Pain Sensitivity Predicts Support for Moral and Political Views Across the Aisle

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Abstract

We live in a time of exacerbating political polarization. Bridging the ideological divide is hard. Although some strategies have been found effective for interpersonal persuasion and interaction across the aisle, little is known about what *intrapersonal* attributes predict which individuals are more inclined to support their ideological opponent's views. The present work identifies a low-level attribute—sensitivity to physical pain—that robustly predicts individual variations in support for moral and political views typically favored by one's ideological opponent. We first summarize a psychophysical validation of an established pain sensitivity measure ($n = 263$), then report a series of exploratory and preregistered confirmatory studies and replications ($N = 7,360$) finding that more (vs. less) pain-sensitive liberal Americans show greater endorsement of moral foundations typically endorsed by conservatives (Studies 1a–1c), higher likelihood of voting for Trump over Biden in the 2020 Presidential Election, stronger support for Republican politicians, and more conservative attitudes toward contentious political issues (Studies 2a–2b). Conservatives show the mirroring pattern. These "cross-aisle" effects of pain sensitivity are driven by heightened harm perception (Study 3). They defy lay intuitions (Study 4). They are not attributable to multicollinearity or response set. The consistent findings across studies highlight the value of deriving integrative predictions from multiple previously unconnected perspectives (social properties of pain, moral foundations theory, dyadic morality theory, principle of multiple determinants in higher mental processes). They open up novel directions for theorizing and research on why pain sensitivity predicts support for moral and political views across the aisle. (250 words)

Keywords: pain, ideology, harm, moral foundations, political attitudes

Introduction

Liberals and conservatives exhibit numerous divergent ideological beliefs and psychological tendencies, from views about societal structure (Kteily et al., 2019; Pratto et al., 1994), traditions (Altemeyer, 1981), status quo (Jost et al., 2004), friends (Waytz et al., 2019), and family (Lakoff, 2002; Feinberg et al., 2019), to personality and behavioral profiles (Carney et al., 2008) and basic affective (Inbar et al., 2009) and cognitive styles (Jost et al., 2003). Given their pervasive differences, bridging the divide is no easy feat (Brandt et al., 2014), particularly with the exacerbating political polarization and sectarianism of our time (Finkel et al., 2020).

Various strategies have been offered and found effective for facilitating cross-aisle persuasion and interaction. Examples include framing liberal policies around moral themes that conservatives care about and vice versa (Feinberg & Willer, 2019), correcting overestimation of how negative one's political opponents feel toward one's political allies (Lees & Cikara, 2019; Ruggeri et al., 2021), discussing personal experience rather than arguing about facts with one's political opponents (Kubin et al., 2021), prompting the belief in the utility of cross-partisan empathy (Santos et al., 2022), and using language that de-moralizes people's attitudes and thus increases their willingness to compromise (Kodapanakkal et al., 2022). All of these strategies focus on *interpersonal* communication. In contrast, little is known about what *intrapersonal* attributes undergird who is generally more or less inclined to support moral and political views opposite to one's ideological placement (even without any cross-aisle persuasive attempt or social interaction). We propose that such individual variations are predicted by a low-level attribute whose relation to morality and politics has received little attention in prior theorizing or research: sensitivity to physical pain.

74 **Relating pain to morality and politics**

75   Biologically vital for survival, sensing pain is one of the most universal experiences,

76 observable even in newborn infants (Jones et al., 2017) and non-human vertebrates (National

77 Research Council of the National Academies, 2009). Individuals vary though in their sensitivity

78 to pain stimuli (Nielsen et al., 2009). We suggest that these variations may be associated with

79 moral and political views, due to two social properties of pain.

80   First, sensing physical pain (e.g., in bodily injury) and sensing social pain (e.g., in

81 relational rejection) involve shared neural bases (Eisenberger et al., 2003; DeWall et al., 2010;

82 Kross et al., 2011; Lieberman & Eisenberger, 2015), subjective experiences, and linguistic

83 expressions (MacDonald & Leary, 2005). These overlapping processes imply that higher

84 sensitivity to physical pain may be associated with higher sensitivity to social pain. Second, pain

85 experience can be socially contagious and occur vicariously, such that perceiving a conspecific

86 in pain or in painful situations increases one's own pain, a process that has been found

87 physiologically and behaviorally in both mice (Langford et al., 2006; Lidhar et al., 2021; Smith

88 et al., 2016) and humans (Goubert et al., 2005; Loggia et al., 2008; Singer et al., 2004). Meta-

89 analytic imaging evidence also shows that feeling for others in pain and directly feeling pain

90 oneself involve common neural networks, particularly the bilateral anterior insular cortex and

91 medial/anterior cingulate cortex (Lamm et al., 2011). Witnessing others in somatic pain can even

92 result in vicarious activation of one's somatosensory cortices, as shown in multiple fMRI

93 experiments (Keysers et al., 2010).

94   Integrating both of these social properties of pain (overlap between physical pain and

95 social pain; overlap between one's own pain and others' pain) suggests that individuals with

96 higher sensitivity to their own physical pain may be more sensitive not only to their own social

97   pain, but also to others' physical and social pain (e.g., others' distress, social ills, harms being

98   committed; for suggestive evidence, see Xiao et al., 2015). It is known that perception of

99   suffering, damage, or harm—be it physical or non-physical—caused by an intentional agent on a

100 vulnerable patient can intensify judgments across moral domains (cf. dyadic morality theory;

101 Gray et al., 2012, 2022; Schein & Gray, 2018). Considering that higher sensitivity to physical

102 pain may heighten perception of harm and that perception of harm can intensify moral views, it

103 follows that more pain-sensitive individuals may have stronger moral views (e.g., stronger

104 reactions to unfairness; Wang et al., 2019).

105   This raises an empirical question: Does pain sensitivity predict all moral views similarly

106 strongly? Or does it predict some moral views more strongly than others? If so, which ones? We

107 consider three competing hypotheses.

108   Hypothesis 1 is the most straightforward (Figure 1a). It draws on the reasoning above and

109 expects simply that higher pain sensitivity should predict greater perception of harm and stronger

110 moral views across domains. Hypotheses 2 and 3 add conceptual nuances by drawing on moral

111 foundations theory and its corresponding evidence that liberals and conservatives hold different

112 moral views (i.e., different views about what values and behaviors are morally relevant and are

113 right or wrong; Graham et al., 2009, 2013). Both hypotheses 2 and 3 expect that pain sensitivity

114 should particularly strongly predict perceived harm and moral views in certain domains, and that

115 which domains of perceived harm and moral views are most strongly predicted by pain

116 sensitivity should depend on how liberal or conservative the perceiver is (Figure 1b).[i] But

117 hypotheses 2 and 3 differ in their expectations about how exactly this pattern should look like.

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[i] Terminological clarification about the word *harm* is warranted here. Moral foundations theory (Graham et al., 2009, 2013) calls one of the moral domains Care/Harm, which refers specifically to concerns about "suffering, distress, or neediness" and "motivations to care, nurture, and protect" (Graham et al., 2013, p. 69). In contrast to this domain-specific view, dyadic morality theory (Gray et al., 2012, 2022; Schein & Gray, 2018) takes a domain-

118   Hypothesis 2 expects that higher pain sensitivity should predict greater perception of

119 harm and stronger moral views, and that these predictive effects of pain sensitivity should be

120 particularly strong for those domains one is already likely to deem important given one's

121 political orientation, but weaker for those domains one is less likely to deem important given

122 one's political orientation (Figure 1c). In other words, those harms that one is most ready to

123 perceive and those moral views that one is most inclined to endorse are the ones that should be

124 most amplified by pain sensitivity. Conservatives (more than liberals) are known to readily

125 perceive harm in betrayal to one's group, subversion to one's authorities, and contamination of

126 one's body and soul; liberals (more than conservatives) are known to readily perceive harm in

127 failures to care for the vulnerable and to attain equality (Graham et al., 2009, 2013).

128 Accordingly, hypothesis 2 expects that higher pain sensitivity should predict amplified

129 perception of harm and moral views in domains of disloyalty, disrespect, and degradation more

130 strongly among conservatives than liberals, but in domains of unkindness and inequality more

131 strongly among liberals than conservatives.

132   Hypothesis 3 also expects that higher pain sensitivity should predict greater perception of

133 harm and stronger moral views. Contrary to hypothesis 2, however, it expects that these

134 predictive effects of pain sensitivity should be particularly strong for those domains one is *not*

135 likely to deem important given one's political orientation, but weaker for those domains one is

136 already likely to deem important given one's political orientation (Figure 1d). In other words,

137 those harms that one is less ready to perceive and those moral views that one is less inclined to

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general view and uses the word *harm* in a broader sense. It conceptualizes harm as affective in nature (Gray et al., 2022) and as "intuitively perceived" whenever a situation involves "an intentional agent causing damage to a vulnerable patient" (Schein & Gray, 2018, p. 32), whatever tangible or intangible form the damage may take. When we use the word *harm*, we mean it in the broader sense, which is also compatible with the way many psychologists and the general public use this word (Haslam, 2016).

138 endorse are the ones that should be most amplified by pain sensitivity. This assumption draws on

139 the basic principle that higher mental processes (e.g., social or moral judgments) are multiply

140 determined such that the effect of a given factor decreases as the effect of competing factors

141 increases (Bless et al., 2003). To liberals, if their liberal ideology and their liberal-leaning media

142 diet and social network already tell them that racism, sexism, and inequality are immoral, then

143 whether they have high or low pain sensitivity is unlikely to matter much for their perception of

144 harm in these domains. But their liberal ideology does not typically lead them to perceive as

145 much harm in nonconformity to societal traditions, challenge to authority figures, and

146 unconventional sexual practices, so there is more room for higher pain sensitivity to amplify

147 liberals' perception of harm in these domains (i.e., domains in which conservatives typically

148 perceive greater harm). Applying the same logic to liberals and conservatives alike predicts a

149 "cross-aisle" pattern of interaction effects (pain sensitivity × political orientation): higher pain

150 sensitivity should predict greater perception of harm and stronger moral views, particularly in

151 domains typically deemed important by one's ideological opponent.

152   For ease of reference, we will use the following shorthand for the three hypotheses

153 throughout the rest of our article.

154 - Hypothesis 1: *heightening all harms*

155 - Hypothesis 2: *heightening own side*

156 - Hypothesis 3: *heightening other side*

157

158 **Figure 1**

159 *Three Competing Hypotheses About How Pain Sensitivity May Be Related to Moral and Political*

160 *Views*

9

a   **Competing hypothesis 1: Heightened perception of all harms**

| Pain sensitivity | →(Drawing on social properties of pain)→ | Perceived harm | →(Drawing on dyadic morality theory)→ | Moral & political views |

b   **Competing hypotheses 2-3: Heightened perception of some harms, depending on one's political orientation**

Political orientation

(Drawing on moral foundations theory)

| Pain sensitivity | →(Drawing on social properties of pain)→ | Perceived harm | →(Drawing on dyadic morality theory)→ | Moral & political views |

c   **Competing hypothesis 2: Heightened perception of those harms that one is already likely to deem important given one's political orientation**

	One's political orientation	
	More liberal	More conservative
Moral & political domains in which liberals typically perceive greater harm	Higher pain sensitivity **strongly** predicts greater perception of harm	Higher pain sensitivity **doesn't** strongly predict greater perception of harm
Moral & political domains in which conservatives typically perceive greater harm	Higher pain sensitivity **doesn't** strongly predict greater perception of harm	Higher pain sensitivity **strongly** predicts greater perception of harm

d   **Competing hypothesis 3: Heightened perception of those harms that one is not likely to deem important given one's political orientation**

	One's political orientation	
	More liberal	More conservative
Moral & political domains in which liberals typically perceive greater harm	Higher pain sensitivity **doesn't** strongly predict greater perception of harm	Higher pain sensitivity **strongly** predicts greater perception of harm
Moral & political domains in which conservatives typically perceive greater harm	Higher pain sensitivity **strongly** predicts greater perception of harm	Higher pain sensitivity **doesn't** strongly predict greater perception of harm

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Note. Higher pain sensitivity may predict heightened perception of (**a**) all harms similarly strongly or (**b**) some harms most strongly, either (**c**) those harms that one is already likely to deem important given one's political orientation or (**d**) those harms that one is not likely to deem important given one's political orientation.

To test these competing hypotheses, we examine the relations of pain sensitivity and political orientation to moral views in Studies 1a (exploratory), 1b (direct replication), and 1c (preregistered conceptual replication). Considering that people's moral views are closely linked to their political views (Graham et al., 2013; Schein & Gray, 2018), we also test these competing hypotheses in the realm of political views[ii] in Studies 2a (exploratory) and 2b (preregistered replication). We further replicate these relations (of pain sensitivity and political orientation to moral and political views) and test the hypothesized process (moderated mediation by perceived harm) in Study 3 (preregistered). Finally, we compare the actual effects of pain sensitivity observed in Studies 1a–3 against lay intuitions about the effects of pain sensitivity in Study 4 (descriptive). Before reporting these primary studies, we first summarize our psychophysical validation of an established measure of pain sensitivity.

Psychophysical Validation of Pain Sensitivity Measure

To test the hypotheses above with sufficient statistical power, in general we aimed for large sample sizes, and in the case of preregistered studies we determined the sample size by conducting power analysis based on effect sizes from prior data. To attain the required sample

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[ii] We use the term *political views* to refer to a person's views on specific political issues, varying on the spectrum of support—oppose. We use the term *political orientation* to refer to a person's general ideological leaning, varying on the spectrum of liberal—conservative.

186   sizes in a feasible manner, we needed a valid and reliable measure of pain sensitivity that could

187   be used in online surveys. We chose the Pain Sensitivity Questionnaire, or PSQ (Ruscheweyh et

188   al., 2009), because it had been validated in multiple psychophysical studies (Ruscheweyh et al.,

189   2009, 2012; Sellers et al., 2013) among various samples (healthy adults, chronic pain patients,

190   patients experiencing subcutaneous injection of lidocaine as a pain stimulus) as a reliable

191   measure that consistently predicts the subjective intensity of pain experience across different

192   sensory modalities (heat pain, cold pain, pressure pain, and pinprick pain) in daily life situations.

193   Prior validation studies mostly focused on subjective intensity of pain experience. To

194   provide an independent and extended validation of the PSQ, we conducted a psychophysical

195   study to assess not only subjective intensity of pain experience but also other parameters of pain

196   sensitivity. A brief summary is provided below. All methodological details and full results are

197   available in the Supplemental Material.

198   Using a pressure algometer for pain induction, our study involved two parts. The first part

199   assessed pain threshold (minimum level of physical stimulation at which a person starts

200   experiencing pain) and pain tolerance (maximum level of pain-inducing physical stimulation a

201   person can tolerate). The second part assessed changes in subjective intensity of pain experience

202   in response to increases in objective amount of physical stimulation. We examined the extent to

203   which these parameters were predicted by PSQ scores.

204   We found that higher PSQ scores predicted both overall higher subjective pain intensity

205   and steeper increases in subjective pain intensity as a result of increases in objective pressure

206   amount. Beyond subjective pain intensity, we also found that higher PSQ scores predicted lower

207   pain tolerance. These results dovetail and extend prior validation studies (Ruscheweyh et al.,

208   2009, 2012; Sellers et al., 2013)—using different methods and spanning different populations

(students, healthy adults, chronic pain patients, patients experiencing subcutaneous injection of lidocaine as a pain stimulus) from different countries (Germany, U.S., Canada)—to suggest that the PSQ, as a self-report measure, reflects experiential qualities of physical pain. Given such validity evidence, we use the PSQ as a tool for measuring pain sensitivity among large samples to test our theoretical hypotheses with sufficient power throughout our primary studies.

General Methodological Information Across Studies

For concision, this section outlines general methodological information across our studies. Subsequent Method sections describe each study's procedure and analyses. Fine-grained details of each study's participants, sample size justification, exclusion criteria, and measures are provided in the Supplemental Material, where measures are described in order of presentation to participants. Reliability, mean, and standard deviation of the measures are available in supplemental tables.

Transparency and Openness. We report how we determined our sample size, all data exclusions, all measures, and all manipulations (if any) in each study. Studies 1a, 1b, 2a, and 4 were not preregistered. All aspects of Studies 1c, 2b, and 3 were preregistered, including study design, hypotheses, sample size justification based on power analysis, data collection, stopping rules, exclusion criteria, and analysis plan. For all studies, we follow the APA Journal Article Reporting Standards for Quantitative (JARS–Quant) Research in Psychology (Appelbaum et al., 2018). All data, analysis code, research materials, and preregistrations of study and analysis plans are available at https://osf.io/mgcef/?view_only=ed0786335fdc41a39ea4b7a1c9c2e444. Data for all studies were processed, analyzed, and visualized using R 4.1.3 (R Core Team, 2022)

231   with the aid of various packages noted in subsequent Method sections. Data visualization for

232   Study 4 also involved using Tableau 2021.4.3 (*Tableau Desktop*, 2021).

233   **Participants.** Adults in the U.S. were recruited via Amazon Mechanical Turk (Study 1a)

234   or Prolific (Studies 1b–4) because we aimed to collect data from Americans of diverse

235   demographic backgrounds and spanning the ideological spectrum, from very liberal to very

236   conservative, in order to test the interaction effects of pain sensitivity × political orientation. In

237   each study, we examined the initial distribution of liberals and conservatives and balanced them

238   out by continuing recruitment of participants on the less-represented side of the ideological

239   spectrum (e.g., if there were more liberals than conservatives, then we would continue recruiting

240   conservatives until we had a balanced sample). Other than that, any U.S. adult could participate,

241   and the recruitment material was generic. Across studies, the mean age hovered around the

242   recent mean age of the U.S. population (38.5 years in 2022) and gender distribution was fairly

243   representative of the U.S. population. That said, we did not set out to collect representative

244   samples, because we were interested in testing the hypothesized relations among variables, not in

245   estimating the population means of variables.

246   **Procedures and Exclusion Criteria.** To maximize power, we (1) used or adapted

247   established measures with known reliability and content validity, (2) determined the sample size

248   for each preregistered study by running power analysis based on effect sizes from prior data or

249   pilot data, and (3) used multilevel modelling analyses wherever possible to test the highest-order

250   interaction effects of interest. (Information pertaining to the last two aspects is highlighted in

251   yellow throughout the manuscript and Supplemental Material for ease of identification.) Within

252   each measure, items were presented in randomized order unless noted otherwise. Reverse-

253   worded items were reverse-scored for analysis. All studies concluded with attention checks,

254 demographic measures (including political orientation), debriefing, and reconsent for participants

255 to indicate whether they would like to have their data included in or withdrawn from the study.

256 Participants were excluded if they did not provide reconsent, did not pass the attention check

257 (e.g., failing to check the right boxes) or problematic response patterns check (e.g., choosing the

258 same response for all items on a scale), or completed the study more than once.

259   **Data Analysis and Visualization.** All statistical tests were two-sided. Given our primary

260 interest in the interaction effects of pain sensitivity × political orientation, in each study we (1)

261 centered all predictors and (2) conducted collinearity diagnostics and found no concern of

262 multicollinearity (Cohen et al., 2013; Thompson et al., 2017; for details, see **General Discussion**

263 -> **Potential Artifacts** -> **Multicollinearity**). In all statistical analyses, both pain sensitivity and

264 political orientation were treated as continuous variables. In data visualization, for clarity of

265 depiction and ease of comprehension, political orientation is shown as if it were a categorical

266 variable (with liberal participants in one group and conservative participants in another).

267   In multilevel modeling analyses, all outcomes were analyzed using 2-level models

268 because measures were nested within participants. Each outcome was modelled as a function of

269 the highest-order interaction effect and all lower-order effects. Models involving cross-level

270 interaction effects included a random slope for the level 1 predictor (measures) in addition to a

271 random intercept (Aguinis et al., 2013). Models for the continuous (Likert) outcomes in all

272 studies were linear mixed models fit by REML with an unstructured covariance matrix and

273 Satterthwaite degrees of freedom using the `lmer` function in the `lme4` package v1.1-28 (Bates

274 et al., 2022, p. 4) and the `lmerTest` package v.3.1-3 (Kuznetsova et al., 2020) in R 4.1.3 (R

275 Core Team, 2022). The model for the dichotomous outcome in Study 2a (voting for Trump over

276 Biden) was a generalized linear mixed model fit by maximum likelihood (Laplace

277 Approximation) using the `glmer` function in the `lme4` package. The ICC (intraclass correlation

278 coefficient) for each model suggested that the continuous (Likert) measures in general were

279 fairly clustered within participants and that the dichotomous measures (intended and actual

280 voting preferences) were highly clustered within participants.

281   **Research Ethics.** All studies had received institutional ethics approval and were

282 executed in compliance with relevant ethical guidelines and APA ethical standards, including

283 adherence to the legal requirements of the study country.

284

285   **Pain Sensitivity Predicts Moral Views (Studies 1a–1c)**

286   *Method*

287 **Procedure**

288   As part of a larger survey, participants in Study 1a (exploratory; $N = 950$) completed the

289 Moral Foundations Questionnaire (Graham et al., 2011), which was chosen because it is the most

290 widely used measure of the five moral foundations that have been established across cultures

291 (Graham et al., 2013). In addition, participants completed the PSQ (Ruscheweyh et al., 2009,

292 2012; Sellers et al., 2013). To test if our effects of interest might be explained away by other

293 variables known to predict moral foundations, participants also completed established measures

294 of disgust sensitivity (Haidt et al., 1994), emotion reactivity (Nock et al., 2008), anxiety

295 (Spielberger, 2012), anger proneness (Spielberger et al., 1983), and empathy (Reniers et al.,

296 2011). These variables, together with gender, served as control predictors in our analyses.

297 Finally, in the demographics section, participants rated their political orientation (*1 = Liberal, 5*

298 *= Centrist, 9 = Conservative*).

299 To ascertain replicability, Study 1b (direct replication; $N = 686$) used the same measures

300 (with minimal modifications as noted in the Supplemental Material) and analytic strategy as in

301 Study 1a, and recruited participants from a different platform. Study 1c ($N = 1,313$) was a

302 preregistered conceptual replication that focused on contrasting pain sensitivity with disgust

303 sensitivity—a frequently studied variable in moral and political psychology (Inbar et al., 2009;

304 Petersen et al., 2020; Pizarro et al., 2011)—and used a psychometrically improved version of the

305 Disgust Scale (Olatunji et al., 2007). Prior to the Disgust Scale - Revised, participants also

306 completed the Moral Foundations Questionnaire (Graham et al., 2011) and the PSQ

307 (Ruscheweyh et al., 2009, 2012; Sellers et al., 2013).

308

309 **Analyses**

310 Hierarchical regression models were used to test our hypotheses. In Studies 1a

311 (exploratory) and 1b (direct replication), support for each moral foundation was regressed on the

312 interaction effect of pain sensitivity × political orientation and their main effects, first without

313 (step 1) and then with (step 2) all the control predictors. Relevance of each moral foundation was

314 analyzed in the same way.

315 In Study 1c (preregistered conceptual replication), to test our preregistered primary

316 hypotheses, support for each moral foundation was regressed on the interaction effect of pain

317 sensitivity × political orientation and their main effects, first without (step 1) and then controlling

318 for (step 2) disgust sensitivity and gender, and finally also controlling for the interaction effect of

319 disgust sensitivity × political orientation (step 3). Relevance of each moral foundation was

320 analyzed in the same way.

321   In each of Studies 1a–1c, support for and relevance of all moral foundations were also

322   analyzed using multilevel modelling. Both pain sensitivity and political orientation were

323   between-participant and continuous. Moral foundations were within-participant and effects-

324   coded: -1 (care/harm, fairness/cheating) vs. 1 (loyalty/betrayal, authority/subversion,

325   sanctity/degradation).

326

327   ***Results***

328   Study 1a found significant interaction effects of pain sensitivity × political orientation on

329   support for all five moral foundations and relevance of four of the five moral foundations (ps ≤

330   0.0264; Table 1, step 1). After adding various control predictors (step 2), the interaction effects

331   of pain sensitivity × political orientation on all moral foundations were significant. Because of

332   the highly similar patterns between support for and relevance of each moral foundation, we will

333   refer to them collectively as endorsement of the moral foundation.

334

335 **Table 1**

336 *Hierarchical Regressions of Support for and Relevance of Moral Foundations on the Interaction*

337 *Effect of Pain Sensitivity × Political Orientation and Their Main Effects (Step 1), Together with*

338 *Control Predictors (Step 2), in Study 1a*

Predictor	Care/Harm		Fairness/Cheating		Loyalty/Betrayal		Authority/Subversion		Sanctity/Degradation	
	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2
				Support for moral foundation						
Pain Sensitivity ×	0.07*	0.07*	0.20***	0.18***	-0.08**	-0.07*	-0.16***	-0.15***	-0.17***	-0.15***
Political Orientation	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Pain Sensitivity	0.28***	0.23*	0.32***	0.22***	0.44***	0.36***	0.32***	0.25***	0.35***	0.23***
	(0.03)	(0.04)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Political Orientation	-0.22***	-0.16***	-0.29***	-0.26***	0.37***	0.37***	0.40***	0.40***	0.39***	0.39***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Disgust Sensitivity		0.11***		0.08*		0.10***		0.11***		0.23***
		(0.03)		(0.03)		(0.03)		(0.03)		(0.03)
Emotion Reactivity		0.04		0.03		0.14**		0.08		0.08
		(0.05)		(0.05)		(0.04)		(0.05)		(0.04)
Anxiety		-0.02		-0.09*		-0.13***		-0.19***		-0.08*
		(0.04)		(0.04)		(0.04)		(0.04)		(0.04)
Anger		-0.14*		0.03		-0.01		0.02		0.01
		(0.05)		(0.05)		(0.04)		(0.05)		(0.04)
Empathy		0.29***		0.28***		0.05		0.08*		0.07*
		(0.03)		(0.03)		(0.03)		(0.03)		(0.03)
Gender		-0.15*		0.20***		0.21***		0.05		0.03
		(0.06)		(0.06)		(0.05)		(0.06)		(0.05)
R^2	.098	.233	.189	.280	.418	.449	.331	.373	.353	.416
ΔR^2		.136		.091		.030		.041		.063
F	32.79***	30.57***	70.54***	38.97***	218.15***	81.68***	150.30***	59.69***	165.60***	71.45***
ΔF		26.68***		18.99***		8.24***		9.96***		16.13***
				Relevance of moral foundation						
Pain Sensitivity ×	0.11**	0.08*	0.12***	0.10**	-0.04	-0.06*	-0.07*	-0.08**	-0.12***	-0.12***
Political Orientation	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Pain Sensitivity	0.08*	0.05	0.08*	0.06	0.41***	0.27***	0.42***	0.28***	0.38***	0.25***
	(0.03)	(0.04)	(0.03)	(0.04)	(0.03)	(0.04)	(0.03)	(0.04)	(0.03)	(0.03)
Political Orientation	-0.23***	-0.16***	-0.23***	-0.18***	0.27***	0.26***	0.29***	0.28***	0.36***	0.35***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Disgust Sensitivity		0.07*		0.05		0.15***		0.13***		0.24***
		(0.03)		(0.03)		(0.03)		(0.03)		(0.03)
Emotion Reactivity		-0.15**		-0.20***		0.09		0.08		0.07
		(0.05)		(0.05)		(0.05)		(0.05)		(0.04)
Anxiety		0.04		0.03		-0.03		-0.10*		-0.03
		(0.04)		(0.04)		(0.04)		(0.04)		(0.04)
Anger		-0.04		0.00		0.07		0.11*		0.01
		(0.05)		(0.05)		(0.05)		(0.05)		(0.04)
Empathy		0.43***		0.36***		0.10***		0.10***		0.09**
		(0.03)		(0.03)		(0.03)		(0.03)		(0.03)
Gender		-0.05		0.05		0.09		0.02		0.02
		(0.06)		(0.06)		(0.06)		(0.06)		(0.05)
R^2	.061	.254	.061	.192	.304	.349	.319	.359	.341	.409
ΔR^2		.194		.132		.045		.040		.068
F	19.67***	34.27***	19.55	23.89***	132.60***	53.91***	142.10***	56.24***	156.90***	69.38***
ΔF		39.10***		24.55***		10.45***		9.38***		17.23***

339 *Note*. Political orientation was a continuous variable (*1 = liberal, 5 = centrist, 9 = conservative*).

340 Gender was coded as a dichotomous variable (-1 = female, 1 = male). Standardized regression

341 coefficients are reported, with standard errors in parentheses. * $p < .05$, ** $p < .005$, *** $p <$

342 .001. If we used the more stringent criterion of Bonferroni-corrected alpha = .05 / 10 interaction

343 effects of interest = .005, the interaction effects of pain sensitivity × political orientation

344 remained significant on support for four of the five moral foundations ($ps \leq .00305$) and on

345 relevance of three of the five moral foundations ($ps \leq .00111$).

346

347   As noted in **General Methodological Information Across Studies**, both pain sensitivity

348 and political orientation were treated as continuous variables in all statistical analyses. Only for

349 the purpose of visualizing the interaction effects (Figure 2, Table S1), we categorized

350 participants into liberals (political orientation below scale midpoint) and conservatives (political

351 orientation above scale midpoint). Recall that loyalty/betrayal, authority/subversion, and

352 sanctity/degradation are the moral foundations typically favored by conservatives more than by

353 liberals (Graham et al., 2009, 2013); we found that higher pain sensitivity predicted endorsement

354 of these "conservative moral foundations" more strongly among liberals (βs = 0.42–0.50) than

355 among conservatives (βs = 0.20–0.40). In contrast, care/harm and fairness/cheating are the moral

356 foundations typically favored by liberals more than by conservatives (Graham et al., 2009,

357 2013); we found that higher pain sensitivity predicted endorsement of these "liberal moral

358 foundations" more strongly among conservatives (βs = 0.23–0.54) than among liberals (βs = -

359 0.03–0.23). These opposite patterns constituted significant cross-level interaction effects of pain

360 sensitivity × political orientation × moral foundations (loyalty/betrayal, authority/subversion, and

361 sanctity/degradation vs. care/harm and fairness/cheating) in multilevel modelling analyses ($ps \leq$

362 1.80e-6; Table 2).

363

364 **Figure 2**

365 *Interaction Effects of Pain Sensitivity × Political Orientation on Support for (Top Row) and Relevance of (Bottom Row) Moral Foundations*

366 *in Study 1a*

369
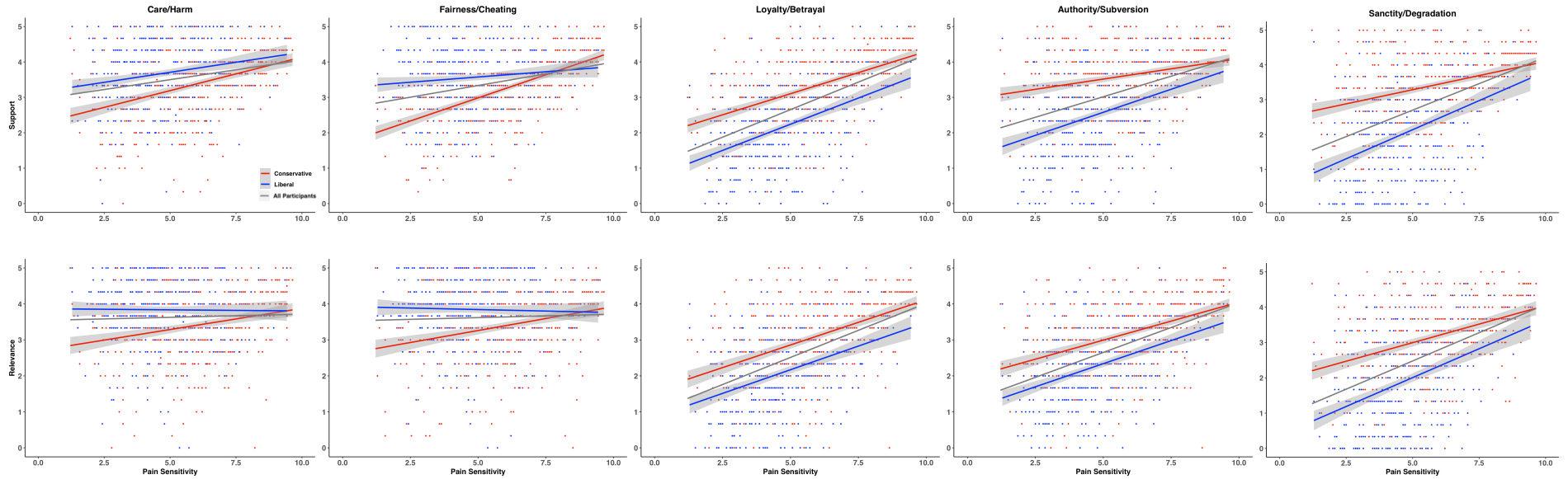
370 *Note*. 95% confidence intervals are shown around the lines for conservatives (i.e., political orientation above scale midpoint; *n* = 404) and

371 liberals (i.e., political orientation below scale midpoint; *n* = 405). For ease of reference, an overall line is shown for all participants who

372 indicated any political orientation (i.e., regardless of whether it was above, below, or at scale midpoint; *N* = 950). Statistical details are

373 available in Table S1.

374 **Table 2**

375 *Highest-Order Interaction Effects of Theoretical Interest in Multilevel Modelling of Outcomes in*

376 *Studies 1a–3*

Study	Highest-Order Interaction of Interest in Exploratory Multilevel Model	Measures (Within-Participant): Effects-Coding Where Relevant	Outcome (Likert)	ICC	β	SE	t	df	p
1a	PS x PO x Measures	Moral foundations: -1 vs. 1[a]	Support for moral foundations	.301	-0.133	0.0145	-9.174	920	< .001
			Relevance of moral foundations	.323	-0.089	0.0167	-5.366	920	< .001
1b	PS x PO x Measures	Moral foundations: -1 vs. 1[a]	Support for moral foundations	.270	-0.131	0.0164	-7.989	655	< .001
			Relevance of moral foundations	.324	-0.083	0.0172	-4.819	654	< .001
1c	PS x PO x Measures	Moral foundations: -1 vs. 1[a]	Support for moral foundations	.240	-0.151	0.0121	-12.473	1256	< .001
			Relevance of moral foundations	.306	-0.083	0.0172	-4.819	654	< .001
2a	PS x PO x Measures	Political figures: -1 vs. 1[b]	Support for political figures	.101	-0.151	0.0147	-10.306	997	< .001
	PS x PO	Political issues: all issues[c]	Support for political issues	.365	-0.145	0.0106	-13.712	1001	< .001
2b	PS x PO x Measures	Political figures: -1 vs. 1[b]	Support for political figures	.179	-0.207	0.0159	-13.010	999	< .001
	PS x PO	Political issues: all issues[c]	Support for political issues	.380	-0.237	0.0145	-16.329	1012	< .001
3	PS x PO x Measures	Moral foundations: -1 vs. 1[a]	Support for moral foundations	.344	-0.149	0.0106	-14.112	1563	< .001
			Relevance of moral foundations	.338	-0.105	0.0115	-9.136	1563	< .001
	PS x PO	Political issues: all issues[c]	Support for political issues	.362	-0.273	0.0117	-23.284	1564	< .001

Study	Highest-Order Interaction in Multilevel Model	Measures (Within-Participant)	Outcome (Dichotomous)	ICC	β	SE	z		p
2a	PS x PO	Voting preferences: intended & actual	Voting for Trump over Biden	.972	-8.521	1.2609	-6.758		< .001

377 *Note.* PS = pain sensitivity (between-participant, continuous). PO = political orientation

378 (between-participant, continuous). [a]Effects-coding of moral foundations (within-participant): -1

379 (care/harm, fairness/cheating) vs. 1 (loyalty/betrayal, authority/subversion, sanctity/degradation).

380 [b]Effects-coding of political figures (within-participant): -1 (Joe Biden, Kamala Harris, Bernie

381 Sanders, Elizabeth Warren, Nancy Pelosi, Steny Hoyer, Chuck Schumer) vs. 1 (Donald Trump,

382 Mike Pence, Mitch McConnell, Kevin McCarthy). [c]All political issues (within-participant) were

383 coded such that higher scores represented more conservative views.

384

385   Study 1b (direct replication) found a highly similar pattern of interaction effects (Figure

386   3, Table S2), again generally robust to the addition of control predictors (Table S3). Likewise,

387   Study 1c (preregistered conceptual replication) found significant interaction effects (pain

388   sensitivity × political orientation) on support for all five moral foundations and relevance of four

389   of the five moral foundations (Figure 4, Table S4), controlling for disgust sensitivity, gender, and

390   the interaction effect of disgust sensitivity × political orientation (Table S5).[iii] Both Studies 1b

391   and 1c also replicated the significant cross-level interaction effects of pain sensitivity × political

392   orientation × moral foundations (loyalty/betrayal, authority/subversion, and sanctity/degradation

393   vs. care/harm and fairness/cheating) in multilevel modelling analyses (Table 2).

[iii] In addition to our primary hypotheses of interaction effects, Studies 1a–1b revealed main effects of pain sensitivity on (a) support for all moral foundations, (b) relevance of three moral foundations (loyalty/betrayal, authority/subversion, sanctity/degradation), and (c) political orientation (Tables 1, S3, and S6). For comprehensiveness, we included these effects in the preregistration of Study 1c. To test (a), support for each moral foundation was regressed on pain sensitivity, first without (step 1) and then controlling for (step 2) disgust sensitivity, political orientation, and gender. To test (b), relevance of each of the three moral foundations (loyalty/betrayal, authority/subversion, sanctity/degradation) was regressed on pain sensitivity, first without (step 1) and then controlling for (step 2) disgust sensitivity, political orientation, and gender. To test (c), political orientation was regressed on pain sensitivity, first without (step 1) and then controlling for (step 2) disgust sensitivity and gender. Results for (a) and (b) are available in Table S7. Results for (c) are available in Table S6.

394   **Figure 3**

395   *Interaction Effects of Pain Sensitivity × Political Orientation on Support for (Top Row) and Relevance of (Bottom Row) Moral Foundations*

396   *in Study 1b*

397
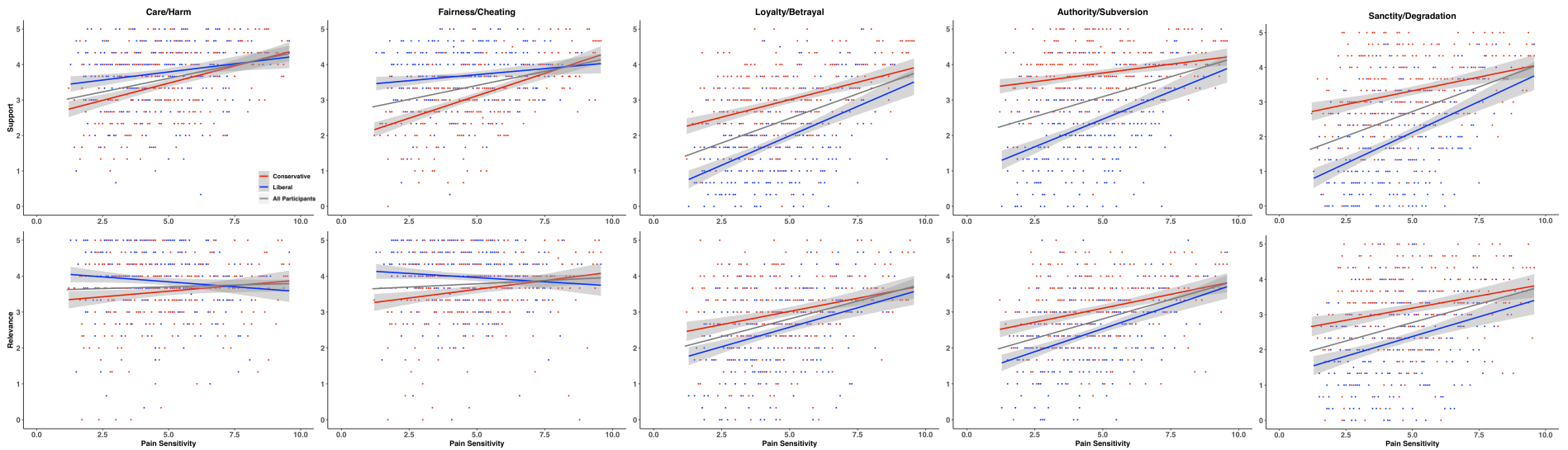
400

401   *Note.* 95% confidence intervals are shown around the lines for conservatives (i.e., political orientation above scale midpoint; $n = 288$) and

402   liberals (i.e., political orientation below scale midpoint; $n = 287$). For ease of reference, an overall line is shown for all participants who

403   indicated any political orientation (i.e., regardless of whether it was above, below, or at scale midpoint; $N = 686$). Statistical details are

404   available in Table S2.

405   **Figure 4**

406   *Interaction Effects of Pain Sensitivity × Political Orientation on Support for (Top Row) and Relevance of (Bottom Row) Moral Foundations*

407   *in Study 1c*
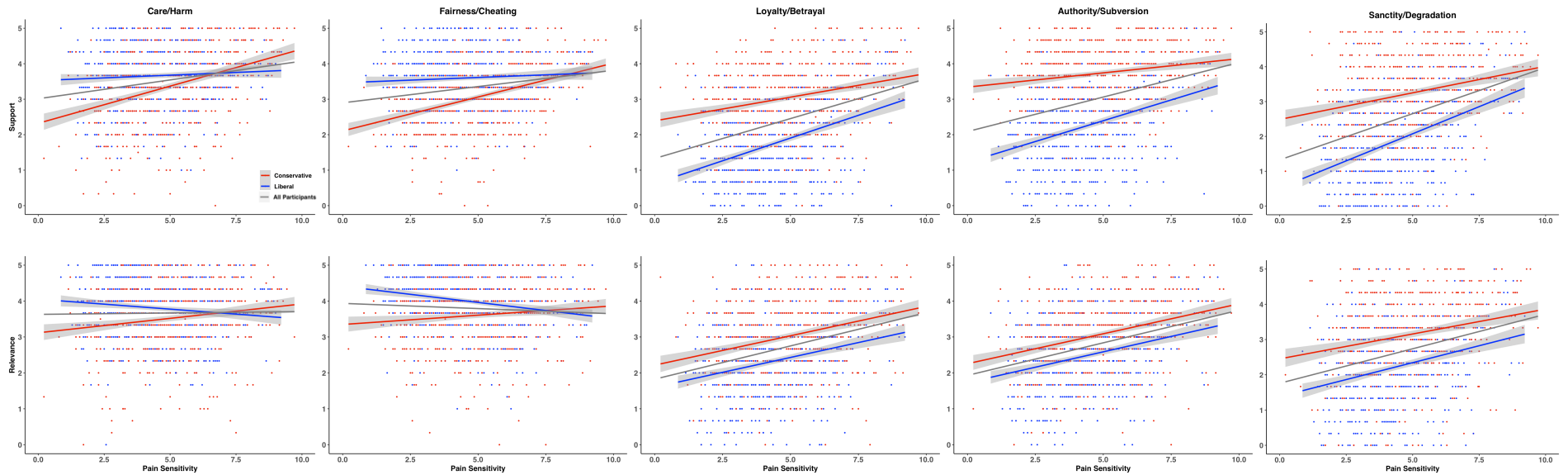
410   *Note*. 95% confidence intervals are shown around the lines for conservatives (i.e., political orientation above scale midpoint; *n* = 554) and

411   liberals (i.e., political orientation below scale midpoint; *n* = 583). For ease of reference, an overall line is shown for all participants who

412   indicated any political orientation (i.e., regardless of whether it was above, below, or at scale midpoint; *N* = 1,260). Statistical details are

413   available in Table S4.

414   ***Discussion***

415   Exploratory and confirmatory evidence from Studies 1a–1c showed that higher pain

416   sensitivity predicted greater endorsement of moral foundations typically highlighted by one's

417   ideological opponent. Specifically, higher pain sensitivity predicted greater endorsement of

418   "conservative moral foundations" (loyalty/betrayal, authority/subversion, sanctity/degradation)

419   more strongly among liberals than among conservatives, and greater endorsement of "liberal

420   moral foundations" (care/harm, fairness/cheating) more strongly among conservatives than

421   among liberals. The effects could not be explained away by other control variables known to

422   predict moral views. Nor could they be attributed to moderate ideology because throughout all of

423   our studies, more pain-sensitive liberals and conservatives did *not* place themselves closer to the

424   midpoint of the ideological spectrum (see **General Discussion** for details). Results of Studies

425   1a–1c (as well as Studies 2a, 2b, and 3) also could not be attributed to methodological artifacts

426   such as multicollinearity and response set (**General Discussion -> Potential Artifacts**).

427   The observed pattern of interaction effects supports hypothesis 3 (heightening other side),

428   which specifies that higher pain sensitivity should predict stronger moral views, particularly in

429   domains typically deemed important by one's ideological opponent. The observed pattern does

430   not support hypothesis 2 (heightening own side), which predicts the opposite pattern of

431   interaction effects. It also does not support hypothesis 1 (heightening all harms), which predicts

432   no interaction effects, but only positive, similarly strong main effects of pain sensitivity on all

433   moral foundations. Contrary to these predictions, interaction effects consistently emerged, and

434   the main effect of pain sensitivity varied in size for different moral foundations (Tables 1, S3,

435   and S5). Overall, results support hypothesis 3 (heightening other side).

436

437   **Pain Sensitivity Predicts Political Views (Studies 2a–2b)**

438   Building on the evidence thus far, and considering that moral foundations are closely

439   related to people's political views (Graham et al., 2013; Schein & Gray, 2018), a corollary

440   prediction is that individuals with higher pain sensitivity are more inclined to show political

441   attitudes and voting preferences typically exhibited by their ideological opponents. Supportive

442   evidence for this prediction would reveal a novel theoretical relation (between pain sensitivity

443   and political views). It would also shed light on outcomes that are often hard to move but have

444   significant consequences in the real world (e.g., political attitudes toward contentious issues,

445   voting preferences in a presidential election). We test this prediction in Studies 2a (exploratory)

446   and 2b (preregistered replication).

447

448   ***Method***

449   **Procedure**

450   Study 2a (exploratory; $N = 1,007$) explored the hypothesized interaction effect of pain

451   sensitivity × political orientation on voting preference in the 2020 U.S. Presidential Election,

452   support for leading Republican/conservative and Democratic/liberal figures, and attitudes toward

453   25 contentious political issues. Data were primarily collected on October 10–15, 2020 (pre-

454   election), except for the brief post-election survey on November 4–9, 2020 (right after November

455   3 the Election Day) where the same participants were recruited to indicate whom they actually

456   voted for ($N = 723$; 71.8% of the original sample). We describe each wave of data collection in

457   turn.

458   During the pre-election primary data collection, participants first rated their attitudes

459   toward 15 contentious political issues with item-specific scale labels (adapted from prior

460   research; Day et al., 2014; Feinberg & Willer, 2015; Koleva et al., 2012; Qian & Yahara, 2020)

461   and 10 contentious political issues with items-general scale labels (adapted from prior research;

462   Christie et al., 2019; Feinberg & Willer, 2015; Franks & Scherr, 2019; Frimer et al., 2017;

463   Monroe et al., 2020). Responses to some issues were reverse-scored such that higher scores

464   would always indicate more conservative attitudes. Then, 3 items prompted participants to

465   indicate their likelihood of voting for a liberal, a conservative, and an independent political

466   candidate. Next, participants rated their support for 11 leading political figures, each with 3 items

467   (using Donald Trump as an example here: "I support Donald Trump"; "I approve of Donald

468   Trump's performance in the administration of his job"; "I support the political issues that Donald

469   Trump stands for"). Participants were also asked whom they intended to vote for in the

470   upcoming 2020 U.S. Presidential Election. Finally, participants completed the PSQ (Ruscheweyh

471   et al., 2009, 2012; Sellers et al., 2013), attention check, and demographic measures (including

472   political orientation).

473   During the post-election brief data collection, participants were asked whom they actually

474   voted for in the 2020 Presidential Election.

475   To provide a preregistered replication of Study 2a's results, Study 2b ($N = 1,022$) used

476   the same measures as in Study 2a, with two exceptions. First, because the 2020 Election had

477   already happened, Study 2b measured actual (not intended) voting preference. Second, because

478   of the highly consistent results across political issues in Study 2a, Study 2b included 10 of the 25

479   original issues, selected on the basis of (a) significant interaction effects of pain sensitivity ×

480   political orientation and (b) significant effects of pain sensitivity among both liberals and

481   conservatives.

482

Analyses

Multiple regression models were used to test our hypotheses. Each dependent variable was regressed on the interaction effect of pain sensitivity × political orientation and their main effects. All of the dependent measures were continuous and analyzed using linear regression, except for intended voting preference in the pre-election data of Study 2a (exploratory) and actual voting preference in the post-election data of Study 2a (exploratory) and in Study 2b (preregistered replication). These dependent variables were categorical and thus analyzed using logistic regression.

In Study 2a, because actual voting preference (measured post-election) showed a highly similar pattern of results to intended voting preference (measured pre-election), we also submitted them to multilevel modelling analysis (Table 2, bottom row) and formally tested their consistency using cross-tabulation analysis. Indeed, intended voting preference and actual voting preference were highly consistent (98.3% of participants who had indicated they intended to vote for Trump later reported actually having voted for him, and 98.9% of participants who had indicated they intended to vote for Biden later reported actually having voted for him; McNemar's χ^2 (1) = 0, P = 1, among Trump and Biden voters). Such consistency was observed regardless of whether we analyzed participants who completed the post-election survey on November 4, 5, 6, 7, 8, or 9 (Table S8), alleviating concerns about memory distortion following the announcement of election results.

In both Studies 2a and 2b, each set of dependent variables was also analyzed using multilevel modelling (Table 2). Both pain sensitivity and political orientation were between-participant and continuous. Political figures were within-participant and effects-coded: -1 (Joe Biden, Kamala Harris, Bernie Sanders, Elizabeth Warren, Nancy Pelosi, Steny Hoyer, Chuck

506   Schumer) vs. 1 (Donald Trump, Mike Pence, Mitch McConnell, Kevin McCarthy). Political

507   issues were also within-participant and all coded such that higher scores represented more

508   conservative views.

509

510   ***Results***

511   Study 2a found significant interaction effects of pain sensitivity × political orientation on

512   intended and actual voting preferences in the 2020 U.S. Presidential Election and on support for

513   all leading Republican/conservative and Democratic/liberal figures ($ps \leq 9.40e\text{-}7$; Table S9). As

514   in Studies 1a–1c, both pain sensitivity and political orientation were treated as continuous

515   variables in all statistical analyses, but for the purpose of visualizing the interaction effects

516   (Figure 5), we categorized participants into liberals (political orientation below scale midpoint)

517   and conservatives (political orientation above scale midpoint). Higher pain sensitivity predicted

518   higher intended voting preference for Trump over Biden among liberals ($\beta = 1.92$), but higher

519   intended voting preference for Biden over Trump among conservatives ($\beta = -0.53$). Likewise,

520   higher pain sensitivity (measured pre-election) predicted higher actual voting preference

521   (measured post-election) for Trump over Biden among liberals ($\beta = 0.98$), but higher actual

522   voting preference for Biden over Trump among conservatives ($\beta = -0.37$).

523   Higher pain sensitivity also predicted higher likelihood of voting for a conservative

524   candidate and greater support for Trump, Pence, McConnell and McCarthy among liberals (βs =

525   0.14–0.38) more than among conservatives (βs = -0.07–0.05). In contrast, higher pain sensitivity

526   predicted higher likelihood of voting for a liberal candidate and greater support for Biden, Harris,

527   Sanders, Warren, Pelosi, Hoyer, and Schumer among conservatives (βs = 0.20–0.39) more than

528   among liberals (βs = -0.09–0.03). These opposite patterns constituted a significant cross-level

529 interaction effect of pain sensitivity × political orientation × political figures (Republican vs.

530 Democratic) in multilevel modelling analyses ($p <$ 2e-16; Table 2).

531   In addition, we found a robust pattern of significant interaction effects of pain sensitivity

532 × political orientation on attitudes toward 23 of the 25 contentious political issues (ps ≤ .008;

533 Table S10), where response options were presented on a bipolar scale and scored or reverse-

534 scored such that higher scores always indicated conservative (as opposed to liberal) attitudes.

535 Higher pain sensitivity predicted conservative attitudes toward the political issues among liberals

536 more than among conservatives (Figure 6).

537   Study 2b (preregistered) replicated the interaction effects of pain sensitivity × political

538 orientation on all measures (ps ≤ .001; Tables 2 and S11–S12, Figures 7–8), reinforcing the

539 conclusion that individuals with higher pain sensitivity are more inclined to support political

540 views and show voting preferences typically exhibited by their ideological opponents.

541

542   **Figure 5**

543   *Interaction Effects of Pain Sensitivity × Political Orientation on Voting or Support for Political Figures in Study 2a*

544

545

546

547
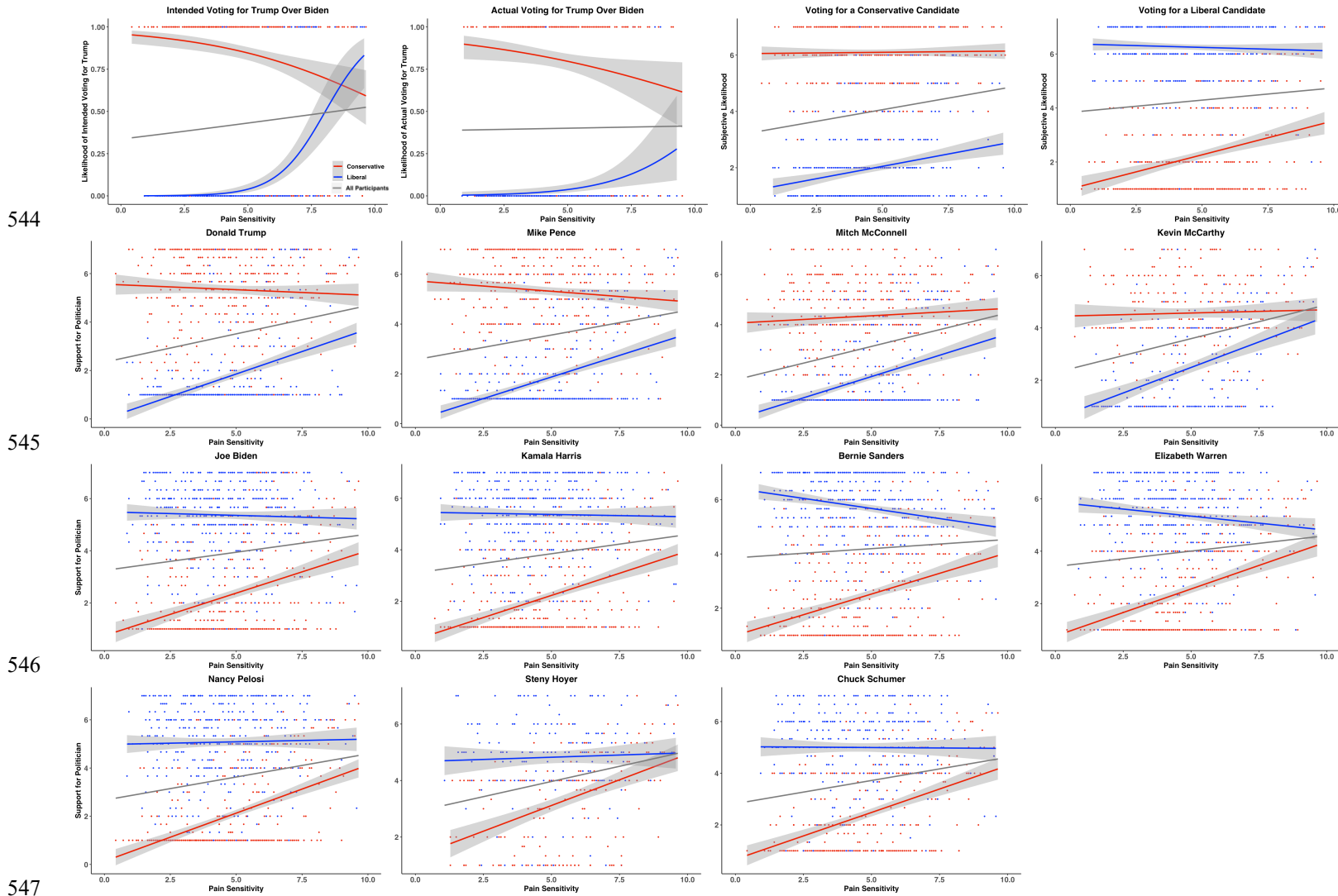
548   *Note*. 95% confidence intervals are shown around the lines for conservative participants (i.e., political orientation above scale

549   midpoint; $n = 434$) and liberal participants (i.e., political orientation below scale midpoint; $n = 455$). For ease of reference, an overall

550   line is shown for all participants who indicated any political orientation (i.e., regardless of whether it was above, below, or at scale

551   midpoint; $N = 1,005$). Statistical details are available in Table S9.

552 **Figure 6**

553 *Interaction Effects of Pain Sensitivity × Political Orientation on Support for Political Issues in Study 2a*

Note. 95% confidence intervals are shown around the lines for conservative participants (i.e., political orientation above scale midpoint; $n = 434$) and liberal participants (i.e., political orientation below scale midpoint; $n = 455$). For ease of reference, an overall line is shown for all participants who indicated any political orientation (i.e., regardless of whether it was above, below, or at scale midpoint; $N = 1,005$). Items are coded or recoded such that higher scores represent more conservative views. They are labelled accordingly in the figure here. Items are listed in descending order of magnitude of the interaction effect β. Statistical details are available in Table S10.

566 **Figure 7**

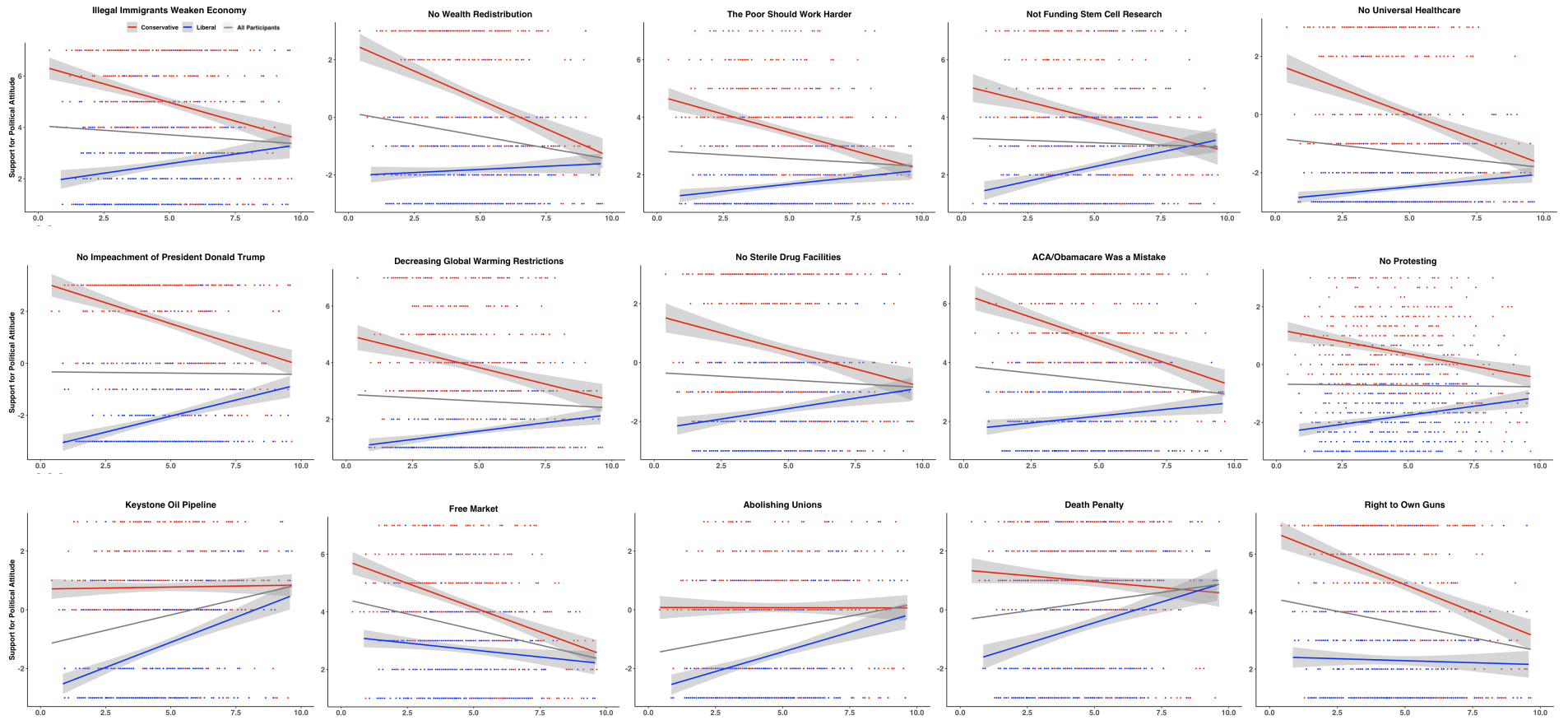567 *Preregistered Interaction Effects of Pain Sensitivity × Political Orientation on Voting or Support for Political Figures in Study 2b*
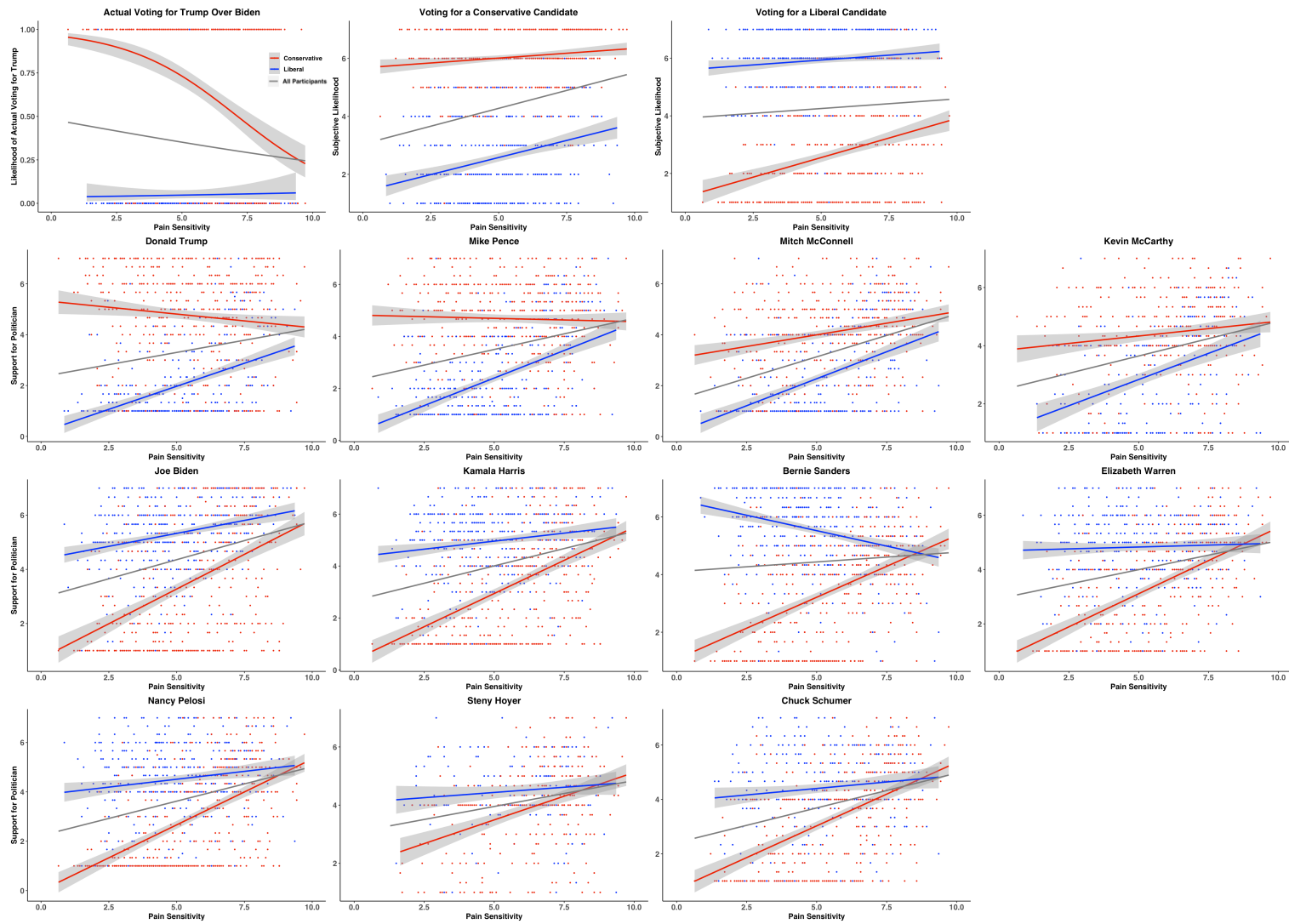
572   *Note*. 95% confidence intervals are shown around the lines for conservative participants (i.e., political orientation above scale

573   midpoint; $n = 453$) and liberal participants (i.e., political orientation below scale midpoint; $n = 424$). For ease of reference, an overall

574   line is shown for all participants who indicated any political orientation (i.e., regardless of whether it was above, below, or at scale

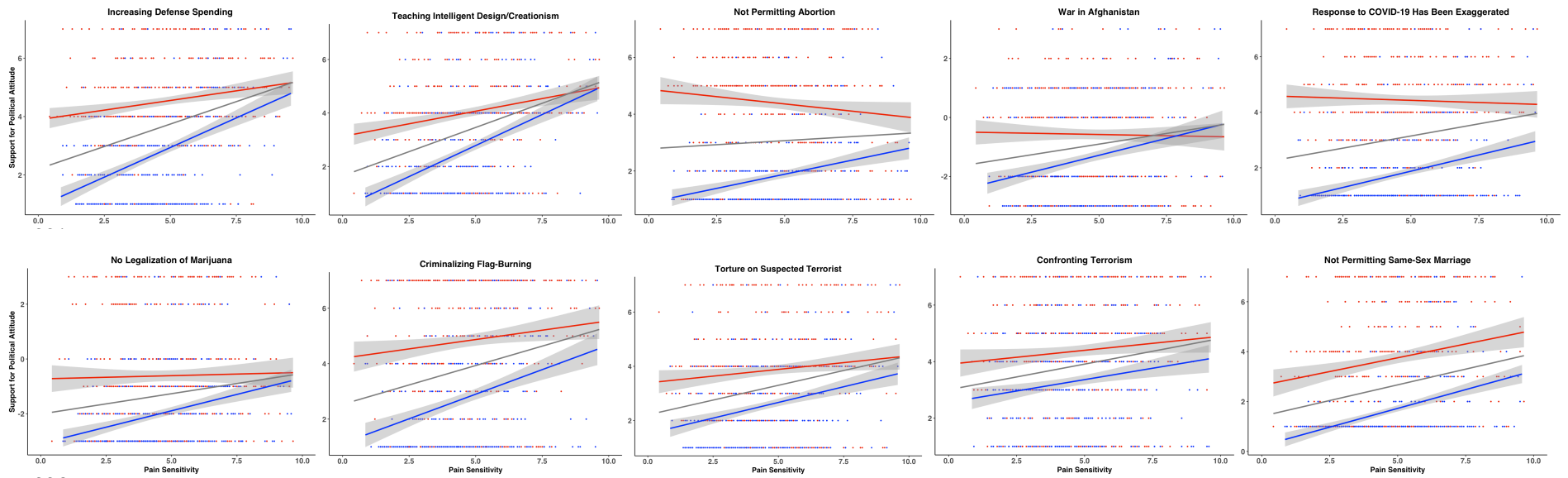575   midpoint; $N = 1,015$). Statistical details are available in Table S11.

576 **Figure 8**

577 *Preregistered Interaction Effects of Pain Sensitivity × Political Orientation on Support for Political Issues in Study 2b*
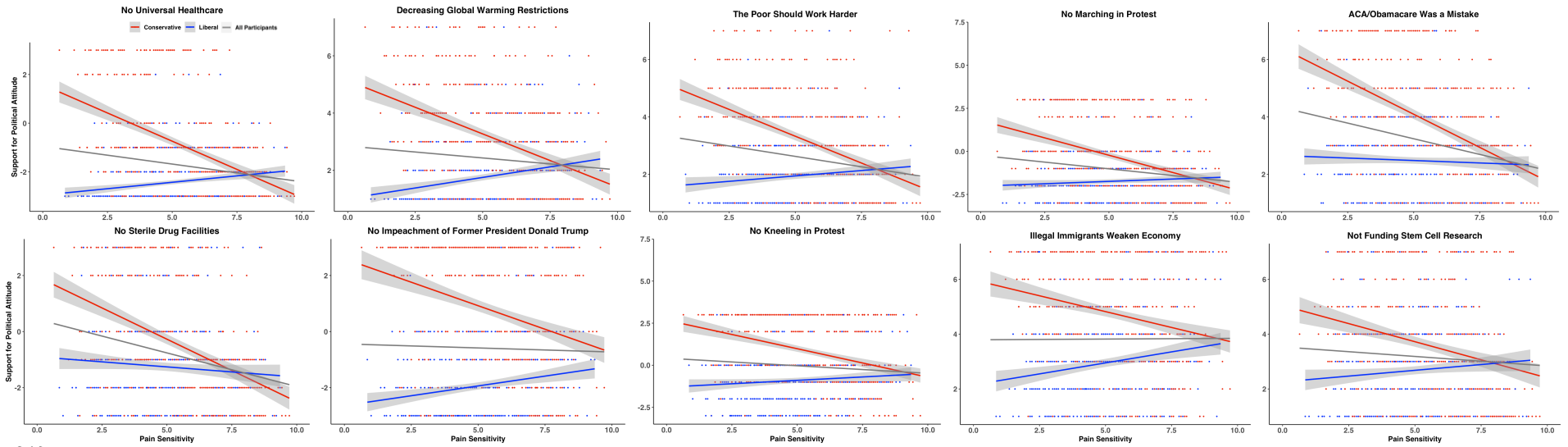
580 *Note*. 95% confidence intervals are shown around the lines for conservative participants (i.e., political orientation above scale

581 midpoint; *n* = 453) and liberal participants (i.e., political orientation below scale midpoint; *n* = 424). For ease of reference, an overall

582 line is shown for all participants who indicated any political orientation (i.e., regardless of whether it was above, below, or at scale

583 midpoint; *N* = 1,015). All items are coded and labelled in the figure such that higher scores represent more conservative views. Items

584 are listed in descending order of magnitude of the interaction effect *β*. Statistical details are available in Table S12.

Discussion

585

586   Exploratory and confirmatory evidence from Studies 2a–2b indicated that higher pain

587   sensitivity predicted stronger inclinations to support political views and show voting preferences

588   typically exhibited by one's ideological opponent. Specifically, among liberals, higher pain

589   sensitivity predicted higher likelihood of voting for Trump over Biden in the 2020 Presidential

590   Election, stronger support for leading Republican politicians, and more conservative attitudes

591   toward contentious political issues. Among conservatives, higher pain sensitivity predicted

592   higher likliehood of voting for Biden over Trump in the 2020 Presidential Election, stronger

593   support for leading Democratic politicians, and more liberal attitudes toward contentious

594   political issues. The cross-aisle effects of pain sensitivity on political views in Studies 2a–2b

595   echo the cross-aisle effects of pain sensitivity on moral views in Studies 1a–1c. Both sets of

596   results support hypothesis 3 (heightening other side).[iv]

597   It is important to be precise about what our cross-aisle effects did and did not show.

598   Consider first the patterns in Figures 6 and 8. They show that highly pain-sensitive liberals and

599   highly pain-sensitive conservatives hold more similar attitudes toward various contentious

600   political issues than less pain-sensitive liberals and less pain-sensitive conservatives do. These

601   graphs generally show interaction effects (pain sensitivity × political orientation) in the form of

602   attenuation, not crossover. The differences on the left end of the graph (i.e., low pain sensitivity)

603   are attenuated on the right end of the graph (i.e., high pain sensitivity). The same pattern is seen

604   in our results for attitudes toward political figures (Figures 5 and 7) and endorsement of moral

605   foundations (Figures 2–4). If these graphs had shown interaction effects in the form of crossover,

---

[iv] As higher pain sensitivity predicted stronger endorsement of various moral foundations in Studies 1a–1c and stronger support for political views typically exhibited by one's ideological opponent in Studies 2a–2b, our findings are consistent with the idea that stronger endorsement of various moral foundations is associated with more ideologically diverse views on different issues (Pyszczynski et al., 2018).

606   they would have suggested that highly pain-sensitive liberals not only supported conservative

607   moral and political views but also rejected liberal ones, and that highly pain-sensitive

608   conservatives not only supported liberal moral and political views but also rejected conservative

609   ones. This is not the case. Higher pain sensitivity heightens support for moral and political views

610   typically exhibited by the other side without undermining support for moral and political views

611   typically exhibited by one's side.

612   The same interpretation is applicable to the effects of pain sensitivity on dichotomous

613   voting preferences (first two panels of Figure 5). The patterns suggest that some of the highly

614   pain-sensitive liberals intended to vote for Trump and actually did, and some of the highly pain-

615   sensitive conservatives intended to vote for Biden and actually did. The key phrase is *some of*:

616   Some of the highly pain-sensitive liberals and conservatives showed voting preferences typically

617   exhibited by their ideological opponents. But it was not the case that the majority of highly pain-

618   sensitive liberals or conservatives showed this "flipped" voting preference. Our interpretation of

619   these findings is guided by our general assumption that human behavior is multiply determined.

620   Specifically, pain sensitivity is one of many determinants of political attitudes and behaviors.

621   Higher pain sensitivity, amidst other factors, predicts a stronger inclination to hold political

622   views typically exhibited by one's ideological opponent and, in the case of a dichotomous choice

623   (Biden vs. Trump), a higher probability of voting across the aisle.

624   All together, results from Studies 2a–2b support hypothesis 3 (heightening other side). As

625   in Studies 1a–1c, the cross-aisle effects of pain sensitivity on political views could not be

626   attributed to moderate ideology because throughout all of our studies, more pain-sensitive

627   liberals and conservatives did not place themselves closer to the midpoint of the ideological

628   spectrum (see **General Discussion** for details).

629

Testing the Process: Perception of Harm (Study 3, Preregistered)

630

The findings reported so far support the outcomes derived from hypothesis 3, but have

631

not examined the process per se. Study 3 (preregistered) directly tested the process model

632

(Figure 1b), wherein political orientation moderates the effect of pain sensitivity on harm

633

perception, which drives moral and political views.

634

635

Method

636

Procedure

637

Participants ($N = 1,658$) first rated their endorsement of moral foundations as in Studies

638

1a–1c, followed by their attitudes toward 10 contentious political issues as in Studies 2a–2b (five

639

issues with item-specific scale labels and five issues with items-general scale labels). Next,

640

participants completed measures of perceived harm. Specifically, they rated how much harm

641

they perceived in behavioral violations of each moral foundation and in attitudinal disagreements

642

with each moral foundation, using 32 items we modified from the Moral Foundations

643

Questionnaire (Graham et al., 2011). They also rated how much harm they perceived in the

644

liberal attitude and in the conservative attitude toward each contentious political issue, using 20

645

items we modified from the aforementioned measure of attitudes toward political issues; for each

646

issue, the difference score (perceived harm in the liberal attitude minus perceived harm in the

647

conservative attitude; $PH_{lib\text{-}con}$) served as the preregistered measure of interest. Finally,

648

participants completed the PSQ (Ruscheweyh et al., 2009, 2012; Sellers et al., 2013), attention

649

check, and demographic measures (including political orientation).

650

651

652   **Analyses**

653   All preregistered analyses are presented in Table 3 and summarized below.

654   (1) To test the interaction effect of pain sensitivity × political orientation on perceived

655   harm (i.e., the moderated first path of our conceptual model in Figure 1b), we ran three sets of

656   regression models (first column of results in Table 3). In each regression model, the predictors

657   were the interaction effect of pain sensitivity × political orientation and their main effects. The

658   outcome was (a) perceived harm in attitudinal disagreements with each moral foundation (rows

659   1-5 of results in Table 3), (b) perceived harm in behavioral violations of each moral foundation

660   (rows 6-10), or (c) perceived harm in the liberal attitude minus perceived harm in the

661   conservative attitude ($PH_{lib\text{-}con}$) toward each contentious political issue (rows 11-20).

662   (2) To test the effect of perceived harm on moral and political views (i.e., the second path

663   of our conceptual model in Figure 1b), we ran three sets of regression models (second column of

664   results in Table 3). In each regression model, the predictor was each kind of perceived harm as

665   described in the last paragraph. The outcome was (a) support for each moral foundation (rows 1-

666   5 of results in Table 3), (b) relevance of each moral foundation (rows 6-10), or (c) attitude

667   toward each contentious political issue (rows 11-20).

668   (3) To test for moderated mediation (i.e., the full conceptual model in Figure 1b), we

669   implemented three sets of structural equation models with 10,000 bootstraps using the `lavaan`

670   package v0.6-10(Rosseel et al., 2022) in `R` 4.1.3(R Core Team, 2022). Results are presented in

671   the last column of Table 3. (a) Support for each moral foundation was predicted by perceived

672   harm in attitudinal disagreements with the corresponding foundation, which in turn was

673   predicted by the interaction effect of pain sensitivity × political orientation and their main effects

674   (rows 1-5 of results in Table 3). (b) Relevance of each foundation was predicted by perceived

675 harm in behavioral violations of the corresponding foundation, which in turn was predicted by

676 the interaction effect of pain sensitivity × political orientation and their main effects (rows 6-10).

677 (c) Attitude toward each contentious political issue was predicted by $PH_{lib-con}$ toward the

678 corresponding issue, which in turn was predicted by the interaction effect of pain sensitivity ×

679 political orientation and their main effects (rows 11-20).

680

681 **Table 3**

682 *Preregistered Moderated Mediation Analyses in Study 3*

Support for Moral Foundation	Interaction Effect of Pain Sensitivity × Political Orientation on Perceived Harm in Attitudinal Disagreements with Moral Foundation			Effect of Perceived Harm in Attitudinal Disagreements with Moral Foundation on Support for Moral Foundation			Index of Moderated Mediation		
	β	SE	p	β	SE	p	β	SE	p
Care/Harm	-0.007	0.02	.778	0.399	0.02	< .001	-0.003	0.01	.782
Fairness/Cheating	0.072	0.02	.003	0.340	0.02	< .001	0.021	0.01	.010
Loyalty/Betrayal	-0.093	0.02	< .001	0.451	0.02	< .001	-0.027	0.01	.001
Authority/Subversion	-0.113	0.02	< .001	0.383	0.02	< .001	-0.031	0.01	< .001
Sanctity/Degradation	-0.117	0.02	< .001	0.469	0.02	< .001	-0.035	0.01	< .001
Relevance of Moral Foundation	**Interaction Effect of Pain Sensitivity × Political Orientation on Perceived Harm in Behavioral Violations of Moral Foundation**			**Effect of Perceived Harm in Behavioral Violations of Moral Foundation on Relevance of Moral Foundation**			**Index of Moderated Mediation**		
	β	SE	p	β	SE	p	β	SE	p
Care/Harm	0.117	0.02	< .001	0.464	0.02	< .001	0.057	0.01	< .001
Fairness/Cheating	0.139	0.02	< .001	0.440	0.02	< .001	0.063	0.01	< .001
Loyalty/Betrayal	-0.082	0.02	< .001	0.616	0.02	< .001	-0.048	0.01	< .001
Authority/Subversion	-0.050	0.02	.014	0.607	0.02	< .001	-0.028	0.01	.021
Sanctity/Degradation	-0.112	0.02	< .001	0.695	0.02	< .001	-0.078	0.01	< .001
Political Issue	**Interaction Effect of Pain Sensitivity × Political Orientation on $PH_{lib-con}$**			**Effect of $PH_{lib-con}$ on Attitude Toward Political Issue**			**Index of Moderated Mediation**		
	β	SE	p	β	SE	p	β	SE	p
Decreasing global warming restrictions	-0.324	0.02	< .001	0.585	0.02	< .001	-0.198	0.02	< .001
No universal healthcare	-0.287	0.02	< .001	0.689	0.02	< .001	-0.196	0.02	< .001
No impeachment of former president Donald Trump	-0.241	0.02	< .001	0.727	0.02	< .001	-0.176	0.02	< .001
Illegal immigrants weaken the U.S. economy	-0.272	0.02	< .001	0.570	0.02	< .001	-0.174	0.02	< .001
ACA/Obamacare was a mistake	-0.288	0.02	< .001	0.570	0.02	< .001	-0.167	0.02	< .001
The poor should work harder	-0.275	0.02	< .001	0.478	0.02	< .001	-0.149	0.01	< .001
No marching in protest	-0.220	0.02	< .001	0.606	0.02	< .001	-0.133	0.02	< .001
Not funding stem cell research	-0.196	0.02	< .001	0.639	0.02	< .001	-0.126	0.02	< .001
No sterile drug facilities	-0.181	0.02	< .001	0.671	0.02	< .001	-0.120	0.02	< .001
No kneeling in protest	-0.146	0.02	< .001	0.652	0.02	< .001	-0.097	0.02	< .001

683 *Note.* $PH_{lib-con}$ = perceived harm in the liberal attitude minus perceived harm in the conservative

684 attitude toward a contentious political issue. Attitudes toward all political issues were coded such

685 that higher scores represented more conservative views.

686

687   In addition to the above preregistered analyses, multilevel modelling analyses were

688   conducted. Both pain sensitivity and political orientation were between-participant and

689   continuous. Moral foundations were within-participant and effects-coded: -1 (care/harm,

690   fairness/cheating) vs. 1 (loyalty/betrayal, authority/subversion, sanctity/degradation). Political

691   issues were also within-participant and all coded such that higher scores represented more

692   conservative views.

693

694   ***Results***

695   The hypothesized moderated mediation was significant in 19 of the 20 preregistered

696   statistical models (9 on moral views, ps ≤ .02100; 10 on political views, ps ≤ 1.92e-8; last

697   column in Table 3). Starting with moral views (rows 1-10 in Table 3), higher pain sensitivity

698   predicted perceived harm in behavioral violations of and attitudinal disagreements with

699   loyalty/betrayal, authority/subversion, and sanctity/degradation more strongly among liberals

700   than among conservatives (pain sensitivity × political orientation interaction βs = -0.117–-0.050).

701   In contrast, higher pain sensitivity predicted perceived harm in behavioral violations of

702   care/harm and fairness/cheating and in attitudinal disagreements with fairness/cheating (but not

703   care/harm) more strongly among conservatives than among liberals (interaction βs = 0.072–

704   0.139). Greater perceived harm in behavioral violations of or attitudinal disagreements with each

705   moral foundation consistently predicted endorsement of the foundation (βs = 0.340–0.695).

706   Turning to political views (rows 11-20 in Table 3), across all 10 political issues, higher

707   pain sensitivity consistently predicted $PH_{lib\text{-}con}$ more strongly among liberals than conservatives

708   (interaction βs = -0.324–-0.146). Greater $PH_{lib\text{-}con}$ consistently predicted more conservative

709   attitudes toward the political issues (βs = 0.478–0.727).

710   To enhance understanding of the preregistered difference score ($PH_{lib\text{-}con}$) for each

711   political issue, we present its descriptive statistics and its correlation with political orientation in

712   Table S13. Higher $PH_{lib\text{-}con}$ for every issue was associated with more conservative political

713   orientation. We also conducted exploratory analyses that broke down $PH_{lib\text{-}con}$ into its two

714   components and analyzed them separately (Table 4). Specifically, perceived harm in the liberal

715   attitude toward each issue was regressed on the interaction effect of pain sensitivity × political

716   orientation and their main effects. Perceived harm in the conservative attitude toward each issue

717   was analyzed in the same way. For ease of comprehending the results, readers might think of

718   "perceived harm in the liberal attitude toward each issue" as a conservative tendency and

719   "perceived harm in the conservative attitude toward each issue" as a liberal tendency. Results

720   showed that higher pain sensitivity predicted greater perceived harm in the liberal attitude toward

721   every issue (i.e., conservative tendency) more strongly among liberals than among conservatives.

722   Likewise, higher pain sensitivity predicted greater perceived harm in the conservative attitude

723   toward every issue (i.e., liberal tendency) more strongly among conservatives than among

724   liberals. In short, both components of the preregistered difference score ($PH_{lib\text{-}con}$) showed the

725   cross-aisle effects of pain sensitivity.

726

727   **Table 4**

728   *Exploratory Analyses That Separately Examined the Interaction Effect of Pain Sensitivity ×*

729   *Political Orientation on Perceived Harm in the Liberal Attitude and on Perceived Harm in the*

730   *Conservative Attitude Toward Each Political Issue in Study 3*

Political Issue	Interaction Effect of Pain Sensitivity × Political Orientation on…					
	Perceived Harm in Liberal Attitude Toward Political Issue			Perceived Harm in Conservative Attitude Toward Political Issue		
	β	*SE*	*p*	*β*	*SE*	*p*
Decreasing global warming restrictions	-0.15	0.02	< .001	0.33	0.02	< .001
No universal healthcare	-0.17	0.02	< .001	0.29	0.02	< .001
No impeachment of Former President Donald Trump	-0.15	0.02	< .001	0.22	0.02	< .001
Illegal immigrants weaken the U.S. economy	-0.14	0.02	< .001	0.28	0.02	< .001
ACA/ Obamacare was a mistake	-0.17	0.02	< .001	0.26	0.02	< .001
The poor should work harder	-0.14	0.02	< .001	0.24	0.02	< .001
No marching in protest	-0.14	0.02	< .001	0.19	0.02	< .001
Not funding stem cell research	-0.10	0.02	< .001	0.20	0.02	< .001
No sterile drug facilities	-0.13	0.02	< .001	0.16	0.02	< .001
No kneeling in protest	-0.15	0.02	< .001	0.06	0.02	< .001

731

732   Overall, these results supported the moderated mediation process model (Figure 1b) in

733   hypothesis 3 (heightening other side). They further replicated the interaction effects of pain

734   sensitivity × political orientation on moral and political views found across Studies 1a–2b (see

735   multilevel modelling analyses in Table 2).

736

737   **Lay Intuitions about Pain Sensitivity (Study 4, Descriptive)**

738   Are the robustly observed interaction effects consistent with lay people's intuitions about

739   pain sensitivity? We addressed this question empirically in our final study, which sought to

740   describe lay intuitions about the effects of pain sensitivity and compare them with the actual

741   effects of pain sensitivity observed in Studies 1a–3.

742

743   *Method*

744   **Procedure**

745   Participants received introductory sample items from the PSQ (Ruscheweyh et al., 2009,

746   2012; Sellers et al., 2013) and were asked to imagine a [person] who responded to the PSQ items

747   with generally high ratings and thus had high sensitivity to physical pain. Participants were then

748   asked to rate their intuitions about a [person] with high sensitivity to physical pain (compared

749   with a [person] with low sensitivity to physical pain) on a number of measures, including the

750   [person]'s moral foundations, political orientation, voting preference, support for political

751   figures, and attitudes toward political issues. The text in the [person] placeholder was either

752   "person," "politically liberal person," or "politically conservative person." This manipulation

753   (with three between-participant conditions) allowed us to examine lay intuitions about the

754   interaction effects of pain sensitivity × political orientation in two ways (see **Analyses** below).

755

756   **Analyses**

757   To probe whether participants' intuitions would reflect the interaction effects of pain

758   sensitivity × political orientation observed in Studies 1a–3, we used two methods. Both methods

759   found the same pattern of results.

760   In method 1, participants were asked to think of a pain-sensitive person and compare this

761   target with a less pain-sensitive person, both of whom were specified as either politically liberal

762   or politically conservative (two between-participant conditions). In method 2, a separate group of

763   participants was asked to think of a pain-sensitive person and compare this target with a less

764   pain-sensitive person, and political orientation was not mentioned at all. We measured

765   participants' inferred political orientation of the pain-sensitive person.

766   Regardless of whether the hypothetical pain-sensitive person was specified as liberal or

767   conservative (method 1; Figure 9), or inferred as liberal or conservative (method 2; Figure S1),

768   all lay intuitions regarding the hypothetical pain-sensitive person (expected support for political

769   figures, expected voting preference, expected attitudes toward political issues, expected moral

770   foundations) were tested against the scale midpoint using one-sample t-tests (for all continuous

771   measures) or against equal frequency distribution using a chi-square test (for the one categorical

772   measure: expected voting preference between Trump and Biden). Effect sizes were converted to

773   the metric of *r* for data visualization.

774

775   ***Results***

776   Lay intuitions about pain sensitivity turned out to be mostly wrong, often in diametric

777   opposition to the actual effects of pain sensitivity. Specifically, participants expected that a more

778   pain-sensitive target (relative to a less pain-sensitive target) would be more supportive of

779   political figures and attitudes typically supported by the target's ideological allies, but more

780   opposed to political figures and attitudes typically supported by the target's ideological

781   opponents. These lay intuitions were found regardless of whether the target was specified

782   (method 1) as liberal (Figure 9a) or conservative (Figure 9b). They were also found regardless of

783   whether the target was inferred (method 2) as liberal (Figure S1a) or conservative (Figure S1b).

784   Yet these lay intuitions are exactly opposite to the actual effects of pain sensitivity.

785   Likewise, participants expected that a more pain-sensitive target (relative to a less pain-

786   sensitive target) would much more strongly endorse moral foundations typically endorsed by the

787   target's ideological allies, but either oppose or less strongly endorse moral foundations typically

788   endorsed by the target's ideological opponents. Contrary to these lay intuitions, higher pain

789   sensitivity actually predicted stronger endorsement of moral foundations typically endorsed by

790   one's ideological opponents more than those typically endorsed by one's ideological allies.

791

792   **Figure 9**

793   *Actual Effects of Pain Sensitivity in Studies 1a–3 versus Lay Intuitions About Pain Sensitivity*

794   *When the Target's Political Orientation Was Specified in Study 4*

795 **a**

Liberal participants in Studies 1-3 and participants in the "target's political orientation specified as liberal" condition in Study 4
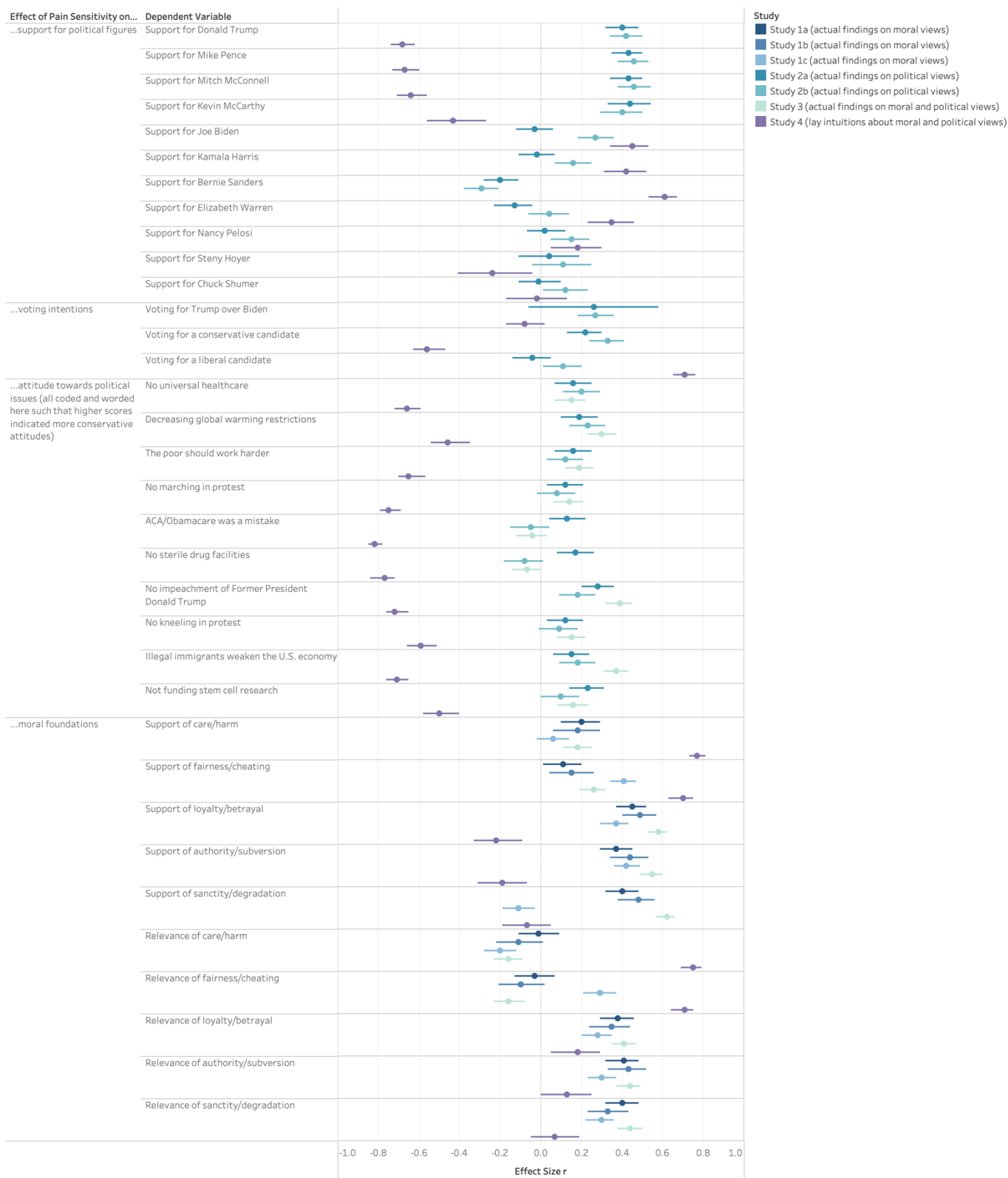
796

797 **b**

Conservative participants in Studies 1-3 and participants in the "target's political orientation specified as conservative" condition in Study 4

798

Effect of Pain Sensitivity on...	Dependent Variable
...support for political figures	Support for Donald Trump
	Support for Mike Pence
	Support for Mitch McConnell
	Support for Kevin McCarthy
	Support for Joe Biden
	Support for Kamala Harris
	Support for Bernie Sanders
	Support for Elizabeth Warren
	Support for Nancy Pelosi
	Support for Steny Hoyer
	Support for Chuck Shumer
...voting intentions	Voting for Trump over Biden
	Voting for a conservative candidate
	Voting for a liberal candidate
...attitude towards political issues (all coded and worded here such that higher scores indicated more conservative attitudes)	No universal healthcare
	Decreasing global warming restrictions
	The poor should work harder
	No marching in protest
	ACA/Obamacare was a mistake
	No sterile drug facilities
	No impeachment of Former President Donald Trump
	No kneeling in protest
	Illegal immigrants weaken the U.S. economy
	Not funding stem cell research
...moral foundations	Support of care/harm
	Support of fairness/cheating
	Support of loyalty/betrayal
	Support of authority/subversion
	Support of sanctity/degradation
	Relevance of care/harm
	Relevance of fairness/cheating
	Relevance of loyalty/betrayal
	Relevance of authority/subversion
	Relevance of sanctity/degradation

Study
- Study 1a (actual findings on moral views)
- Study 1b (actual findings on moral views)
- Study 1c (actual findings on moral views)
- Study 2a (actual findings on political views)
- Study 2b (actual findings on political views)
- Study 3 (actual findings on moral and political views)
- Study 4 (lay intuitions about moral and political views)

Effect Size r

799   *Note*. (**a**) Actual effects of pain sensitivity among liberal participants in Studies 1a, 1b, 1c, 2a,

800   2b, and 3 (ns = 406, 287, 583, 455, 424, and 717) versus lay intuitions about pain sensitivity for a

801   target specified as liberal in Study 4 (n = 240). (**b**) Actual effects of pain sensitivity among

802   conservative participants in Studies 1a, 1b, 1c, 2a, 2b, and 3 (ns = 404, 288, 554, 434, 456, and

803   705) versus lay intuitions about pain sensitivity for a target specified as conservative in Study 4

804   (n = 237). To facilitate comparison, all actual effects and lay intuitions were converted to the

805   same metric of effect size, r. Error bars represent 95% confidence intervals.

806

General Discussion

A series of exploratory and preregistered confirmatory studies (total $N = 7,360$) provides both theory-building and theory-testing evidence that individuals with higher sensitivity to physical pain are more inclined to support moral and political views typically exhibited by their ideological opponents (Studies 1a–3). Specifically, more (vs. less) pain-sensitive liberal Americans show greater endorsement of moral foundations typically endorsed by conservatives (loyalty to ingroup, respect for authority, sanctity of oneself; Studies 1a–1c), even after controlling for a variety of variables that are known to predict moral foundations (e.g., disgust sensitivity, emotion reactivity, empathy). More pain-sensitive liberals also show higher likelihood of voting for Trump over Biden in the 2020 Presidential Election, stronger support for leading Republican politicians, and more conservative attitudes toward contentious political issues (Studies 2a–2b). In contrast, more (vs. less) pain-sensitive conservatives show greater endorsement of moral foundations typically endorsed by liberals (caring for the vulnerable and equality for all; Studies 1a–1c), higher likelihood of voting for Biden over Trump, stronger support for leading Democratic politicians, and more liberal attitudes toward contentious political issues (Studies 2a–2b). These cross-aisle effects of pain sensitivity are driven by heightened perception of harm (Study 3) such that more pain-sensitive individuals perceive greater harm in behaviors or issues where their political orientation does not typically lead them to perceive harm (Figure 1d). Overall, the interaction effects of pain sensitivity $\times$ political orientation are highly consistent across a wide variety of measures and analyses, often large in effect size, and robustly supported in well-powered and preregistered studies and replications.

The cross-aisle effects of pain sensitivity on moral and political views are distinct from the effects of other intrapersonal variables of basic sensitivity. Those tend to show main effects,

830   not interaction effects. For example, higher disgust sensitivity (Inbar et al., 2009; Petersen et al.,

831   2020; Pizarro et al., 2011), higher gustatory sensitivity (Ruisch et al., 2020), and lower

832   interoceptive sensitivity (Ruisch et al., 2022) all predict more conservative moral and political

833   views. Unlike these main effects, higher pain sensitivity predicts more conservative moral and

834   political views among liberals, but more liberal moral and political views among conservatives.

835   The interaction effects of pain sensitivity × political orientation are not only distinct from the

836   main effects of other variables, but also contrary to lay intuitions (Study 4). Lay people wrongly

837   expect pain sensitivity to predict moral and political views typically favored by one's ideological

838   allies. In reality, it predicts views typically favored by one's ideological opponents. The fact that

839   lay people mispredict the effects of pain sensitivity also implies that the observed effects of pain

840   sensitivity in Studies 1a–3 are unlikely to have resulted from demand characteristics.

841   Our findings across studies highlight the counterintuitive role of pain sensitivity, as a

842   low-level attribute, in higher-order moral and political views. The relevance of pain sensitivity to

843   morality and politics has received little attention in prior theorizing and research. Our theoretical

844   approach is, to our knowledge, the first that integrates insights from multiple previously

845   unconnected perspectives, which are individually insufficient and jointly necessary for deriving

846   our predictions. Without prior work on the social properties of pain (DeWall et al., 2010;

847   Eisenberger et al., 2003; Goubert et al., 2005; Keysers et al., 2010; Kross et al., 2011; Lamm et

848   al., 2011; Langford et al., 2006; Lidhar et al., 2021; Lieberman & Eisenberger, 2015; Loggia et

849   al., 2008; MacDonald & Leary, 2005; Singer et al., 2004; Smith et al., 2016), it would be unclear

850   why higher sensitivity to physical pain should predict heightened perception of harm. Without

851   prior work on harm perception as an intuitive template underlying moral judgment (Gray et al.,

852   2012, 2022; Schein & Gray, 2018), it would be unclear why heightened perception of harm

853   should predict stronger moral views. Without prior work on the different moral foundations of

854   liberals and conservatives (Graham et al., 2009, 2013), it would be unclear why political

855   orientation should be a moderator of the effects of pain sensitivity. Without prior work on the

856   basic principle of multiple determinants in higher mental processes (Bless et al., 2003), it would

857   be unclear how exactly political orientation should moderate the effect of pain sensitivity. These

858   perspectives, each by itself, would not predict our results. We integrate them into a coherent

859   model. We demonstrate the utility of this model in generating novel predictions. And we find

860   robust evidence supporting these predictions.

861   Note that our integrative model highlights the mediating role of harm perception (Gray et

862   al., 2012, 2022; Schein & Gray, 2018) in the predictive effects of pain sensitivity on people's

863   moral views. An alternative prediction could have been derived from a hypothetical model that

864   ignores the notion of harm perception and simply focuses on the unique content of each moral

865   foundation (Graham et al., 2009, 2013). Among the five established moral foundations, the only

866   one that has an obvious link to pain is the care/harm foundation, which taps into our "ability to

867   feel (and dislike) the pain of others" and "underlies virtues of kindness, gentleness, and

868   nurturance" (Ditto et al., 2019). At this surface level, the care/harm foundation might have been

869   expected as the only moral foundation with a direct association with pain sensitivity. But it turns

870   out that pain sensitivity is associated with all moral foundations—and it is not a straightforward

871   main effect. Among liberals, pain sensitivity predicts endorsement of "conservative moral

872   foundations" more strongly than endorsement of "liberal moral foundations" (to which care/harm

873   belongs); among conservatives, pain sensitivity predicts endorsement of "liberal moral

874   foundations" more strongly than endorsement of "conservative moral foundations." These

875   interaction effects of pain sensitivity × political orientation are incompatible with the simplistic

876   hypothetical model, but compatible with our integrative model, which specifies that higher pain

877   sensitivity predicts heightened perception of harm in moral issues where one's political

878   orientation does not typically lead one to perceive harm, a pattern that is aligned with the general

879   principle of multiple determinants in higher mental processes (Bless et al., 2003).

880   As people's moral views are closely linked to their political views (Graham et al., 2013;

881   Schein & Gray, 2018), our model also predicts the same conceptual pattern of interaction effects

882   (pain sensitivity × political orientation) on political views. We find remarkably consistent results

883   across all measures of political interest. Higher pain sensitivity predicts higher likelihood of

884   voting for the presidential candidate typically favored by one's ideological opponent (i.e.,

885   liberals voting for Trump; conservatives voting for Biden), regardless of whether voting

886   preference was measured before the election (i.e., whom participants intended to vote for) or

887   after the election (i.e., whom participants had actually voted for). Higher pain sensitivity predicts

888   stronger support for leading political figures typically favored by one's ideological opponent

889   (i.e., liberals supporting Trump, Pence, McConnell, McCarthy; conservatives supporting Biden,

890   Harris, Pelosi, Schumer, etc.). Higher pain sensitivity predicts attitudes that are typically favored

891   by one's ideological opponent toward contentious political issues. In short, higher pain

892   sensitivity predicts "cross-aisle" political views, be they measured as a dichotomous choice

893   (voting for either Trump or Biden), on a unipolar continuum (support for a leading Republican,

894   support for a leading Democrat), or on a bipolar continuum (more conservative or more liberal

895   attitude toward a political issue).

896   As we consistently find that more pain-sensitive individuals are more inclined to support

897   moral and political views typically exhibited by their ideological opponents, one may wonder:

898   are more pain-sensitive individuals simply more ideologically moderate? That is, do the cross-

899   aisle effects of pain sensitivity on moral and political views emerge because more pain-sensitive

900   liberals and conservatives are closer to the ideological midpoint? Not according to participants'

901   ideological self-placement (Table S14). Across studies, among liberals, higher pain sensitivity

902   was not associated with rating oneself as less liberal; among conservatives, higher pain

903   sensitivity was generally associated with rating oneself as slightly more conservative, never less.

904   That is, while pain sensitivity consistently predicted cross-aisle moral and political views, it did

905   not predict moderate ideological self-placement. Furthermore, we conducted additional analyses

906   to explore the potential role of moderate (or extreme) ideological self-placement in our primary

907   phenomenon of interest. Across Studies 1a–3, we created a new variable, ideological extremity,

908   by recoding political orientation (*1 = Liberal, 5 = Centrist, 9 = Conservative*) in terms of

909   difference from the midpoint (such that 1, 2, 3, 4, 5, 6, 7, 8, 9 became 4, 3, 2, 1, 0, 1, 2, 3, 4).

910   Even after controlling for ideological extremity, 141 of the 142 significant interaction effects of

911   pain sensitivity × political orientation found in Studies 1a–3 remained significant (Table S15).

912   These supplementary results suggest that the cross-aisle effects of pain sensitivity are not

913   reducible to moderate (or extreme) ideological self-placement. Instead, they are driven by

914   heightened perception of harm in behaviors or issues where one's political orientation does not

915   typically lead one to perceive harm, as specified in our theoretical model.

916   　　　One may also wonder if the cross-aisle effects of pain sensitivity are attributable to

917   methodological artifacts such as multicollinearity or response set. They are not (see **Potential**

918   **Artifacts** below). These consistent cross-aisle effects, together with our integrative model, open

919   up uncharted territory for considerable theoretical and empirical work (see **Future Directions**

920   afterwards).

921

Potential Artifacts

Multicollinearity. Given our primary interest in the interaction effects of pain sensitivity × political orientation, Studies 1a–3 involved regressing the outcomes on the interaction effect of pain sensitivity × political orientation and their main effects. In regression analyses, substantial correlations among predictors would constitute the problem of multicollinearity, which would (a) destabilize the predictors' partial coefficients and (b) inflate their standard errors, resulting in wider confidence intervals and higher Type II error rates (Cohen et al., 2013). To probe the possibility of multicollinearity, we used the `ols_vif_tol`, `ols_eigen_cindex`, and `ols_coll_diag` functions of the `olsrr` package v0.5.3 (Hebbali, 2020) in R 4.1.3(R Core Team, 2022) to run collinearity diagnostics across studies. Variance inflation factor (VIF), tolerance (i.e., the reciprocal of VIF), and condition index (i.e., the square root of the ratio of the largest eigenvalue among all orthogonal dimensions extracted from principal components analysis to the eigenvalue of a particular orthogonal dimension) suggested minimal multicollinearity (Table S16) and thus no collinearity concern in our regression analyses (Cohen et al., 2013; Thompson et al., 2017).

Response Set. Considering the robust interaction effects of pain sensitivity × political orientation observed across Studies 1a–3, a potential concern could be response set, the notion that some participants might have simply completed all measures with higher ratings, other participants with lower ratings, regardless of the measures' content, resulting in spurious effects. Three observations argue against this concern. First, a number of items were reverse-worded (and thus reverse-scored in analysis), yet the measures showed reliabilities resembling those in prior research (Table S17), indicating that participants were likely responding to the measures' content. Second, additional analyses (Table S18) showed that ignoring reverse-wording and

945   reverse-scoring (which should not be ignored) would result in no coherent pattern of effects

946   (which would have been found as a result of response set). Third, response set would not be able

947   to account for the fact that pain sensitivity predicted the same participants' responses to some

948   measures differently than their responses to other measures (e.g., pain sensitivity predicted

949   liberal participants' endorsement of loyalty/betrayal, authority/subversion, and

950   sanctity/degradation differently than their endorsement of care/harm and fairness/cheating;

951   Figures 2–4, Tables 1–2 and S1–S5). These observations suggest that the robust interaction

952   effects of pain sensitivity × political orientation were unlikely to be a mere consequence of

953   response set.

954

Future Directions

956   **Pain Sensitivity and Political Orientation.** We found robust interaction effects between

957   pain sensitivity and political orientation. Both variables involve a number of nuances that

958   deserve future investigation.

959   Starting with political orientation, as noted in **General Methodological Information**

960   **Across Studies**, it was treated as a continuous variable throughout our statistical analyses. As

961   such, it captured variations across the ideological spectrum, from highly liberal to moderately

962   liberal to moderately conservative to highly conservative. But more fine-grained aspects of

963   political orientation may be examined. For example, social/cultural and economic/fiscal aspects

964   of ideology, while overlapping with each other, have proven dissociable (Azevedo et al., 2019;

965   Johnston & Ollerenshaw, 2020). They may interact with pain sensitivity in different ways or to

966   different degrees. Also, the extremity of one's ideology is not the same as the strength or

967   centrality of one's political identity (Huddy, 2001), especially in the American bipartisan context

968   (Huddy et al., 2015). Whether these related but distinct variables show the same patterns of

969   interaction with pain sensitivity remains to be explored.

970   Turning to pain sensitivity, the Pain Sensitivity Questionnaire we used came with the

971   advantage that it had been validated multiple times in prior psychophysical studies (Ruscheweyh

972   et al., 2009, 2012; Sellers et al., 2013) as a reliable measure that predicts subjective intensity of

973   pain experience across a variety of sensory modalities (heat pain, cold pain, pressure pain, and

974   pinprick pain) that are common in daily life situations and thus relatable to participants. Our

975   psychophysical validation study further supports and extends the validity of the PSQ by showing

976   that higher PSQ scores predicted overall higher subjective pain intensity, steeper increases in

977   subjective pain intensity with increases in objective pressure amount, and lower pain tolerance.

978   In spite of this range of validity evidence, one disadvantage of the PSQ is that its wording

979   focuses on subjective *intensity* of pain experience, which is only one psychophysical parameter

980   of pain sensitivity.

981   Other parameters exist, such as awareness, tolerance, threshold, and just noticeable

982   difference. These parameters are distinct from each other. Subjective intensity refers to the

983   subjective experience of pain intensity when a person receives a specified objective level of pain-

984   inducing physical stimulation (e.g., 490 Kpa pressure, 80ºC temperature, 10 mA electric shock).

985   Awareness is the frequency with which a person is aware of and attentive to their experience of

986   pain in naturalistic settings. Tolerance is the maximum level of pain-inducing physical

987   stimulation a person can tolerate. Threshold is the minimum level of physical stimulation at

988   which a person starts experiencing pain. Just noticeable difference is the smallest difference

989   between two levels of pain-inducing physical stimulation at which a person can detect a

990   difference consistently and accurately 50% of the time. Which of these specific parameters of the

991   broad construct of pain sensitivity are most robustly linked to individual variations in moral and

992   political views? Answering this question will require further, laborious psychophysical

993   assessment and, according to our power analyses based on effect sizes of the interaction effects

994   of pain sensitivity × political orientation, probably fairly large sample sizes ($N \sim 1,000$).

995   Additional psychophysical assessments of pain sensitivity will also serve the

996   methodological function of either corroborating or challenging the present findings based on

997   self-report measurement of pain sensitivity. The utility of self-report measurement of

998   psychological factors underlying political attitudes has been a subject of debate due to several

999   concerns. First, for some low-level constructs (e.g., interoceptive sensitivity), people may be

1000   unable to provide accurate self-assessment (Ruisch et al., 2022). Second, even if people are able

1001   to provide accurate self-assessment, they may be unwilling to provide truthful responses to

1002   measures of certain psychological constructs underlying political attitudes (e.g., cognitive

1003   rigidity and intolerance of ambiguity underlying right-wing attitudes) due to social desirability

1004   and related motivations (Taber & Young, 2013); indeed, self-report measures and behavioral

1005   measures of these constructs do not always show the same pattern of associations with political

1006   attitudes (Van Hiel et al., 2016). Third, political attitudes often need to be measured via self-

1007   report (by asking people what they think about certain topics), and when the psychological

1008   factors of interest are also measured via self-report, common method variance may inflate the

1009   magnitude of association between the two (Brannick et al., 2010; Podsakoff et al., 2003).

1010   It is useful to be aware of these general concerns, but it is also important to contextualize

1011   them in specific studies to gauge the likelihood that they pose validity threats. Our stance is that

1012   in the present context of pain sensitivity measurement, the first concern does not pose substantial

1013   validity threats, the second concern is unlikely though cannot be ruled out, and the third concern

1014   is most complex and worth addressing. More broadly, we also believe that adding

1015   psychophysical assessment of pain sensitivity will be a useful direction for future research.

1016   Regarding the first concern, as noted earlier, the PSQ has been validated multiple times in

1017   prior studies (hence our choice of it) and in our own validation study such that people are able to

1018   provide self-report assessment of their subjective intensity of pain in ways that reliably map onto

1019   psychophysical assessment of their pain experience in situ. Such mapping may be more reliable

1020   in the case of pain sensitivity than in the case of interoceptive sensitivity because pain is a more

1021   specific notion and is easily understandable to lay people whereas interoception is a broader,

1022   more nebulous notion and is less readily comprehensible to lay people.

1023   The validation of reliable mapping between self-report and psychophysical measures also

1024   partly relieves the second concern, namely, social desirability. Social desirability is most likely

1025   to shape responses to topics that carry clear social-evaluative implications (e.g., being "rigid" or

1026   "intolerant"). In the case of the PSQ, participants were asked to read statements about relatable

1027   experiences in daily life (e.g., "You burn your tongue on a very hot drink," "You trap your finger

1028   in a drawer") and rate how painful they imagined the experience to feel. Rating oneself as feeling

1029   more or less pain in these situations does not seem to bear any obvious relation to social

1030   evaluation. And these ratings do map onto objective psychophysical measures. Nevertheless, the

1031   extent to which responses to the PSQ are susceptible to social desirability is ultimately an

1032   empirical question.

1033   Regarding the third and last concern, common method variance might be at work but was

1034   unlikely to be the sole driver of the present findings for several reasons (Brannick et al., 2010;

1035   Podsakoff et al., 2003): (a) Self-report pain sensitivity predicted the same participants' responses

1036   to some self-report measures differently than their responses to other self-report measures (e.g.,

1037 pain sensitivity predicted liberal participants' endorsement of loyalty/betrayal,

1038 authority/subversion, and sanctity/degradation differently than their endorsement of care/harm

1039 and fairness/cheating; Figures 2–4, Tables 1–2 and S1–S5). (b) Other psychological factors

1040 (beyond pain sensitivity) that were also measured via self-report did not show the same patterns

1041 of association with self-report measures of moral views (Tables 1, S3, and S5). (c) A number of

1042 near-zero correlations exist among other self-report measures in our studies (e.g., between

1043 anxiety and moral foundations; Table S19). (d) More broadly, experts on common method

1044 variance have pointed out that "we should not take as default mode the position that self-report

1045 data are inherently full of serious problems of method variance that automatically lead to

1046 fallacious inferences" (Brannick et al., 2010, p. 417). In fact, "self-report is sometimes the

1047 preferred method of measurement" (p. 418). Still, we cannot eliminate the possibility that

1048 common method variance might have inflated the magnitude of the associations we observed.

1049 Psychophysical assessment of pain sensitivity will address this concern (though it will introduce

1050 a different and less widely appreciated concern, namely, method variance due to the use of

1051 different methods; Brannick et al., 2010). It will also provide useful data for triangulating the

1052 present findings.

1053 **Mediation by Harm Perception.** We found that the interaction effects of pain sensitivity

1054 × political orientation on moral and political views were mediated by harm perception (Study 3).

1055 Although the evidence bearing on the mediation was robust across the variety of moral and

1056 political views we examined, it was correlational in nature, which involves limitations and

1057 invites further investigation on two fronts. First, methodologically, experimental work that

1058 manipulates the mediating variable (Jacoby & Sassenberg, 2011; Spencer et al., 2005) or that

1059 manipulates the independent variable in ways that encourage changes in the putative mediating

1060   variable (Bullock & Green, 2021; West & Aiken, 1997) would provide corroborative evidence.

1061   Second, a substantive concern might be that the mediating variable was conceptually too close to

1062   the dependent variable. Recall that the dependent variable was support for certain moral views,

1063   perceived relevance of certain behaviors to morality, or attitude toward certain contentious

1064   political issues. The mediating variable was perceived harm in opposition to those moral views,

1065   perceived harm in those behaviors or their opposites, or the difference between perceived harm

1066   in the liberal attitude and perceived harm in the conservative attitude toward those political

1067   issues. The concern about conceptual proximity between the mediating and dependent variables

1068   might be alleviated by the recognition that perceived harm is only one of the elements—not the

1069   sole determinant—of judgments in moral (Schein & Gray, 2018) and political realms (Kubin et

1070   al., 2021). Other elements such as social norm and identity matter as well. In other words, one's

1071   moral and political views are not identical or reducible to one's perception of harm in

1072   disagreement with those views. This suggests that evidence for the mediating role of perceived

1073   harm should not be trivialized.

1074   There is a catch though. The concept of harm has exhibited expanded meanings and uses

1075   over time, a historical pattern known as "concept creep" (Haslam, 2016). Against this semantic

1076   backdrop, it is plausible that when lay people rate how much harm they perceive, at least some of

1077   them interpret the concept of harm loosely and rely on the same intuitive understanding that

1078   forms the basis of their moral and political views. If true, it would constitute a case of content

1079   overlap between the mediating and dependent variables and thus undermine the theoretical value

1080   of the mediational evidence, regardless of whether the mediation is based on measurement (as

1081   we did) or manipulation (as we suggested above). Future research may address this issue by

1082   carefully probing what participants actually think of when they provide these ratings and by

1083   triangulating it with manipulations of harm perception that clearly establish the meaning of harm

1084   to avoid problems of ambiguous interpretation and concept overuse within the experimental

1085   context. In so doing, fine distinctions may be made about where exactly the perceived harm is

1086   directed. For example, perceivers may focus on how harmful a target person's view on a

1087   particular issue is (as we measured in Study 3) or on how harmful a policy is (which we did not

1088   measure).[v] The former is more likely to tap into perception of the target person's character; the

1089   latter is more likely to tap into perception of the policy's consequences. These different

1090   perceptions may or may not show the same effects. Identifying such differences will clarify

1091   which kinds of harm are salient on participants' minds and driving the effects of pain sensitivity.

1092   The link from pain sensitivity to harm perception may also be further unpacked. Recall

1093   that our argument for this link is rooted in neuroscientific, physiological, behavioral, and

1094   linguistic evidence for two social properties of pain: overlap between sensing physical and social

1095   pain (DeWall et al., 2010; Eisenberger et al., 2003; Kross et al., 2011; Lieberman & Eisenberger,

1096   2015; MacDonald & Leary, 2005) and overlap between experiencing pain oneself and perceiving

1097   pain in one's conspecifics (Goubert et al., 2005; Keysers et al., 2010; Lamm et al., 2011;

1098   Langford et al., 2006; Lidhar et al., 2021; Loggia et al., 2008; Singer et al., 2004; Smith et al.,

1099   2016). Based on these social properties of pain, we proposed that individuals with higher

1100   sensitivity to their own physical pain may be more sensitive not only to their own social pain, but

1101   also to others' physical and social pain (e.g., others' distress, social ills, harms being committed),

1102   hence their heightened perception of harm. Does social pain sensitivity fully mediate the effect

1103   of physical pain sensitivity on harm perception? Or do physical pain sensitivity and social pain

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[v] We thank a reviewer for suggesting this distinction.

1104　sensitivity actually exert differential influences (because, despite their overlap, they are still

1105　different constructs; for related evidence, see Riva et al., 2016)?

1106　　　　More broadly, what other mediators may contribute to pain-sensitive individuals'

1107　heightened perception of harm in violations of moral and political views that their ideological

1108　opponents typically care about? For instance, is reactivity to negative events, which is linked to

1109　higher sensitivity to sensory processing (Van Reyn et al., 2022), one of those mediators?

1110　Furthermore, is heightened perception of harm associated with other psychological correlates

1111　such as greater attitude importance and stronger moral conviction? If so, do these correlates

1112　further mediate or crowd out the mediating role of harm perception? Teasing apart the unique

1113　contributions of physical pain sensitivity, social pain sensitivity, and other potential mediators

1114　will be important next steps.

1115　　　　One may even argue that harm perception is a downstream consequence, not a mediator,

1116　of the effects of pain sensitivity. In other words, it may be that pain sensitivity predicts cross-

1117　aisle moral and political views for reasons unrelated to perception of harm in the issues at hand.

1118　For example, building on the premise that physical pain sensitivity is associated with social pain

1119　sensitivity, individuals with higher physical and social pain sensitivity may be more worried

1120　about upsetting others and thus be more inclined to adopt others' perspectives and be "fence-

1121　sitters" in their moral and political views.[vi] Those views, in turn, may motivate the perception of

1122　greater harm in contradictory views through a process of motivated reasoning and post hoc

1123　justification of one's views (Haidt, 2001; Kunda, 1990). It is even possible that harm perception

1124　is both a mediator and a downstream consequence: Pain sensitivity predicts heightened harm

1125　perception, which shapes moral and political views as we have found, and once those views are

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[vi] We thank a reviewer for suggesting and inspiring these ideas.

1126   formed, they motivate post hoc justification and further identification of harm in contradictory

1127   views. This feedback loop seems highly plausible to us, especially considering the strong

1128   correlations between moral/political views and perceived harm in contradictory views. Our

1129   cross-sectional data fall short of being able to diagnose the feedback loop. We are excited to see

1130   future evidence for or against it, using experimental or longitudinal designs or both.

1131   **Generalizability and Applicability.** Beyond integrating theoretical insights and

1132   generating new predictions, our model (Figure 1d) and findings also open up new research

1133   questions along the lines of generalizability and applicability. In terms of generalizability, recall

1134   that we collected data from American adults of diverse demographic backgrounds and spanning

1135   the ideological spectrum, from very liberal to very conservative, in order to test the interaction

1136   effects of pain sensitivity × political orientation. Although the samples' age and gender

1137   distributions were fairly representative of the American population, they were limited to one

1138   nation. And the studies were conducted at various time points between May 2019 and October

1139   2021—a highly polarized era in the U.S. Do the cross-aisle effects of pain sensitivity generalize

1140   to other time periods and other populations, especially those in calmer political climates?

1141   Applicability of our findings to various contexts also deserves empirical attention. For

1142   example, in interpersonal communicative contexts, several strategies have been found effective

1143   for facilitating cross-aisle persuasion and interaction, such as framing liberal policies around

1144   moral themes that conservatives care about and vice versa (Feinberg & Willer, 2019), correcting

1145   overestimation of how negative one's political opponents feel toward one's political allies (Lees

1146   & Cikara, 2019; Ruggeri et al., 2021), discussing personal experience rather than arguing about

1147   facts with one's political opponents (Kubin et al., 2021), prompting the belief in the utility of

1148   cross-partisan empathy (Santos et al., 2022), and using language that de-moralizes people's

1149 attitudes and thus increases their willingness to compromise (Kodapanakkal et al., 2022). May

1150 these communicative strategies be more effective among more pain-sensitive individuals but less

1151 effective among less pain-sensitive individuals? In light of the robust associations of pain

1152 sensitivity with explicitly measured moral and political views, does pain sensitivity also predict

1153 implicit attitudes and nonverbal behaviors toward ideological opponents?

1154   Experimentally, does temporary induction of physical pain (e.g., electric shock, extreme

1155 temperature, sharp pressure) produce similar effects (for suggestive evidence, see Xiao et al.,

1156 2015)? Does temporary reduction of physical pain (e.g., through the provision of social support;

1157 Brown et al., 2003) or temporary inhibition of physiological pathways of pain sensitivity (e.g.,

1158 by taking acetaminophen; DeWall et al., 2010) produce opposite effects? Extrapolating our

1159 findings to clinical contexts, do interventions that reduce patients' chronic pain (Driscoll et al.,

1160 2021) produce unintended effects on their social views? Do clinical conditions associated with

1161 lower pain sensitivity, such as depression, which is associated with higher pain tolerance in

1162 certain pain modalities (Bär et al., 2005; Dickens et al., 2003), also predict social views? To

1163 pursue these future directions, we encourage behavioral, pharmacological, clinical, and

1164 neuroscientific research to start disentangling how the affective (Eisenberger et al., 2003;

1165 Lieberman & Eisenberger, 2015; Singer et al., 2004) and sensory (Kross et al., 2011; Loggia et

1166 al., 2008) components of physical pain may differentially contribute to its role in morality and

1167 politics.

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1470

1   **Pain Sensitivity Predicts Support for Moral and Political Views Across the Aisle**

2

3   **SUPPLEMENTAL MATERIAL**

4

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5

6 **SUPPLEMENTAL METHODS AND RESULTS**

7

8 **Psychophysical Validation of Pain Sensitivity Measure**

9 ***Method***

10   All data, analysis code, and research materials are available at

11 https://osf.io/mgcef/?view_only=ed0786335fdc41a39ea4b7a1c9c2e444. The study had received

12 institutional ethics approval and was executed in compliance with relevant ethical guidelines and

13 APA ethical standards, including adherence to the legal requirements of the study country.

14

15 **Participants**

16   Undergraduate students at a large university in North America were recruited to complete

17 a lab study for course credits. Our data collection targeted a sample size of at least 200

18 participants with useable data. It proceeded from the beginning to the end of an academic term.

19 In total, 263 participants (M_{age} = 19.15, SD_{age} = 1.96) completed the study, provided reconsent (7

20 others did not), and passed the attention check (10 others did not) and problematic response

21 patterns check. Most participants indicated their gender as "female" (n = 153) or "male" (n =

22 108), and 2 indicated "other" (n = 2).

23

24 **Equipment, Procedure, and Measures**

25   Pain was induced using a pressure algometer (Model FDX 50, Wager Instruments,

26 Greenwich, CT; http://www.wagnerinstruments.com/products/force-gages/digital-force-

27 gages/force-ten-fdx). Prior work has shown that pressure algometers provide high levels of

28 reliability and validity in force application and pressure-pain assessment (Kinser et al., 2009).

29   We used the algometer to apply pressure on fingers, a body region chosen for ease of access and

30   in accordance with established experimental procedures (Brennum et al., 1989). We oriented the

31   algometer in such a way that participants could place their finger in a comfortable position but

32   could not see the screen displaying the objective pressure amount (Figure S2).

33   Data collection took place one participant at a time. Upon arrival at the lab and after

34   providing consent, the participant was reminded that they could terminate their participation at

35   any point. The first part of the study assessed pain threshold and pain tolerance. Experimenter 1

36   asked the participant to position the index finger of their non-dominant hand such that the

37   midpoint of the middle phalanx (between the first and second knuckles) was right underneath the

38   rubber-tipped load shaft of the algometer.

39   To assess pain threshold, the participant was told that Experimenter 1 would apply

40   pressure to their finger and was asked to inform Experimenter 1 when they started feeling pain

41   (not when they started feeling touch). Experimenter 1 asked the participant to look away from

42   their finger and then started tightening the screw slowly and continuously to increase the

43   pressure exerted by the algometer. When the participant reported starting to feel pain,

44   Experimenter 2 wrote down the objective pressure amount displayed on the algometer.

45   Next, to assess pain tolerance, the participant was told that Experimenter 1 would

46   increase the pressure applied to their finger and was asked to inform Experimenter 1 when they

47   reached the maximum amount of pain they could tolerate. Experimenter 1 started tightening the

48   screw slowly and continuously to increase the amount of pressure exerted by the algometer.

49   When the participant reported feeling the maximum amount of pain they could tolerate,

50   Experimenter 2 wrote down the objective pressure amount displayed on the algometer.

51   Experimenter 1 loosened the screw all the way for the participant to remove their index finger

52   from the algometer. This concluded the first part of the study.

53   The second part of the study assessed changes in subjective intensity of pain experience

54   in response to increases in objective amount of physical pressure. After reminding the participant

55   that they could withdraw from the study at any time, Experimenter 1 told them that increasing

56   pressure would be applied to the middle finger (as opposed to the index finger in the first part of

57   the study) of their non-dominant hand and that with each pressure increment, they would

58   verbally rate their pain intensity on a scale of 0 to 100, with 0 being no pain at all and 100 being

59   the maximum amount of pain.

60   Experimenter 1 asked the participant to position the middle finger of their non-dominant

61   hand such that the midpoint of the middle phalanx (between the first and second knuckles) was

62   right underneath the rubber-tipped load shaft of the algometer. Experimenter 1 began by

63   tightening the screw to reach the objective pressure amount at which the participant started

64   feeling pain in the first part of the study. Experimenter 1 asked the participant to rate their pain

65   intensity. Experimenter 2 wrote down the subjective pain intensity rated by the participant and

66   the objective pressure amount displayed on the algometer.

67   Experimenter 1 tightened the screw of the algometer to increase its exerted pressure by

68   ~10 ozf and asked the participant to rate their pain intensity. Experimenter 2 wrote down the

69   subjective pain intensity and the objective pressure amount. This cycle was repeated until one of

70   the following criteria was met: (1) the objective pressure amount reached 500 ozf, (2) the

71   participant rated their pain intensity at 100, or (3) the participant opted to withdraw from the

72   study. Criterion 1 was met for 3 participants, criterion 2 for 229 participants, and criterion 3 for

73   31 participants. Afterwards, Experimenter 1 loosened the screw all the way for the participant to

74   remove their middle finger from the algometer. This concluded the second part of the study.

75   Recall that throughout the psychophysical assessment, the algometer was always oriented

76   in such a way that the participant could not see the screen displaying the objective pressure

77   amount (Figure S2). The participant was never informed of the objective pressure amount in any

78   part of the study. That means the participant was only aware of their subjective experience,

79   including the experience of starting to feel pain, the experience of feeling the maximum amount

80   of pain they could tolerate, and the experience of feeling higher intensities of pain with pressure

81   increments. All participants had these subjective experiences without knowing the corresponding

82   objective pressure amounts.

83   After the psychophysical assessment, Experimenter 2 escorted the participant to a

84   different room and asked them to complete an online survey that included the Pain Sensitivity

85   Questionnaire (Ruscheweyh et al., 2009, 2012; Sellers et al., 2013), attention check,

86   demographic measures, debriefing, and reconsent. The PSQ included 14 items (plus three fillers)

87   that measured the extent to which the participant found an imagined situation painful (e.g., "You

88   grazed your knee falling off your bicycle") on a 11-point scale (*0 = not at all painful, 10 = most*

89   *severe pain imaginable*). All situations pertained to physical pain. Scores were averaged across

90   the 14 items (Cronbach's α = .90) to create a composite index for analysis.

91

92   **Analyses**

93   Simple linear regression was used to test whether higher PSQ scores would predict lower

94   pain tolerance and lower pain threshold assessed in the first part of the study. Multilevel

95   modelling was used to test whether higher PSQ scores would predict overall higher subjective

96 pain intensity assessed in the second part of the study. It was also used to test whether higher

97 PSQ scores would predict a stronger positive effect of objective pressure amount on subjective

98 pain intensity. Analytic details of multilevel modelling are specified below.

99   Because objective pressure amount was nested within participants, we used 2-level

100 multilevel models. We ran four models that operationalized objective pressure amount in

101 different ways. In model 1, objective pressure amount was simply standardized across all trials.

102 Subjective pain intensity was thus modelled as a function of PSQ score (level 2; standardized),

103 objective pressure amount (level 1; grand standardized), and the interaction between them (cross-

104 level). Because the predictors were standardized, each coefficient would estimate the effect of

105 increasing the predictor's value by one standard deviation. To facilitate interpretation, we also

106 ran model 2, which was identical to model 1 except that the predictors were mean-centered

107 (rather than standardized) such that each coefficient would estimate the effect of increasing the

108 predictor's value by one raw scale unit (1 ozf for objective pressure amount; 1 point on an 11-

109 point scale for PSQ score).

110   In model 3, we disentangled the distinct influence of both within-participant and

111 between-participant effects of objective pressure amount, which would allow us to examine

112 whether PSQ score separately interacted with the within-participant and between-participant

113 effects of objective pressure amount (Enders & Tofighi, 2007). To determine the within-

114 participant effect of objective pressure amount (i.e., as it increased from trial to trial) on

115 subjective pain intensity, objective pressure amount was standardized within-participant (level

116 1). To determine the between-participant effect of objective pressure amount (i.e., as it was

117 higher overall for some participants) on subjective pain intensity, participant-level mean

118 objective pressure amount was standardized between-participant (level 2). Together, subjective

119   pain intensity was modelled as a function of PSQ score (level 2; standardized), objective

120   pressure amount (level 1; standardized within-participant), objective pressure amount (level 2;

121   standardized between-participant), the interaction between PSQ score and objective pressure

122   amount standardized within-participant (cross-level), and the interaction between PSQ score and

123   objective pressure amount standardized between-participant (level 2). Again, because the

124   predictors were standardized, each coefficient would estimate the effect of increasing the

125   predictor's value by one standard deviation. To facilitate interpretation, we also ran model 4,

126   which was identical to model 3 except that the predictors were mean-centered (rather than

127   standardized) such that each coefficient would estimate the effect of increasing the predictor's

128   value by one raw scale unit.

129   Each model was fit by REML with an unstructured covariance matrix and Satterthwaite

130   degrees of freedom using the lmer function in the lme4 package v1.1-28 (Bates et al., 2022)

131   and the lmerTest package v.3.1-3 (Kuznetsova et al., 2020) in R 4.1.3 (R Core Team, 2022).

132   Given the cross-level interaction term, we modelled a random slope for the level 1 predictor

133   (objective pressure amount) in addition to a random intercept (Aguinis et al., 2013). Across

134   models, the intraclass correlation coefficient suggested that subjective pain intensity was mildly

135   clustered within participants ($ICC = .128$), with 12.8% of the total variance in subjective pain

136   intensity attributable to between-participant variation and 87.2% attributable to within-

137   participant variation. Substantial between-participant variations were found both in overall

138   subjective pain intensity (i.e., random intercept, with its 95% confidence interval excluding zero)

139   and in the within-participant association between objective pressure amount and subjective pain

140   intensity (i.e., random slope of objective pressure amount predicting subjective pain intensity,

141   with its 95% confidence interval excluding zero).

142

143   ***Results***

144   The four multilevel models found conceptually similar results. Key results are

145   summarized below. Full results are presented in Table S20.

146   Model 1 found that higher PSQ scores predicted overall higher subjective pain intensity

147   (main effect $\beta = 15.472$, $SE = 3.516$, $t(230.841) = 4.401$, $p = 1.65e\text{-}5$, $R^2 = .077$). Unsurprisingly,

148   higher objective pressure amount predicted higher subjective pain intensity (main effect $\beta =$

149   65.344, $SE = 1.929$, $t(215.616) = 33.875$, $p < 2e\text{-}16$, $R^2 = .842$). This predictive effect (of

150   objective pressure amount on subjective pain intensity) was amplified by higher PSQ scores

151   (cross-level interaction $\beta = 4.822$, $SE = 1.936$, $t(215.279) = 2.490$, $p = .0135$, $R^2 = .028$), as

152   depicted in Figure S3a. Model 2 found the same pattern of results (Figure S3b), only with

153   different coefficient estimates (as the predictors were mean-centered rather than standardized).

154   As in models 1–2, model 3 found that higher PSQ scores predicted overall higher

155   subjective pain intensity (main effect $\beta = 3.012$, $SE = 0.874$, $t(253.266) = 3.446$, $p = 6.65e\text{-}4$, R^2

156    $= .045$). Within-participant trial-to-trial increases in objective pressure amount predicted higher

157   subjective pain intensity (main effect $\beta = 68.736$, $SE = 2.053$, $t(207.874) = 33.448$, $p < 2e\text{-}16$, R^2

158    $= .843$). This predictive effect (of within-participant trial-to-trial increases in objective pressure

159   amount on subjective pain intensity) was amplified by higher PSQ scores (cross-level interaction

160    $\beta = 5.314$, $SE = 2.060$, $t(208.234) = 2.580$, $p = 1.05e\text{-}4$, $R^2 = .031$), as shown in Figure S3c.

161   Between-participant variations in overall objective pressure amount did not predict subjective

162   pain intensity (main effect $\beta = 1.290$, $SE = 0.883$, $t(257.507) = 1.461$, $p = .145$, $R^2 = .008$). This

163   non-significant predictive effect (of between-participant variations in overall objective pressure

164   amount on subjective pain intensity) was also not affected by PSQ scores (level 2 interaction $\beta =$

165 -0.148, $SE = 0.811$, $t(254.206) = -0.182$, $p = .856$, $R^2 = 0$). Model 4 found the same pattern of

166 results (Figure S3d), only with different coefficient estimates (as the predictors were mean-

167 centered rather than standardized).

168   In short, multilevel modelling analyses found that higher PSQ scores predicted overall

169 higher subjective pain intensity and steeper increases in subjective pain intensity as a result of

170 within-participant trial-to-trial increases in objective pressure amount. In addition, simple linear

171 regression found that higher PSQ scores predicted lower pain tolerance ($\beta = -0.165$, $SE = 0.063$,

172 $t(252) = -2.640$, $p = .0088$, $R^2 = .0269$). Similar to prior findings (Ruscheweyh et al., 2009),

173 higher PSQ scores did not significantly predict lower pain threshold despite the marginal trend (β

174 $= -0.108$, $SE = 0.062$, $t(260) = -1.747$, $p = .0818$, $R^2 = .0116$).

175

176   **Pain Sensitivity Predicts Moral Views (Studies 1a–1c)**

177   *Method*

178 **Studies 1a (Exploratory) and 1b (Direct Replication)**

179 *Participants*

180   **Study 1a.** Adults in the U.S. were recruited on May 13, 2019 through Amazon

181 Mechanical Turk to complete a multi-part exploratory survey. Our data collection targeted a

182 sample size of roughly 1,000 participants with useable data. In total, 950 participants ($M_{age} =$

183 36.05, $SD_{age} = 10.81$) completed the survey and provided reconsent (248 others did not) and

184 passed the attention check (8 others did not) and problematic response patterns check (123 others

185 did not). Most participants indicated their gender as "woman" ($n = 440$) or "man" ($n = 500$), and

186 only 10 indicated "something else" ($n = 2$), "prefer not to say" ($n = 3$), or skipped this question

187 ($n = 5$). For all analyses involving gender as a variable, we reported results based on women and

188 men only; including the other 10 participants would not change any of the conclusions. In terms

189 of political orientation (M = 4.87, SD = 2.64), 405 participants were left of center (M = 2.27, SD

190 = 1.11), 404 right of center (M = 7.45, SD = 1.10), 115 at center, and 26 skipped this question.

191 **Study 1b.** Adults in the U.S. were recruited on October 6–7, 2020 through Prolific. Our

192 data collection targeted an initial sample size of roughly 500 participants with useable data, after

193 which we would examine the distribution of liberals and conservatives and balance them out by

194 continuing recruitment of participants on the less-represented side of the ideological spectrum. In

195 total, 686 participants (M_{age} = 34.20, SD_{age} = 12.82) completed the survey and provided

196 reconsent (46 others did not) and passed the attention check (15 others did not) and problematic

197 response patterns check (38 others did not). Most participants indicated their gender as "woman"

198 (n = 366) or "man" (n = 309), and only 11 indicated "something else" (n = 1), "prefer not to say"

199 (n = 8), or skipped this question (n = 2). For all analyses involving gender as a variable, we

200 reported results based on women and men only; including the other 11 participants would not

201 change any of the conclusions. In terms of political orientation (M = 4.87, SD = 2.68), 287

202 participants were left of center (M = 2.18, SD = 1.06), 288 right of center (M = 7.50, SD = 1.06),

203 84 at center, and 27 skipped this question.

204

205 ***Measures***

206 **Moral Foundations Questionnaire.** The MFQ (Graham et al., 2011) included 15 items

207 that measured the extent to which participants considered something relevant to their judgments

208 of right and wrong (e.g., "Whether or not someone acted unfairly") on a 6-point scale (*0 = not at*

209 *all relevant, 5 = extremely relevant*) and 15 items that measured the extent to which participants

210 supported a moral belief or attitude (e.g., "Compassion for those who are suffering is the most

211   crucial virtue") on a 6-point scale (*0 = strongly disagree, 5 = strongly agree*). Two additional

212   filler items were included as in the original MFQ. Each of the 30 items tapped into participants'

213   endorsement of one of the five moral foundations (care/harm, fairness/cheating, loyalty/betrayal,

214   authority/subversion, and sanctity/degradation). For each moral foundation, a *relevance* score

215   was operationalized as the average score across the three "relevant" items, and a *support* score

216   was operationalized as the average score across the three "support" items.

217   **Pain Sensitivity Questionnaire.** As described in the ***Method*** section of the

218   psychophysical validation study, the PSQ (Ruscheweyh et al., 2009, 2012; Sellers et al., 2013)

219   included 14 items (plus three fillers) that measured the extent to which participants found an

220   imagined situation painful (e.g., "You grazed your knee falling off your bicycle") on a 11-point

221   scale (*0 = not at all painful, 10 = most severe pain imaginable*). All situations pertained to

222   physical pain. Pain sensitivity was operationalized as the average score across all 14 items.

223   **Disgust Scale.** The DS (Haidt et al., 1994) was chosen because the original

224   demonstration of the link between disgust sensitivity and political conservatism (Inbar et al.,

225   2009) used the same scale (shortened version in their study 1, full version in their study 2). The

226   DS used in our Study 1a included 16 items that measured how participants felt about a

227   potentially disgust-eliciting situation (e.g., "It bothers me to hear someone clear a throat full of

228   mucus") on a 2-point scale (*agree, disagree*) and 15 items that measured the extent to which

229   participants found a situation disgusting (e.g., "You see a bowel movement left unflushed in a

230   public bathroom") on a 3-point scale (*not disgusting, slightly disgusting, disgusting*). One item

231   from the original DS was missing in Study 1a due to a clerical error but included in Study 1b,

232   where the scale labels were also revised (first part of the scale: *true, false*; second part of the

233   scale: *not disgusting at all, slightly disgusting, very disgusting*). Disgust sensitivity was

234   operationalized by coding the first part of the scale (0 = no disgust reaction, 1 = disgust reaction)

235   and the second part of the scale (0 = no disgust reaction, 0.5 = slight disgust reaction, 1 = disgust

236   reaction) on the same scale range, then averaging scores across all but four items that were pre-

237   determined for exclusion due to their relevance to sexual morality ("I think it is immoral for

238   someone to seek sexual pleasure from animals"; "I think homosexual activities are immoral";

239   "As part of a sex education class, you are required to inflate a new lubricated condom, using

240   your mouth"; "You hear about a 30-year-old man who seeks sexual relationships with 80-year-

241   old women"). Including these four items that tapped into moral disgust would have artifactually

242   inflated the associative effects of physical disgust sensitivity with moral foundations.

243   **Emotion Reactivity Scale.** 21 items (Nock et al., 2008) measured the extent to which

244   participants considered their emotional reactions to be sensitive, intense, and persistent in general

245   (e.g., "I tend to get very emotional very easily") on a 4-point scale (*not at all like me, somewhat*

246   *unlike me, somewhat like me, completely like me*). Emotion reactivity was operationalized as the

247   average score across all items.

248   **State-Trait Anxiety Inventory.** 20 items (Spielberger, 2012) measured state anxiety

249   (e.g., "I feel nervous") on a 4-point scale (*not at all, somewhat, moderately so, very much so*) and

250   19 items measured trait anxiety (e.g., "I worry too much over something that really doesn't

251   matter") on a 4-point scale (*almost never, sometimes, often, almost always*). One original trait

252   item was missing due to a clerical error in Study 1a but included in Study 1b. Scores across all

253   items were averaged to form the overall index of anxiety.

254   **Trait Anger Scale.** 15 items (Spielberger et al., 1983) measured the frequency with

255   which participants felt angry (e.g., "It makes me furious when I am criticized in front of others")

256   on a 4-point scale (*almost never, sometimes, often, almost always*). Scores across all items were

257   averaged to form the overall index of anger.

258   **Questionnaire of Cognitive and Affective Empathy.** 31 items (Reniers et al., 2011)

259   measured the frequency and ease with which participants experienced cognitive (e.g., "I can

260   easily work out what another person might want to talk about") and affective empathy (e.g., "I

261   am happy when I am with a cheerful group and sad when the others are glum") on a 6-point scale

262   (from *strongly disagree* to *strongly agree*). Scores across all items were averaged to form the

263   overall index of empathy.

264

265   **Study 1c (Preregistered Conceptual Replication)**

266   *Participants*

267   Adults in the U.S. were recruited on January 6–12, 2021 through Prolific. Our data

268   collection followed the preregistered plan, which determined the required sample size by a priori

269   power analysis (target N of useable data = 1,131 based on alpha = 0.05, power = 0.80, partial r^2 =

270   0.006926 = the smallest effect size in Study 1a among those of interest within budgetary

271   constraints, namely, the interaction effect of pain sensitivity × political orientation on the

272   relevance of loyalty/betrayal) and an expected attrition rate of 10% (target N of recruitment =

273   1,131 / 90% = 1,257). We also followed the preregistered sampling strategy (adapted from prior

274   research; Camerer et al., 2018), examined the distribution of liberals and conservatives after

275   initial data collection, and balanced them out by continuing recruitment of participants on the

276   less-represented side of the ideological spectrum. In total, 1,313 participants (M_{age} = 36.37, SD_{age}

277   = 14.24) completed the survey and provided reconsent (61 others did not) and passed the

278   preregistered attention check (27 others did not) and preregistered problematic response patterns

279   check (10 others did not). Most participants indicated their gender as "woman" (n = 669) or

280   "man" (*n* = 598), and only 16 indicated "prefer not to say" (*n* = 14) or skipped this question (*n* =

281   2). For all analyses involving gender as a variable, we reported results based on women and men

282   only; including the other 16 participants would not change any of the conclusions. In terms of

283   political orientation (*M* = 4.77, *SD* = 2.80), 583 participants were left of center (*M* = 2.09, *SD* =

284   1.10), 554 right of center (*M* = 7.54, *SD* = 1.11), 123 at center, and 53 skipped this question.

285

286   ***Measures***

287   Study 1c included the same Moral Foundations Questionnaire (Graham et al., 2011) and

288   PSQ (Ruscheweyh et al., 2009, 2012; Sellers et al., 2013) as in Studies 1a and 1b, but a

289   psychometrically improved version of the Disgust Scale.

290   **Disgust Scale – Revised.** Studies 1a–1b used the original Disgust Scale, as in the original

291   demonstration of the link between disgust sensitivity and political conservatism (Inbar et al.,

292   2009). Subsequent psychometric research (van Overveld et al., 2011) recommended the use of

293   the "Disgust Scale - Revised" (Olatunji et al., 2007), which we used in Study 1c to ensure

294   robustness of results. The DS-R included many of the same items from the original DS but used

295   different response scales. Specifically, it included 14 items that measured how participants felt

296   about a potentially disgust-eliciting situation (e.g., "It bothers me to hear someone clear a throat

297   full of mucus") on a 5-point scale [*0 = strongly disagree (very untrue about me), 2 = neither*

298   *agree nor disagree, 4 = strongly agree (very true about me)*] and 13 items that measured the

299   extent to which participants found a situation disgusting (e.g., "You see maggots on a piece of

300   meat in an outdoor garbage pail") on a 5-point scale (*0 = not disgusting at all, 4 = extremely*

301   *disgusting*). Disgust sensitivity was operationalized as the average score across all items, except

302   one that was pre-determined for exclusion due to its relevance to sexual morality ("As part of a

303 sex education class, you are required to inflate a new unlubricated condom, using your mouth")

304 and two filler items ("I would rather eat a piece of fruit than a piece of paper"; "You see a person

305 eating an apple with a knife and fork").

306

307 *Analyses*

308   In addition to the analyses reported in the article, zero-order correlations are available in

309 Table S21.

310

311 **Pain Sensitivity Predicts Political Views (Studies 2a–2b)**

312 *Method*

313 **Study 2a (Exploratory): Pre-Election Primary Data Collection**

314 *Participants*

315   Adults in the U.S. were recruited on October 10–15, 2020 through Prolific. Our data

316 collection targeted a sample size of roughly 1,000 participants with useable data, with the

317 distribution of liberals and conservatives balanced out by continuing recruitment of participants

318 on the less-represented side of the ideological spectrum. In total, 1,007 participants (M_{age} =

319 40.28, SD_{age} = 15.53) completed the survey and provided reconsent (26 others did not) and

320 passed the attention check (19 others did not) and problematic response patterns check (14 others

321 did not). 3 other participants were excluded for repeated completion of the study. Most

322 participants indicated their gender as "woman" (n = 484) or "man" (n = 507), and only 16

323 indicated "prefer not to say" (n = 11) or skipped this question (n = 5). Political orientation was

324 measured the same way as in Studies 1a–1c. We also asked participants, "What is your political

325 affiliation?" with the response options "Democrat," "Republican," "Independent," and "Other

326   (Please Specify): ___.” In terms of political orientation (M = 4.79, SD = 2.72), 455 participants

327   were left of center (M = 2.15, SD = 1.11), 434 right of center (M = 7.50, SD = 1.10), 116 at

328   center, and 2 skipped this question. In terms of political affiliation, 389 indicated Democrat, 356

329   Republican, 222 independent, 39 other, and 1 skipped this question.

330

331   *Measures*

332   **Attitudes Toward Political Issues with Item-Specific Scale Labels.** For 15 issues

333   (adapted from prior research; Day et al., 2014; Feinberg & Willer, 2015; Koleva et al., 2012;

334   Qian & Yahara, 2020), participants were asked to “Please select the attitude that comes closest to

335   your views on ___” (e.g., abortion, illegal immigrants). Responses were made on a 7-point scale,

336   with item-specific scale labels, some of which showed typically conservative attitudes on the

337   higher end and others showed typically liberal attitudes on the higher end (Table S22). The latter

338   category of items was reverse-scored such that higher scores would always indicate more

339   conservative attitudes.

340   **Attitudes Toward Political Issues with Items-General Scale Labels.** For 10 issues

341   (adapted from prior research; Christie et al., 2019; Feinberg & Willer, 2015; Franks & Scherr,

342   2019; Frimer et al., 2017; Monroe et al., 2020), participants were asked to “Please rate the extent

343   to which you support or oppose each of the following” on a 7-point scale (*-3* = *strongly oppose*,

344   *3* = *strongly support*) (Table S22). Some issues were typically supported by conservatives (e.g.,

345   war in Afghanistan) and others by liberals (e.g., legalization of marijuana). The latter category of

346   items was reverse-scored such that higher scores would always indicate more conservative

347   attitudes.

348   **Generic Voting Likelihood.** 3 items (in fixed order) asked participants to indicate their

349   likelihood of voting for a liberal, a conservative, or an independent political candidate (Table

350   S23) on a 7-point scale (from *extremely unlikely* to *extremely likely*).

351   **Support for Political Figures.** Participants were asked to indicate their agreement or

352   disagreement with 3 statements for each of 11 leading political figures (Table S24) on a 7-point

353   scale (from *strongly disagree* to *strongly agree*) plus an option of *I do not know this person*.

354   Using Donald Trump as an example here, the 3 statements were "I support Donald Trump," "I

355   approve of Donald Trump's performance in the administration of his job," and "I support the

356   political issues that Donald Trump stands for." For each political figure, the 3 statements had

357   high internal reliability and were thus averaged to form the overall index of support.

358   **Intended Voting Preference.** Participants were asked, "Who do you intend to vote for in

359   the upcoming presidential election?" Options included "Donald Trump," "Joe Biden," "Other

360   (please specify): ___," "I haven't decided yet," and "No one." The vast majority of participants

361   indicated Trump or Biden (Table S8), so our analysis focused on these two options.

362   **Hypothetical Voting Preference.** Participants were asked an exploratory open-ended

363   question, "Hypothetically, imagine you could vote for anyone in the upcoming presidential

364   election, regardless of whether they are currently in the running. Who would you vote for?"

365   (Table S25).

366   **Pain Sensitivity Questionnaire.** We used the same PSQ (Ruscheweyh et al., 2009, 2012;

367   Sellers et al., 2013) as in Studies 1a–1c and scored it the same way.

368

369   **Study 2a (Exploratory): Post-Election Brief Data Collection**

370   *Participants*

371   On November 4, 2020 (right after November 3 the Election Day), we recruited all

372   original participants to complete a brief post-election survey. To ensure timeliness, our data

373   collection was planned such that we would close the survey either 5 days after posting it or when

374   all of the original participants had responded to the invite, whichever would happen first. In the

375   end, we concluded data collection on November 9, 2020. 723 of the 1,007 original participants

376   (71.8%) completed the survey and provided reconsent (17 others did not) and passed the

377   attention check (14 others did not). 2 others were excluded for repeated completion of the study.

378

379   *Measures*

380   **Actual Voting Preference.** Participants were asked, "Who did you vote for in the 2020

381   presidential election?" Options included "Donald Trump," "Joe Biden," "Other (please specify):

382   ___," "Couldn't decide," and "No one." Again, the vast majority of participants indicated Trump

383   or Biden (Table S8), so our analysis focused on these two options.

384   **Hypothetical Voting Preference.** Participants were asked an exploratory open-ended

385   question, "Hypothetically, imagine you could vote for anyone in the 2020 presidential election,

386   regardless of whether they were or were not actually in the running. Who would you vote for?"

387   (Table S25).

388

389   **Study 2b (Preregistered Replication)**

390   *Participants*

391   Adults in the U.S. were recruited on July 15–17, 2021 through Prolific. Our data

392   collection followed the preregistered plan, which determined the required sample size by a priori

393   power analysis (target N of useable data = 759 based on alpha = 0.05, power = 0.80, partial r =

394   0.1015294 = the smallest effect size in Study 2a among those of interest here, namely, the

395   interaction effect of pain sensitivity × political orientation on the likelihood of voting for a

396   conservative political candidate) and an expected attrition rate of 10% (target N of recruitment =

397   759 / 90% = 843). We also followed the preregistered sampling strategy such that after initial

398   data collection, we examined the distribution of liberals and conservatives and balanced them out

399   by continuing recruitment of participants on the less-represented side of the ideological

400   spectrum. In total, 1,022 participants (M_{age} = 35.17, SD_{age} = 11.83) completed the survey and

401   provided reconsent (6 others did not) and passed the preregistered attention check (47 others did

402   not) and preregistered problematic response patterns check (165 others did not). 3 others were

403   excluded for repeated completion of the study. Most participants indicated their gender as

404   "woman" (n = 426) or "man" (n = 572), and only 24 indicated "something else" (n = 6), "prefer

405   not to say" (n = 10), or skipped this question (n = 8). Political orientation was measured the same

406   way as in Studies 1a–2a. We also asked, "What is your political affiliation?" with the response

407   options "Democrat," "Republican," "Independent," and "Other (Please Specify): ___." In terms

408   of political orientation (M = 5.01, SD = 2.56), 424 participants were left of center (M = 2.39, SD

409   = 1.06), 453 right of center (M = 7.47, SD = 1.07), 138 at center, and 7 skipped this question. In

410   terms of political affiliation, 485 indicated Democrat, 267 Republican, 230 independent, 33

411   other, and 7 skipped this question.

412

413   **Testing the Process: Perception of Harm (Study 3, Preregistered)**

414   *Method*

415   **Participants**

416   Adults in the U.S. were recruited on September 28–October 5, 2021 through Prolific. Our

417   data collection followed the preregistered plan, which involved a multi-stage strategy of sample

418   size determination based on power analyses (see next section). Given our focus on moderated

419   mediation, we used the lavaan package v0.6-10 (Rosseel et al., 2022) in R 4.1.3 (R Core Team,

420   2022) to compute indices of moderated mediation from pilot data, and then the simsem package

421   v0.5-16 (Jorgensen et al., 2021) to run simulations for power estimation (final target N of useable

422   data = 1,645 based on alpha = 0.05, power = 0.80, and index of moderated mediation = -0.0192).

423   With an expected attrition rate of 10%, target N of recruitment = 1,645 / 90% = 1,828. We also

424   followed the preregistered sampling strategy such that after initial data collection, we examined

425   the distribution of liberals and conservatives and balanced them out by continuing recruitment of

426   participants on the less-represented side of the ideological spectrum. In total, 1,658 participants

427   (M_{age} = 33.35, SD_{age} = 11.06) completed the survey and provided reconsent (17 others did not)

428   and passed the preregistered attention check (172 others did not) and preregistered problematic

429   response patterns check (381 others did not). Most participants indicated their gender as

430   "female" (n = 760) or "male" (n = 878), and only 20 indicated "other" (n = 14) or skipped this

431   question (n = 6). Political orientation was measured the same way as in Studies 1a–2b. We also

432   asked, "What is your political affiliation?" with the response options "Democrat," "Republican,"

433   "Independent," and "Other (Please Specify): ___." In terms of political orientation (M = 4.95, SD

434   = 2.77), 717 participants were left of center (M = 2.26, SD = 1.08), 705 right of center (M = 7.66,

435   SD = 1.10), 145 at center, and 91 skipped this question. In terms of political affiliation, 834

436   indicated Democrat, 406 Republican, 356 independent, 55 other, and 7 skipped this question.

437

438   **Preregistered Multi-Stage Data Collection**

439   Our data collection followed the preregistered plan, which involved a multi-stage strategy

440   of sample size determination adapted from prior research (Camerer et al., 2018): If the

441   preregistered hypotheses were supported in the first stage, we concluded data collection; if not,

442   we proceeded to the second stage. If the preregistered hypotheses were supported in the second

443   stage, we concluded data collection; if not, we proceeded to the third stage, after which we

444   concluded data collection.

445   Across stages, sample sizes were determined by a priori power analyses based on alpha =

446   0.05, power = 0.80, and an index of moderated mediation. We chose the index of moderated

447   mediation with the smallest absolute value (-0.024) among the significant effects of interest in a

448   pilot study embedded in a larger exploratory survey within budgetary constraints, namely, the

449   index of moderated mediation where political orientation moderated the path from pain

450   sensitivity to perceived harm in violations of authority/subversion, which in turn predicted

451   support for authority/subversion. The first stage of our power analysis assumed 100% of the

452   original index (-0.024). The second stage assumed 90% of the original index (90% * -0.024 = -

453   0.0216). The third stage assumed 80% of the original index (80% * -0.024 = -0.0192). Based on

454   these power analyses, target Ns of useable data by the end of the first, second, and third stages

455   were 1,055, 1,256, and 1,645, respectively. With an expected attrition rate of 10%, target Ns of

456   recruitment (= target Ns of useable data / 90%) by the end of the first, second, and third stages

457   were 1,172, 1,396, and 1,828, respectively.

458

459   **Measures**

460   **Perceived Harm in Violations of and Disagreements with Moral Foundations.** We

461   modified each original item in the Moral Foundations Questionnaire (Graham et al., 2011) to

462 assess participants' perceived harm in behavioral violations of and attitudinal disagreements with

463 each moral foundation. For example, one original item in the MFQ asked participants to indicate

464 the extent to which they considered "Whether or not someone acted unfairly" to be relevant to

465 their judgments of right and wrong (*0 = not at all relevant, 5 = extremely relevant*). We

466 modified the item into a behavioral violation by removing the expression "Whether or not" and

467 asking participants to indicate the extent to which they perceived harm in "Someone acted

468 unfairly" (*0 = no harm at all, 5 = very severe harm*). Another original item in the MFQ asked

469 participants to indicate the extent to which they agreed that "Compassion for those who are

470 suffering is the most crucial virtue" (*0 = strongly disagree, 5 = strongly agree*). We modified the

471 item into an attitudinal disagreement: "Person A **DISAGREES** with the following statement:

472 'Compassion for those who are suffering is the most crucial virtue.' To what extent do you

473 perceive harm in Person A's view?" (*0 = no harm at all, 5 = very severe harm*). The same

474 structural modifications were made to all original items in the MFQ, rendering a total of 32

475 modified items (Table S26).

476 **Perceived Harm in Liberal Attitude and in Conservative Attitude Toward**

477 **Contentious Political Issues.** Recall that in an earlier part of the study, participants had rated

478 their own attitudes toward 10 contentious political issues, five with item-specific scale labels and

479 five with items-general scale labels. In this part of the study, we turned each scale label into a

480 stand-alone political view (see next paragraph). We assessed the extent to which participants

481 perceived each political view to be a harmful view (*0 = no harm at all, 5 = very severe harm*).

482 As an example of the issues with item-specific scale labels, participants read, "Person E

483 **AGREES** with the following statement: 'The government should decrease the current

484 restrictions because global warming is a theory that has not yet been proven.' To what extent do

485   you perceive harm in Person E's view?" and "Person F **AGREES** with the following statement:

486   'The government should increase restrictions on emissions from cars and industrial facilities

487   such as power plants and factories in an attempt to reduce the effects of global warming.' To

488   what extent do you perceive harm in Person F's view?" As an example of the issues with item-

489   general scale labels, participants read, "Person S **SUPPORTS** universal health care. To what

490   extent do you perceive harm in Person S's view?" and "Person T **OPPOSES** universal health

491   care. To what extent do you perceive harm in Person T's view?"

492   The same structural modifications were made to all 10 contentious political issues,

493   rendering 20 items that assessed participants' perceived harm in the liberal attitude and in the

494   conservative attitude toward each issue (Table S27). To simplify analyses, for each issue, the

495   difference score (perceived harm in the liberal attitude minus perceived harm in the conservative

496   attitude; $PH_{lib-con}$) served as the preregistered measure of interest. We also conducted additional

497   analyses that separately examined perceived harm in the liberal attitude and perceived harm in

498   the conservative attitude, which showed conceptually the same results as the difference score

499   (see ***Results***).

500

501   **Lay Intuitions about Pain Sensitivity (Study 4, Descriptive)**

502   ***Method***

503   **Participants**

504   Adults in the U.S. were recruited on October 30–31, 2020 through Prolific. Our data

505   collection targeted a sample size of roughly 600 participants with useable data. We chose this

506   sample size because this was a purely descriptive study, with three conditions, and we aimed to

507   have roughly 200 participants per condition in order to obtain reasonably confident estimates of

508 lay intuitions about pain sensitivity in each condition. With an expected attrition rate of 20%,

509 target *N* of recruitment was 600 / 80% = 750. In total, 724 participants (M_{age} = 32.31, SD_{age} =

510 12.13) completed the survey and provided reconsent (129 others did not) and passed the attention

511 check (35 others did not) and problematic response patterns check (5 others did not). Most

512 participants indicated their gender as "woman" (*n* = 361) or "man" (*n* = 349), and only 14

513 indicated "something else" (*n* = 1), "prefer not to say" (*n* = 10), or skipped this question (*n* = 3).

514

515 **Materials**

516   For clear understanding of our operationalizations, we describe the survey below by

517 retaining its formatting features.

518   **Information about Pain Sensitivity.** Participants were first told that "The following

519 items are examples from a measure of **SENSITIVITY TO PHYSICAL PAIN.** If a person

520 responds to the following items with generally high ratings, they are **high on sensitivity to**

521 **physical pain.** If a person responds to the following items with generally low ratings, they are

522 **low on sensitivity to physical pain.**" Then, participants read the instructions and six sample

523 items (in fixed order) of the Pain Sensitivity Questionnaire. Next, they were asked to "please

524 imagine a [person] who responded to the items with generally high ratings. We are interested in

525 your impression of **the [person] with high sensitivity to physical pain** (compared with a

526 [person] with low sensitivity to physical pain). How do you think this person would respond to

527 the following questionnaires?" The text in the [person] placeholder was either "person,"

528 "politically liberal person," or "politically conservative person." As noted in the study overview,

529 this manipulation (with three between-participant conditions) allowed us to examine lay

530 intuitions about the interaction effects of pain sensitivity × political orientation in two ways (see

531 **Analyses** below).

532   **Expected Moral Foundations of a Pain-Sensitive Person.** Participants read, "Part 1.

533 When **a [person] with high sensitivity to physical pain** (compared with a [person] with low

534 sensitivity to physical pain) decides whether something is right or wrong, to what extent do you

535 think the following considerations are likely to be more relevant, or less relevant, to their

536 thinking?" Participants rated the 15 items about relevance to morality (plus 1 filler item) in the

537 Moral Foundations Questionnaire on a 7-point scale (*-3 = much less relevant to judgments of*

538 *right and wrong by **a [person] with high sensitivity to physical pain** (than a [person] with low*

539 *sensitivity to physical pain), 0 = about equally relevant…, +3 = much more relevant…*).

540 Afterwards, participants read, "Part 2. To what extent do you think the following statements are

541 likely to be agreed or disagreed more by **a [person] with high sensitivity to physical pain** (than

542 a [person] with low sensitivity to physical pain)?" Participants rated the 15 MFQ items about

543 moral belief or attitude (plus 1 filler item) on a 7-point scale (*-3 = disagreed much more by **a***

544 ***[person] with high sensitivity to physical pain** (than a [person] with low sensitivity to physical*

545 *pain), 0 = agreed or disagreed about equally…, +3 = agreed much more…*).

546   **Expected Political Orientation of a Pain-Sensitive Person.** Participants were asked to

547 "Please indicate the extent to which you think **a [person] with high sensitivity to physical pain**

548 (compared with a [person] with low sensitivity to physical pain) is likely to be more politically

549 liberal or conservative" on a 9-point scale (*1 = much more liberal, 5 = about the same, 9 = much*

550 *more conservative*).

551   **Expected Voting Preference of a Pain-Sensitive Person.** Participants were asked,

552 "Who do you think **a [person] with <u>HIGH</u> sensitivity to physical pain** is likely to vote for in

553   the presidential election?" Options included "Donald Trump," "Joe Biden," "Other (please

554   specify): ___," "Undecided," and "No one." Participants were also asked, "Who do you think **a**

555   **[person] with <u>LOW</u> sensitivity to physical pain** is likely to vote for in the presidential

556   election?" (with the same available options). Asking both questions made it possible to compare

557   expected voting preferences of a [person] with high pain sensitivity vs. a [person] with low pain

558   sensitivity. Next, participants were asked to "Please indicate the extent to which you think **a**

559   **[person] with high sensitivity to physical pain (**compared with a [person] with low sensitivity

560   to physical pain) is more or less likely to vote for…" a liberal, a conservative, and an

561   independent political candidate (in fixed order) on a 7-point scale (*-3 = much less likely*, *0 =*

562   *about equally likely*, *+3 = much more likely*).

563   **Expected Support for Political Figures of a Pain-Sensitive Person.** Participants were

564   asked to "Please indicate the extent to which you think each of the following politicians and the

565   political issues they stand for are more approved/supported or disapproved/opposed by **a**

566   **[person] with high sensitivity to physical pain (**compared with a [person] with low sensitivity

567   to physical pain)" on a 7-point scale (*-3 = disapproved/opposed much more*, *0 =*

568   *approved/supported or disapproved/opposed about equally*, *+3 = approved/supported much*

569   *more*) plus an option of *I do not know this person*. The same 11 political figures as in Studies 2a–

570   2b were presented.

571   **Expected Attitudes Toward Political Issues of a Pain-Sensitive Person.** Participants

572   were presented with the 10 political issues used in Studies 2b–3 (Table S28). For 5 of the

573   political issues, two issue-specific attitudes were provided, and participants were asked to rate

574   the extent to which a pain-sensitive [person]'s attitude was closer to either attitude on a 7-point

575   scale. For the other 5 political issues, participants were asked to rate the extent to which each

576 issue was likely to be more supported or opposed by a [person] with high pain sensitivity than a

577 [person] with low pain sensitivity, on an issue-general 7-point scale.

578   **Comparison with Expected Political Orientation of a Disgust-Sensitive Person.**

579 Given prior research on the association between disgust sensitivity and political orientation, we

580 were also interested in exploring the comparison between lay intuitions about the political

581 orientation of a pain-sensitive [person] and lay intuitions about the political orientation of a

582 disgust-sensitive [person]. Therefore, participants were asked to imagine a [person] with high

583 sensitivity to physical disgust by reading the same kind of information as when we asked them to

584 imagine a [person] with high sensitivity to physical pain, except that here the word "pain" was

585 replaced by "disgust" and the Pain Sensitivity Questionnaire was replaced by the Disgust Scale.

586 Then participants were asked to rate their expected political orientation of a [person] with high

587 (vs. low) sensitivity to physical disgust (*1 = much more liberal, 5 = about the same, 9 = much*

588 *more conservative*).

589   In addition to examining lay intuitions about how pain sensitivity and disgust sensitivity

590 were associated with political orientation, we also examined lay intuitions about the strength of

591 these associations by asking participants, "To what extent do you think **sensitivity to physical**

592 **PAIN** is associated with political orientation?" and "To what extent do you think **sensitivity to**

593 **physical DISGUST** is associated with political orientation?" (*0 = not associated at all*, *6 =*

594 *extremely associated*).

595   To explore whether participants might form different demographic impressions of the

596 imagined pain-sensitive person and disgust-sensitive person, participants were first asked to

597 "Recall the hypothetical **[person] with high sensitivity to physical PAIN**" and report this

598 person's age, gender, race/ethnicity, and socioeconomic status (in fixed order). For each

599   demographic variable, "If [it] was entirely absent from your impression of the hypothetical

600   person, please select 'N/A'." Then participants did the same thing for "the hypothetical **[person]**

601   **with high sensitivity to physical DISGUST**."

602

603   *Results*

604   Beyond the primary results reported in the article, we also explored the comparison

605   between lay intuitions about the political orientation of a pain-sensitive target and lay intuitions

606   about the political orientation of a disgust-sensitive target. Participants incorrectly expected that

607   a target with higher pain sensitivity was more likely to be politically liberal, $t(637) = -2.9292$, p

608   $= .00352$, but correctly expected that a target with higher disgust sensitivity was more likely to

609   be politically conservative, $t(666) = 4.7973$, $p = 1.986e\text{-}6$. Participants expected the strength of

610   association with political orientation to be stronger for pain sensitivity ($M = 2.70$, $SD = 1.62$)

611   than for disgust sensitivity ($M = 2.18$, $SD = 1.73$), $t(722) = 9.6266$, $p < 2.2e\text{-}16$. When

612   participants imagined a pain-sensitive target and a disgust-sensitive target, they formed

613   comparable demographic impressions in terms of age ($p = .5796$), gender ($p = .0546$),

614   race/ethnicity ($p = .9761$), and socioeconomic status ($p = .9996$), suggesting that participants'

615   different lay intuitions about pain sensitivity and disgust sensitivity were not due to different

616   demographic inferences.

617

618   **SUPPLEMENTAL TABLES**

619   **Table S1**

620   *Interaction Effects of Pain Sensitivity × Political Orientation on Support for and Relevance of*

621   *Moral Foundations in Study 1a*

Outcome	Interaction Effect of Pain Sensitivity × Political Orientation on Outcome					Effect of Pain Sensitivity on Outcome			
						Among conservatives		Among liberals	
	β	*SE*	*t*	*df*	*p*	*β*	*p*	*β*	*p*
Support for moral foundation									
Care/Harm	0.07	0.03	2.21	920	.027	0.38	< .001	0.23	< .001
Fairness/Cheating	0.20	0.03	6.67	920	< .001	0.54	< .001	0.12	.033
Loyalty/Betrayal	-0.07	0.03	-2.91	920	.004	0.40	< .001	0.50	< .001
Authority/Subversion	-0.15	0.03	-5.62	920	< .001	0.20	< .001	0.45	< .001
Sanctity/Degradation	-0.16	0.03	-6.00	920	< .001	0.23	< .001	0.48	< .001
Relevance of moral foundation									
Care/Harm	0.10	0.03	3.19	920	.001	0.23	< .001	-0.01	.827
Fairness/Cheating	0.12	0.03	3.55	920	< .001	0.25	< .001	-0.03	.573
Loyalty/Betrayal	-0.04	0.03	-1.50	920	.134	0.40	< .001	0.42	< .001
Authority/Subversion	-0.06	0.03	-2.32	920	.020	0.37	< .001	0.45	< .001
Sanctity/Degradation	-0.12	0.03	-4.38	920	< .001	0.30	< .001	0.47	< .001

622

623   *Note*. If we used the more stringent criterion of Bonferroni-corrected alpha = 0.05 / 10

624   interaction effects of interest = 0.005, the interaction effects of pain sensitivity × political

625   orientation remained significant on attitudinal support for four of the five moral foundations (*p*s

626   ≤ .00369) and on perceived relevance of three of the five moral foundations (*p*s ≤ 0.00147).

627   Graphical depiction is available in Figure 2.

628   **Table S2**

629   *Interaction Effects of Pain Sensitivity × Political Orientation on Support for and Relevance of*

630   *Moral Foundations in Study 1b*

| Outcome | Interaction Effect of Pain Sensitivity × Political Orientation on Outcome | | | | | Effect of Pain Sensitivity on Outcome | | | |
| | | | | | | Among conservatives | | Among liberals | |
	β	SE	t	df	p	β	p	β	p
			Support for moral foundation						
Care/Harm	0.07	0.04	1.88	655	.060	0.37	< .001	0.17	.003
Fairness/Cheating	0.19	0.03	5.79	655	< .001	0.52	< .001	0.14	.010
Loyalty/Betrayal	-0.11	0.03	-3.81	655	< .001	0.31	< .001	0.51	< .001
Authority/Subversion	-0.16	0.03	-5.69	655	< .001	0.15	< .001	0.47	< .001
Sanctity/Degradation	-0.14	0.03	-4.65	655	< .001	0.22	< .001	0.49	< .001
			Relevance of moral foundation						
Care/Harm	0.11	0.04	2.94	655	.003	0.12	.033	-0.11	.070
Fairness/Cheating	0.16	0.04	4.39	655	< .001	0.20	< .001	-0.09	.110
Loyalty/Betrayal	-0.03	0.03	-0.99	655	.324	0.25	< .001	0.36	< .001
Authority/Subversion	-0.07	0.03	-2.12	655	.034	0.28	< .001	0.46	< .001
Sanctity/Degradation	-0.07	0.03	-2.01	655	.045	0.21	< .001	0.34	< .001

631

632   *Note*. Graphical depiction is available in Figure 3.

Table S3

Hierarchical Regressions of Support for and Relevance of Moral Foundations on the Interaction

Effect of Pain Sensitivity × Political Orientation and Their Main Effects (Step 1), Together with

Control Predictors (Step 2), in Study 1b

Predictor	Care/Harm		Fairness/Cheating		Loyalty/Betrayal		Authority/Subversion		Sanctity/Degradation	
	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2
Support for moral foundation										
Pain Sensitivity × Political Orientation	0.08*	0.05	0.19***	0.17***	-0.11***	-0.10***	-0.16***	-0.16***	-0.14***	-0.14***
	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Pain Sensitivity	0.31***	0.21***	0.35***	0.28***	0.39***	0.33***	0.30***	0.24***	0.36***	0.26***
	(0.04)	(0.04)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Political Orientation	-0.17***	-0.12**	-0.35***	-0.32***	0.44***	0.39***	0.55***	0.53***	0.48***	0.47***
	(0.04)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Disgust Sensitivity		0.18***		0.08*		0.07*		0.06		0.20***
		(0.04)		(0.04)		(0.03)		(0.03)		(0.03)
Emotion Reactivity		0.08		0.15**		0.11*		0.05		0.06
		(0.05)		(0.05)		(0.05)		(0.04)		(0.05)
Anxiety		-0.03		-0.01		-0.18***		-0.16***		-0.10*
		(0.04)		(0.04)		(0.04)		(0.04)		(0.04)
Anger		-0.08		-0.04		0.02		0.02		0.01
		(0.05)		(0.05)		(0.04)		(0.04)		(0.04)
Empathy		0.24***		0.11**		-0.03		0.08*		0.06
		(0.04)		(0.04)		(0.03)		(0.03)		(0.03)
Gender		-0.15*		0.01		0.24***		0.12		0.08
		(0.08)		(0.07)		(0.07)		(0.06)		(0.07)
R^2	.122	.258	.270	.310	.389	.423	.435	.461	.389	.435
ΔR^2		.135		.040		.034		.027		.046
F	29.9***	24.58***	79.16***	31.82***	136.60***	51.86***	164.80***	60.64***	136.70***	54.50***
ΔF		19.35***		6.218***		6.167***		5.269***		8.580***
Relevance of moral foundation										
Pain Sensitivity × Political Orientation	0.12**	0.08*	0.17***	0.13***	-0.03	-0.06	-0.07*	-0.08*	-0.06	-0.07*
	(0.04)	(0.04)	(0.04)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Pain Sensitivity	0.04	-0.06	0.07	-0.02	0.30***	0.19***	0.36***	0.25***	0.28***	0.15***
	(0.04)	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)
Political Orientation	-0.15***	-0.11**	-0.21***	-0.19***	0.22***	0.22***	0.29***	0.29***	0.36***	0.35***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)
Disgust Sensitivity		0.15*		0.07		0.09*		0.16***		0.22***
		(0.04)		(0.04)		(0.04)		(0.04)		(0.04)
Emotion Reactivity		0.06		0.08		0.04		0.06		0.04
		(0.06)		(0.05)		(0.05)		(0.05)		(0.05)
Anxiety		-0.09		-0.09		-0.12*		-0.14***		-0.14***
		(0.05)		(0.05)		(0.04)		(0.04)		(0.04)
Anger		0.03		0.03		0.17***		0.07		0.12*
		(0.05)		(0.05)		(0.05)		(0.05)		(0.05)
Empathy		0.33***		0.33***		0.18***		0.12***		0.10*
		(0.04)		(0.04)		(0.04)		(0.04)		(0.04)
Gender		-0.05		0.02		0.15		0.05		0.08
		(0.08)		(0.08)		(0.08)		(0.07)		(0.07)
R^2	.038	.181	.080	.206	.149	.215	.238	.293	.224	.291
ΔR^2		.142		.126		.066		.055		.068
F	8.538***	15.58***	18.52***	18.32***	37.41***	19.38***	66.78***	29.29***	61.68***	29.05***
ΔF		18.40***		16.86***		8.965***		8.276***		10.11***

Note. Political orientation was a continuous variable (*1 = liberal, 5 = centrist, 9 = conservative*).

Gender was coded as a dichotomous variable (-1 = female, 1 = male). Standardized regression

coefficients are reported, with standard errors in parentheses. * $p < .05$, ** $p < .005$, *** $p <$

.001.

641 **Table S4**

642 *Preregistered Interaction Effects of Pain Sensitivity × Political Orientation on Support for and*

643 *Relevance of Moral Foundations in Study 1c*

Outcome	Interaction Effect of Pain Sensitivity × Political Orientation on Outcome					Effect of Pain Sensitivity on Outcome			
						Among conservatives		Among liberals	
	β	*SE*	*t*	*df*	*p*	*β*	*p*	*β*	*p*
Support for moral foundation									
Care/Harm	0.17	0.03	6.44	1256	< .001	0.38	< .001	0.06	.132
Fairness/Cheating	0.17	0.02	6.72	1256	< .001	0.39	< .001	0.06	.122
Loyalty/Betrayal	-0.12	0.02	-5.47	1256	< .001	0.20	< .001	0.39	< .001
Authority/Subversion	-0.15	0.02	-7.73	1256	< .001	0.12	< .001	0.35	< .001
Sanctity/Degradation	-0.13	0.02	-6.10	1256	< .001	0.20	< .001	0.41	< .001
Relevance of moral foundation									
Care/Harm	0.13	0.03	4.85	1256	< .001	0.16	< .001	-0.11	.005
Fairness/Cheating	0.14	0.03	5.45	1256	< .001	0.11	.012	-0.19	< .001
Loyalty/Betrayal	-0.03	0.02	-1.33	1256	.183	0.27	< .001	0.27	< .001
Authority/Subversion	-0.05	0.02	-1.84	1256	.066	0.30	< .001	0.30	< .001
Sanctity/Degradation	-0.07	0.02	-3.04	1256	.002	0.21	< .001	0.28	< .001

644

645 *Note*. Graphical depiction is available in Figure 4.

646 **Table S5**

647 *Hierarchical Regressions of Support for and Relevance of Moral Foundations on the*

648 *Preregistered Interaction Effect of Pain Sensitivity × Political Orientation as well as Their Main*

649 *Effects (Step 1), Together with Disgust Sensitivity and Gender (Step 2) and the Interaction Effect*

650 *of Disgust Sensitivity × Political Orientation (Step 3), in Study 1c*

Predictor	Care/Harm			Fairness/Cheating			Loyalty/Betrayal			Authority/Subversion			Sanctity/Degradation		
	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
						Support for moral foundation									
Pain Sensitivity × Political Orientation	**0.17*****	**0.14*****	**0.14*****	**0.17*****	**0.16*****	**0.17*****	**-0.12*****	**-0.10*****	**-0.10*****	**-0.15*****	**-0.16*****	**-0.16*****	**-0.13*****	**-0.16*****	**-0.16*****
	(0.03)	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**
Pain Sensitivity	0.20***	0.24**	0.13***	0.22***	0.17***	0.17***	0.28***	0.25***	0.25***	0.21***	0.18***	0.18***	0.29***	0.21***	0.20***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Political Orientation	-0.19***	-0.18***	-0.18***	-0.36***	-0.37***	-0.37***	0.52***	0.49***	0.49***	0.63***	0.62***	0.62***	0.49***	0.48***	0.48***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Disgust Sensitivity		0.23***	0.23***		0.15***	0.15***		0.03	0.03		0.09***	0.09***		0.26***	0.26***
		(0.03)	(0.03)		(0.03)	(0.05)		(0.02)	(0.02)		(0.02)	(0.02)		(0.02)	(0.02)
Gender		-0.18**	-0.18**		0.06	0.05		0.38***	0.38***		0.03	0.03		-0.07	-0.06
		(0.06)	(0.06)		(0.05)	(0.05)		(0.05)	(0.05)		(0.04)	(0.04)		(0.05)	(0.05)
Disgust Sensitivity × Political Orientation			0.02			-0.04			0.01			0.00			0.01
			(0.03)			(0.03)			(0.02)			(0.02)			(0.02)
R^2	.099	.160	.160	.174	.192	.193	.387	.420	.420	.471	.477	.477	.358	.419	.419
ΔR^2		.061	.000		.017	.001		.033	.000		.006	.000		.061	.000
F	45.43***	47.17***	39.38***	87.30***	58.68***	49.21***	260.90***	179.00***	149.20***	367.40***	225.40***	187.70***	230.10***	178.30***	148.50***
ΔF		44.96***	0.516		13.18***	1.700		34.886***	0.256		7.008***	0.000		64.88***	0.122
						Relevance of moral foundation									
Pain Sensitivity × Political Orientation	**0.13*****	**0.10*****	**0.10*****	**0.14*****	**0.12*****	**0.13*****	**-0.03**	**-0.04**	**-0.04**	**-0.04**	**-0.06***	**-0.06***	**-0.07****	**-0.10*****	**-0.10*****
	(0.03)	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.02)**	**(0.03)**	**(0.02)**	**(0.02)**	**(0.03)**
Pain Sensitivity	0.03	-0.01	-0.01	-0.05	-0.10	-0.10	0.27***	0.24***	0.23***	0.28***	0.22***	0.22***	0.23***	0.17***	0.17***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Political Orientation	-0.18	-0.16	-0.16	-0.24	-0.23	-0.23	0.29***	0.28***	0.28***	0.28***	0.28***	0.28***	0.37***	0.38***	0.38***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Disgust Sensitivity		0.16***	0.16***		0.17***	0.17***		0.09**	0.09**		0.20***	0.20***		0.20***	0.20***
		(0.03)	(0.03)		(0.03)	(0.03)		(0.03)	(0.03)		(0.03)	(0.03)		(0.03)	(0.03)
Gender		-0.32	-0.32		-0.14	-0.15		0.00	0.01		-0.05	-0.05		-0.12	-0.12
		(0.06)	(0.06)		(0.06)	(0.06)		(0.05)	(0.05)		(0.05)	(0.05)		(0.05)	(0.05)
Disgust Sensitivity × Political Orientation			0.00			-0.03			0.01			-0.01			0.00
			(0.03)			(0.03)			(0.03)			(0.03)			(0.03)
R^2	.044	.103	.103	.075	.110	.110	.174	.181	.181	.178	.214	.214	.215	.259	.259
ΔR^2		.058	.000		.035	.001		.007	.000		.037	.000		.043	.000
F	19.12***	28.29***	23.56***	33.41***	30.46***	25.59***	87.21***	54.74***	45.61***	89.30***	67.57***	56.28***	113.40***	86.33***	71.88***
ΔF		40.22***	0.005		24.16***	1.206		5.145***	0.169		28.94***	0.089		36.07***	0.004

651 *Note*. Political orientation was a continuous variable (*1 = liberal, 5 = centrist, 9 = conservative*).

652 Gender was coded as a dichotomous variable (-1 = female, 1 = male). Standardized regression

653 coefficients are reported, with standard errors in parentheses. * *p* < .05, ** *p* < .005, *** *p* <

654 .001.

655

656   **Table S6**

657   *Hierarchical Regressions of Political Orientation on Pain Sensitivity (Step 1), Together with*

658   *Control Predictors (Step 2), in Studies 1a–1c*

Predictor	Study 1a		Study 1b		Study 1c	
	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2
Pain Sensitivity	**0.31*****	**0.17*****	**0.12****	**0.08****	**0.16*****	**0.11*****
	(0.03)	**(0.04)**	**(0.04)**	**(0.04)**	**(0.03)**	**(0.03)**
Disgust Sensitivity		0.09*		0.04		0.08**
		(0.03)		(0.04)		(0.03)
Emotion Reactivity		-0.05		0.01		---
		(0.05)		(0.06)		
Anxiety		-0.15***		-0.25***		---
		(0.04)		(0.05)		
Anger		0.33***		0.10		---
		(0.05)		(0.05)		
Empathy		-0.12***		-0.10*		---
		(0.03)		(0.04)		
Gender		0.01		0.27***		0.35***
		(0.06)		(0.08)		(0.06)
R^2	.095	.160	.015	.097	.026	.056
ΔR^2		.065		.081		.029
F	95.56***	24.71***	10.04**	9.764***	33.60***	24.36***
ΔF		11.776***		9.585***		19.253***

659

660   *Note*. Political orientation was a continuous variable (*1 = liberal, 5 = centrist, 9 = conservative*).

661   Gender was coded as a dichotomous variable (-1 = female, 1 = male). Standardized regression

662   coefficients are reported, with standard errors in parentheses. * $p < .05$, ** $p < .01$, *** $p < .001$.

663

664 **Table S7**

665 *Preregistered Hierarchical Regressions of Support for and Relevance of Moral Foundations on*

666 *Pain Sensitivity (Step 1), Together with Control Predictors (Step 2), in Study 1c*

Predictor	Care/Harm		Fairness/Cheating		Loyalty/Betrayal		Authority/Subversion		Sanctity/Degradation	
	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2
Support for moral foundation										
Pain Sensitivity	**0.19***** (0.03)	**0.15***** (0.03)	**0.19***** (0.03)	**0.18***** (0.03)	**0.35***** (0.03)	**0.24***** (0.02)	**0.30***** (0.03)	**0.16***** (0.02)	**0.35***** (0.03)	**0.19***** (0.02)
Political Orientation		-0.17*** (0.03)		-0.35*** (0.03)		0.48*** (0.02)		0.61*** (0.02)		0.47*** (0.02)
Disgust Sensitivity		0.24*** (0.03)		0.16*** (0.03)		0.02 (0.02)		0.07** (0.02)		0.24*** (0.02)
Gender		-0.20*** (0.06)		0.03 (0.06)		0.40*** (0.05)		0.05 (0.04)		-0.04 (0.05)
R^2	.038	.139	.035	.166	.122	.409	.085	.451	.124	.393
ΔR^2		.100		.131		.287		.366		.268
F	49.27	49.82	45.13	61.66	172.50	214.40	114.70	254.20	176.00	200.10
ΔF		48.13		64.85		200.67		275.41		182.41
Relevance of moral foundation										
Pain Sensitivity	**0.02** (0.03)	**0.00** (0.03)	**-0.07*** (0.03)	**-0.09**** (0.03)	**0.31***** (0.03)	**0.23***** (0.03)	**0.32***** (0.03)	**0.21***** (0.03)	**0.29***** (0.03)	**0.16***** (0.03)
Political Orientation		-0.15*** (0.03)		-0.22*** (0.03)		0.28*** (0.03)		0.27*** (0.03)		0.37*** (0.03)
Disgust Sensitivity		0.17*** (0.03)		0.18*** (0.03)		0.09** (0.03)		0.19*** (0.03)		0.19*** (0.03)
Gender		-0.34*** (0.06)		-0.16** (0.06)		0.01 (0.05)		-0.04 (0.05)		-0.10* (0.05)
R^2	.000	.092	.004	.094	.096	.180	.104	.210	.082	.249
ΔR^2		.092		.090		.083		.106		.167
F	.310	31.50	5.552	32.18	132.30	67.74	145.10	82.53	111.20	102.60
ΔF		41.89		40.88		41.87		55.34		91.60

667

668 *Note*. Political orientation was a continuous variable (*1 = liberal, 5 = centrist, 9 = conservative*).

669 Gender was coded as a dichotomous variable (-1 = female, 1 = male). Standardized regression

670 coefficients are reported, with standard errors in parentheses. * $p < .05$, ** $p < .005$, *** $p <$

671 .001.

672

673 **Table S8**

674 *Intended and Actual Voting Preferences in Study 2a*

Voting preference	Intended voting (*N* = 1,006)	Actual voting among participants who completed the post-election survey on						
		November 4-9 (*N* = 710)	November 4 (*n* = 571)	November 5 (*n* = 70)	November 6 (*n* = 29)	November 7 (*n* = 14)	November 8 (*n* = 18)	November 9 (*n* = 8)
Trump	368 (36.6%)	257 (36.2%)	216 (37.8%)	21 (30.0%)	8 (27.6%)	6 (42.9%)	3 (16.7%)	3 (37.5%)
Biden	496 (49.3%)	387 (54.5%)	304 (53.2%)	41 (58.6%)	20 (69.0%)	7 (50.0%)	11 (61.1%)	4 (50.0%)
Others	13 (1.29%)	14 (1.97%)	8 (1.40%)	3 (4.29%)	1 (3.45%)	1 (7.14%)	1 (5.56%)	0 (0.00%)
Undecided	85 (8.45%)	7 (0.99%)	6 (1.05%)	1 (1.37%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
No one	44 (4.37%)	45 (6.34%)	37 (6.48%)	4 (5.71%)	0 (0.00%)	0 (0.00%)	3 (16.7%)	1 (12.5%)

675

676 *Note*. Count of participants and percentage within column are shown.

677

678   **Table S9**

679   *Interaction Effects of Pain Sensitivity × Political Orientation on Voting or Support for Political*

680   *Figures in Study 2a*

Outcome	Interaction Effect of Pain Sensitivity × Political Orientation on Outcome					Effect of Pain Sensitivity on Outcome			
						Among conservatives		Among liberals	
	β	*SE*	*z*	*df*	*p*	*β*	*p*	*β*	*p*
Voting (dichotomous)									
Intended voting for Trump over Biden	-1.46	0.16	-9.02	861	< .001	-0.53	< .001	1.92	< .001
Actual voting for Trump over Biden	-1.06	0.21	-5.04	642	< .001	-0.37	.022	0.98	.002
	β	*SE*	*t*	*df*	*p*	*β*	*p*	*β*	*p*
Voting (Likert)									
Likelihood of voting for a conservative candidate	-0.08	0.02	-5.06	1001	< .001	0.01	.738	0.14	< .001
Likelihood of voting for a liberal candidate	0.11	0.02	6.53	999	< .001	0.20	< .001	-0.02	.347
Support for Republican political figure (Likert)									
Donald Trump	-0.14	0.02	-6.53	995	< .001	-0.03	.307	0.28	< .001
Mike Pence	-0.16	0.02	-8.12	990	< .001	-0.07	.047	0.27	< .001
Mitch McConnell	-0.13	0.02	-5.61	886	< .001	0.05	.180	0.32	< .001
Kevin McCarthy	-0.15	0.03	-4.96	566	< .001	0.02	.595	0.38	< .001
Support for Democratic political figure (Likert)									
Joe Biden	0.14	0.02	5.89	997	< .001	0.27	< .001	-0.02	.489
Kamala Harris	0.14	0.02	6.28	969	< .001	0.28	< .001	-0.01	.667
Bernie Sanders	0.20	0.02	9.59	993	< .001	0.26	< .001	-0.12	< .001
Elizabeth Warren	0.20	0.02	8.89	924	< .001	0.31	< .001	-0.09	.006
Nancy Pelosi	0.15	0.02	6.69	962	< .001	0.33	< .001	0.02	.627
Steny Hoyer	0.19	0.04	5.01	418	< .001	0.39	< .001	0.03	.586
Chuck Schumer	0.16	0.03	6.21	783	< .001	0.33	< .001	-0.01	.883

681   *Note*. If we used the more stringent criterion of Bonferroni-corrected alpha = .05 / (15 interaction

682   effects of interest in Table S9 + 25 interaction effects of interest in Table S10) = .05 / 40 =

683   .00125, all 15 interaction effects in Table S9 remained significant (*p*s ≤ 9.40e-7). Graphical

684   depiction is available in Figure 5.

685

686 **Table S10**

687 *Interaction Effects of Pain Sensitivity × Political Orientation on Support for Political Issues in*

688 *Study 2a*

| Outcome | Interaction Effect of Pain Sensitivity × Political Orientation on Outcome | | | | | Effect of Pain Sensitivity on Outcome | | | |
| | | | | | | Among conservatives | | Among liberals | |
	β	*SE*	*t*	*df*	*p*	*β*	*p*	*β*	*p*
Illegal Immigrants Weaken the U.S. Economy †	-0.21	0.02	-8.23	1000	< .001	-0.25	< .001	0.13	.001
No Wealth Redistribution †	-0.20	0.02	-8.35	1001	< .001	-0.35	< .001	0.04	.210
The Poor Should Work Harder †	-0.19	0.03	-7.39	997	< .001	-0.28	< .001	0.11	< .001
Not Funding Stem Cell Research †	-0.19	0.03	-6.85	999	< .001	-0.21	< .001	0.18	< .001
No Universal Healthcare †	-0.19	0.02	-7.91	998	< .001	-0.31	< .001	0.08	< .001
No Impeachment of Former President Donald Trump †	-0.18	0.02	-8.61	1000	< .001	-0.24	< .001	0.18	< .001
Decrease Global Warming Restrictions †	-0.18	0.02	-7.26	1001	< .001	-0.22	< .001	0.11	< .001
No Sterile Drug Facilities †	-0.18	0.03	-6.71	1001	< .001	-0.22	< .001	0.13	< .001
ACA/Obamacare is Mistake †	-0.18	0.02	-7.72	999	< .001	-0.28	< .001	0.08	.004
No Protests †	-0.17	0.02	-7.60	1001	< .001	-0.19	< .001	0.14	< .001
Keystone Oil Pipeline	-0.17	0.03	-6.67	999	< .001	0.01	.710	0.34	< .001
Free Market †	-0.16	0.03	-5.97	998	< .001	-0.35	< .001	-0.10	.012
Abolishing Unions	-0.15	0.03	-5.53	1000	< .001	0.00	.973	0.27	< .001
Death Penalty	-0.15	0.03	-5.23	998	< .001	-0.07	.078	0.26	< .001
Gun Ownership †	-0.15	0.03	-5.91	1001	< .001	-0.30	< .001	-0.02	.534
Defense Spending	-0.14	0.03	-5.48	1000	< .001	0.14	< .001	0.42	< .001
Teaching Creationism	-0.14	0.03	-5.13	1000	< .001	0.18	< .001	0.45	< .001
No Abortion †	-0.13	0.02	-5.09	999	< .001	-0.09	.048	0.17	< .001
War in Afghanistan	-0.13	0.03	-4.16	1000	< .001	-0.02	.712	0.24	< .001
COVID Exaggerated	-0.12	0.02	-5.00	998	< .001	-0.03	.502	0.21	< .001
Illegal Marijuana †	-0.09	0.03	-3.22	995	.001	0.02	.657	0.23	< .001
Illegal to Burn Flag	-0.09	0.03	-3.31	999	< .001	0.10	.022	0.27	< .001
Torturing Terrorists	-0.08	0.03	-2.65	1001	.008	0.10	.030	0.24	< .001
Confront Terrorism	-0.05	0.03	-1.69	1001	.092	0.09	.059	0.15	< .001
No Same-Sex Marriage †	-0.04	0.03	-1.59	1001	.113	0.19	< .001	0.26	< .001

689 *Note*. Items are listed in descending order of magnitude of the interaction effect *β*. † denotes

690 items that have been reverse-coded. All items are coded such that higher scores represent more

691 conservative views. If we used the more stringent criterion of Bonferroni-corrected alpha = .05 /

692 (15 interaction effects of interest in Table S9 + 25 interaction effects of interest in Table S10) =

693 .05 / 40 = .00125, 21 of the 25 interaction effects in Table S10 remained significant (*p*s ≤ 9.83e-

694 4). Graphical depiction is available in Figure 6.

695

696   **Table S11**

697   *Preregistered Interaction Effects of Pain Sensitivity × Political Orientation on Voting or Support*

698   *for Political Figures in Study 2b*

Outcome	Interaction Effect of Pain Sensitivity × Political Orientation on Outcome					Effect of Pain Sensitivity on Outcome			
						Among conservatives		Among liberals	
	β	*SE*	*z*	*df*	*p*	*β*	*p*	*β*	*p*
Voting (dichotomous)									
Actual voting for Trump over Biden	-0.84	0.14	-5.82	780	< .001	-0.89	< .001	0.11	.675
	β	*SE*	*t*	*df*	*p*	*β*	*p*	*β*	*p*
Voting (Likert)									
Likelihood of voting for a conservative candidate	-0.11	0.02	-6.52	1008	< .001	0.06	.005	0.22	< .001
Likelihood of voting for a liberal candidate	0.11	0.02	5.41	1009	< .001	0.25	< .001	0.06	.024
Support for Republican political figure (Likert)									
Donald Trump	-0.23	0.02	-9.66	1007	< .001	-0.09	.018	0.32	< .001
Mike Pence	-0.23	0.02	-9.22	974	< .001	-0.03	.501	0.42	< .001
Mitch McConnell	-0.14	0.03	-5.33	908	< .001	0.19	< .001	0.45	< .001
Kevin McCarthy	-0.16	0.03	-5.01	645	< .001	0.11	.016	0.40	< .001
Support for Democratic political figure (Likert)									
Joe Biden	0.17	0.03	6.62	1008	< .001	0.50	< .001	0.19	< .001
Kamala Harris	0.21	0.03	7.95	988	< .001	0.51	< .001	0.12	< .001
Bernie Sanders	0.31	0.02	12.97	993	< .001	0.44	< .001	-0.22	< .001
Elizabeth Warren	0.24	0.03	8.70	896	< .001	0.53	< .001	0.03	.464
Nancy Pelosi	0.21	0.03	7.88	962	< .001	0.54	< .001	0.13	.003
Steny Hoyer	0.16	0.04	3.74	505	< .001	0.44	< .001	0.10	.161
Chuck Schumer	0.21	0.03	7.00	795	< .001	0.52	< .001	0.11	.035

699   *Note*. Graphical depiction is available in Figure 7.

700   **Table S12**

701   *Preregistered Interaction Effects of Pain Sensitivity × Political Orientation on Support for*

702   *Political Issues in Study 2b*

Outcome	Interaction Effect of Pain Sensitivity × Political Orientation on Outcome					Effect of Pain Sensitivity on Outcome			
						Among conservatives		Among liberals	
	β	*SE*	*t*	*df*	*p*	*β*	*p*	*β*	*p*
No Universal Healthcare	-0.31	0.03	-11.78	1007	< .001	-0.53	< .001	0.12	< .001
Decrease Global Warming Restrictions	-0.29	0.03	-10.87	1009	< .001	-0.43	< .001	0.17	< .001
The Poor Should Work Harder	-0.27	0.03	-10.29	1004	< .001	-0.46	< .001	0.09	.013
No Marching in Protest	-0.26	0.03	-9.62	1011	< .001	-0.42	< .001	0.06	.118
ACA/Obamacare is Mistake	-0.24	0.03	-9.02	1007	< .001	-0.51	< .001	-0.04	.287
No Sterile Drug Facilities	-0.21	0.03	-7.40	1009	< .001	-0.45	< .001	-0.07	.091
No Impeachment of Former President Donald Trump	-0.22	0.02	-8.97	1011	< .001	-0.29	< .001	0.12	< .001
No Kneeling in Protest	-0.20	0.03	-7.42	1009	< .001	-0.32	< .001	0.08	.071
Illegal Immigrants Weaken the U.S. Economy	-0.19	0.03	-7.19	1008	< .001	-0.22	< .001	0.16	< .001
Not Funding Stem Cell Research	-0.17	0.03	-5.82	1010	< .001	-0.27	< .001	0.09	.046

703   *Note*. Items are listed in descending order of magnitude of the interaction effect *β*. All items

704   have been reverse-coded such that higher scores represent more conservative views. Graphical

705   depiction is available in Figure 8.

706 **Table S13**

707 PH$_{lib-con}$ *Toward Each Contentious Political Issue, Its Descriptive Statistics, and Its Correlation*

708 *with Political Orientation in Study 3*

Political Issue	Descriptive statistics of PH$_{lib-con}$ toward political issue			Correlation between PH$_{lib-con}$ and political orientation		
	n	*M*	*SD*	*n*	*r*	*p*
Illegal immigrants weaken the U.S. economy	1645	-0.87	2.43	1554	0.42	< 0.001
Not funding stem cell research	1650	-0.65	2.33	1559	0.30	< 0.001
Decreasing global warming restrictions	1648	-1.94	2.38	1558	0.37	< 0.001
The poor should work harder	1651	-1.51	2.10	1560	0.39	< 0.001
ACA/ Obamacare was a mistake	1651	-1.00	2.28	1560	0.34	< 0.001
No sterile drug facilities	1648	-0.89	2.55	1558	0.28	< 0.001
No marching in protest	1645	-1.50	2.31	1554	0.36	< 0.001
No kneeling in protest	1648	-0.12	2.37	1561	0.42	< 0.001
No impeachment of Former President Donald Trump	1644	-0.66	2.66	1555	0.48	< 0.001
No universal healthcare	1651	-2.09	2.46	1560	0.41	< 0.001

709

710 *Note*. Political orientation was a continuous variable (*1 = liberal, 5 = centrist, 9 = conservative*).

711 *n* = sample size, *M* = mean, *SD* = standard deviation, *r* = Pearson's correlation coefficient.

712 **Table S14**

713 *Pearson's Correlation Between Pain Sensitivity and Political Orientation Among Conservatives*

714 *and Among Liberals in Studies 1a–3*

Study	Correlation between pain sensitivity and political orientation					
	Among conservatives			Among liberals		
	r	*n*	*p*	*r*	*n*	*p*
1a	.103	404	.039	-.066	405	.183
1b	.155	288	.009	.038	287	.524
1c	.209	554	< .001	-.019	583	.642
2a	.082	434	.087	.019	455	.688
2b	.193	453	< .001	-.065	424	.182
3	.315	705	< .001	-.200	717	< .001

715

716 *Note*. Political orientation (*1 = liberal, 5 = centrist, 9 = conservative*).

717

Table S15

Standardized Regression Coefficient and Significance Level of the Interaction Effect of Pain

Sensitivity × Political Orientation Before and After Adding Ideological Extremity as a Predictor

to the Regression Models in Studies 1a–3

Dependent variable	Interaction effect of pain sensitivity × political orientation			
	In the original regression model (without ideological extremity as a predictor)		In the new regression model (after adding ideological extremity as a predictor)	
	β	*p*	*β*	*p*
Study 1a				
Regressing support for moral foundations on pain sensitivity × political orientation and their main effects (step 1)				
Care/harm	0.071	.026	0.065	.046
Fairness/cheating	0.203	< .001	0.189	< .001
Loyalty/betrayal	-0.076	.003	-0.078	.003
Authority/subversion	-0.157	< .001	-0.152	< .001
Sanctity/degradation	-0.166	< .001	-0.157	< .001
Regressing support for moral foundations on pain sensitivity × political orientation and their main effects together with control predictors (step 2)				
Care/harm	0.068	.026	0.065	.037
Fairness/cheating	0.181	< .001	0.173	< .001
Loyalty/betrayal	-0.071	.006	-0.070	.008
Authority/subversion	-0.148	< .001	-0.140	< .001
Sanctity/degradation	-0.154	< .001	-0.141	< .001
Regressing relevance of moral foundations on pain sensitivity × political orientation and their main effects (step 1)				
Care/harm	0.106	.001	0.104	.002
Fairness/cheating	0.117	< .001	0.115	< .001
Loyalty/betrayal	-0.044	.112	-0.041	.153
Authority/subversion	-0.068	.014	-0.071	.012
Sanctity/degradation	-0.123	< .001	-0.120	< .001
Regressing relevance of moral foundations on pain sensitivity × political orientation and their main effects together with control predictors (step 2)				
Care/harm	0.084	.005	0.085	.006
Fairness/cheating	0.102	.001	0.102	.001
Loyalty/betrayal	-0.060	.032	-0.053	.063
Authority/subversion	-0.083	.003	-0.081	.004
Sanctity/degradation	-0.118	< .001	-0.112	< .001
Study 1b				
Regressing support for moral foundations on pain sensitivity × political orientation and their main effects (step 1)				
Care/harm	0.079	.027	0.076	.033
Fairness/cheating	0.189	< .001	0.187	< .001
Loyalty/betrayal	-0.108	< .001	-0.103	< .001
Authority/subversion	-0.158	< .001	-0.155	< .001
Sanctity/degradation	-0.138	< .001	-0.138	< .001
Regressing support for moral foundations on pain sensitivity × political orientation and their main effects together with control predictors (step 2)				
Care/harm	0.053	.114	0.054	.104
Fairness/cheating	0.165	< .001	0.165	< .001
Loyalty/betrayal	-0.105	< .001	-0.100	< .001
Authority/subversion	-0.162	< .001	-0.158	< .001
Sanctity/degradation	-0.141	< .001	-0.140	< .001
Regressing relevance of moral foundations on pain sensitivity × political orientation and their main effects (step 1)				
Care/harm	0.121	.001	0.113	.003
Fairness/cheating	0.171	< .001	0.165	< .001
Loyalty/betrayal	-0.031	.381	-0.025	.480
Authority/subversion	-0.065	.049	-0.066	.046
Sanctity/degradation	-0.060	.076	-0.062	.065
Regressing relevance of moral foundations on pain sensitivity × political orientation and their main effects together with control predictors (step 2)				
Care/harm	0.082	.019	0.079	.025
Fairness/cheating	0.131	< .001	0.130	< .001
Loyalty/betrayal	-0.058	.092	-0.051	.141
Authority/subversion	-0.080	.014	-0.079	.016
Sanctity/degradation	-0.072	.028	-0.072	.027

Study 1c

Regressing support for moral foundations on pain sensitivity × political orientation and their main effects (step 1)

Care/harm	0.172	< .001	0.163	< .001
Fairness/cheating	0.168	< .001	0.165	< .001
Loyalty/betrayal	-0.116	< .001	-0.119	< .001
Authority/subversion	-0.151	< .001	-0.151	< .001
Sanctity/degradation	-0.133	< .001	-0.140	< .001

Regressing support for moral foundations on pain sensitivity × political orientation and their main effects together with control predictors (step 2)

Care/harm	0.144	< .001	0.136	< .001
Fairness/cheating	0.157	< .001	0.155	< .001
Loyalty/betrayal	-0.101	< .001	-0.106	< .001
Authority/subversion	-0.157	< .001	-0.158	< .001
Sanctity/degradation	-0.158	< .001	-0.165	< .001

Regressing support for moral foundations on pain sensitivity × political orientation and their main effects together with control predictors and disgust sensitivity × political orientation (step 3)

Care/harm	0.137	< .001	0.131	< .001
Fairness/cheating	0.170	< .001	0.167	< .001
Loyalty/betrayal	-0.105	< .001	-0.109	< .001
Authority/subversion	-0.158	< .001	-0.158	< .001
Sanctity/degradation	-0.161	< .001	-0.166	< .001

Regressing relevance of moral foundations on pain sensitivity × political orientation and their main effects (step 1)

Care/harm	0.128	< .001	0.126	< .001
Fairness/cheating	0.143	< .001	0.139	< .001
Loyalty/betrayal	-0.311	.212	-0.034	.180
Authority/subversion	-0.042	.091	-0.042	.096
Sanctity/degradation	-0.074	.003	-0.082	.001

Regressing relevance of moral foundations on pain sensitivity × political orientation and their main effects together with control predictors (step 2)

Care/harm	0.099	< .001	0.099	< .001
Fairness/cheating	0.121	< .001	0.118	< .001
Loyalty/betrayal	-0.039	.122	-0.042	.103
Authority/subversion	-0.062	.012	-0.062	.014
Sanctity/degradation	-0.097	< .001	-0.104	< .001

Regressing relevance of moral foundations on pain sensitivity × political orientation and their main effects together with control predictors and disgust sensitivity × political orientation (step 3)

Care/harm	0.098	< .001	0.099	< .001
Fairness/cheating	0.132	< .001	0.129	< .001
Loyalty/betrayal	-0.043	.111	-0.045	.098
Authority/subversion	-0.060	.025	-0.059	.027
Sanctity/degradation	-0.096	< .001	-0.102	< .001

Study 2a

Interaction effects of pain sensitivity × political orientation on voting or support for political figures

Intended voting	-1.458	< .001	-1.418	< .001
Actual voting	-1.057	< .001	-1.003	< .001
Conservative candidate	-0.081	< .001	-0.082	< .001
Liberal candidate	0.110	< .001	0.112	< .001
Donald Trump	-0.138	< .001	-0.152	< .001
Mike Pence	-0.163	< .001	-0.170	< .001
Mitch McConnell	-0.135	< .001	-0.139	< .001
Kevin McCarthy	-0.154	< .001	-0.154	< .001
Joe Biden	0.135	< .001	0.143	< .001
Kamala Harris	0.140	< .001	0.146	< .001
Bernie Sanders	0.196	< .001	0.201	< .001
Elizabeth Warren	0.204	< .001	0.205	< .001
Nancy Pelosi	0.153	< .001	0.154	< .001
Steny Hoyer	0.189	< .001	0.192	< .001
Chuck Schumer	0.159	< .001	0.159	< .001

Interaction effects of pain sensitivity × political orientation on support for political issues

Illegal immigrants weaken the U.S. economy	-0.206	< .001	-0.207	< .001
No wealth redistribution	-0.200	< .001	-0.201	< .001
The poor should work harder	-0.191	< .001	-0.188	< .001
Not funding stem cell research	-0.190	< .001	-0.191	< .001
No universal healthcare	-0.189	< .001	-0.198	< .001
No impeachment of former president Donald Trump	-0.182	< .001	-0.190	< .001
Decrease global warming restrictions	-0.179	< .001	-0.186	< .001
No sterile drug facilities	-0.178	< .001	-0.178	< .001
ACA/Obamacare is mistake	-0.177	< .001	-0.185	< .001
No protests	-0.171	< .001	-0.171	< .001
Keystone oil pipeline	-0.171	< .001	-0.165	< .001
Free market	-0.162	< .001	-0.156	< .001
Abolishing unions	-0.154	< .001	-0.147	< .001

Death penalty	-0.150	< .001	-0.145	< .001
Gun ownership	-0.148	< .001	-0.152	< .001
Defense spending	-0.140	< .001	-0.142	< .001
Teaching creationism	-0.139	< .001	-0.137	< .001
No abortion	-0.127	< .001	-0.134	< .001
War in Afghanistan	-0.125	< .001	-0.118	< .001
COVID exaggerated	-0.122	< .001	-0.126	< .001
Illegal marijuana	-0.093	.001	-0.098	< .001
Illegal to burn Flag	-0.092	< .001	-0.085	.002
Torturing terrorists	-0.075	.008	-0.074	.009
Confront terrorism	-0.050	.092	-0.048	.111
No same-sex marriage	-0.043	.113	-0.051	.055

Study 2b

Interaction effects of pain sensitivity × political orientation on voting or support for political figures

Actual voting	-0.840	< .001	-0.845	< .001
Conservative candidate	-0.113	< .001	-0.118	< .001
Liberal candidate	0.108	< .001	0.114	< .001
Donald Trump	-0.228	< .001	-0.241	< .001
Mike Pence	-0.227	< .001	-0.232	< .001
Mitch McConnell	-0.140	< .001	-0.142	< .001
Kevin McCarthy	-0.164	< .001	-0.166	< .001
Joe Biden	0.171	< .001	0.177	< .001
Kamala Harris	0.206	< .001	0.209	< .001
Bernie Sanders	0.315	< .001	0.306	< .001
Elizabeth Warren	0.235	< .001	0.229	< .001
Nancy Pelosi	0.213	< .001	0.211	< .001
Steny Hoyer	0.158	< .001	0.158	< .001
Chuck Schumer	0.208	< .001	0.204	< .001

Interaction effects of pain sensitivity × political orientation on support for political issues

No universal healthcare	-0.307	< .001	-0.311	< .001
Decrease global warming restrictions	-0.294	< .001	-0.298	< .001
The poor should work harder	-0.273	< .001	-0.263	< .001
No marching in protest	-0.259	< .001	-0.259	< .001
ACA/Obamacare is mistake	-0.239	< .001	-0.243	< .001
No sterile drug facilities	-0.219	< .001	-0.204	< .001
No impeachment of former president Donald Trump	-0.218	< .001	-0.229	< .001
No kneeling in protest	-0.201	< .001	-0.205	< .001
Illegal immigrants weaken the U.S. economy	-0.193	< .001	-0.202	< .001
Not funding stem cell research	-0.171	< .001	-0.168	< .001

Study 3

Interaction effects of pain sensitivity × political orientation on perceived harm in attitudinal disagreements with moral foundations

Care/harm	-0.007	.778	-0.016	.511
Fairness/cheating	0.072	.003	0.059	.015
Loyalty/betrayal	-0.093	< .001	-0.096	< .001
Authority/subversion	-0.113	< .001	-0.114	< .001
Sanctity/degradation	-0.117	< .001	-0.123	< .001

Interaction effects of pain sensitivity × political orientation on perceived harm in behavioral violations of moral foundations

Care/harm	0.117	< .001	0.113	< .001
Fairness/cheating	0.139	< .001	-0.139	< .001
Loyalty/betrayal	-0.082	< .001	-0.089	< .001
Authority/subversion	-0.050	.014	-0.054	.010
Sanctity/degradation	-0.112	< .001	-0.115	< .001

Interaction effects of pain sensitivity × political orientation on difference in perceived harm in liberal attitude and in conservative attitude toward political issues

Decreasing global warming restrictions	-0.324	< .001	-0.328	< .001
No universal healthcare	-0.287	< .001	-0.283	< .001
No impeachment of former president Donald Trump	-0.241	< .001	-0.248	< .001
Illegal immigrants weaken the U.S. economy	-0.272	< .001	-0.275	< .001
ACA/Obamacare was a mistake	-0.288	< .001	-0.286	< .001
The poor should work harder	-0.275	< .001	-0.276	< .001
No marching in protest	-0.220	< .001	-0.218	< .001
Not funding stem cell research	-0.196	< .001	-0.202	< .001
No sterile drug facilities	-0.181	< .001	-0.184	< .001
No kneeling in protest	-0.146	< .001	-0.146	< .001

722

723   *Note*. Political orientation (*1 = liberal, 5 = centrist, 9 = conservative*). Ideological extremity was

724   created by coding political orientation in terms of difference from the midpoint (i.e., 1, 2, 3, 4, 5,

725   6, 7, 8, 9 became 4, 3, 2, 1, 0, 1, 2, 3, 4).

726   **Table S16**

727   *Collinearity Diagnostics for Regression Analyses in Studies 1a–3*

Outcome	Predictor: Pain sensitivity × political orientation		Predictor: Pain sensitivity		Predictor: Political orientation		Condition index		
	VIF	Tolerance	VIF	Tolerance	VIF	Tolerance	OD1	OD2	OD3
Study 1a									
All outcomes (support for or relevance of each moral foundation)	16.72	0.06	5.47	0.18	8.92	0.11	1.50	1.80	8.14
Study 1b									
All outcomes (support for or relevance of each moral foundation)	11.92	0.08	4.53	0.22	7.21	0.14	1.44	1.54	6.77
Study 1c									
All outcomes (support for or relevance of each moral foundation)	12.64	0.08	4.17	0.24	7.95	0.13	1.46	1.59	7.00
Study 2a									
Voting for a Conservative Candidate	11.37	0.09	4.31	0.23	7.45	0.13	1.42	1.47	6.60
Voting for a Liberal Candidate	11.39	0.09	4.33	0.23	7.44	0.13	1.42	1.47	6.60
Support for Donald Trump	11.38	0.09	4.33	0.23	7.43	0.13	1.42	1.47	6.60
Support for Mike Pence	11.38	0.09	4.28	0.23	7.50	0.13	1.42	1.47	6.60
Support for Mitch McConnell	11.30	0.09	4.19	0.24	7.37	0.14	1.42	1.49	6.58
Support for Kevin McCarthy	11.55	0.09	4.42	0.23	7.46	0.13	1.42	1.59	6.83
Support for Joe Biden	11.36	0.09	4.30	0.23	7.46	0.13	1.42	1.47	6.59
Support for Kamala Harris	11.43	0.09	4.26	0.23	7.52	0.13	1.42	1.47	6.62
Support for Bernie Sanders	11.30	0.09	4.30	0.23	7.41	0.13	1.42	1.47	6.57
Support for Elizabeth Warren	11.49	0.09	4.25	0.24	7.59	0.13	1.42	1.48	6.63
Support for Nancy Pelosi	11.32	0.09	4.27	0.23	7.42	0.13	1.42	1.47	6.58
Support for Steny Hoyer	12.79	0.08	4.44	0.23	8.42	0.12	1.40	1.82	7.44
Support for Chuck Schumer	11.37	0.09	4.24	0.24	7.39	0.14	1.43	1.50	6.62
Illegal Immigrants Weaken the U.S. Economy	11.37	0.09	4.31	0.23	7.45	0.13	1.42	1.47	6.60
No Wealth Redistribution	11.37	0.09	4.31	0.23	7.45	0.13	1.42	1.47	6.60
The Poor Should Work Harder	11.41	0.09	4.31	0.23	7.45	0.13	1.42	1.47	6.61
Not Funding Stem Cell Research	11.39	0.09	4.31	0.23	7.46	0.13	1.42	1.47	6.60
No Universal Healthcare	11.34	0.09	4.30	0.23	7.44	0.13	1.42	1.47	6.59
No Impeachment of Former President Donald Trump	11.35	0.09	4.31	0.23	7.43	0.13	1.42	1.47	6.59
Decreasing Global Warming Restrictions	11.37	0.09	4.31	0.23	7.45	0.13	1.42	1.47	6.60
ACA/Obamacare Was a Mistake	11.37	0.09	4.32	0.23	7.45	0.13	1.42	1.47	6.60
No Sterile Drug Facilities	11.37	0.09	4.31	0.23	7.45	0.13	1.42	1.47	6.60
No Protesting	11.37	0.09	4.31	0.23	7.45	0.13	1.42	1.47	6.60
Keystone Oil Pipeline	11.37	0.09	4.30	0.23	7.47	0.13	1.42	1.47	6.60
Free Market	11.50	0.09	4.36	0.23	7.49	0.13	1.42	1.47	6.64
Abolishing Unions	11.35	0.09	4.31	0.23	7.44	0.13	1.42	1.47	6.59
Death Penalty	11.40	0.09	4.33	0.23	7.46	0.13	1.42	1.47	6.61
Right to Own Guns	11.37	0.09	4.31	0.23	7.45	0.13	1.42	1.47	6.60
Increasing Defence Spending	11.37	0.09	4.31	0.23	7.45	0.13	1.42	1.47	6.60
Teaching Creationism	11.34	0.09	4.30	0.23	7.45	0.13	1.42	1.47	6.59
Not Permitting Abortion	11.37	0.09	4.32	0.23	7.43	0.13	1.42	1.47	6.60
War in Afghanistan	11.35	0.09	4.31	0.23	7.43	0.13	1.42	1.47	6.59
Response to COVID-19 Has Been Exaggerated	11.36	0.09	4.31	0.23	7.43	0.13	1.42	1.47	6.59
No Legalization of Marijuana	11.33	0.09	4.31	0.23	7.42	0.13	1.42	1.47	6.58
Criminalizing Flag-Burning	11.40	0.09	4.31	0.23	7.46	0.13	1.42	1.47	6.61
Torture on Suspected Terrorist	11.37	0.09	4.31	0.23	7.45	0.13	1.42	1.47	6.60
Confronting Terrorism	11.37	0.09	4.31	0.23	7.45	0.13	1.42	1.47	6.60
Not Permitting Same-Sex Marriage	11.37	0.09	4.31	0.23	7.45	0.13	1.42	1.47	6.60
Study 2b									
Voting for a Conservative Candidate	14.50	0.07	5.03	0.20	8.88	0.11	1.45	1.57	7.51
Voting for a Liberal Candidate	14.51	0.07	5.02	0.20	8.88	0.11	1.45	1.57	7.51
Support for Donald Trump	14.49	0.07	5.04	0.20	8.85	0.11	1.45	1.57	7.50
Support for Mike Pence	14.75	0.07	5.11	0.20	8.97	0.11	1.45	1.57	7.57
Support for Mitch McConnell	14.62	0.07	4.96	0.20	9.00	0.11	1.45	1.58	7.54
Support for Kevin McCarthy	15.92	0.06	5.29	0.19	10.15	0.10	1.49	1.68	8.23
Support for Joe Biden	14.49	0.07	5.01	0.20	8.90	0.11	1.45	1.56	7.50
Support for Kamala Harris	14.82	0.07	5.10	0.20	9.02	0.11	1.45	1.58	7.59
Support for Bernie Sanders	14.42	0.07	5.00	0.20	8.83	0.11	1.45	1.57	7.48
Support for Elizabeth Warren	14.61	0.07	4.93	0.20	8.97	0.11	1.45	1.59	7.54
Support for Nancy Pelosi	14.94	0.07	5.19	0.19	9.07	0.11	1.45	1.57	7.62
Support for Steny Hoyer	18.49	0.05	5.46	0.18	12.43	0.08	1.54	1.92	9.48
Support for Chuck Schumer	14.91	0.07	5.28	0.19	9.16	0.11	1.48	1.57	7.73
No Universal Healthcare	14.54	0.07	5.03	0.20	8.89	0.11	1.45	1.57	7.52
Decreasing Global Warming Restrictions	14.59	0.07	5.06	0.20	8.89	0.11	1.45	1.57	7.53
The Poor Should Work Harder	14.56	0.07	5.05	0.20	8.88	0.11	1.45	1.57	7.52
The Poor Should Work Harder	14.56	0.07	5.05	0.20	8.88	0.11	1.45	1.57	7.52
No Marching in Protest	14.51	0.07	5.03	0.20	8.88	0.11	1.45	1.57	7.51

ACA/Obamacare Was a Mistake	14.53	0.07	5.06	0.20	8.86	0.11	1.45	1.57	7.51
No Sterile Drug Facilities	14.48	0.07	5.02	0.20	8.88	0.11	1.45	1.56	7.50
No Impeachment of Former President Donald Trump	14.51	0.07	5.03	0.20	8.88	0.11	1.45	1.57	7.51
No Kneeling in Protest	14.48	0.07	5.02	0.20	8.87	0.11	1.45	1.56	7.50
Illegal Immigrants Weaken the U.S. Economy	14.51	0.07	5.03	0.20	8.87	0.11	1.45	1.57	7.51
Not Funding Stem Cell Research	14.54	0.07	5.05	0.20	8.91	0.11	1.45	1.56	7.52
Study 3									
All outcomes related to moral foundations (support for or relevance of each moral foundation)	12.52	0.08	3.93	0.25	7.97	0.13	1.46	1.62	6.97
Decreasing Global Warming Restrictions	12.54	0.08	3.93	0.25	7.97	0.13	1.46	1.62	6.98
No Universal Healthcare	12.50	0.08	3.93	0.25	7.95	0.13	1.46	1.62	6.96
No Impeachment of Former President Donald Trump	12.52	0.08	3.93	0.25	7.97	0.13	1.46	1.62	6.97
Illegal Immigrants Weaken the U.S. Economy	12.54	0.08	3.91	0.26	8.00	0.12	1.46	1.62	6.98
ACA/Obamacare Was a Mistake	12.51	0.08	3.93	0.25	7.97	0.13	1.46	1.62	6.97
The Poor Should Work Harder	12.52	0.08	3.94	0.25	7.94	0.13	1.46	1.62	6.97
No Marching in Protest	12.55	0.08	3.94	0.25	7.98	0.13	1.46	1.62	6.98
Not Funding Stem Cell Research	12.48	0.08	3.92	0.25	7.95	0.13	1.46	1.62	6.96
No Sterile Drug Facilities	12.52	0.08	3.93	0.25	7.97	0.13	1.46	1.62	6.97
No Kneeling in Protest	12.52	0.08	3.93	0.25	7.97	0.13	1.46	1.62	6.97

Note. VIF = variance inflation factor. Tolerance = 1 / VIF. OD = orthogonal dimension extracted from principal components analysis. For each outcome (i.e., in each row), the largest condition index is also known as the condition number (i.e., the square root of the ratio of the largest eigenvalue to the smallest eigenvalue among all orthogonal dimensions extracted from principal components analysis).

734 **Table S17**

735 *Reliability Coefficient and Descriptive Statistics of Scales in Studies 1a–1c*

Variables	Study 1a			Study 1b			Study 1c		
	α	*M*	*SD*	*α*	*M*	*SD*	*α*	*M*	*SD*
Support for Moral Foundation									
Care/Harm	0.49	3.53	0.97	0.48	3.57	0.97	0.48	3.50	0.97
Fairness/Cheating	0.35	3.37	0.93	0.38	3.38	0.90	0.35	3.32	0.87
Loyalty/Betrayal	0.64	2.74	1.14	0.63	2.42	1.19	0.63	2.37	1.17
Authority/Subversion	0.66	3.08	1.13	0.73	3.04	1.22	0.70	2.99	1.19
Sanctity/Degradation	0.80	2.79	1.36	0.75	2.66	1.34	0.75	2.56	1.33
Relevance of Moral Foundation									
Care/Harm	0.73	3.63	0.99	0.72	3.70	0.92	0.69	3.67	0.90
Fairness/Cheating	0.76	3.63	1.02	0.75	3.78	0.90	0.71	3.80	0.85
Loyalty/Betrayal	0.77	2.60	1.21	0.69	2.76	1.10	0.70	2.68	1.07
Authority/Subversion	0.68	2.73	1.10	0.64	2.76	1.02	0.64	2.77	0.99
Sanctity/Degradation	0.75	2.57	1.35	0.62	2.73	1.21	0.65	2.67	1.21
Pain Sensitivity	0.95	4.81	2.05	0.95	4.18	1.81	0.95	4.06	1.72
Disgust Sensitivity	0.78	0.58	0.16	0.82	0.56	0.17	0.87	2.22	0.64
Emotion Reactivity	0.96	2.37	0.73	0.95	2.34	0.67	-	-	-
Anger	0.94	2.03	0.69	0.91	1.92	0.55	-	-	-
Anxiety	0.95	2.07	0.57	0.96	2.10	0.53	-	-	-
Empathy	0.91	4.19	0.67	0.91	4.16	0.64	-	-	-

736

737 *Note.* *α* = reliability coefficient (Cronbach's alpha), *M* = mean, *SD* = standard deviation. All

738 scale reliabilities resemble prior research, including the lower reliabilities of Support for

739 Care/Harm and Fairness/Cheating in the Moral Foundations Questionnaire (Graham et al., 2011).

740   **Table S18**

741   *Incoherent Pattern of Interaction Effects of Pain Sensitivity × Political Orientation on Attitudes*

742   *Toward Political Issues in Study 2a if Reverse-Wording and Reverse-Scoring Were Ignored*

Political issues	β when reverse-wording and reverse-scoring were properly considered	β if reverse-wording and reverse-scoring were ignored
Illegal Immigrants Weaken the U.S. Economy †	-0.21	0.21
No Wealth Redistribution †	-0.20	0.20
The Poor Should Work Harder †	-0.19	0.19
Not Funding Stem Cell Research †	-0.19	0.19
No Universal Healthcare †	-0.19	0.19
No Impeachment of Former President Donald Trump †	-0.18	0.18
Decreasing Global Warming Restrictions †	-0.18	0.18
No Sterile Drug Facilities †	-0.18	0.18
ACA/Obamacare was a Mistake †	-0.18	0.18
No Protests †	-0.17	0.17
Keystone Oil Pipeline	-0.17	-0.17
Free Market †	-0.16	0.16
Abolishing Unions	-0.15	-0.15
Death Penalty	-0.15	-0.15
Gun Ownership †	-0.15	0.15
Defense Spending	-0.14	-0.14
Teaching Creationism	-0.14	-0.14
No Abortion †	-0.13	0.13
War in Afghanistan	-0.13	-0.13
COVID Exaggerated	-0.12	-0.12
Illegal Marijuana †	-0.09	0.09
Illegal to Burn Flag	-0.09	-0.09
Torturing Terrorists	-0.08	-0.08
Confront Terrorism	-0.05	-0.05
No Same-Sex Marriage †	-0.04	0.04

743

744   *Note*. Items are listed in descending order of magnitude of the interaction effect of pain

745   sensitivity × political orientation in Study 2a. † denotes items that were reverse-worded and thus

746   should be reverse-coded (so higher scores should always represent more conservative views).

747

748 **Table S19**

749 *Zero-Order Correlations in Studies 1a–1b*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Pain Sensitivity	1.00	.29***	.32***	.43***	.34***	.39***	.04	.07	.33***	.39***	.32***	.13***	.35***	.27***	-.01	.23***	.13***
2. Support for Care	.22***	1.00	.47***	.13***	.11**	.20***	.42***	.37***	.21***	.24***	.20***	-.12**	.32***	.19***	.02	.02	.35***
3. Support for Fairness	.28***	.44***	1.00	-.01	-.11**	.00	.32***	.43***	.11**	.09*	.02	-.30***	.21***	.29***	.14***	.14***	.25***
4. Support for Loyalty	.53***	.15***	.15***	1.00	.63***	.61***	-.08*	-.13***	.49***	.52***	.44***	.49***	.17***	.04	-.21***	.08*	-.04
5. Support for Authority	.40***	.07*	.05	.61***	1.00	.66***	-.05	-.11**	.43***	.59***	.53***	.59***	.15***	-.02	-.25***	.02	.02
6. Support for Sanctity	.43***	.15***	.12***	.63***	.63***	1.00	.03	-.05	.46***	.59***	.70***	.51***	.30***	.07	-.17***	.06	.04
7. Relevance of Care	.03	.46***	.35***	-.03	-.03	.05	1.00	.68***	.31***	.27***	.30***	-.14***	.15***	.15***	.02	.04	.38***
8. Relevance of Fairness	.04	.36***	.41***	-.08**	-.07*	-.03	.68***	1.00	.22***	.23***	.20***	-.20***	.14***	.18***	.03	.06	.38***
9. Relevance of Loyalty	.48***	.18***	.15***	.61***	.50***	.55***	.16***	.09**	1.00	.61***	.56***	.26***	.19***	.16***	.20***	.20***	.17***
10. Relevance of Authority	.49***	.18***	.15***	.59***	.57***	.62***	.18***	.15***	.71***	1.00	.65***	.34***	.28***	.11**	-.14***	.10**	.13***
11. Relevance of Sanctity	.46***	.15***	.09**	.58***	.57***	.77***	.14***	.04	.65***	.66***	1.00	.39***	.28***	.11**	-.13***	.13***	.09*
12. Political Orientation	.30***	-.13***	-.18***	.50***	.49***	.49***	-.20***	-.20***	.39***	.41***	.46***	1.00	.02	-.08*	-.22***	.00	-.12**
13. Disgust Sensitivity	.36***	.22***	.16***	.30***	.28***	.40***	.10**	.06	.34***	.33***	.41***	.16***	1.00	.21***	.07	.05	.20***
14. Emotion Reactivity	.48***	.11***	.16***	.29***	.19***	.26***	-.04	-.08*	.35***	.32***	.31***	.19***	.29***	1.00	.54***	.65***	.24***
15. Anxiety	.23***	-.02	.02	.06	-.05	.06	-.08*	-.09**	.16***	.10**	.11***	.07*	.11***	.66***	1.00	.49***	.06
16. Anger	.54***	-.01	.11***	.33***	.22***	.27***	-.11***	-.10**	.37***	.35***	.31***	.32***	.19***	.73***	.61***	1.00	.03
17. Empathy	.18***	.37***	.35***	.11**	.12***	.12***	.43***	.34***	.16***	.16***	.15***	-.06	.17***	.19***	-.03	.02	1.00

750

751 *Note.* Political orientation was a continuous variable (*1 = liberal, 5 = centrist, 9 = conservative*). Study 1a correlation coefficients are

752 below the diagonal, Study 1b correlation coefficients above it. * *p* < .05, ** *p* < .01, *** *p* < .001.

753 **Table S20**

754 *Results of Psychophysical Validation Study as a Function of How the Level 1 Predictor*

755 *(Objective Pressure Amount) and Level 2 Predictor (PSQ Score) Were Analyzed*

Results	Model 1	Model 2	Model 3	Model 4
Model summary				
How was OPA analyzed?	Grand standardized (level 1)	Grand mean-centered (level 1)	Standardized within participant (level 1); participant-level mean being standardized between participants (level 2)	Mean-centered within participant (level 1); participant-level mean being mean-centered between participants (level 2)
How was PSQ score analyzed?	Standardized	Mean-centered	Standardized	Mean-centered
Basic model statistics				
Random intercept				
var	3,129.90	3218.09	185.67	183.93
SD	55.95	56.73	13.63	13.56
95% CI of *SD*	50.80, 61.28	50.80, 61.28	12.38, 14.82	12.38, 14.82
Random slope of OPA				
var	845.92	0.1151	944.02	0.1368
SD	29.09	0.3393	30.73	0.3605
95% CI of *SD*	26.07, 32.19	0.3023, 0.3733	27.51, 34.06	0.3190, 0.3950
r between random intercept and random slope				
r	.54	.55	-.08	-.08
95% CI of *r*	.4336, .6355	.4336, .6355	-.2275, .0712	-.2275, .0712
Primary results				
Main effect of PSQ score (level 2)				
β	15.472	10.934	3.012	2.128
SE	3.516	2.517	0.874	0.615
df	230.841	222.787	253.266	256.677
t	4.401	4.334	3.446	3.463
p	1.65e-05	2.12e-05	.0007	.0006
R^2	.077	.078	.045	.045
Main effect of OPA (level 1)				
β	65.344	0.7588	68.659	0.7963
SE	1.929	0.0225	2.0527	0.0238
df	215.616	213.0150	207.874	208.133
t	33.875	33.746	33.448	33.469
p	< 2e-16	< 2e-16	< 2e-16	< 2e-16
R^2	.842	.842	.843	.843
Interaction effect of PSQ score (level 2) × OPA (level 1)				
β	4.822	0.0396	5.314	0.0435
SE	1.936	0.0159	2.060	0.0169
df	215.279	212.703	208.234	208.490
t	2.490	2.483	2.580	2.581
p	.0135	.0138	.0106	.0105
R^2	.028	.028	.031	.031
Main effect of OPA (level 2)				
β	-	-	1.290	0.0171
SE	-	-	0.883	0.0116
df	-	-	257.507	260.856
t	-	-	1.461	1.475
p	-	-	.1452	.1413
R^2	-	-	.008	.008
Interaction effect of PSQ score (level 2) × OPA (level 2)				
β	-	-	-0.1477	-0.0014
SE	-	-	0.8113	0.0075
df	-	-	254.206	257.492
t	-	-	-0.182	-0.184
p	-	-	.8557	.8541
R^2	-	-	.000	.000

756

757   *Note.* OPA = objective pressure amount. PSQ = pain sensitivity questionnaire. *var* = variance.

758   *SD* = standard deviation. 95% CI = 95% confidence interval. *r* = Pearson's correlation

759   coefficient. A positive (or negative) *r* between random intercept and random slope indicated that

760   participants with a higher intercept in subjective pain intensity tended to show a more positive

761   (or negative) association between objective pressure amount and subjective pain intensity.

762   When OPA was standardized or mean-centered within participant (models 3–4), each

763   participant's mean was reintroduced as a level 2 predictor into the multilevel model so that both

764   within-participant and between-participant effects of OPA could be separately investigated

765   (Enders & Tofighi, 2007). This step of reintroducing each participant's mean was unnecessary

766   when OPA was grand standardized or grand mean-centered (models 1–2).

767

768 **Table S21**

769 *Zero-Order Correlations in Study 1c*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Pain Sensitivity	1.00												
2. Support for Care/Harm	.19***	1.00											
3. Support for Fairness/Cheating	.19***	.46***	1.00										
4. Support for Loyalty/Betrayal	.34***	.05	-.06*	1.00									
5. Support for Authority/Subversion	.29***	-.01	-.14***	.69***	1.00								
6. Support for Sanctity/Degradation	.35***	.15***	.01	.58***	.66***	1.00							
7. Relevance of Care/Harm	.02	.41***	.33***	-.14***	-.09**	.01	1.00						
8. Relevance of Fairness/Cheating	-.06*	.33***	.36***	-.24***	-.18***	-.14***	.62***	1.00					
9. Relevance of Loyalty/Betrayal	.31***	.11***	.08**	.47***	.47***	.48***	.23***	.10	1.00				
10. Relevance of Authority/Subversion	.32***	.17***	.10***	.46***	.55***	.55***	.27***	.18	.61***	1.00			
11. Relevance of Sanctity/Degradation	.29***	.13***	.02	.44***	.54***	.69***	.22***	.07*	.57***	.64***	1.00		
12. Political Orientation	.17***	-.13***	-.30***	.56***	.65***	.52***	-.16***	-.23	.33***	.32***	.41***	1.00	
13. Disgust Sensitivity	.37***	.30***	.19***	.12***	.18***	.36***	.19***	.13	.20***	.30***	.30***	.10***	1.00

770

771 *Note.* Political orientation was a continuous variable (*1 = liberal, 5 = centrist, 9 = conservative*). * *p* < .05, ** *p* < .01, *** *p* < .001.

772

773 **Table S22**

774 *Political Issues and Their Scale Labels and Descriptive Statistics in Studies 2a–2b*

Issues and scale labels	Reverse-scored?	Study 2a			Study 2b		
		n	*M*	*SD*	*n*	*M*	*SD*
"Please select the attitude that comes closest to your views on ___."							
abortion	Yes	1005	3.05	2.13	-	-	-
(1 = Abortion should not be permitted at all; 3 = Abortion should be against the law except in cases of rape, incest and to save the woman's life; 5 = Abortion should be available but under stricter limits than it is now; 7 = Abortion should be generally available to those who want it)							
defence spending	No	1006	3.65	1.80	-	-	-
(1 = The federal government should decrease its defence spending; 4 = The federal government should maintain its current defence spending; 7 = The federal government should increase its defence spending)							
teaching intelligent design/creationism	No	1006	3.35	1.91	-	-	-
(1 = Public schools should only teach the theory of evolution; 4 = Public schools should teach intelligent design/creationism along with evolution; 7 = Public schools should only teach intelligent design/creationism (instead of evolution))							
illegal immigrants	Yes	1006	3.73	2.16	1022	3.82	1.94
(1 = Illegal immigrants do more to weaken the US economy overall because they do not all pay taxes but can use public services; 7 = Illegal immigrants do more to strengthen the US economy overall because they provide low-cost labor and they spend money)							
terrorism	No	1007	3.86	1.97	-	-	-
(1 = In the long run, the US will be safer from terrorism if it stays out of other countries' affairs in the Middle East; 7 = In the long run, the US will be safer from terrorism if it confronts the countries and troops that promote terrorism in the Middle East)							
torture	No	1007	3.23	1.79	-	-	-
(1 = It is NEVER justified to use forceful interrogation techniques/torture to get information from a suspected terrorist; 4 = It is SOMETIMES justified to use forceful interrogation techniques/torture to get information from a suspected terrorist; 7 = It is OFTEN justified to use forceful interrogation techniques/torture to get information from a suspected terrorist)							
stem cell research	Yes	1005	3.13	2.04	1024	3.16	1.83
(1 = The federal government should NOT fund research that would use newly created stem cells obtained from human embryos; 7 = The federal government should fund research that would use newly created stem cells obtained from human embryos)							
flag-burning	No	1005	3.85	2.43	-	-	-
(1 = I oppose a constitutional amendment that would make it illegal to burn the American flag; 7 = I favour a constitutional amendment that would make it illegal to burn the American flag)							
gun control legislation	Yes	1007	3.61	2.32	-	-	-
(1 = When it comes to gun control legislation, I think it is more important to protect the right of Americans to own guns; 7 = When it comes to gun control legislation, I think It is more important to control gun ownership)							
global warming	Yes	1007	2.65	1.92	1023	2.42	1.64
(1 = The government should decrease the current restrictions because global warming is a theory that has not yet been proven; 4 = The restrictions that are currently in place are sufficient to reduce the effects of global warming; 7 = The government should increase restrictions on emissions from cars and industrial facilities such as power plants and factories in an attempt to reduce the effects of global warming)							
same-sex couples	Yes	1007	2.59	2.16	-	-	-
(1 = Same-sex couples should NOT be allowed to marry nor have civil unions; 4 = Same-sex couples should be allowed to have a civil union, but not to marry; 7 = Same-sex couples should be allowed to legally marry)							
the response to COVID-19	No	1004	3.09	2.09	-	-	-
(1 = The government is not doing enough to fight COVID-19; 4 = The government is doing enough to fight COVID-19; 7 = The response of the society to COVID-19 has been exaggerated)							
economic regulation	Yes	1004	3.45	1.75	-	-	-
(1 = The economic market will naturally correct itself; 7 = The federal government must regulate the economy)							

		n	M	SD	n	M	SD
social welfare *(1 = The poor should learn to work harder; 7 = Social programs serve a valuable role in our society)*	Yes	1003	2.58	1.68	1018	2.59	1.52
the Affordable Care Act (ObamaCare) *(1 = The passage of the Affordable Care Act (ObamaCare) was a great mistake in American history; 3 = The Supreme Court should find the Affordable Care Act (Obama Care) unconstitutional; 5 = The Affordable Care Act (Obama Care) should continue to go into effect over the next few years; 7 = The passage of the Affordable Care Act (ObamaCare) was a great moment in American history)*	Yes	1005	3.42	2.03	1020	3.20	1.71

"Please rate the extent to which you support or oppose each of the following:"
(-3 = strongly oppose, -2 = oppose, -1 = somewhat oppose, 0 = neither oppose nor support, 1 = somewhat support, 2 = support, 3 = strongly support)

		n	M	SD	n	M	SD
Government funded facilities that provide sterile supplies (clean needles, sterile water for injections) to drug users	Yes	1007	-0.58	2.08	1023	-0.82	1.87
Legalization of marijuana	Yes	1001	-1.31	1.92	-	-	-
Wealth redistribution	Yes	1007	-0.60	2.13	-	-	-
War in Afghanistan	No	1006	-0.95	1.78	-	-	-
[Different forms of protesting]	Yes	1007	-0.72	1.65	-	-	-
Marching in a protest (e.g., Black Lives Matter, Occupy Wall Street)	Yes	1007	-0.93	2.05	1024	-1.05	1.80
Kneeling during the national anthem	Yes	1007	-0.21	2.25	1023	-0.04	1.97
Going on strike	Yes	1004	-1.02	1.60	-	-	-
Abolishing unions	No	1006	-0.70	1.84	-	-	-
Impeachment of President Donald Trump	Yes	1006	-0.37	2.50	1025	-0.59	2.20
Universal health care	Yes	1004	-1.29	2.09	1021	-1.71	1.65
Keystone Oil Pipeline	No	1005	-0.24	1.85	-	-	-
Death penalty	No	1004	0.24	2.02	-	-	-

775

776   *Note*. Some items were reverse-scored such that on all items, higher scores would indicate more

777   conservative attitudes. Different forms of protesting were analyzed as a single issue in Study 2a.

778   Two forms of protesting were included and analyzed separately in Study 2b as preregistered. *n* =

779   sample size, *M* = mean (after reverse-scoring where relevant), *SD* = standard deviation.

780 **Table S23**

781 *Generic Voting Likelihood Items and Their Scale Labels and Descriptive Statistics in Studies 2a–*

782 *2b*

Items and scale labels	Study 2a			Study 2b		
	n	*M*	*SD*	*n*	*M*	*SD*
"How likely are you to vote for....." *(extremely unlikely, moderately unlikely, slightly unlikely, neither likely nor unlikely, slightly likely, moderately likely, extremely likely)* **scored 1 to 7**						
A Liberal Political Candidate	1005	4.26	2.35	1023	4.26	2.06
A Conservative Political Candidate	1007	4.01	2.32	1022	4.34	2.04
An Independent Political Candidate	1007	4.26	1.65	1021	4.52	1.44

783

784 *Note*. *n* = sample size, *M* = mean, *SD* = standard deviation.

785 **Table S24**

786 *Support for Political Figures in Studies 2a–2b*

Political Figure	Study 2a				Study 2b			
	n	*α*	*M*	*SD*	*n*	*α*	*M*	*SD*
Donald Trump (President, Republican)	1001	0.98	3.44	2.45	1020	0.97	3.35	2.14
Mike Pence (Vice President, Republican)	996	0.99	3.50	2.33	986	0.97	3.55	1.90
Mitch McConnell (Senate Majority Leader, Republican)	892	0.98	3.06	1.97	921	0.97	3.23	1.79
Kevin McCarthy (House Minority Leader, Republican)	570	0.98	3.61	1.88	657	0.95	3.80	1.69
Joe Biden (Presidential candidate, Democrat)	1003	0.97	3.90	2.20	1022	0.97	4.41	1.95
Kamala Harris (Vice Presidential candidate, Democrat)	975	0.98	3.80	2.22	1002	0.96	4.06	1.89
Nancy Pelosi (Speaker of the House of Representatives, Democrat)	968	0.98	3.57	2.22	976	0.97	3.68	1.88
Steny Hoyer (House Majority Leader, Democrat)	424	0.97	4.06	1.69	515	0.93	4.12	1.41
Chuck Schumer (Senate Minority Leader, Democrat)	789	0.98	3.68	2.00	806	0.96	3.79	1.70
Bernie Sanders (former presidential primary candidate, Democrat)	999	0.97	4.17	2.19	1006	0.96	4.44	1.83
Elizabeth Warren (former presidential primary candidate, Democrat)	930	0.98	3.97	2.11	908	0.96	4.05	1.75

787

788 *Note*. Participants were asked to "Please indicate the degree to which you agree or disagree with

789 each of the following statements regarding ___." Three statements were used for each political

790 figure (e.g., "I support Donald Trump," "I approve of Donald Trump's performance in the

791 administration of his job," and "I support the political issues that Donald Trump stands for").

792 Response options included *I do not know this person, strongly disagree, disagree, somewhat*

793 *disagree, neither agree nor disagree, somewhat agree, agree,* and *strongly agree*, which were

794 scored 1 to 7 after excluding participants who indicated "I do not know this person." For context,

795 this table provides the role and party affiliation of each political figure at the time of data

796 collection. In the actual survey, only the name of the political figure was shown, not the

797 information in parentheses. n = sample size, α = reliability coefficient (Cronbach's alpha) of the

798 three items, M = mean, SD = standard deviation.

799   **Table S25**

800   *Hypothetical Voting Preference in Study 2a*

Hypothetical voting preference	Pre-election survey	Post-election survey
Donald Trump	200	136
Bernie Sanders	174	128
Joe Biden	98	54
Barack Obama	62	59
Elizabeth Warren	51	37
Andrew Yang	34	18
Don't know / unsure / undecided	34	16
Mike Pence	23	16
Michelle Obama	17	14
No one	17	6
Someone else (based on ideology)	16	3
Hillary Clinton	14	9
Me	14	8
Tulsi Gabbard	12	6
Kamala Harris	11	6
Pete Buttigieg	10	8
Ted Cruz	10	6
Alexandria Ocasio-Cortez	8	13
Ben Carson	8	4
Dwayne Johnson	8	1
Ron Paul	8	3
Mitt Romney	6	2
Rand Paul	6	3
A Republican other than Donald Trump	5	2
Andrew Cuomo	5	3
Arnold Schwarzenegger	5	2
Ben Shapiro	5	2
Bill Gates	5	1
Candace Owens	5	4
Nikki Haley	5	3
Ronald Reagan	5	5
Amy Coney Barrett	4	
Elon Musk	4	2
Mark Cuban	4	3
Condoleezza Rice	3	3
Family/ friend	3	3
Jimmy Carter	3	
Jo Jorgensen	3	5
John Kasich	3	3
Kanye West	3	6
Patrick Buchanan	3	2
Tucker Carlson	3	2
A non career politician	2	
Ben Sasse	2	
Bill Clinton	2	2
Dan Crenshaw	2	5
George Washington	2	1
Howie Hawkins	2	1
Michael Bloomberg	2	5
Mike Huckabee	2	2
Oprah Winfrey	2	6
Theodore Roosevelt	2	1
A Democrat	1	
A Kennedy	1	
A Republican	1	
A younger candidate	1	2
Adam Schiff	1	
Al Gore	1	
Allen West	1	
Amy Klobuchar	1	1
Angela Merkel	1	
Anthony Fauci	1	1
Any Democrat	1	
Anyone other than Biden or Trump	1	
Bill Bradley	1	
C. Stephen Evans	1	
Carly Fiorina	1	
Charlie Baker	1	1
Chris Christie	1	
Chuck Schumer	1	
Clark Howard	1	
Colin Powell	1	1

Hypothetical voting preference	Pre-election survey	Post-election survey
Cory Booker	1	
David Nunes	1	
Dwight Eisenhower	1	
Ellen DeGeneres	1	
Evan McMullin	1	
Franklin Roosevelt	1	
Gavin Newsom	1	
George Bush	1	
Grady Judd	1	1
Hank Williams Jr.	1	1
Hayley Kiyoko	1	
Homer Simpson	1	1
Ice Cube	1	1
Ivanka Trump	1	2
James Agnew	1	
James Corbett	1	1
James Woods	1	
Jared Polis	1	
Jay Inslee	1	1
Jeb Bush	1	
Jeffrey Sachs	1	
Jesus	1	8
Jim Carrey	1	
Jim Jordan	1	2
Jim Webb	1	1
John Boehner	1	1
John F. Kennedy	1	2
John James	1	1
John MacArthur	1	
John Maxwell	1	
John McCain	1	
John Morgan	1	
John Smith	1	
Jordan Peterson	1	1
Katie Porter	1	
Keanu Reeves	1	
Kimberly Klacik	1	
Lesser of two evils	1	
Libertarian candidate	1	
Lil Wayne	1	
Lindsey Graham	1	1
Lisa Murkowski	1	
Marco Rubio	1	3
Martin Luther King	1	
Michael Dukakis	1	
Mike Ditka	1	
Mike Pompeo	1	
Mike Rowe	1	
Mimi Soltysik	1	1
Misha Collins	1	1
Mitch Daniels	1	1
Nancy Pelosi	1	1
Nate Silver	1	
Phil Murphy	1	
Rashida Tlaib	1	
Rick Scott	1	
Rob Portman	1	
Robert Kennedy	1	1
Ron DeSantis	1	1
Ross Perot	1	3
Rush Limbaugh	1	3
Russell M. Nelson	1	
Sam Elliott	1	
Snoop Dogg	1	1
Stacey Abrams	1	2
Steve Bullock	1	
Superman	1	
Tom Fitton	1	
Tony Perkins	1	
Waldo	1	
Willie Nelson	1	

801

802 *Note*. Participants were asked the following open-ended questions in the pre- and post-election

803 surveys, respectively: "Hypothetically, imagine you could vote for anyone in the upcoming

804 presidential election, regardless of whether they are currently in the running. Who would you

805 vote for?" (pre-election survey); "Hypothetically, imagine you could vote for anyone in the 2020

806 presidential election, regardless of whether they were or were not actually in the running. Who

807 would you vote for?" (post-election survey). Responses are sorted here in descending order of

808 frequency in the pre-election survey; ties are sorted in alphabetical order.

809

810 **Table S26**

811 *Items for Measuring Perceived Harm in Attitudinal Disagreements with and Behavioral*

812 *Violations of Moral Foundations and Their Scale Labels and Descriptive Statistics in Study 3*

Items	Moral foundations (not shown to participants)	*n*	*M*	*SD*
Perceived harm in attitudinal disagreements with moral foundations				
"Please read the following descriptions and indicate the extent to which you perceive harm in each of the views." (0 = no harm at all, 1 = very mild harm, 2 = mild harm, 3 = moderate harm, 4 = severe harm, 5 = very severe harm)				
Person A **DISAGREES** with the following statement: "Compassion for those who are suffering is the most crucial virtue." To what extent do you perceive harm in Person A's view?	Care/harm	1652	2.53	1.52
Person B **DISAGREES** with the following statement: "When the government makes laws, the number one principle should be ensuring that everyone is treated fairly." To what extent do you perceive harm in Person B's view?	Fairness/cheating	1653	2.82	1.61
Person C **DISAGREES** with the following statement: "I am proud of my country's history." To what extent do you perceive harm in Person C's view?	Loyalty/betrayal	1653	1.69	1.63
Person D **DISAGREES** with the following statement: "Respect for authority is something all children need to learn." To what extent do you perceive harm in Person D's view?	Authority/subversion	1646	2.26	1.57
Person E **DISAGREES** with the following statement: "People should not do things that are disgusting, even if no one is harmed." To what extent do you perceive harm in Person E's view?	Sanctity/degradation	1650	1.93	1.5
Person F **DISAGREES** with the following statement: "It is better to do good than to do bad." To what extent do you perceive harm in Person F's view?	Not applicable (filler)	1654	3.00	1.71
Person G **DISAGREES** with the following statement: "One of the worst things a person could do is hurt a defenceless animal." To what extent do you perceive harm in Person G's view?	Care/harm	1654	2.91	1.62
Person H **DISAGREES** with the following statement: "Justice is the most important requirement for a society." To what extent do you perceive harm in Person H's view?	Fairness/cheating	1650	2.58	1.59
Person I **DISAGREES** with the following statement: "People should be loyal to their family members, even when they have done something wrong." To what extent do you perceive harm in Person I's view?	Loyalty/betrayal	1655	1.81	1.52
Person J **DISAGREES** with the following statement: "Men and women each have different roles to play in society." To what extent do you perceive harm in Person J's view?	Authority/subversion	1652	1.68	1.58
Person K **DISAGREES** with the following statement: "I would call some acts wrong on the grounds that they are unnatural." To what extent do you perceive harm in Person K's view?	Sanctity/degradation	1646	1.82	1.41
Person L **DISAGREES** with the following statement: "It can never be right to kill a human being." To what extent do you perceive harm in Person L's view?	Care/harm	1653	2.71	1.73
Person M **DISAGREES** with the following statement: "I think it's morally wrong that rich children inherit a lot of money while poor children inherit nothing." To what extent do you perceive harm in Person M's view?	Fairness/cheating	1653	1.75	1.48
Person N **DISAGREES** with the following statement: "It is more important to be a team player than to express oneself." To what extent do you perceive harm in Person N's view?	Loyalty/betrayal	1654	1.72	1.39
Person O **DISAGREES** with the following statement: "If I were a soldier and disagreed with my commanding officer's orders, I would obey anyway because that is my duty." To what extent do you perceive harm in Person O's view?	Authority/subversion	1657	2.18	1.45
Person P **DISAGREES** with the following statement: "Chastity is an important and valuable virtue." To what extent do you perceive harm in Person P's view?	Sanctity/degradation	1650	1.64	1.58

Perceived harm in behavioral violations of moral foundations

"Please read the following sentences and indicate the extent to which you perceive harm in each of them."
(0 = no harm at all, 1 = very mild harm, 2 = mild harm, 3 = moderate harm, 4 = severe harm, 5 = very severe harm)

Someone suffered emotionally.	Care/harm	1652	3.29	1.19
Some people were treated differently than others.	Fairness/cheating	1655	3.34	1.15
Someone's action did not show love for his or her country.	Loyalty/betrayal	1654	2.11	1.59
Someone showed a lack of respect for authority	Authority/subversion	1655	2.63	1.32
Someone violated standards of purity and decency.	Sanctity/degradation	1657	2.46	1.53
Someone was good at math.	Not applicable (filler)	1654	0.58	1.28
Someone did not care for someone weak or vulnerable.	Care/harm	1655	3.30	1.16
Someone acted unfairly.	Fairness/cheating	1650	3.01	1.14
Someone did something to betray his or her group.	Loyalty/betrayal	1655	3.00	1.20
Someone did not conform to the traditions of society.	Authority/subversion	1649	1.82	1.46
Someone did something disgusting.	Sanctity/degradation	1653	2.44	1.42
Someone was cruel.	Care/harm	1643	3.66	1.11
Someone was denied his or her rights.	Fairness/cheating	1653	3.94	1.10
Someone showed a lack of loyalty.	Loyalty/betrayal	1652	2.75	1.26
An action caused chaos or disorder.	Authority/subversion	1653	3.50	1.14
Someone acted in a way that God would not approve of.	Sanctity/degradation	1655	2.17	1.78

813

814   *Note*. *n* = sample size, *M* = mean, *SD* = standard deviation.

815   **Table S27**

816   *Items for Measuring Perceived Harm in Liberal Attitude and in Conservative Attitude Toward*

817   *Contentious Political Issues and Their Scale Labels and Descriptive Statistics in Study 3*

Items	Political issues and attitudes toward them (not shown to participants)	*n*	*M*	*SD*
"Please read the following descriptions and indicate the extent to which you perceive harm in each of the views." *(0 = no harm at all, 1 = very mild harm, 2 = mild harm, 3 = moderate harm, 4 = severe harm, 5 = very severe harm)*				
Person A **AGREES** with the following statement: "Illegal immigrants do more to weaken the US economy overall because they do not all pay taxes but can use public services." To what extent do you perceive harm in Person A's view?	Illegal immigrants; conservative attitude	1651	2.34	1.59
Person B **AGREES** with the following statement: "Illegal immigrants do more to strengthen the US economy overall because they provide low-cost labor and they spend money." To what extent do you perceive harm in Person B's view?	Illegal immigrants; liberal attitude	1652	1.46	1.50
Person C **AGREES** with the following statement: "The federal government should NOT fund research that would use newly created stem cells obtained from human embryos." To what extent do you perceive harm in Person C's view?	Stem cell research; conservative attitude	1653	2.06	1.54
Person D **AGREES** with the following statement: "The federal government should fund research that would use newly created stem cells obtained from human embryos." To what extent do you perceive harm in Person D's view?	Stem cell research; liberal attitude	1655	1.41	1.51
Person E **AGREES** with the following statement: "The government should decrease the current restrictions because global warming is a theory that has not yet been proven." To what extent do you perceive harm in Person E's view?	Global warming; conservative attitude	1652	2.96	1.68
Person F **AGREES** with the following statement: "The government should increase restrictions on emissions from cars and industrial facilities such as power plants and factories in an attempt to reduce the effects of global warming." To what extent do you perceive harm in Person F's view?	Global warming; liberal attitude	1654	1.03	1.38
Person G **AGREES** with the following statement: "The poor should learn to work harder." To what extent do you perceive harm in Person G's view?	Social welfare; conservative attitude	1656	2.36	1.66
Person H **AGREES** with the following statement: "Social programs serve a valuable role in our society." To what extent do you perceive harm in Person H's view?	Social welfare; liberal attitude	1652	0.85	1.23
Person I **AGREES** with the following statement: "The passage of the Affordable Care Act (ObamaCare) was a great mistake in American history." To what extent do you perceive harm in Person I's view?	Affordable Care Act; conservative attitude	1653	2.19	1.59
Person J **AGREES** with the following statement: "The passage of the Affordable Care Act (ObamaCare) was a great moment in American history." To what extent do you perceive harm in Person J's view?	Affordable Care Act; conservative attitude	1656	1.20	1.45
Person K **SUPPORTS** government funded facilities that provide sterile supplies (clean needles, sterile water for injections) to drug users. To what extent do you perceive harm in Person K's view?	Drug facilities; liberal attitude	1653	1.34	1.52
Person L **OPPOSES** government funded facilities that provide sterile supplies (clean needles, sterile water for injections) to drug users. To what extent do you perceive harm in Person L's view?	Drug facilities; conservative attitude	1652	2.23	1.59
Person M **SUPPORTS** marching in a protest (e.g., Black Lives Matter, Occupy Wall Street). To what extent do you perceive harm in Person M's view?	Marching in protest; liberal attitude	1650	0.94	1.32
Person N **OPPOSES** marching in a protest (e.g., Black Lives Matter, Occupy Wall Street). To what extent do you perceive harm in Person N's view?	Marching in protest; conservative attitude	1652	2.44	1.65

Person O **SUPPORTS** kneeling during the national anthem. To what extent do you perceive harm in Person O's view?	Kneeling in protest; liberal attitude	1653	1.40	1.61
Person P **OPPOSES** kneeling during the national anthem. To what extent do you perceive harm in Person P's view?	Kneeling in protest; conservative attitude	1653	1.52	1.59
Person Q **SUPPORTS** the impeachment of former President Donald Trump. To what extent do you perceive harm in Person Q's view?	Impeachment of Trump; liberal attitude	1652	1.41	1.64
Person R **OPPOSES** the impeachment of former President Donald Trump. To what extent do you perceive harm in Person R's view?	Impeachment of Trump; conservative attitude	1650	2.07	1.76
Person S **SUPPORTS** universal health care. To what extent do you perceive harm in Person S's view?	Universal health care; liberal attitude	1655	0.83	1.31
Person T **OPPOSES** universal health care. To what extent do you perceive harm in Person T's view?	Universal health care; conservative attitude	1653	2.92	1.66

818

819   *Note. n* = sample size, *M* = mean, *SD* = standard deviation.

820

821 **Table S28**

822 *Items for Measuring Lay Intuitions Regarding the Political Attitudes of a Pain-Sensitive Person*

823 *in Study 4*

Issues and scale labels			*n*	*M*	*SD*
"On the issue of **[X]**, to what extent do you think the views of **a [person] with high sensitivity to physical pain** (compared with a [person] with low sensitivity to physical pain] are closer to one of the following attitudes?" *(1 = Much closer to A, 2 = Moderately closer to A, 3 = Slightly closer to A, 4 = About equally between A and B, 5 = Slightly closer to B, 6 = Moderately closer to B, 7 = Much closer to B)*					
[X]	**Attitude A**	**Attitude B**			
illegal immigrants	Illegal immigrants do more to weaken the US economy overall because they do not all pay taxes but can use public services.	Illegal immigrants do more to strengthen the US economy overall because they provide low-cost labor and they spend money.	716	3.60	1.80
stem cell research	The federal government should NOT fund research that would use newly created stem cells obtained from human embryos.	The federal government should fund research that would use newly created stem cells obtained from human embryos.	720	3.88	1.74
global warming	The government should decrease the current restrictions because global warming is a theory that has not yet been proven.	The government should increase restrictions on emissions from cars and industrial facilities such as power plants and factories in an attempt to reduce the effects of global warming.	721	3.26	1.83
social welfare	The poor should learn to work harder.	Social programs serve a valuable role in our society.	721	3.30	1.89
Affordable Care Act (ObamaCare)	The passage of the Affordable Care Act (ObamaCare) was a great mistake in American history.	The passage of the Affordable Care Act (ObamaCare) was a great moment in American history.	722	3.39	1.85
"Please indicate the extent to which you think each of the following issues is likely to be more supported or opposed by **a [person] with high sensitivity to physical pain** (compared with a [person] with low sensitivity to physical pain)" *(-3 = opposed much more, -2 = opposed moderately more, -1 = opposed slightly more, 0 = supported or opposed about equally, +1 = supported slightly more, +2 = supported moderately more, +3 = supported much more)*					
Impeachment of President Donald Trump			723	-0.29	1.93
Kneeling during the national anthem			724	-0.13	1.74
Universal health care			721	-0.95	1.77
Government funded facilities that provide sterile supplies (clean needles, sterile water for injections) to drug users			723	-0.58	1.72
Marching in a protest (e.g., Black Lives Matter, Occupy Wall Street)			724	-0.42	1.82

824

825 *Note.* Five issues used a 7-point scale that ranged between two issue-specific attitudes. Five

826 issues used an issues-general 7-point scale. *n* = sample size, *M* = mean, *SD* = standard deviation.

827

828 **SUPPLEMENTAL FIGURES**

829 **Figure S1**

830 *Actual Effects of Pain Sensitivity in Studies 1a–3 versus Lay Intuitions about Pain Sensitivity*

831 *When the Target's Political Orientation Was Inferred in Study 4*

832   **a**

Liberal participants in Studies 1-3 and participants in the "target's political orientation unspecified" condition who inferred the target to be liberal in Study 4
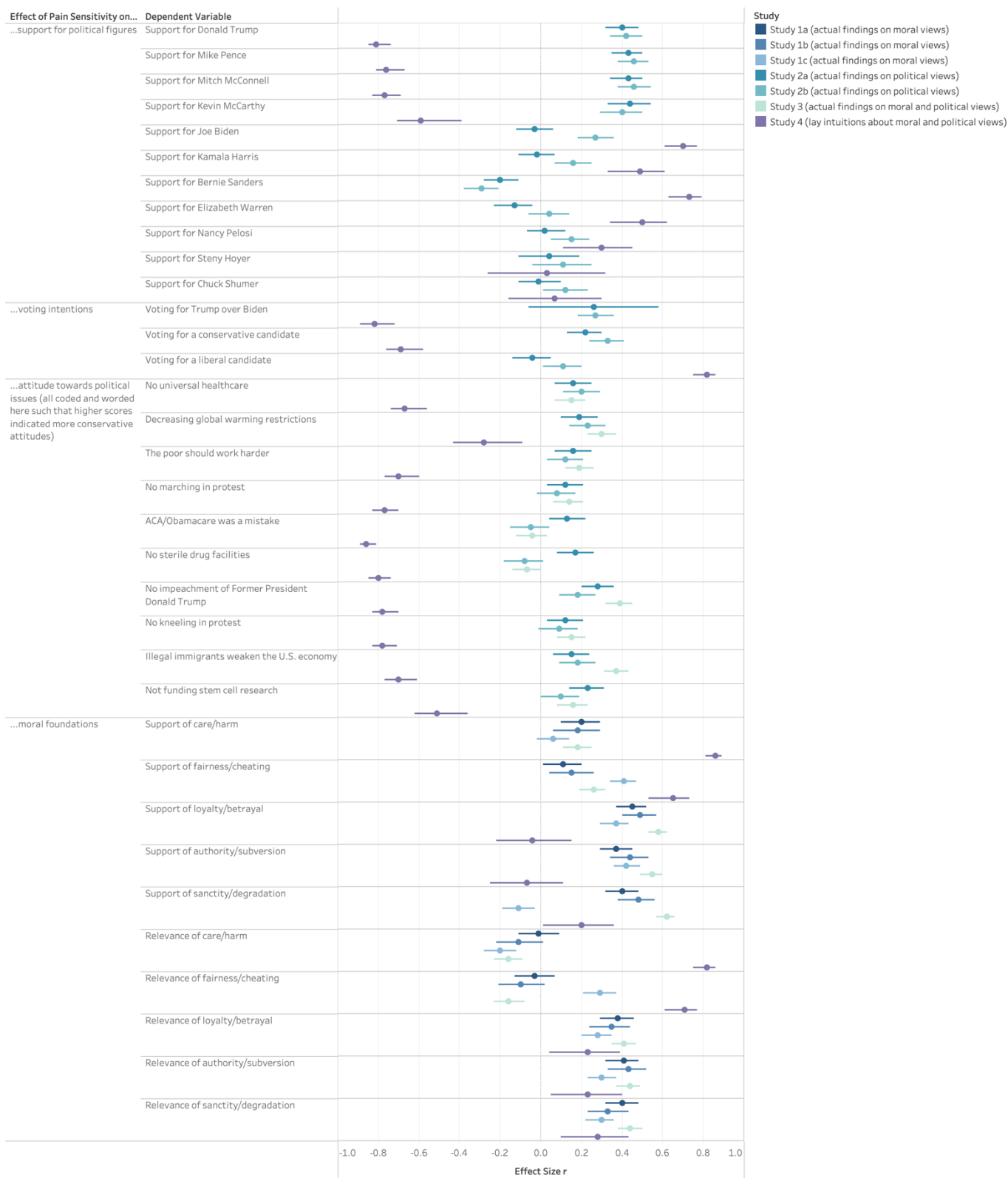

833

834 **b**

Conservative participants in Studies 1-3 and participants in the "target's political orientation unspecified" condition who inferred the target to be conservative in Study 4

836   *Note*. (**a**) Actual effects of pain sensitivity among liberal participants in Studies 1a, 1b, 1c, 2a,

837   2b, and 3 (ns = 406, 287, 583, 455, 424, and 717) versus lay intuitions about pain sensitivity for a

838   target inferred as liberal in Study 4 (n = 110). (**b**) Actual effects of pain sensitivity among

839   conservative participants in Studies 1a, 1b, 1c, 2a, 2b, and 3 (ns = 404, 288, 554, 434, 456, and

840   705) versus lay intuitions about pain sensitivity for a target inferred as conservative in Study 4 (n

841   = 48). To facilitate comparison, all actual effects and lay intuitions were converted to the same

842   metric of effect size, r. Error bars represent 95% confidence interval.

843

844 **Figure S2**

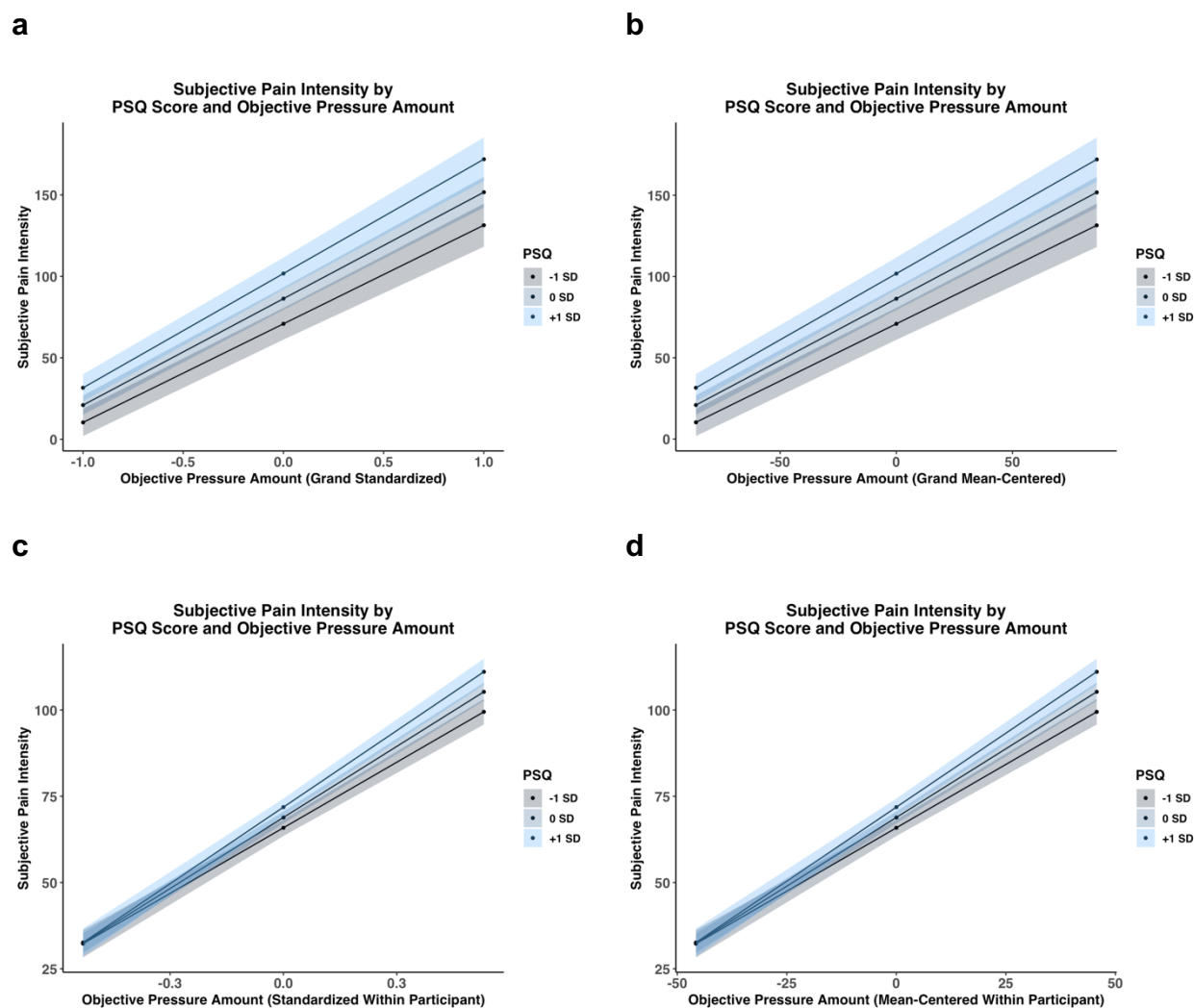845 *Pressure Algometer for Pain Induction in Psychophysical Validation Study*

846

847
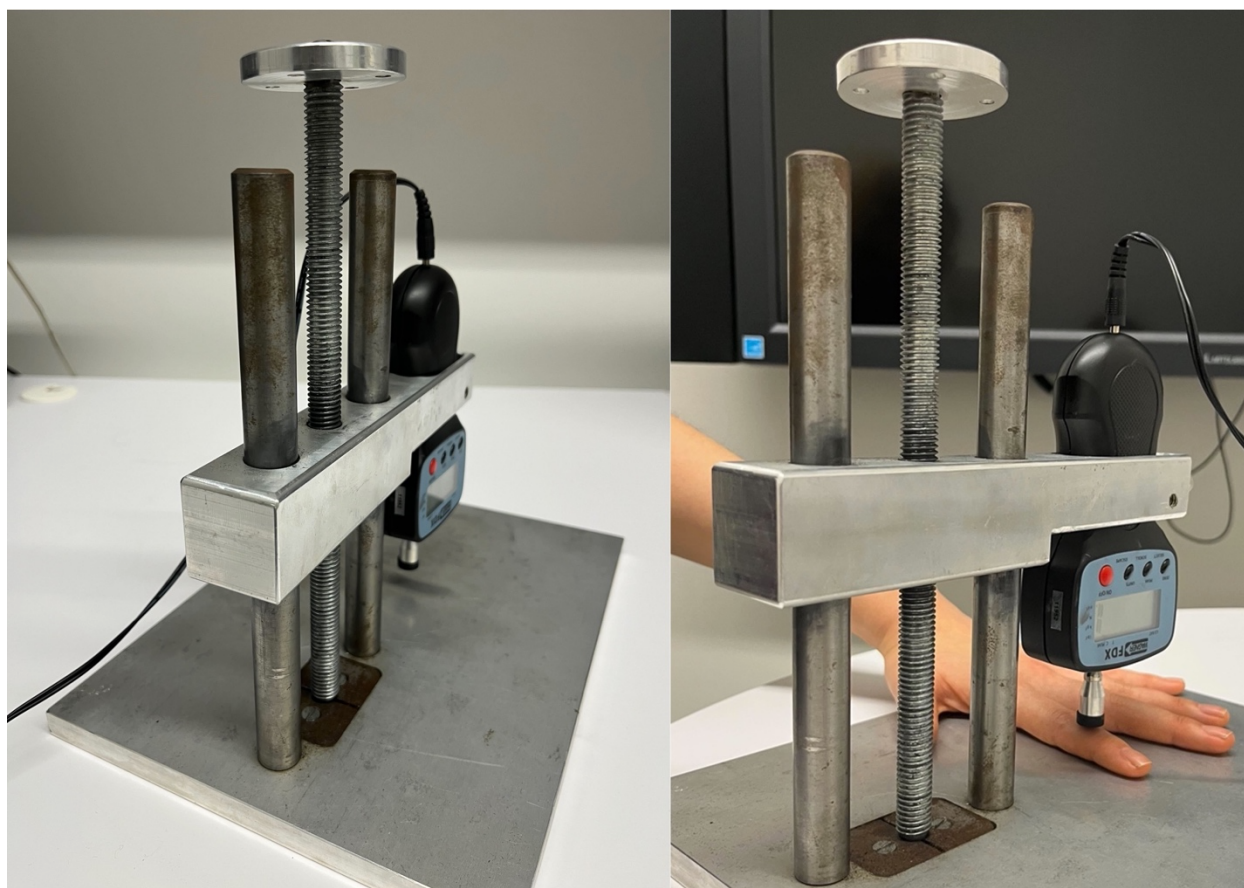
848　**Figure S3**

849　*Effects of PSQ Score (Level 2), Objective Pressure Amount (Level 1), and Their Interaction*

850　*(Cross-Level) on Subjective Pain Intensity in Psychophysical Validation Study*

851　**a**　　　　　　　　　　　　　　　　　　　　　　　**b**

852

853　**c**　　　　　　　　　　　　　　　　　　　　　　　**d**

854

855

856　*Note*. (**a**) Model 1. (**b**) Model 2. (**c**) Model 3. (**d**) Model 4. 95% confidence intervals are shown

857　around the lines for three levels of PSQ scores (*M* minus 1 *SD*; *M*; *M* plus 1 *SD*).

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