns over group cohesion. In contrast, Individuators exhibited a pattern of responses corresponding to a Liberal pattern of morality identified in previous research. Individuators placed a strong emphasis on the two individualizing foundations, but deemphasized the importance of the three binding foundations. In contrast to the High Moralist signature, Individuators expressed great concern over whether or not actions could potentially harm others, yet were indifferent to the strict binding foundations that govern actions at the group level.

Our Moderate signature, which was characterized by moderate scores on the three individualizing foundations, resembled the Religious Left cluster identified by Haidt et al. (2009). This group also closely corresponded with the pattern of moral intuitions associated with the politically Moderate signature identified by Weber and Federico (2013). As with these previous studies, the Moderate signature represented the largest portion of our sample (i.e., 49.4 %).

The fourth profile identified in our model, however, did not directly correspond to the response patterns identified in previous research (i.e., a Libertarian profile; see Haidt et al., 2009; Iyer et al., 2012; Weber & Federico, 2013). This Neutral signature was characterized by low scores on all five of the moral foundations. Interestingly, participants who belonged to this latent profile were disinterested in the individualizing moral foundations. This suggests a lack of concern with the consequences of one's actions. At the same time, the Neutral profile showed the same level of disinterest in the three binding foundations, suggesting indifference to the group-level norms governing the morality of given actions. As such, the Neutral signature observed here corresponds to a group who is unconcerned with all five moral foundations.

Differences between the moral signatures identified here point to the cross-cultural applicability of the moral foundations framework observed in previous research. Kim, Kang, and Yun (2012) observed different patterns of moral reliance on the five foundations associated with liberal and conservative political ideologies across samples derived from Korea and the U.S. Specifically, conservative ideologies were associated with a higher reliance on the binding moral foundations than on the individualizing moral foundations in the U.S. The corresponding pattern in the Korean sample, however, was characterized by a relatively equal distribution across the five moral foundations. Within our New Zealand-based sample, we also observed moral signatures that differed slightly from those previously observed in U.S.-based research. These differences highlight the importance of historical and cultural variability in how people emphasize the five moral dimensions identified by MFT.

A Dual Process Model of the Moral Domain

We extended the previous work on MFT by investigating the effects of SDO and RWA on people's likely membership in distinct latent profiles (i.e., *moral signatures*). Because MFT is primarily a theory of group-level variability, identifying unique moral signatures, as well as the effects of SDO and RWA on

people's membership in these profiles, provides a critical test of the both MFT and the DPM. In doing so, we identified distinct groups of people varied in their likely group membership as a function of their levels of SDO and RWA. Importantly, the effects of SDO and RWA on predicting membership to the different moral signatures were independent of the effects associated with the Big-Six and other relevant covariates. As such, we provide a conservative test of the propositions derived from the DPM (Duckitt, 2001; Sibley & Duckitt, 2008).

The results of our analyses indicated that SDO was positively associated with the likelihood of belonging to a Neutral (vs. Moderate) moral signature. On the other hand, SDO was negatively associated with the likelihood of belonging to the Individuator and High Moralist moral signatures relative to the Moderate profile. These opposing effects are consistent with our predictions and the pattern of effects identified in previous research (e.g., Graham et al., 2011; Haidt et al., 2009; Federico et al., 2013). Because SDO is associated with acceptance of social injustices and inequality, we expected that it would predict moral signatures that deemphasize the individualizing moral concerns that focus on fairness.

The Neutral moral signature identified here represents a potentially *"ruthless"* (or even immoral) pattern of beliefs about morality (see Wilson, 2003). Specifically, this response pattern reflects a general lack of concern for whether one's actions result in harm to others and an indifference to group norms and traditions. It is unsurprising, then, that membership in this profile would be predicted by high levels of SDO—a group for whom the ends are often seen as justifying the means (see Wilson, 2003).

In contrast to our predictions for SDO, we argued that RWA would predict people's membership in moral signatures that emphasize the binding foundations. This is because the motivation behind RWA is to establish social cohesion and authoritarian submission—motivations that should be strongly related to the concerns met by the three binding principles. Because previous research has only found weak relationships between RWA and the two individualizing foundations (e.g., Federico et al., 2013; Graham et al., 2011), we expected that RWA would be largely unassociated with membership in moral signatures that emphasize the individualizing moral concerns.

As predicted, RWA was positively associated with the likelihood of belonging to the High Moralist (vs. Moderate) moral signature, but negatively associated with the likelihood of belonging to both the Individuator and Neutral moral signatures. These findings suggest that RWA predicts moral signatures that emphasize the importance of group cohesion (i.e., binding foundations). The non-significant association between RWA and membership in the Neutral (vs. Individuator) profile further supports our hypothesized motivational model. As such, the effects of RWA on people's membership in the different moral signatures appear to be largely based on people's emphasis on binding moral concerns—an interpretation that is consistent with McHoskey's (1996) finding that RWA is associated with a preference for concrete ingroup-based prescriptions concerning moral acceptability.

Our findings demonstrate the utility of the DPM in the realm of moral psychology. Specifically, our model predicted membership in the different moral signatures based on participants' levels of SDO and RWA. SDO predicts differential

moral signatures largely depending on the levels of concern with social equality, a notion that is in opposition to the motivations manifested through SDO (Duckitt, 2001; Sidanius & Pratto, 1999). In contrast, RWA predicted membership in moral signatures that place a high level of concern on social cohesion, tradition, and authoritarian submission (Altemeyer, 1998; Duckitt, 2001)–moral principles that overlap with the motivations of RWA. Moreover, these effects held even after partialing out the effects of relevant personality and demographic covariates.

Personality Differences

Although we offered no specific predictions about the effects of personality on profile membership, our findings can be readily interpreted in the context of the documented relationships between personality and both SDO and RWA (Sibley & Duckitt, 2008), as well as personality and different moral profiles (Haidt et al., 2009; Iyer et al., 2012). Specifically, Agreeableness was negatively associated with the likelihood of belonging to the Neutral (vs. Moderate) profile. This finding supports the propositions of the DPM and is consistent with the documented relationships between Agreeableness and SDO (Duckitt, 2001; Osborne, Wooton, & Sibley, 2013; Sibley & Duckitt, 2008). This finding is also important in the context of the libertarian moral profile, which has been shown to have negative associations with Agreeableness (Iyer et al. 2012).

Another important effect of personality in the context of the DPM is the effect of Openness to Experience–a personality trait particularly relevant for RWA (Sibley & Duckitt, 2008). Specifically, our results indicated that Openness to Experience was negatively—albeit marginally—associated with the likelihood of belonging to the High Moralist signature. Moreover, the finding that Openness to Experience is a strong predictor of belonging to the Individuator signature is consistent with the conceptualization of Individuators as an ideologically liberal profile (see Haidt et al., 2009).

Additionally our models revealed an interesting finding in that Honesty–Humility predicted an increased likelihood of belonging to both the Neutral and the Individuator moral signatures relative to the Moderate profile. On the other hand, Honesty–Humility was unassociated with membership in the High Moralist signature (relative to the Moderate). This pattern of results suggests that a greater emphasis on binding moral concerns is associated with *lower* levels of Honesty–Humility. In other words, those who profess moderate-to-high levels of concern for all five of the moral domains tended to be *lower* in personality traits relating to altruism and sincerity, but higher in personal entitlement (Ashton & Lee, 2007, 2009). These findings provide a useful avenue for further investigations into the links between the recently identified sixth core aspect of personality (Honesty–Humility) and moral cognition.

Political Orientation and Religious Status

To date, the most common applications of the Moral Foundations framework have been in relation to socio-political attitudes (Graham et al., 2009; Haidt et al., 2009; Weber & Federico, 2013). A consistent finding within this literature is that those

identifying as liberal place more emphasis on the individualizing moral foundations than on the binding moral foundations. Conservatives, however, tend to value all five moral foundations equally (Graham et al., 2009; Weber & Federico, 2013). Accordingly, our results indicated that political conservatism was positively associated with the likelihood of belonging to moral signatures that emphasized the binding moral foundations and to those that placed an equal emphasis on all five moral foundations. Specifically, conservatism was positively associated with membership in the High Moralist (vs. Moderate) signature, but negatively associated with the likelihood of belonging to the Individuator (vs Moderate) moral signature. Thus, political conservatism predicted greater likelihood of belonging to moral signatures that reflect a "conservative" moral response pattern (see Graham et al., 2009; Haidt et al., 2009; Weber & Federico, 2013).

Our analyses also identified an effect of religious status on profile membership. Specifically, being religious was negatively associated with the likelihood of belonging to the Individuator (vs. Moderate) profile—a response pattern also associated with lower RWA, lower SDO, higher Openness to Experience, and less conservatism. Our findings thus suggest that this *type* of moral and socio-political orientation might represent the greatest separation between religion and political ideology in the New Zealand population. This type of moral and ideological orientation might, in turn, be associated with moral arguments emphasizing the individualizing principles of (no) harm and care, thereby actively separating religious notions from political issues.

Strengths and Caveats

The current study provides important contributions to the literature on MFT and the DPM. We provide a strong test of the reliability of the broad moral profiles suggested in previous research in a new cultural setting, using a more appropriate methodological strategy. We use LPA to directly investigate qualitatively different ways of emphasizing the five moral foundations. By using a national probability sample in New Zealand, we provide a strict test of *moral signatures* that exist outside the traditional North American-based literature. Also, we integrate research on MFT with the literature on the DPM to predict people's membership in distinct latent profiles as a function of their levels of SDO and RWA. In testing these associations in relation to the moral signatures rather than predicting levels of any given foundation, we provided a validation of the ideological distinctiveness of particular moral profiles that make up varying proportions of the population in question. Moreover, our tests include core components of the DPM (Duckitt, 2001), while also controlling for a number of relevant covariates including political ideology and personality. The present investigation thus demonstrates a number of strengths in terms of statistical modeling, sample representativeness, and theoretical integration.

Despite these strengths, there are some limitations in our design. In particular, we were unable to examine some of the recent developments in MFT. Specifically, due to the timing of our survey, we were unable to include a recently developed sixth moral foundation (i.e., Liberty/Oppression; see Iyer et al., 2012). This newly discovered foundation concerns one's feelings of resentment toward those who

dominate and oppress. Because of the conceptual association between this foundation and the moral foundation of Authority, we suspect that slightly different moral signatures might have emerged had we been able to include this measure in our survey. Moreover, the addition of a Liberty/Oppression foundation might have produced interesting relationships with SDO and Agreeableness (see Iyer et al., 2012). Future research updating the composition of "core" moral signatures found across nations should therefore include the newly identified sixth moral foundation.

Concluding Comments

MFT was developed to integrate largely autonomous steams of research on moral cognition across the social and biological sciences (Haidt, 2007). Here, we expand upon this framework by using MFT to identify broad patterns of moral profiles and test models of the socio-political processes outlined by the DPM (Duckitt, 2001). After identifying four distinct moral signatures, we predicted people's membership in these profiles as a function of their levels of SDO and RWA. In doing so, we also provide a cross-cultural replication of the broad moral signatures identified in previous research. Together, these findings provide a critical integration of previously disparate research traditions and pave the way for future research on the socio-political processes underlying people's beliefs about human morality.

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