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**Lay Theories of Financial Well-being
Predict Political and Policy Message Preferences**

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Abstract

People differ in their lay theories about how and why the financial well-being of individuals changes over time or varies between individuals. We introduce a measure of Causal Attributions of Financial Uncertainty—the CAFU scale—and find that such attributions can be reliably described along three distinct dimensions, respectively capturing the extent to which changes in financial well-being are perceived to be: (1) knowable and within individuals’ control due to individual factors such as effort (“Rewarding”); (2) knowable and outside of individuals’ control due to systemic factors such as favoritism and discrimination (“Rigged”); and (3) inherently unpredictable and determined by chance events (“Random”). In a sample representative of the U.S. population on various demographic characteristics ($N = 1,102$), we find that differences in these beliefs are associated with political ideology, revealing a predicted pattern: conservatives scored higher on the Rewarding subscale and liberals scored higher on the Rigged and Random subscales, even when controlling for key demographics. Moreover, we find that these three dimensions predict responses to different policy messages when controlling for political ideology. In three preregistered experiments (combined $N = 2,560$), we observe increased support for various social welfare policies when we highlighted aspects of these policies that are compatible with people’s beliefs about financial well-being. Likewise, we observe increased support for political candidates when they expressed their positions in a way that is compatible with people’s beliefs. Thus, this work can help better understand drivers of political attitudes and guide in crafting more persuasive policy messages.

Keywords: uncertainty, redistribution, inequality, persuasion, political attitudes

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Lay Theories of Financial Well-being

Predict Political and Policy Message Preferences

Economic inequality within industrialized nations has been rising in recent decades (Alvaredo et al., 2018; Piketty & Saez, 2014; Saez & Zucman, 2016; Zucman, 2019) and has become a pressing social concern. In response, many elected officials have been seeking ways to garner broad support for policies designed to reduce economic disparities. This is not an easy task. Although people show a surprising degree of consensus in their preference for a more equal society (Kiatpongsan & Norton, 2014; Norton & Ariely, 2011), they often disagree on when, why, and how the government should intervene through social welfare policies. Such disagreements may arise in part because people vary in their beliefs about what causes differences in financial well-being. For instance, surveys have found that people’s political and policy attitudes may be associated with the extent to which they think that poverty or wealth is caused by structural, individualistic, or fatalistic factors (Bobbio et al., 2010; Bullock et al., 2003; Cozzarelli et al., 2001; Feagin, 1972; Feather, 1974; Furnham, 1982a, 1982b; Henry et al., 2004; Kluegel & Smith, 1986; Lepianka et al., 2009; Sahar, 2014; Weiner et al., 2011; Zucker & Weiner, 1993).

Changes in economic conditions and voters’ beliefs about the ability of politicians to manage these conditions are pivotal factors determining the outcomes of elections (Kinder & Kiewiet, 1979; Lewis-Beck & Stegmaier, 2000; Sides et al., 2017; Vavreck, 2014). To successfully persuade voters, campaigns must therefore speak not only to objective economic indicators that reflect citizens’ financial well-being—such as unemployment and wage growth—but also to voters’ beliefs about factors that cause financial well-being to change over time. Beyond this, policy preferences among different audiences can be shaped by how a policy is

46 labeled or characterized. For instance, one study found that political conservatives (but not
47 liberals) find a policy labeled “carbon tax” less appealing than an equivalent “carbon offset”
48 because the former has particularly negative associations for conservatives (Hardisty et al.,
49 2010).

50 In this article, we propose that a person’s beliefs about changes in financial well-being
51 predict not only overall political preferences but also responses to different social welfare policy
52 messages, even when controlling for political ideology and other demographics. We define
53 financial well-being as the capacity to meet financial obligations and the financial freedom to
54 make the choices that allow one to enjoy life (adapted from CFPB, 2015). We show that lay
55 theories about uncertainty in financial well-being vary along three conceptually and statistically
56 distinct dimensions. The *Rewarding* dimension captures the extent to which people attribute
57 changes in financial well-being to predictable meritocratic factors such as a person’s level of
58 effort, skill, and resourcefulness. The *Rigged* dimension captures the extent to which people
59 attribute changes in financial well-being to predictable factors that are beyond the control of the
60 individual, such as discrimination and favoritism. Finally, the *Random* dimension captures the
61 extent to which people attribute changes in financial well-being to chance factors, including
62 seemingly unpredictable life events, such as becoming disabled from an accident or winning the
63 lottery.

64 Distinguishing lay beliefs about uncertainty in financial well-being can help us understand
65 what drives disagreements about social welfare policy. Moreover, it can help us understand how
66 and why different policy messages appeal to different groups. People who would normally
67 disagree may be persuaded to support the same social welfare policy or political candidate when
68 messages are aligned with their lay theories about changes in financial well-being. Before

69 developing our hypotheses in more detail, we next explain how our approach synthesizes two
70 distinct research streams: one that examines the relationship between perceived fairness and
71 control, and one that examines dimensions of subjective uncertainty.

72 **Fair Allocations and Control**

73 Forming preferences for social welfare policies requires an assessment of the fairness of the
74 status quo distribution. People are not averse to unequal allocations per se, but rather to
75 inequalities that they perceive to be unfair (Starmans et al., 2017; Trump, 2020). When asked
76 whether a given allocation warrants redistribution, people are thought to rely on the
77 *accountability principle*, which states that “a person’s fair allocation (e.g., of income) varies in
78 proportion to the relevant variables that he can influence (e.g., work effort) but not according to
79 those that he cannot reasonably influence (e.g., a physical handicap)” (Konow, 2000, p. 1073).
80 According to this view, a judgment of whether the allocation of outcomes in a situation is
81 acceptable should thus involve an assessment of the degree of individual control over the
82 situation.

83 The accountability principle has been amply demonstrated in studies of economic games in
84 the laboratory. For instance, Oxoby and Spraggon (2008) found that participants allocated more
85 money to others (i.e., they redistributed more wealth) when the initial amount of available wealth
86 was determined at random than when it was determined by the number of correct answers in a
87 test. Similar results have been observed in other incentive-compatible laboratory experiments
88 and vignette studies, involving redistribution decisions that were made both by stakeholders and
89 by impartial spectators (Cappelen et al., 2007; Cappelen et al., 2013; Chavanne, 2018; Konow,
90 2000; Krawczyk, 2010).

91 While experimental games offer a crisp demonstration of the impact of control on
92 distributional preferences, the precise mechanisms determining economic allocations outside the
93 laboratory are typically unknown and therefore more open to interpretation. People may
94 reasonably differ in the extent to which they believe allocations are driven by factors under the
95 influence of the individual (i.e., discretionary variables) versus those that are not (i.e., exogenous
96 variables; Konow, 1996, 2000). For instance, data from the World Values Survey gathered
97 between 1983 and 1997 documents a sharp contrast between how people in Europe and people in
98 the United States thought about poverty: 54% of Europeans believed that luck determines
99 income, versus 30% of Americans; meanwhile, 26% of Europeans believed that the poor are
100 lazy, versus 60% of Americans (Alesina & Glaeser, 2004; Alesina et al., 2001). Cross-national
101 differences in beliefs about a larger role of luck and smaller role of effort in causing poverty
102 predict stronger support for more progressive redistribution policies and higher welfare spending
103 (Alesina & Angeletos, 2005; Alesina & Glaeser, 2004; Alesina & La Ferrara, 2005; Almås et al.,
104 2020; Fong, 2001; Piff et al., 2020).

105 **Subjective Dimensions of Uncertainty**

106 Preferences for social welfare policies also require an assessment of how financial well-
107 being will change over time, a judgment under uncertainty. Recent research has identified two
108 dimensions of uncertainty that people intuitively distinguish: epistemicness, or the extent to
109 which uncertainty is seen as inherently knowable, and aleatoriness, or the extent to which
110 uncertainty is seen as inherently random (Fox & Ülkümen, 2011; Tannenbaum et al., 2016;
111 Ülkümen et al., 2016). For instance, most people judge the correct answer to a trivia question as
112 purely epistemic (i.e., knowable), whereas they see the outcome of a future coin flip as purely
113 aleatory (i.e., random). More generally, different people may perceive different degrees of both

114 epistemicness and aleatoriness in uncertain events—for instance, one person may see the
115 outcome of a basketball game as both more knowable in advance and determined more by
116 random factors than another person.

117 A number of recent studies have documented the importance of the epistemic-aleatory
118 distinction to a variety of behaviors. For instance, people acting as managers assign a greater
119 proportion of compensation to performance-based incentives when they see a task as more
120 epistemic and they prefer longer evaluation windows when they see a task as more aleatory (Fox,
121 Tannenbaum et al., 2021). In other research, perceived nature of uncertainty has been found to
122 predict the language that people use to communicate their uncertainty (Ülkümen et al., 2016), the
123 extremity and accuracy of probability judgments (Tannenbaum et al., 2016), stock market
124 investment behaviors (Walters et al., 2021), and willingness to bet under conditions of
125 uncertainty or ambiguity (Fox, Goedde-Menke et al., 2021). This framework may be especially
126 germane to the question of social welfare policy preferences because it distinguishes two
127 qualitatively distinct ways in which changes in financial well-being can be out of one’s control:
128 in inherently predictable ways and in random ways.

129 **Synthesizing Control and Subjective Uncertainty Frameworks**

130 To clarify the importance of distinguishing knowable from random factors for political and
131 policy preferences, let us consider the following example. Suppose that Alex and Ben are both
132 late paying their rent this month. Alex lost his job because the factory in which he worked was
133 destroyed by a tornado. Ben lost his job because his supervisor replaced him after learning he
134 was Muslim. Most people would agree that Alex and Ben both experienced financial hardship
135 for reasons largely outside of their control, and studies on the role of individual control discussed
136 above do not explicitly distinguish between these two cases. We assert, however, that people

137 may, in fact, make a critical distinction between the cases: Alex's inability to pay rent is the
138 result of an exogenous factor that is seen as random (a natural disaster), whereas Ben's inability
139 to pay rent is the result of an exogenous factor that is seen as systemic and thus more predictable
140 in advance (discrimination). We expect that people may differ in the extent to which they see
141 random versus knowable factors outside of one's control as common drivers of change in
142 financial well-being, and that these factors may suggest distinct kinds of interventions and/or
143 different rationale for redistributing resources.

144 **Three Distinct Dimensions of Beliefs about Changes in Financial Well-being**

145 In this article, we hypothesize that people's lay theories concerning changes in financial
146 well-being are best characterized along three dimensions: An epistemic-discretionary (i.e.,
147 rewarding) dimension capturing the degree to which changes in financial well-being are
148 attributed to the individual's own actions and capabilities; an epistemic-exogenous (i.e., rigged)
149 dimension capturing the degree to which changes in financial well-being are attributed to
150 knowable factors outside of the individual's control, such as discrimination and favoritism; and
151 an aleatory-exogenous (i.e., random) dimension capturing the degree to which changes in
152 financial well-being are attributed to inherently unpredictable factors outside of the individual's
153 control. See Table 1 for an overview of these three dimensions.

154 In the framework we propose, we treat Rewarding, Rigged, and Random as conceptually
155 distinct dimensions (henceforth capitalized to avoid confusion with their generic equivalents).
156 This conceptual distinction provides flexibility and accuracy in capturing the different lay
157 theories that people may have about changes in financial well-being. In past research, perceived
158 individual control was typically treated as a single dimension, with luck (i.e., lack of control) and
159 effort/ability (i.e., control) being on opposite ends and therefore mutually exclusive. In contrast,

160 our proposed model allows for the possibility that an individual may perceive the system to be
161 highly Rewarding, highly Rigged, and highly Random at the same time, or that their beliefs may
162 vary in combinations along these three dimensions.

163 Note that we use ‘Rewarding,’ ‘Rigged,’ and ‘Random’ as mnemonic shorthand labels for
164 the extent to which changes in financial well-being are attributed to factors that are epistemic-
165 discretionary, epistemic-exogenous, and aleatory-exogenous, respectively. While we believe that
166 these labels capture the primary associations that people may have with the underlying
167 constructs, we acknowledge that they do not fully capture them. For instance, epistemic-
168 discretionary causes could be self-sabotaging (rather than rewarding) as when a lazy person
169 predictably loses financial standing over time, and epistemic-exogenous causes could be
170 designed to reduce economic inequality (rather than rig the system in favor of the wealthy) as
171 with many government tax and welfare policies. This said, the scale that we will introduce for
172 measuring these three dimensions is designed to more fully capture the underlying constructs
173 than our shorthand labels might suggest.

174 **Table 1**

175 *Overview of the Rewarding, Rigged, and Random dimensions.*

Dimension	Nature of uncertainty	Causal attribution	Changes in financial well-being perceived as...	Changes in financial well-being are determined by...	Compatible policy argument
Rewarding	Epistemic	Discretionary	Knowable and within control of the individual	...individual factors, such as: - ability/talent - level of effort	Incentivizing
Rigged	Epistemic	Exogenous	Knowable and not within control of the individual	...systemic factors, such as: - discrimination/favoritism - unequal education or opportunity afforded to some groups	Redistributing
Random	Aleatory	Exogenous	Random and not within control of the individual	...chance events, such as: - accidents/natural disasters - lottery windfalls/serendipity	Risk-pooling

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177 Social Welfare Policy Preferences and Persuasive Messaging

178 Governments have many different social welfare policy tools at their disposal. In practice,
179 the same social welfare policy can be described in various ways, emphasizing different
180 interpretations of the purpose of the policy. Consider a politician who proposes introducing a
181 system for publicly funded health care. Such a system can serve a redistributive purpose by using
182 the revenue from a progressive income tax to subsidize the cost of health care for the poor. At
183 the same time, the system may function as social insurance by pooling the risk of unforeseen
184 health care costs among all people. Finally, any restrictions built into the system may incentivize
185 desirable behavior and/or deter people from taking advantage of others—for instance if coverage
186 is made conditional on work requirements.

187 Because social welfare policies are often a mixture of these elements, politicians and
188 policymakers who want to persuade the public have a choice to make: which element(s) to
189 highlight when arguing in favor of a policy? We propose that policies and politicians will be
190 viewed more favorably to the extent that a policy's description is more compatible with an
191 observer's lay theory concerning how financial well-being changes over time. Past research has
192 examined differences in beliefs about morality between liberals and conservatives as a starting
193 point for crafting persuasive policy messages (Day et al., 2014; Feinberg & Willer, 2019).
194 Messages that are compatible with beliefs about morality are more persuasive than messages that
195 are incompatible with these beliefs (Feinberg & Willer, 2019; Kidwell et al., 2013; Lammers &
196 Baldwin, 2018; Voelkel & Feinberg, 2018; Voelkel et al., 2020; Wolsko et al., 2016). We expect
197 a similar association between beliefs about uncertainty in financial well-being and responses to
198 different kinds of messages about social welfare policies, even when controlling for political
199 ideology.

200 In particular, we hypothesize that people who score higher on the Rewarding dimension
201 will more strongly favor a social welfare policy when its tendency to motivate effort or
202 resourcefulness is emphasized. Such an *Incentivizing* message stresses the need for support to be
203 made conditional on individual inputs in order to restrict assistance to the deserving and/or to
204 motivate desirable behavior. Second, we hypothesize that people who score higher on the Rigged
205 dimension will more strongly favor a social welfare policy when its goal of helping traditionally
206 disadvantaged groups is emphasized. Such a *Redistributing* message focuses on repairing
207 imbalance in society and may therefore be particularly attractive to people who believe that
208 changes in financial well-being can be attributed to knowable factors that are beyond the control
209 of the individual. Finally, we hypothesize that people who score higher on the Random
210 dimension will more strongly favor a social welfare policy when it is characterized as a form of
211 social insurance. Such a *Risk-pooling* message emphasizes how a policy is intended to
212 collectively insure everyone against the risk of unforeseeable negative outcomes.

213 **Overview of Studies**

214 In this article we introduce a measure of the Rewarding, Rigged, and Random
215 dimensions of lay theories concerning changes in financial well-being. We establish the
216 concurrent validity of this measure by examining how the dimensions are associated with
217 political ideology when controlling for demographic variables and other related psychological
218 constructs (Study 1). Next, we leverage these insights to test our predictions that policy messages
219 highlighting Incentivizing, Redistributing, and Risk-pooling are more persuasive to individuals
220 with lay theories that are high on the Rewarding, Rigged, and Random dimensions, respectively.
221 In particular, we examine how beliefs about changes in financial well-being are associated with
222 rated importance of different goals that a government may pursue (Study 2), the relative

223 persuasiveness of messages that highlight these different goals for various social welfare policies
224 (Study 3), and support for political candidates who speak about these different goals (Study 4)—
225 all while controlling for differences in political ideology. For all of these studies we preregistered
226 hypotheses, measures, sample sizes, inclusion criteria, and key analyses prior to data collection
227 (see osf.io/n345j).

228 **Study 1**

229 In our first study we introduce and validate a scale measuring beliefs about changes in
230 financial well-being. We developed this scale in a deductive, top-down manner, rather than
231 through inductive, bottom-up scale-development procedures (Boateng et al., 2018; Hinkin,
232 1995). Thus, rather than derive our scale and its factor structure from an initial pool of items, we
233 theoretically deduced the dimensional structure and scale items from the synthesis of two
234 research streams that we described in the Introduction. This synthesis yielded the three
235 dimensions that we believe capture the relevant range of lay theories of financial well-being. The
236 conclusion that our scale successfully captures most lay theories that spontaneously occur to
237 people is bolstered by results of a follow-up test, reported in the Supplemental Material (Study
238 S1A) and described in the General Discussion.

239 We first examine the factor structure of our scale and test for measurement invariance. To
240 further validate our scale, we examine the extent to which the Rewarding, Rigged, and Random
241 subscales are associated with political ideology. This variable is widely used in earlier
242 psychological research and can serve as an initial indication for whether beliefs about the
243 uncertainty in financial well-being are relevant to policy messaging. Liberals on the political left
244 and conservatives on the right have often been described to differ in their openness to change,
245 their preference for stability, and their acceptance of inequality (Hirsh et al., 2010; Jost, 2017;

246 Jost et al., 2009; McCrae, 1996). According to Jost et al. (2003), conservative ideology is
247 characterized in part by a need to “avoid change, disruption, and ambiguity ... and to explain,
248 order, and justify inequality among groups and individuals.” Conservatives and liberals also
249 differ in their lay beliefs about free will; conservatives tend to believe that people have more
250 autonomous control over their behavior (Carey & Paulhus, 2013; Everett et al., 2020). These
251 differences may be a reason why conservatives tend to favor internal causal attributions for
252 outcomes in life. Conservatives are for instance more likely than liberals to believe that poverty
253 is caused by a lack of effort (Zucker & Weiner, 1993) and to blame the poor for their own plight
254 (Weiner et al., 2011).

255 Because conservatives, relative to liberals, are more likely to justify inequalities by holding
256 individuals responsible for their actions and outcomes, we expect that conservatives tend to see
257 changes in financial well-being as more knowable in advance based on individual factors such as
258 effort (i.e., more Rewarding). Meanwhile, we expect liberals to see these changes as both more
259 knowable due to systemic factors such as discrimination and favoritism (i.e., more Rigged), and
260 as more inherently unpredictable (i.e., more Random). In addition, we predict that these effects
261 will remain significant when we control for various socio-demographic variables that have
262 previously been found to be associated with political ideology, such as gender, age, income, level
263 of education, ethnicity, and the strength of religious beliefs.

264 Mapping lay theories of financial well-being along three conceptually distinct dimensions
265 also allows us to examine the relative strength of each dimension’s association with political
266 ideology. This leads to a more nuanced understanding of what distinguishes liberal ideology
267 from conservative ideology. Instead of placing liberals and conservatives on opposite ends of a

268 luck versus effort continuum, we will be able to examine the extent to which each of the three
269 dimensions is uniquely associated with the ideological divide.

270 To further explore the extent to which the Rewarding, Rigged, and Random dimensions
271 constitute a promising framework for crafting effective political and policy messages, we
272 compare each dimension's ability to predict political ideology with several psychological
273 constructs that have previously been found to correlate with political ideology. In particular, two
274 of these constructs can serve as relevant benchmarks. First, we examine social dominance
275 orientation (SDO; Pratto et al., 1994) and right-wing authoritarianism (RWA; Altemeyer, 1988).
276 Together, a preference for social hierarchy (as captured by SDO) and a commitment to authority
277 and tradition (as captured by RWA) seem to lie at the core of what it means to hold conservative
278 beliefs (Duckitt & Sibley, 2010; Jost et al., 2003; Wilson & Sibley, 2013). We thus expect to find
279 that both these constructs are positively associated with self-reported conservative ideology.

280 The second comparison we wish to highlight is with the five moral foundations of
281 care/harm, fairness/cheating, loyalty/betrayal, authority/subversion, and purity/degradation, as
282 proposed in Moral Foundations Theory (Graham et al., 2011, 2013, 2018). Prior research has
283 found that the weight that people put on each of these foundations when making moral
284 judgments is associated with their political ideology. Compared to conservatives, liberals
285 generally base their morality judgments more on the individualizing values—whether or not they
286 believe an action violates the principles of care/harm and fairness/cheating. Compared to liberals,
287 conservatives generally base their morality judgments more on the binding values—whether or
288 not they believe an action violates principles of loyalty/betrayal, authority/subversion, and
289 purity/degradation (Graham et al., 2009; Haidt & Graham, 2007).

290 In Study 1 we examine the role of the three dimensions of beliefs about changes in
291 financial well-being in predicting political ideology, controlling for SDO, RWA, the five moral
292 foundations, and several other scales that have previously been related to political preferences.

293 **Method**

294 *Participants*

295 We recruited participants through Lucid’s Fulcrum Academia service ($N = 1,102$; 52%
296 female, $M_{\text{age}} = 44.01$, $SD_{\text{age}} = 16.63$). We aimed to recruit 1,000 participants and ended up with
297 partial or complete data for 1,168 participants.¹ The sample was demographically targeted using
298 quotas to be representative of the U.S. population in terms of age, gender, region, household
299 income, education, and ethnicity. Of course, given the non-probability nature of quota sampling,
300 the sample may not fully reflect the U.S. population. We removed data of 66 participants before
301 analyses because they did not complete one of the key variables. The collected data were
302 supplemented with socio-demographic information that participants had provided to the panel
303 service at an earlier time (level of education, ethnicity, gender, household income, political party
304 preference, and U.S. region of residence).

305 *Procedure & Materials*

306 We developed a nine-item measure that we label the Causal Attributions of Financial
307 Uncertainty (CAFU) scale. We adapted scale items from the Epistemic-Aleatory Rating Scale
308 (EARS; Fox, Tannenbaum et al., 2021). In the first part of the survey, participants rated their
309 level of agreement (1 = “not at all”; 7 = “very much”) with nine statements that assessed the
310 perceived nature of uncertainty in “a person’s change in financial well-being from one year to

¹ We conducted a post-hoc sensitivity (power) analysis for a single coefficient in a multiple regression analysis with three predictors. The minimum detectable effect with $N = 1000$, $\alpha = .05$, and 95% power is $f^2 = .017$. This effect size is below Cohen’s (1988) threshold for a small effect size ($f^2 = .02$). We present similar sensitivity analyses for Studies 2-4 in the Supplemental Material.

311 the next.” The nine items were presented in random order on a single page. Three items were
312 designed to assess the extent to which participants perceived changes in financial well-being as
313 knowable based on inputs such as effort and skill, and were averaged into a single *Rewarding*
314 score. Three items were designed to assess the extent to which participants perceived changes in
315 financial well-being as knowable based on systemic factors such as discrimination and
316 favoritism, and were averaged into a single *Rigged* score. Three items were designed to assess
317 the extent to which participants perceived changes in financial well-being as being due to chance
318 events and were averaged into a single *Random* score.² See Table 2 for all items of the CAFU
319 scale and Table 3 for scale descriptive statistics, measures of internal consistency, and
320 correlation coefficients.

321 In the second section of the survey, participants rated their political attitudes and beliefs on
322 a seven-point scale (1 = “extremely liberal”; 7 = “extremely conservative”).

323 The third part of the survey consisted of a series of scales measuring constructs potentially
324 associated with political ideology and beliefs about financial well-being. In random order,
325 participants were presented with the following measures: Social Dominance Orientation (SDO;
326 Ho et al., 2015), Right-Wing Authoritarianism (RWA; Bizumic & Duckitt, 2018), Moral
327 Foundations Questionnaire (MFQ; Graham et al., 2011), Belief in a Just World (BJW; Dalbert,
328 1999), General System Justification (GSJ; Kay & Jost, 2003), Protestant Work Ethic (PWE; Ho
329 et al., 2012), trait optimism (Scheier et al., 1994), meritocratic beliefs (Day & Fiske, 2017),
330 perceived societal social mobility (Day & Fiske, 2017), perceived individual social mobility
331 (Day & Fiske, 2017), two questions assessing attributions of wealth and poverty (adapted from
332 Gallup, 1998; PEW, 2018), one question from the World Values Survey about why there are

² Because the labels ‘Rewarding,’ ‘Rigged’ and ‘Random’ may have particularly positive or negative connotations to participants, we never use these labels in the instructions or scale items.

333 people living in need (WVS, n.d.), and two questions about the perceived fairness of the
334 American economic system (adapted from WVS, n.d.; PEW, 2018).

335 In a final section of the survey, participants indicated their subjective socio-economic status
336 using the MacArthur Scale of Subjective Social Status (MSSSS; Adler et al., 2000), some
337 additional socio-demographic information, which political party they would vote for if a
338 congressional election were held today, and who they voted for in the 2016 Presidential election.
339 See the Supplemental Material for full details on the measures used.

340 The Institutional Review Board of University of California Los Angeles granted ethical
341 approval for all studies described in this article (Protocol ID: 14-000698, Project title:
342 Distinguishing Two Dimensions of Subjective Uncertainty).

343 **Table 2**344 *Items of the Causal Attributions of Financial Uncertainty (CAFU) Scale.*

Subscale	CAFU item
	A person's change in financial well-being from one year to the next... (1 = 'not at all'; 7 = 'very much')
Rewarding	...is the result of how hard the person works. ...tends to improve with the person's resourcefulness and problem-solving ability. ...is predictable if you know the person's skills and talents.
Rigged	...depends on how much discrimination or favoritism the person faces. ...is predictable because some groups will always be favored over others. ...depends on the person's initial status and wealth (i.e., rich tend to get richer and poor tend to get poorer).
Random	...is something that has an element of randomness. ...is determined by inherently unpredictable life events (e.g., getting robbed or winning the lottery). ...is determined by chance factors.

345

346 **Table 3**347 *Studies 1-4 CAFU Scale Descriptive Statistics, Measures of Internal Consistency, and*348 *Correlation Coefficients.*

Study 1								
Subscale	<i>M</i>	<i>SD</i>	α	ω_t	ω_h	<i>r</i> (, Rew.)	<i>r</i> (, Rig.)	<i>r</i> (, Ran.)
Rewarding	4.92	1.20	0.65	0.66	0.66		.25	.26
Rigged	4.25	1.43	0.73	0.73	0.74	.25		.52
Random	4.18	1.33	0.70	0.70	0.70	.26	.52	
Study 2								
Subscale	<i>M</i>	<i>SD</i>	α	ω_t	ω_h	<i>r</i> (, Rew.)	<i>r</i> (, Rig.)	<i>r</i> (, Ran.)
Rewarding	4.91	1.07	0.68	0.69	0.68		-.11	-.19
Rigged	4.32	1.29	0.75	0.75	0.75	-.11		.35
Random	4.06	1.27	0.78	0.78	0.78	-.19	.35	
Study 3								
Subscale	<i>M</i>	<i>SD</i>	α	ω_t	ω_h	<i>r</i> (, Rew.)	<i>r</i> (, Rig.)	<i>r</i> (, Ran.)
Rewarding	4.66	1.16	0.73	0.73	0.73		-.09	-.10
Rigged	4.34	1.34	0.75	0.75	0.75	-.09		.42
Random	4.11	1.26	0.78	0.78	0.79	-.10	.42	
Study 4								
Subscale	<i>M</i>	<i>SD</i>	α	ω_t	ω_h	<i>r</i> (, Rew.)	<i>r</i> (, Rig.)	<i>r</i> (, Ran.)
Rewarding	4.72	1.12	0.71	0.71	0.71		-.07	-.04
Rigged	4.37	1.33	0.76	0.76	0.76	-.07		.47
Random	4.16	1.24	0.75	0.75	0.75	-.04	.47	

349 *Note.* α = Cronbach's alpha; ω_t = McDonald's omega total; ω_h = McDonald's omega350 hierarchical; *r* = Pearson's correlation coefficient.

351 **Results**

352 In this section we examine the psychometric properties and validity of the CAFU scale. In
353 particular, we test its factor structure, demonstrate measurement invariance, and test its
354 concurrent validity against related constructs.

355 *Examining the Factor Structure of the CAFU Scale*

356 To examine structural validity, we used confirmatory factor analysis to evaluate the fit of
357 the proposed three-dimensional model. Using the cutoff values suggested by Hu and Bentler
358 (1999), all indices indicate a good fit between the proposed model and the observed data:
359 comparative fit index (CFI) = .97 (> .95), Tucker-Lewis index (TLI) = .96 (> .95), root mean
360 square error of approximation (RMSEA) = .05 (< .06), and standardized root mean square
361 residual (SRMR) = .04 (< .08). In addition, the proposed model passes Hu and Bentler's (1999)
362 suggested combination rule of $RMSEA < .06$ and $SRMR < .09$.³ Figure 1 displays a graphical
363 representation of the proposed model, including the standardized factor loadings and covariances
364 between latent variables.

365 *Testing Measurement Invariance*

366 We next tested whether the factor structure of the CAFU scale is equivalent across different
367 groups within the sample, a criterion of structural validity that is often neglected by researchers
368 (Flake et al., 2017). We tested for measurement invariance between male and female
369 participants, between participants below or above the median age of 43, and between self-rated
370 political conservatives and liberals. Following Hussey and Hughes (2020; see also Putnick &
371 Bornstein, 2016), we tested for: (1) configural invariance, which assesses adequacy of the fit of
372 the unconstrained model across groups; (2) metric invariance, which assesses equivalence of

³ We present a similar analysis with data from Studies 2-4 in the Supplemental Material.

373 factor loadings across groups; and (3) scalar invariance, which tests for equivalence of item
 374 intercepts across groups.

375 Table 4 shows the fit indices used to test for configural invariance and Table 5 shows the
 376 differences in fit indices used to test for metric and scalar invariance. All tests of measurement
 377 invariance pass conventional testing criteria, indicating that the CAFU scale measures the same
 378 constructs (Rewarding, Rigged, and Random) in male and female participants, younger and older
 379 participants, and liberal and conservative participants.

380

381 **Table 4**

382 *Study 1 Fit Indices for Tests of Configural Invariance on Gender, Age, and Political Ideology.*

Measurement invariance test	χ^2	<i>df</i>	<i>p</i>	CFI	TLI	RMSEA	SRMR	Result
Configural inv.: Gender	126.72	48	<.001	0.966	0.949	0.055	0.041	Passed
Configural inv.: Age	151.81	48	<.001	0.955	0.932	0.063	0.041	Passed
Configural inv.: Political id.	113.53	48	<.001	0.957	0.936	0.062	0.046	Passed

383 *Note.* CFI = comparative fit index; TLI = Tucker-Lewis fit index; RMSEA = root mean square
 384 error of approximation; SRMR = standardized root mean square residual. Test is passed when
 385 $SRMR \leq 0.09$ and at least one of the following conditions is met: $CFI \geq 0.95$, $TLI \geq 0.95$,
 386 $RMSEA \leq 0.06$. Criteria based on Hussey and Hughes (2020), Hu and Bentler (1999), Chen
 387 (2007), and Putnick and Bornstein (2016).

388 **Table 5**

389 *Study 1 Differences in Fit Indices for Tests of Metric and Scalar Invariance on Gender, Age, and*
 390 *Political Ideology.*

Measurement invariance test	<i>df</i>	Δ CFI	Δ TLI	Δ RMSEA	Δ SRMR	Result
Metric inv.: Gender	6	-0.004	0.001	-0.001	0.005	Passed
Metric inv.: Age	6	0.000	0.008	-0.004	0.003	Passed
Metric inv.: Political id.	6	0.002	0.010	-0.005	0.001	Passed
Scalar inv.: Gender	6	0.000	0.005	-0.003	0.000	Passed
Scalar inv.: Age	6	-0.004	0.001	0.000	0.002	Passed
Scalar inv.: Political id.	6	-0.001	0.004	-0.002	0.003	Passed

391 *Note.* CFI = comparative fit index; TLI = Tucker-Lewis fit index; RMSEA = root mean square
 392 error of approximation; SRMR = standardized root mean square residual. Tests are passed when
 393 Δ CFI \geq -0.015 and Δ RMSEA \leq 0.01. Criteria based on Hussey and Hughes (2020), Hu and
 394 Bentler (1999), Chen (2007), and Putnick and Bornstein (2016).

395

396 ***Rewarding, Rigged, and Random as Predictors of Political Ideology***

397 Figure 2 displays the association between political ideology and scores on the three CAFU
 398 subscales. Confirming our expectations, participants who rated themselves as more politically
 399 conservative tended to score higher on the Rewarding dimension ($r = 0.13, p < .001$), lower on
 400 the Rigged dimension ($r = -0.20, p < .001$), and lower on the Random dimension ($r = -0.09, p =$
 401 $.005$).

402 To examine concurrent validity, we specified a series of structural equation path models
 403 testing each dimension (Rewarding, Rigged, and Random) as a latent variable predictor of
 404 political ideology, while controlling for the set of socio-demographic variables.⁴ We do this first

⁴ We estimated missing data using full information maximum likelihood. Confirmatory factor analysis and structural equation modeling were performed using R (Version 3.6.0; R Core Team, 2018) and the R-package lavaan (Version 0.6.3; Rosseel, 2012).

405 for individual subscales, as displayed in Figure 3, then simultaneously for all subscales, as
406 displayed in Figure 4.

407 The independent tests of each subscale (Figure 3) shows that when controlling for socio-
408 demographic variables, Rewarding has a significant positive association with political ideology
409 (conservatism), Rigged has a significant negative association with political ideology, and
410 Random has a significant negative association with political ideology. The simultaneous test of
411 all subscales (Figure 4) shows that the Rewarding and the Rigged dimensions are both
412 significantly associated with political ideology, even when controlling for the other dimensions
413 of beliefs about financial well-being and socio-demographic variables. The prediction of political
414 ideology by the Random subscale is no longer significant in this analysis. A fuller account of
415 these models is described in the Supplemental Material.

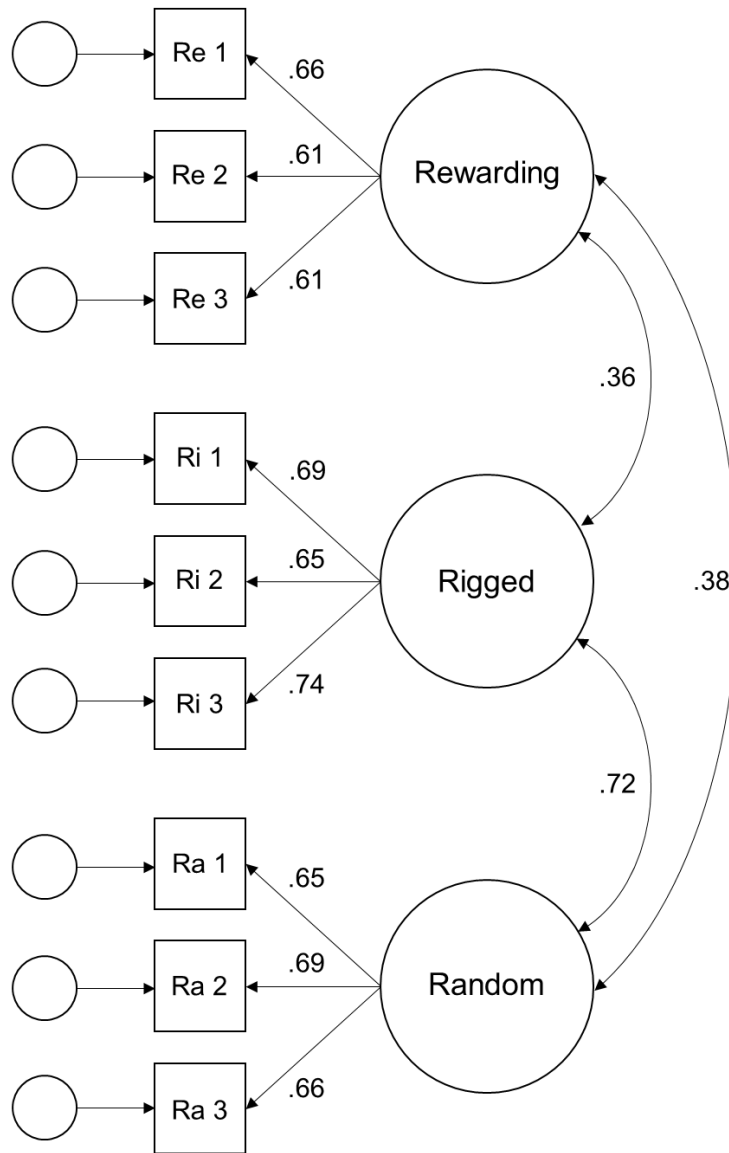
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417

418 **Figure 1**

419 *Study 1 Confirmatory Factor Analysis of the Proposed Model with Rewarding, Rigged, and*

420 *Random as Latent Variables.*



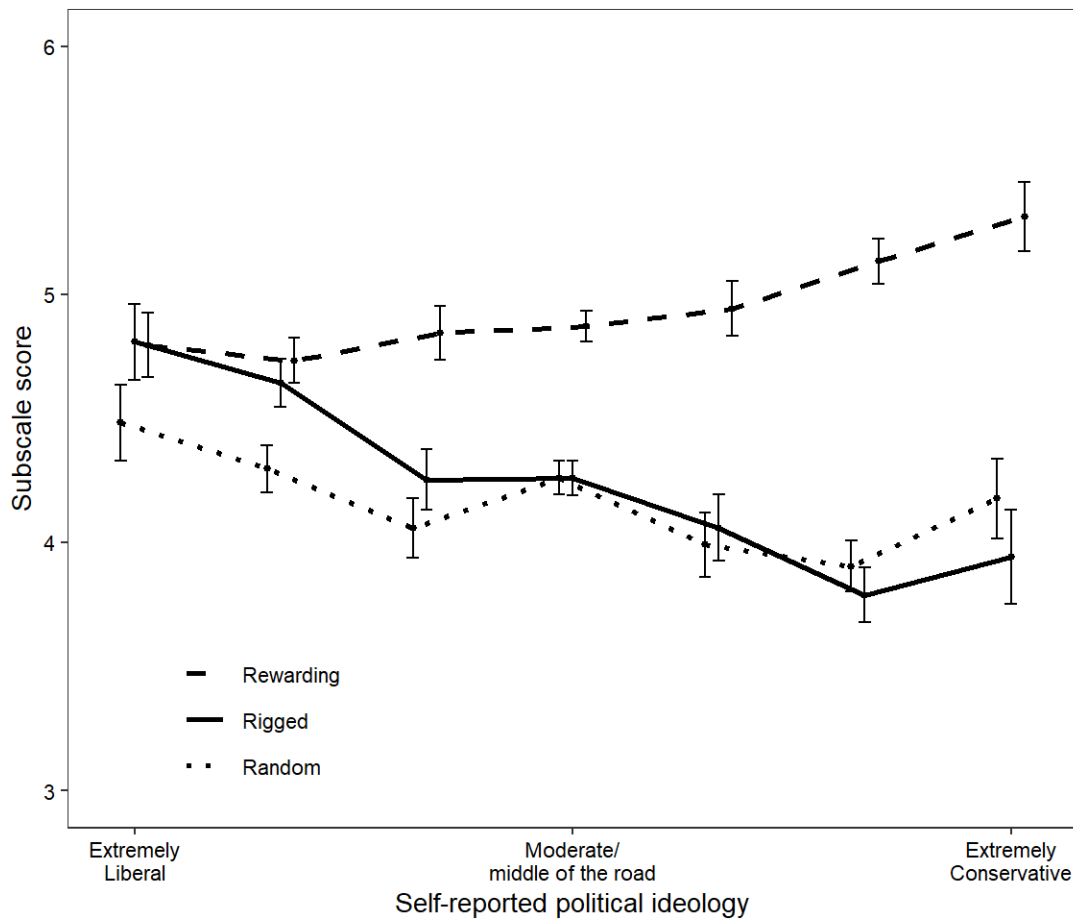
421

422 *Note.* Numbers on the left indicate standardized factor loadings. Numbers on the right (curved

423 arrows) indicate standardized latent variable covariances.

424 **Figure 2**

425 *Study 1 Scores on CAFU Subscales as a Function of Self-reported Political Ideology.*



426

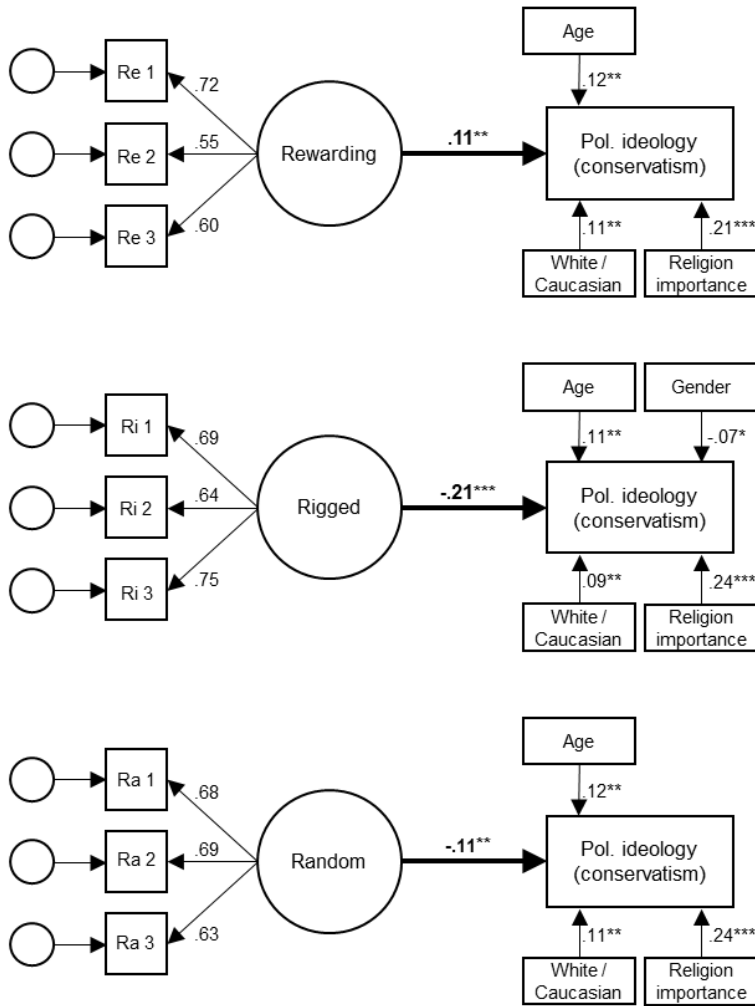
427 *Note.* Bars indicate standard errors.

428

429 **Figure 3**

430 *Study 1 Independent Prediction of Political Ideology by the Rewarding, Rigged, and Random*

431 *Subscales of CAFU, Controlling for Socio-demographic Variables in Path Models.*



432

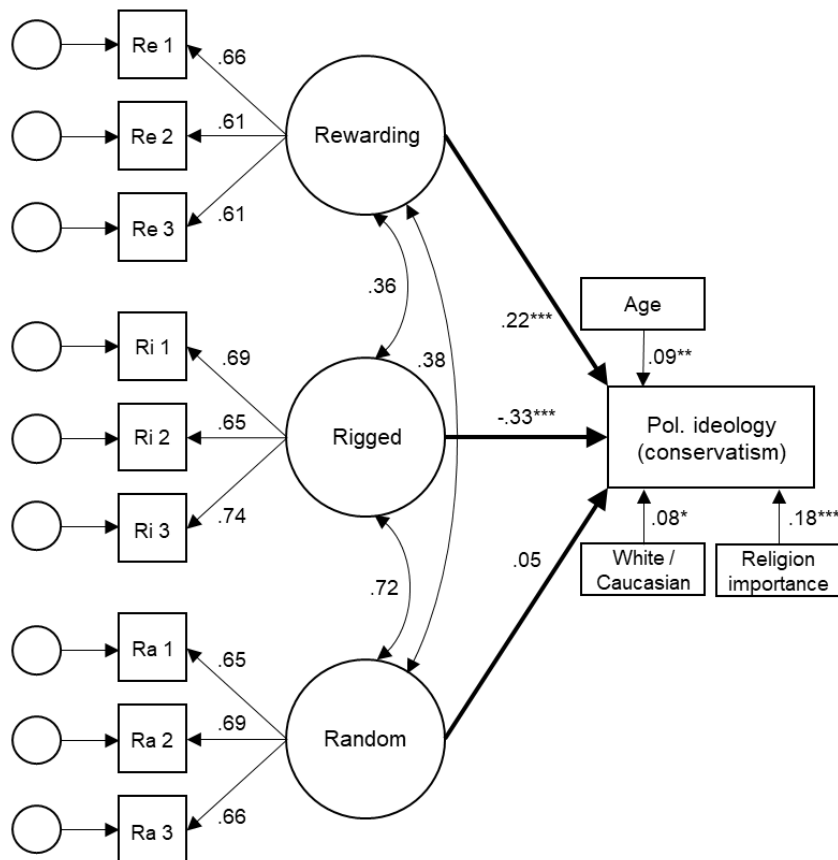
433 *Note.* Numbers on the left indicate standardized factor loadings. Numbers on the right indicate
 434 standardized regression coefficients for all significant predictors (* $p < .05$, ** $p < .01$, *** $p <$
 435 $.001$). Predictors that were included in the models but were not significant: only child, subjective
 436 socio-economic status, household income, Hispanic/Latino, religion, college degree, married,
 437 employed, children, first born, U.S. born.

438

439 **Figure 4**

440 *Study 1 Simultaneous Prediction of Political Ideology by the Rewarding, Rigged, and Random*

441 *Subscales of CAFU, Controlling for Socio-demographic Variables in a Path Model.*



442

443 *Note.* Numbers on the left indicate standardized factor loadings. Numbers in the middle (curved

444 arrows) indicate standardized latent variable covariances. Numbers on the right indicate

445 standardized regression coefficients for all significant predictors (* $p < .05$, ** $p < .01$, *** $p <$

446 $.001$). Predictors that were included in the models but were not significant: gender, only child,

447 subjective socio-economic status, household income, Hispanic/Latino, religion, college degree,

448 married, employed, children, first born, U.S. born.

449

450 *Predicting Political Ideology when Controlling for Related Constructs*

451 We next test the concurrent validity of CAFU subscales against other individual difference
452 measures that have been related to political ideology in prior literature. Simple correlational
453 analyses largely replicate prior results. Participants with a higher SDO score, indicating a
454 preference for hierarchical social structure, rated themselves as more politically conservative ($r =$
455 $0.26, p < .001$). Participants with a higher RWA score, indicating a commitment to authority and
456 tradition, also rated themselves as more politically conservative ($r = 0.39, p < .001$). As for moral
457 foundations, participants who rated themselves as more conservative put less weight on the
458 fairness dimension ($r = -0.08, p = .014$), and more weight on the dimensions of ingroup loyalty (r
459 $= 0.12, p < .001$), obedience to authority ($r = 0.10, p = .001$), and purity ($r = 0.17, p < .001$). In
460 our sample political ideology was not significantly correlated with the rated importance of the
461 harm dimension ($r = -0.03, p = .281$).

462 We performed three sets of linear regression analyses. The first set examined whether the
463 Rewarding, Rigged, and Random subscales are each still significant predictors of political
464 ideology when controlling for SDO and RWA (see Table 6). Indeed, all three subscales of the
465 CAFU remain significant predictors of political ideology when controlling for these scales.
466 Likewise, a second set of three regression analyses examined whether the Rewarding, Rigged,
467 and Random subscales are each still significant predictors of political ideology when controlling
468 for the five moral foundations of care/harm, fairness/cheating, loyalty/betrayal,
469 authority/subversion, and purity/degradation (see Table 7). Again, all three subscales of the
470 CAFU remain significant when controlling for the five moral foundation subscales.

471 In a final regression analysis, we included all 19 individual difference measures and 15
472 socio-demographic variables simultaneously into a single linear regression and examined

473 whether the Rewarding, Rigged, and Random subscales of the CAFU remain significant
474 predictors of political ideology (see Table 8). The positive prediction of political ideology
475 (conservatism) by the Rewarding dimension and the negative prediction of political ideology by
476 the Rigged dimension remain significant in this full model. Other significant predictors of
477 political ideology are age, ethnicity (white/Caucasian), SDO, RWA, meritocratic beliefs, and
478 causal attribution of poverty. The Random dimension is no longer a significant predictor of
479 political ideology in this model. Figure 5 shows the absolute standardized regression coefficients
480 of the included variables. See the Supplemental Material for the correlations between the three
481 subscales of the CAFU, all socio-demographic variables, and all other individual difference
482 measures.
483

484 **Table 6**

485 *Study 1 Prediction of Political Ideology (Higher is more Conservative) by CAFU Subscales, Controlling for Social Dominance*
 486 *Orientation (SDO) and Right-Wing Authoritarianism (RWA) in Linear Regressions.*

	Model 1			Model 2			Model 3		
Effect	<i>b</i> [95% <i>CI</i>]	β	<i>p</i>	<i>b</i> [95% <i>CI</i>]	β	<i>p</i>	<i>b</i> [95% <i>CI</i>]	β	
Rewarding	0.12 [0.04, 0.20]	0.08	.003						487
Rigged				-0.19[-0.25, -0.12]	-0.16	<.001			488
Random							-0.12[-0.19, -0.05]	-0.09	489
SDO	0.34 [0.24, 0.43]	0.20	<.001	0.48 [0.23, 0.41]	0.19	<.001	0.34 [0.25, 0.43]	0.20	490
RWA	0.53 [0.44, 0.62]	0.34	<.001	0.52 [0.44, 0.61]	0.34	<.001	0.55 [0.46, 0.63]	0.35	491
Intercept	0.14 [-0.41, 0.70]		.610	1.63 [1.09, 2.16]		<.001	1.17 [0.65, 1.69]		492
Observations	1,035			1,035			1,035		493
R^2	.20			.22			.20		494
Adjusted R^2	.20			.22			.20		495

504

505 **Table 7**

506 *Study 1 Prediction of Political Ideology (Higher is More Conservative) by CAFU Subscales, Controlling for the Five Subscales of the*

507 *Moral Foundations Questionnaire (MFQ) in Linear Regressions.*

Effect	Model 1			Model 2			Model 3		508
	<i>b</i> [95% <i>CI</i>]	β	<i>p</i>	<i>b</i> [95% <i>CI</i>]	β	<i>p</i>	<i>b</i> [95% <i>CI</i>]	β	509
Rewarding	0.14 [0.05, 0.23]	0.10	.002						510
Rigged				-0.24[-0.31, -0.17]	-0.20	<.001			511
Random							-0.16[-0.24, -0.09]	-0.13	512
MFQ: care/harm	-0.16[-0.31, -0.02]	-0.11	.031	-0.13[-0.28, 0.01]	-0.08	.078	-0.16[-0.31, -0.01]	-0.10	513
MFQ: fairness/cheat.	-0.33[-0.48, -0.19]	-0.22	<.001	-0.27[-0.41, -0.13]	-0.17	<.001	-0.32[-0.46, -0.18]	-0.21	514
MFQ: loyalty/betray.	0.13 [-0.01, 0.27]	0.09	.065	0.15 [0.02, 0.29]	0.10	.028	0.14 [0.01, 0.28]	0.09	515
MFQ: authority/subv.	0.08 [-0.07, 0.23]	0.05	.312	0.09 [-0.06, 0.24]	0.05	.255	0.13 [-0.02, 0.28]	0.08	516
MFQ: purity/degrad.	0.33 [0.21, 0.46]	0.23	<.001	0.33 [0.21, 0.46]	0.23	<.001	0.35 [0.22, 0.47]	0.24	517
Intercept	3.34 [2.80, 3.88]		<.001	4.53 [4.04, 5.02]		<.001	4.32 [3.81, 4.82]		<.001
Observations	1,040			1,040			1,040		
R^2	.09			.12			.10		
Adjusted R^2	.08			.11			.09		

518 **Table 8**

519 *Study 1 Prediction of Political Ideology (Higher is more Conservative) by CAFU Subscales,*
 520 *Controlling for Socio-demographic Variables and Individual Difference Measures (Model 2) in*
 521 *Linear Regressions.*

Effect	Model 1			Model 2		
	<i>b</i> [95% <i>CI</i>]	β	<i>p</i>	<i>b</i> [95% <i>CI</i>]	β	<i>p</i>
Rewarding	0.27 [0.19, 0.36]	0.19	<.001	0.16 [0.06, 0.26]	0.11	.001
Rigged	-0.29[-0.37, -0.21]	-0.24	<.001	-0.19[-0.27, -0.10]	-0.16	<.001
Random	-0.01[-0.10, 0.07]	-0.01	.770	-0.02[-0.11, 0.06]	-0.02	.587
Age				0.01 [0.01, 0.02]	0.12	.001
Female				-0.01 [-0.22, 0.20]	-0.00	.899
Household income				0.00 [-0.02, 0.01]	-0.01	.754
White/Caucasian				0.32 [0.07, 0.58]	0.08	.012
Hispanic				0.10 [-0.22, 0.42]	0.02	.543
Religious				-0.08[-0.29, 0.14]	-0.02	.480
College degree				-0.01[-0.21, 0.20]	-0.00	.951
Married				0.05 [-0.16, 0.26]	0.01	.645
Employed				-0.05[-0.26, 0.17]	-0.01	.674
Children				0.03 [-0.19, 0.25]	0.01	.765
First born				0.02 [-0.20, 0.24]	0.00	.883
Only child				0.22 [-0.10, 0.54]	0.04	.171
Religion importance				0.05 [-0.01, 0.10]	0.06	.082
U.S. born				-0.01[-0.44, 0.41]	-0.00	.953
MSSSS				-0.02[-0.06, 0.02]	-0.03	.308
SDO				0.29 [0.17, 0.41]	0.17	<.001
RWA				0.38 [0.27, 0.49]	0.25	<.001
GSI				-0.07[-0.21, 0.07]	-0.04	.308
BJW				-0.08[-0.20, 0.04]	-0.06	.168
PWE				-0.08[-0.20, 0.05]	-0.05	.220
Optimism				-0.01[-0.11, 0.08]	-0.01	.777
Meritocratic beliefs				0.18 [0.03, 0.32]	0.11	.017

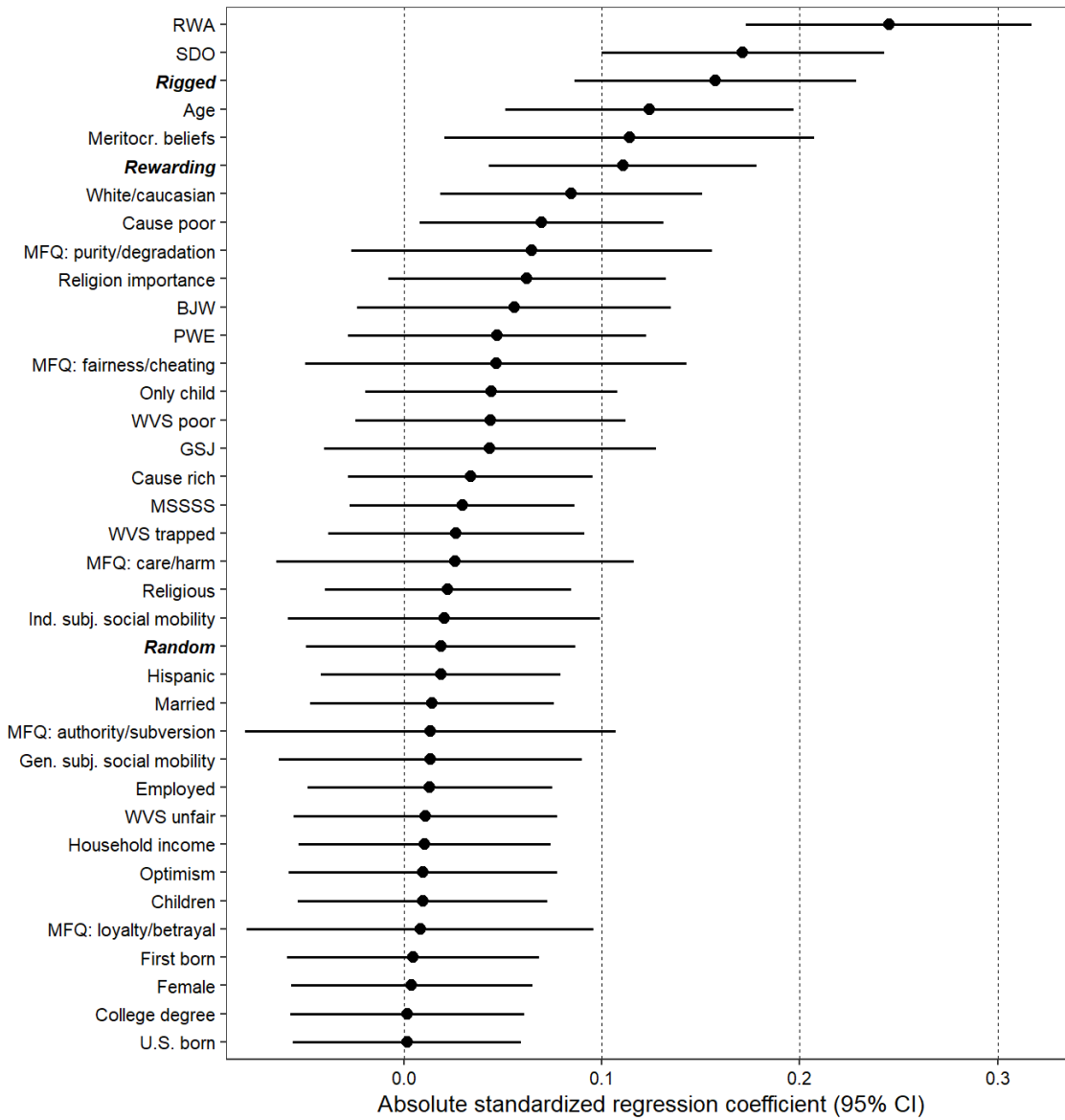
Societal social mobility			0.02 [-0.11, 0.15]	0.01	.733
Individual social mobility			0.03 [-0.09, 0.15]	0.02	.612
MFQ: care/harm			-0.04[-0.19, 0.10]	-0.03	.573
MFQ: fairness/cheating			-0.07[-0.23, 0.08]	-0.05	.344
MFQ: loyalty/betrayal			0.01 [-0.12, 0.15]	0.01	.851
MFQ: authority/subversion			-0.02[-0.17, 0.13]	-0.01	.777
MFQ: purity/degradation			0.09 [-0.04, 0.23]	0.06	.165
Cause poor			-0.19[-0.36, -0.02]	-0.07	.026
Cause rich			0.09 [-0.07, 0.25]	0.03	.284
WVS poor			-0.15[-0.39, 0.08]	-0.04	.207
WVS trapped			0.09 [-0.13, 0.32]	0.03	.420
WVS unfair			-0.04[-0.27, 0.20]	-0.01	.747
Intercept	3.92 [3.45, 4.40]	<.001	1.30 [-0.14, 2.75]		.078
Observations	1,096		958		
R^2	.07		.29		
Adjusted R^2	.07		.26		

- 522 *Note.* MSSS = MacArthur Scale of Subjective Social Status; SDO = Social Dominance
- 523 Orientation; RWA = Right-Wing Authoritarianism; GSJ = General System Justification; BJW =
- 524 Belief in a Just World; PWE = Protestant Work Ethic; MFQ = Moral Foundations Questionnaire;
- 525 WVS = World Values Survey.

526 **Figure 5**

527 *Study 1 Prediction of Political Ideology by Individual Difference Measures and*

528 *Sociodemographic Variables in a Linear Regression.*



529

530 *Note.* RWA = Right-Wing Authoritarianism; SDO = Social Dominance Orientation; MFQ =

531 Moral Foundations Questionnaire; BJW = Belief in a Just World; PWE = Protestant Work Ethic;

532 WVS = World Values Survey; GSJ = General System Justification; MSSS = MacArthur Scale of

533 Subjective Social Status.

534 Discussion

535 Combining insights from different lines of past research, we suggested a more nuanced
536 mapping of lay theories about changes in financial well-being than has been previously
537 articulated in the literature. Our account recognizes that some exogenous factors determining
538 financial well-being are perceived as knowable whereas other exogenous factors are perceived as
539 random. This requires a scale that includes more than a single dimension of perceived individual
540 control, more than two distinct dimensions of beliefs about the role of discretionary and
541 exogenous factors determining financial outcomes, and more than a mere distinction between
542 knowable and random uncertainty. Thus, we designed the CAFU scale to measure lay theories
543 along three conceptually distinct dimensions: Rewarding, Rigged, and Random. Results from
544 Study 1 confirm that people’s beliefs about changes in financial well-being can indeed be well-
545 described along these three dimensions.

546 In a sample of participants that was targeted using quotas to be demographically
547 representative of the U.S. population, we find that the Rewarding, Rigged, and Random
548 dimensions are all associated with political ideology, even when controlling for socio-
549 demographic variables and other individual difference measures such as Social Dominance
550 Orientation, Right-Wing Authoritarianism, and moral foundations. Reassuringly, the conclusion
551 that liberals tend to see changes in financial well-being as more rigged whereas conservatives
552 tend to see changes in financial well-being as more rewarding accords with the causes, reasons,
553 and factors that participants spontaneously listed in Study S1A, as reported in the Supplemental
554 Material.

555 Past research has focused on beliefs about the degree of individual control as a predictor of
556 political ideology. Using the model proposed here, with three conceptually distinct dimensions,

557 we can go a step further and examine the relative importance of the knowable and random
558 elements of those beliefs. What we find is that the two knowable dimensions (Rewarding and
559 Rigged) are both significant predictors of political ideology, even when controlling for the other
560 dimensions. Contrary to our preregistered hypothesis, the prediction of political ideology by the
561 Random dimension was no longer significant when controlling for the Rewarding and Rigged
562 dimensions.

563 We surmise that the Random dimension is less uniquely predictive of political ideology
564 than the other dimensions because this relationship is suppressed by shared variance. Although
565 Random and Rigged are conceptually distinct dimensions, we observe a positive correlation
566 between these CAFU subscales in all four studies reported in this article (see Table 3). One
567 possible reason for this partial overlap could be because both dimensions capture factors that are
568 seen as subverting meritocracy. The connection between the Random dimension and political
569 ideology could be weaker than the Rigged dimension because some people underappreciate the
570 long-term cumulative impact of random fluctuations in financial well-being (Frank, 2016).
571 Moreover, the relationship between the Random dimension and political ideology could be
572 suppressed by the Rigged dimension because the perceived anti-meritocratic effect of systematic
573 (i.e., Rigged) factors overwhelms the perceived anti-meritocratic effect of unsystematic (i.e.,
574 Random) factors.

575 Interestingly, the correlations between the Rewarding, Rigged, and Random dimensions, as
576 displayed in Table 3, differ substantially between Study 1 and the studies that follow. We can
577 only speculate about why this is the case. The pattern of differences—more positive, less
578 negative correlations in Study 1 than the others—may be an indication that a greater proportion
579 of participants in the first study (who were recruited from Lucid) mindlessly perseverated on a

580 particular numerical response compared to respondents in the other three studies (who were all
581 recruited from Amazon’s Mechanical Turk).

582 In this study and the studies that follow, we chose to focus on capturing lay theories
583 concerning *intrapersonal* changes in financial well-being over time, rather than lay theories
584 concerning *interpersonal* differences in financial well-being (i.e., why a person is rich or poor).
585 We expected that beliefs about intrapersonal changes in financial well-being would be more
586 relevant to people’s policy preferences and we designed the statements of the CAFU scale to
587 reflect this focus: participants are asked about “a person’s change in financial well-being from
588 one year to the next.” Of course, it is possible that lay theories about intrapersonal changes in
589 financial well-being are different from lay theories about interpersonal differences in financial
590 well-being. Likewise, it is possible that the strength of associations between different dimensions
591 is more or less strong when framed in terms of intrapersonal changes rather than interpersonal
592 differences. To explore this possibility, we conducted an additional study, comparing the
593 association between political ideology and the standard CAFU versus a modified version of the
594 scale. For clarity we refer to the standard version of the scale in this analysis as “CAFU
595 Intrapersonal.” We designed the modified version of the CAFU to focus on lay theories about
596 interpersonal differences in financial well-being by asking participants to evaluate various causes
597 of “whether a person is rich or poor,” which we refer to in this section as “CAFU Interpersonal.”
598 See Study S1B in the Supplemental Material for further details.

599 We first examined the factor structure and tested for measurement invariance, finding no
600 evidence that the factor structure of CAFU Interpersonal is different from CAFU Intrapersonal.
601 We then examined the associations between political ideology and the Rewarding, Rigged, and
602 Random subscales. For both versions, participants who rated themselves as more politically

603 conservative tended to score higher on the Rewarding dimension ($r_{\text{Intrapersonal}} = 0.35, p < .001$;
604 $r_{\text{Interpersonal}} = 0.31, p < .001$), lower on the Rigged dimension ($r_{\text{Intrapersonal}} = -0.34, p < .001$;
605 $r_{\text{Interpersonal}} = -0.43, p < .001$), and lower on the Random dimension ($r_{\text{Intrapersonal}} = -0.08, p = .019$;
606 $r_{\text{Interpersonal}} = -0.20, p < .001$). See Table 9 for the results of a series of linear regressions,
607 showing that the positive association between the Rewarding subscale and political ideology is
608 significantly weaker when using CAFU Interpersonal than when using CAFU Intrapersonal; the
609 negative association between the Random subscale and political ideology is significantly
610 stronger when using CAFU Interpersonal than when using CAFU Intrapersonal; the association
611 between the Rigged subscale and political ideology is not significantly different when using
612 CAFU Interpersonal than when using CAFU Intrapersonal. Taken together, these results indicate
613 that the factor structure of lay theories about financial well-being and its directional association
614 with political ideology is largely robust to changing the focus of the scale. At the same time, the
615 strength of the associations between each subscale and political ideology may vary modestly
616 under the two variants of the CAFU.

617 Now that we have established how people differ in their beliefs concerning changes in
618 financial well-being, we turn to predicting how they will respond to different messages in
619 support of social welfare policy. We begin in Study 2 by examining how the Rewarding, Rigged,
620 and Random dimensions uniquely predict rated importance of different goals that a government
621 may pursue when allocating resources.

622

623 **Table 9**

624 *Prediction of Political Ideology (Higher is More Conservative) by CAFU Subscales and the Interaction with Scale Version (CAFU*

625 *Interpersonal versus CAFU Intrapersonal) in a Linear Regression.*

Effect	Model 1			Model 2			Model 3		626
	<i>b</i> [95% <i>CI</i>]	β	<i>p</i>	<i>b</i> [95% <i>CI</i>]	β	<i>p</i>	<i>b</i> [95% <i>CI</i>]	β	627
Rewarding	0.57 [0.47, 0.68]	0.38	<.001						628
Rigged				-0.48 [-0.56, -0.39]	-0.35	<.001			629
Random							-0.11 [-0.20, -0.02]	-0.08	630
Interpersonal vs. Intrapersonal	0.80 [0.14, 1.47]	0.23	.018	0.48 [-0.07, 1.03]	0.14	.088	0.57 [0.06, 1.09]	0.16	631
Rew. × Interpersonal	-0.14 [-0.28, -0.00]	-0.20	.045						632
Rig. × Interpersonal				-0.08 [-0.20, 0.04]	-0.12	.171			633
Ran. × Interpersonal							-0.15 [-0.28, -0.03]	-0.19	634
Intercept	0.71 [0.19, 1.23]		.007	5.63 [5.24, 6.03]		<.001	3.96 [3.59, 4.33]		635
Observations	1,759			1,759			1,759		636
R^2	.11			.15			.02		637
Adjusted R^2	.11			.15			.02		638

639

Study 2

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Given limited resources, governments must decide how to prioritize different kinds of social welfare policies. Here we distinguish three types of goals for a government to pursue in their allocation of funds.

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To the extent that a person believes that changes in financial well-being are Rewarding—that is, knowable and within the control of the individual—we hypothesize that this person would prefer the government to use resources in a way that enables people to pull themselves out of financial hardship. The government would thus try to make sure that hard work and initiative are incentivized, while also trying to avoid the possibility of free-riding. We refer to this as an *Incentivizing* goal.

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Second, to the extent that a person believes that changes in financial well-being are Rigged—that is, knowable but beyond the control of the individual—we hypothesize that this person would prefer the government to correct systemic inequity by allocating resources to groups in society that routinely experience financial hardship. The government would thus be involved in the redistribution of resources to disadvantaged groups. We refer to this as a *Redistributing* goal.

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Finally, to the extent that a person believes that changes in financial well-being are Random—that is, not knowable in advance and beyond control of the individual, we hypothesize that this person would prefer the government to pool resources to support anyone who happens to experience financial hardship. The government would thus implement social welfare policy as a way of providing insurance against unforeseeable financial risks. We refer to this as a *Risk-pooling* goal.

661 To test these hypotheses we will compare the direction and strength of the associations
662 between beliefs about changes in financial well-being and the rated importance of the different
663 government goals. We predict that: (a) scores on the Rewarding subscale will be more positively
664 associated with rated importance of the Incentivizing goal compared to the other two goals, (b)
665 scores on the Rigged subscale will be more positively associated with rated importance of the
666 Redistributing goal compared to the other two goals, and (c) scores on the Random subscale will
667 be more positively associated with rated importance of the Risk-pooling goal compared to the
668 other two goals.

669 **Methods**

670 *Participants*

671 We recruited participants through Amazon's Mechanical Turk ($N = 1,207$; 55% female,
672 $M_{\text{age}} = 37.98$, $SD_{\text{age}} = 14.00$). We aimed to recruit 1,200 participants and ended up with partial or
673 complete data for 1,227 participants. We removed data of 20 participants before analyses
674 because they did not give responses for all key variables.

675 *Procedure & Materials*

676 In the first section of the survey, participants read about three distinct goals in a random
677 order that the government might pursue: (1) "The government should use resources to
678 incentivize and enable people to pull themselves out of financial hardship and realize their full
679 potential"; (2) "The government should allocate resources to individuals belonging to
680 disadvantaged groups that routinely experience financial hardship"; (3) "The government should
681 pool resources to support people when they happen to experience unforeseeable financial
682 hardship". These three goals we label in our analysis Incentivizing, Redistributing, and Risk-

683 pooling, respectively. Participants rated each goal on how important it is for the U.S. government
684 to pursue (1 = “not important at all”; 7 = “extremely important”).

685 In the second section, participants completed the CAFU scale as in Study 1. Table 3
686 displays scale descriptive statistics and measures of internal consistency. We randomized the
687 order of the first section (the rating and ranking of government goals) and the second section (the
688 CAFU scale).

689 In a third and final section, participants answered a series of demographic and political
690 identity questions. See the Supplemental Material for full details on our procedures and
691 measures.

692 **Results**

693 We specified a linear mixed model—which took each participant-by-government-goal
694 rating as the unit of analysis (for a total of 3,681 observations)—to treat participants as random
695 effects, thus accounting for the individual-level variation in responses to the government goals.
696 As fixed effects the model included scores on the three subscales of the CAFU (Rewarding,
697 Rigged, and Random), the government goal (Incentivizing, Redistributing, and Risk-pooling),
698 and the nine interactions between the three CAFU subscales and three government goals. Our
699 key prediction is that six of these nine interactions will be significant such that rating on a given
700 CAFU subscale (e.g., Rewarding) is more positively associated with rated importance of the
701 most compatible government goal (i.e., Incentivizing) than the two less compatible goals (i.e.,
702 Redistributing and Risk-pooling). We make no prediction concerning the relative associations
703 between the government goals hypothesized to be less compatible with a given CAFU subscale.

704 To test our key hypotheses, we examined the fixed interaction effects between government goal
705 and Rewarding, Rigged, and Random.⁵

706 The results of this analysis show that five of the six predicted two-way interactions were
707 statistically significant (see Table 10 and Figure 6). Higher scores on the Rewarding subscale are
708 associated more positively with rated importance of the Incentivizing goal than rated importance
709 of the Redistributing goal and the Risk-pooling goal. Higher scores on the Rigged subscale are
710 associated more positively with rated importance of the Redistributing goal than rated
711 importance of the Incentivizing goal and the Risk-pooling goal. Higher scores on the Random
712 subscale are associated more positively with rated importance of the Risk-pooling goal than rated
713 importance of the Incentivizing goal. The one predicted interaction for which we find no support
714 is between the Random subscale and rated importance of the Risk-pooling goal compared to the
715 Redistributing goal. Table 10 shows that we find qualitatively identical results when controlling
716 for political ideology and its interaction with rated importance of each of the three government
717 goals. We present a similar analysis of absolute rather than signed associations in the
718 Supplemental Material.

719 To better understand the rated importance of the three goals, we can examine the
720 differences in Figure 6 at the low end and the high end of the three CAFU subscales. For
721 instance, participants on the low end of the Rewarding subscale rated the Incentivizing goal as
722 less important than the Redistributing and Risk-pooling goals. Participants on the high end of the

⁵ To interpret the nature of the interaction effects, we run the same mixed model twice with different reference levels for the factor government goal: once with Risk-pooling goal as reference level and once with Incentivizing goal as reference level. The linear mixed models in Study 2-4 were analyzed using R (Version 3.6.0; R Core Team, 2018) and the R-packages lme4 (Version 1.1.21; Bates et al., 2015), and lmerTest (Version 3.1.0; Kuznetsova et al., 2017).

723 Rewarding subscale rated the Incentivizing goal as more important than the Risk-pooling goal,
724 which is again rated more important than the Redistributing goal.

725 Figure 6 also shows a main effect that we can interpret: scores on the Rigged subscale are
726 associated positively with rated importance of all three government goals, also when controlling
727 for political ideology. Although we did not predict this effect, in hindsight it strikes us as not
728 surprising that participants scoring higher on the Rigged subscale are more supportive of all three
729 government goals.

730

731 **Table 10**

732 *Study 2 Prediction of Rated Importance of Government Goals by Fixed Effects of Interest,*
 733 *Controlling for Political Ideology and Its Interaction with Government Goal (Model 2) in*
 734 *Linear Mixed Models.*

Effect	Model 1			Model 2		
	<i>b</i> [95% <i>CI</i>]	β	<i>p</i>	<i>b</i> [95% <i>CI</i>]	β	<i>p</i>
Rewarding	0.06 [-0.02, 0.13]	0.04	.125	0.13 [0.06, 0.21]	0.09	.001
Rigged	0.29 [0.22, 0.35]	0.23	<.001	0.21 [0.14, 0.27]	0.17	<.001
Random	0.01 [-0.06, 0.08]	0.01	.754	0.02 [-0.05, 0.08]	0.01	.637
Political ideology				-0.17 [-0.22, -0.12]	-0.19	<.001
Pool. vs. Inc.	-0.16 [-0.67, 0.35]	-0.14	.545	0.06 [-0.48, 0.59]	-0.14	.834
Red. vs. Inc.	-0.80 [-1.31, -0.29]	-0.43	.002	-0.23 [-0.76, 0.30]	-0.43	.400
Red. vs. Pool.	-0.64 [-1.15, -0.13]	-0.29	.015	-0.29 [-0.82, 0.25]	-0.29	.293
Rewarding × Pool. vs. Inc.	-0.21 [-0.28, -0.14]	-0.14	<.001	-0.19 [-0.26, -0.11]	-0.13	<.001
Rewarding × Red. vs. Inc.	-0.30 [-0.37, -0.23]	-0.21	<.001	-0.23 [-0.31, -0.16]	-0.16	<.001
Rewarding × Red. vs. Pool.	-0.09 [-0.16, -0.02]	-0.06	.013	-0.05 [-0.12, 0.03]	-0.03	.220
Rigged × Pool. vs. Inc.	0.15 [0.08, 0.21]	0.12	<.001	0.12 [0.05, 0.19]	0.10	<.001
Rigged × Red. vs. Inc.	0.32 [0.25, 0.38]	0.26	<.001	0.24 [0.18, 0.31]	0.20	<.001
Rigged × Red. vs. Pool.	0.17 [0.11, 0.23]	0.14	<.001	0.12 [0.06, 0.19]	0.10	<.001
Random × Pool. vs. Inc.	0.08 [0.02, 0.15]	0.07	.011	0.08 [0.02, 0.15]	0.07	.012
Random × Red. vs. Inc.	0.06 [-0.01, 0.12]	0.05	.077	0.06 [-0.01, 0.12]	0.05	.074
Random × Red. vs. Pool.	-0.03 [-0.09, 0.04]	-0.02	.441	-0.02 [-0.09, 0.04]	-0.02	.475
Pol. id. × Pool. vs. Inc.				-0.06 [-0.11, -0.01]	-0.07	.011
Pol. id. × Red. vs. Inc.				-0.17 [-0.21, -0.12]	-0.19	<.001
Pol. id. × Red. vs. Pool.				-0.11 [-0.15, -0.06]	-0.12	<.001
Intercept	3.78 [3.24, 4.31]		<.001	4.33 [3.79, 4.87]		<.001
Observations	3,621			3,612		
Pseudo R^2 (fixed effects)	.21			.28		

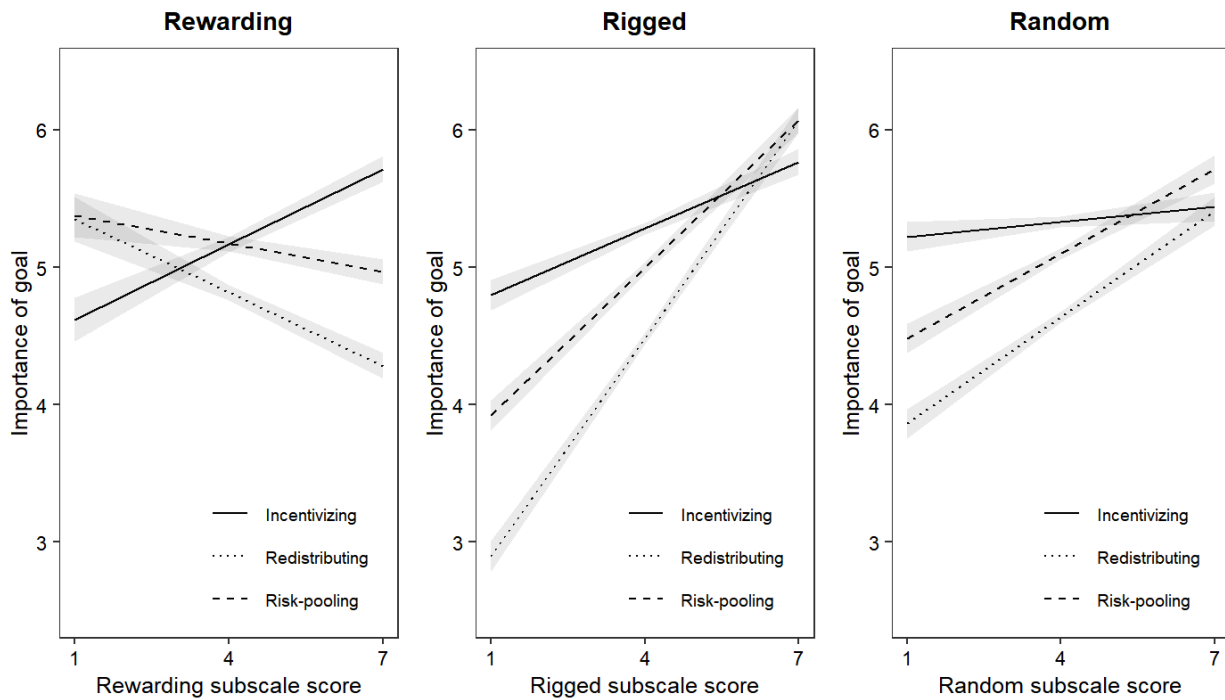
735 *Note.* Shaded rows indicate predicted interactions. Pool. = Risk-pooling goal; Inc. =

736 Incentivizing goal; Red. = Redistributing goal.

737

738 **Figure 6**

739 *Study 2 Prediction of Rated Importance of Each of the Three Government Goals by Rewarding,*
 740 *Rigged, and Random Subscales, Controlling for Political Ideology.*



741

742 *Note.* Bands indicate standard errors.

743

744 **Discussion**

745 Study 2 shows that Rewarding, Rigged, and Random beliefs uniquely predict rated
 746 importance of Incentivizing, Redistributing, and Risk-pooling goals for social welfare policy,
 747 respectively. Despite the association between these lay theories and political ideology
 748 documented in Study 1, the compatibility effect observed in Study 2 remained strikingly similar
 749 even when controlling for political ideology. We now turn to an exploration of how people's

750 beliefs about changes in financial well-being predict the appeal of different policy messages and
751 political candidates.

752 **Study 3**

753 In Study 3 we asked participants to report the extent to which different types of
754 arguments would increase or decrease their support for various social welfare policies such as a
755 food-purchasing assistance program or universal health care. Each of the arguments we use is
756 intended to highlight a different aspect of the proposed social welfare policy. These arguments
757 follow logically from the more general government goals that we found to be compatible with
758 beliefs about financial well-being in Study 2. Specifically, we predict that scores on the
759 Rewarding subscale will be more positively associated with the persuasive impact of an
760 Incentivizing argument, focusing on how the policy would enable and encourage people to work
761 hard and make desirable life choices, compared to other arguments. Likewise, we predict that
762 scores on the Rigged subscale will be more positively associated with the persuasive impact of a
763 Redistributing argument, focusing on how the policy would restore or repair structural unfairness
764 in society, compared to other arguments. Finally, we predict that scores on the Random subscale
765 will be more positively associated with the persuasive impact of a Risk-pooling argument,
766 focusing on how the policy would pool resources to protect all people against the risk of
767 unforeseeable negative events, compared to other arguments. In a political message or speech,
768 these types of arguments may be combined. In the present study, however, we ask participants to
769 evaluate each argument individually. This design allows us to separately examine the
770 associations between the different beliefs about financial well-being and the persuasive impact of
771 the different types of arguments.

772 **Method**

773 ***Participants***

774 We recruited participants through Amazon's Mechanical Turk ($N = 517$; 54% female, M_{age}
775 $= 34.83$, $SD_{\text{age}} = 14.55$). We aimed to recruit 500 participants and ended up with partial or
776 complete data for 517 participants. We removed data of 14 participants before analyses because
777 they did not give responses for all key variables.

778 ***Procedure & Materials***

779 The survey consisted of three sections. In the first section, participants read short
780 descriptions of four different public policy proposals: a more extensive disaster recovery
781 program, a tuition-free higher education system, a more extensive food-purchasing assistance
782 program, and a universal health coverage system. For instance, for the food-purchasing
783 assistance program, participants read the following:

784 Some policy makers favor a more extensive food purchasing assistance program (i.e.,
785 SNAP, or 'food stamps'). This program provides targeted financial aid to help households
786 purchase food. The program is paid for by the federal government. The use of food-
787 purchasing assistance can be restricted to healthy foods (e.g., excluding alcohol, cigarettes,
788 sugary foods and drinks), and can be made conditional on the recipient actively applying
789 for work or participating in job-training.

790 Each policy proposal was presented on a separate page and was followed by three different
791 arguments in favor of the policy: (1) an Incentivizing argument highlighting how the policy
792 would provide assistance to those who deserve it most, thereby encouraging people to behave in
793 a desired way (e.g. "A more extensive food-purchasing assistance program is a good idea
794 because it would encourage recipients to actively look for work and to purchase healthy foods");
795 (2) a Redistributing argument highlighting how the policy would provide assistance to the groups

796 that need it most (e.g., “A more extensive food-purchasing assistance program is a good idea
797 because it would provide financial assistance to those people who need it most, such as low-
798 income, unemployed, homeless, or otherwise disadvantaged groups”); and (3) a Risk-pooling
799 argument highlighting how the policy would pool tax money to collectively pay in case an
800 individual experiences an unexpected life event (e.g. “A more extensive food-purchasing
801 assistance program is a good idea because it would pool tax-money and provide assistance to
802 every individual who experiences an unexpected life event [e.g., sudden unemployment, divorce,
803 illness or disability] and cannot afford food”). As a measure of the *persuasive impact* of
804 arguments we asked participants to rate the extent to which each argument made them more or
805 less supportive of the proposed policy on an 11-point scale (-5 = “makes me much less
806 supportive”; 0 = “makes me no more or less supportive”; +5 = “makes me much more
807 supportive”). The policy descriptions and arguments were presented in an order that was
808 randomized for each participant.

809 The second and third section of the survey were similar to Study 2. Participants completed
810 the CAFU scale and a series of demographic and political identity questions. See Table 3 for
811 scale descriptive statistics and measures of internal consistency, and see the Supplemental
812 Material for full details on procedures and measures.

813 **Results**

814 We specified a linear mixed model—which took each participant-by-policy-argument
815 rating as the unit of analysis (for a total of 6,204 observations)—to treat participants as random
816 effects. As fixed effects the model included scores on the three subscales of the CAFU
817 (Rewarding, Rigged, and Random), the policy argument (Incentivizing, Redistributing, and Risk-
818 pooling), and the nine interactions between the three CAFU subscales and three policy

819 arguments.⁶ Our key prediction is that six of these nine interactions will be significant such that
820 rating on a given CAFU subscale (e.g., Rewarding) is more positively associated with persuasive
821 impact of the most compatible policy argument (i.e., Incentivizing) than the two less compatible
822 arguments (i.e., Redistributing and Risk-pooling). We make no prediction concerning the relative
823 associations between the policy arguments hypothesized to be less compatible with a given
824 CAFU subscale.

825 The results of this analysis show that all six predicted two-way interactions were
826 statistically significant (see Table 11 and Figure 7). Higher scores on the Rewarding subscale are
827 associated more positively with persuasive impact of the Incentivizing argument than persuasive
828 impact of the Redistributing argument and the Risk-pooling argument. Higher scores on the
829 Rigged subscale are associated more positively with persuasive impact of the Redistributing
830 argument than persuasive impact of the Incentivizing argument and the Risk-pooling argument.
831 Higher scores on the Random subscale are associated more positively with persuasive impact of
832 the Risk-pooling argument than persuasive impact of the Incentivizing argument and the
833 Redistributing argument. Table 11 shows that we find similar results when controlling for
834 political ideology and its interaction with persuasive impact of each of the policy arguments. We
835 present a similar analysis of absolute rather than signed associations in the Supplemental
836 Material.

837 To better understand the persuasiveness of the three types of messages, we can examine the
838 differences in Figure 7 at the low end and the high end of the three CAFU subscales. For
839 instance, for participants on the low end of the Rigged subscale, all three types of arguments are

⁶ To interpret the nature of the interaction effects, we run the same mixed model twice with different reference levels for the factor argument: once with Risk-pooling argument as reference level and once with Incentivizing argument as reference level.

840 equally persuasive. For participants on the high end of the Rigged subscale, the Redistributing
841 argument is more persuasive than the Risk-pooling argument, which is again more persuasive
842 than the Incentivizing argument.

843 Figure 7 also shows two main effects that we can interpret: scores on the Rigged and the
844 Random subscales are associated positively with persuasive impact of all three arguments, also
845 when controlling for political ideology. While we did not predict these effects, in hindsight it
846 strikes us as unsurprising that participants scoring higher on the Rigged and Random subscales
847 are more easily persuaded to support government intervention in all four policy domains,
848 regardless of the arguments that are used to support it.

849

850 **Table 11**851 *Study 3 Prediction of Persuasive Impact of Policy Arguments by Fixed Effects of Interest,*852 *Controlling for Political Ideology and its Interaction with Policy Argument (Model 2) in Linear*853 *Mixed Models.*

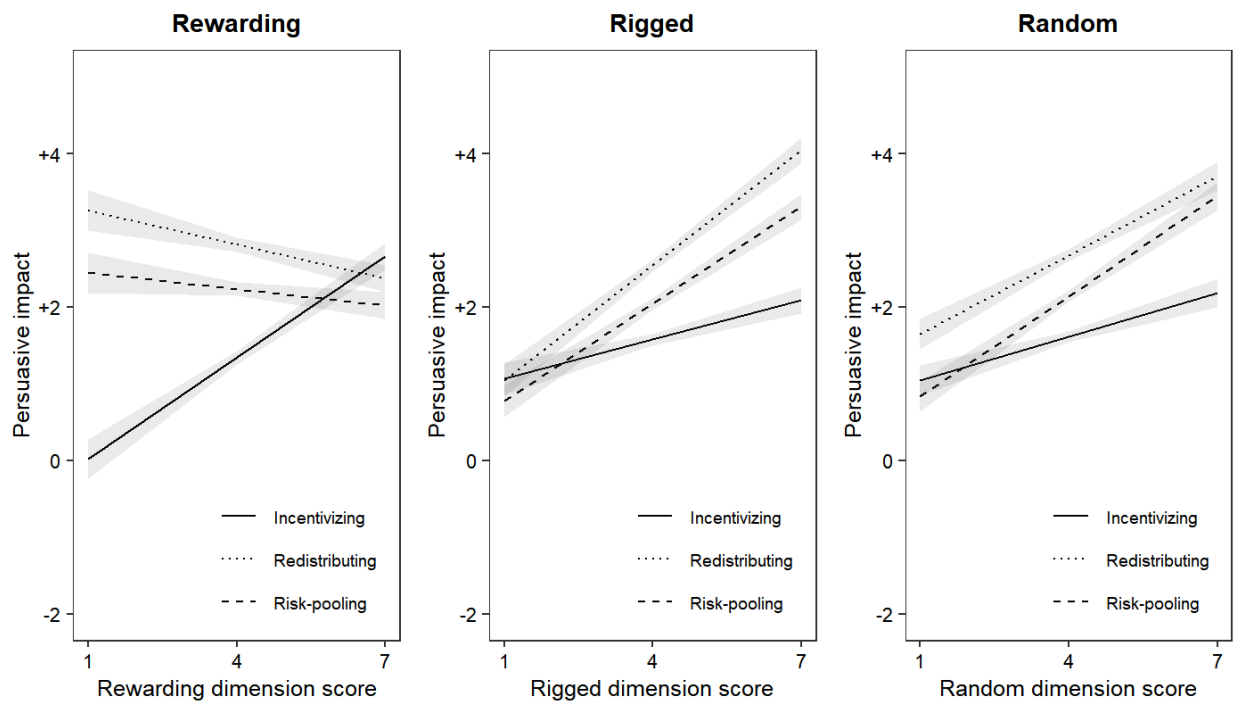
Effect	Model 1			Model 2		
	<i>b</i> [95% <i>CI</i>]	β	<i>p</i>	<i>b</i> [95% <i>CI</i>]	β	<i>p</i>
Rewarding	0.33 [0.20, 0.45]	0.15	<.001	0.36 [0.23, 0.48]	0.17	<.001
Rigged	0.24 [0.12, 0.36]	0.13	<.001	0.20 [0.08, 0.33]	0.11	.001
Random	0.16 [0.03, 0.28]	0.08	.016	0.16 [0.04, 0.29]	0.08	.010
Political ideology				-0.00[-0.01, 0.00]	-0.04	.170
Pool. vs. Inc.	0.25 [0.86, 2.26]	0.22	<.001	0.25 [1.43, 2.86]	0.22	<.001
Red. vs. Inc.	0.39 [1.83, 3.22]	0.43	<.001	0.39 [2.45, 3.88]	0.43	<.001
Red. vs. Pool.	0.97 [0.27, 1.67]	0.21	.007	1.03 [0.31, 1.74]	0.21	.005
Edu. vs. Dis.	1.56 [0.11, 0.38]	0.10	<.001	2.14 [0.13, 0.39]	0.10	<.001
Food. vs. Dis.	2.53 [0.12, 0.38]	0.10	<.001	3.17 [0.12, 0.39]	0.10	<.001
Hea. vs. Dis.	0.24 [0.25, 0.52]	0.15	<.001	0.26 [0.26, 0.52]	0.16	<.001
Rewarding \times Pool. vs. Inc.	-0.48[-0.58, -0.38]	-0.22	<.001	-0.38[-0.48, -0.27]	-0.17	<.001
Rewarding \times Red. vs. Inc.	-0.56[-0.66, -0.46]	-0.26	<.001	-0.44[-0.55, -0.34]	-0.21	<.001
Rewarding \times Red. vs. Pool.	-0.08[-0.18, 0.02]	-0.04	.129	-0.07[-0.17, 0.04]	-0.03	.200
Rigged \times Pool. vs. Inc.	0.16 [0.06, 0.26]	0.08	.001	0.04 [-0.06, 0.14]	0.02	.441
Rigged \times Red. vs. Inc.	0.29 [0.20, 0.39]	0.16	<.001	0.16 [0.06, 0.27]	0.09	.002
Rigged \times Red. vs. Pool.	0.13 [0.04, 0.23]	0.07	.007	0.12 [0.02, 0.23]	0.07	.018
Random \times Pool. vs. Inc.	0.13 [0.03, 0.23]	0.07	.012	0.16 [0.05, 0.26]	0.08	.003
Random \times Red. vs. Inc.	-0.03[-0.13, 0.07]	-0.01	.585	-0.00[-0.10, 0.10]	0.00	.963
Random \times Red. vs. Pool.	-0.16[0.26, -0.06]	-0.08	.002	-0.16[-0.26, -0.06]	-0.08	.002
Pol. id. \times Pool. vs. Inc.				-0.02[-0.02, -0.01]	-0.17	<.001
Pol. id. \times Red. vs. Inc.				-0.02[-0.02, -0.01]	-0.19	<.001
Pol. id. \times Red. vs. Pool.				-0.00[-0.01, 0.00]	-0.02	.505
Intercept	4.21 [3.34, 5.08]		<.001	4.36 [3.48, 5.23]		<.001
Observations	6,203			6,191		
Pseudo R^2 (fixed effects)	.12			.15		

854 *Note.* Shaded rows indicate predicted interactions. Pool. = Risk-pooling goal; Inc. =
 855 Incentivizing goal; Red. = Redistributing goal; Edu. = Tuition-free higher education; Dis. =
 856 Disaster recovery program; Food. = Food purchasing assistance; Hea. = Universal health
 857 coverage.

858

859 **Figure 7**

860 *Study 3 Prediction of Persuasive Impact of Each of the Three Policy Arguments by Rewarding,*
 861 *Rigged, and Random Subscales, Controlling for Political Ideology.*



862

863 *Note.* Bands indicate standard errors.

864

865 **Discussion**

866 Study 3 shows that people with different lay theories about changes in financial well-being
 867 are persuaded by different arguments advocating for various social welfare policies. In particular,

868 we find that Incentivizing arguments are especially persuasive to people scoring high (versus
869 low) on the Rewarding subscale; Redistributing arguments are especially persuasive to people
870 scoring high (versus low) on the Rigged subscale; and Risk-pooling arguments are especially
871 persuasive to people scoring high (versus low) on the Random subscale.

872 **Study 4**

873 In Study 3 we demonstrated argument compatibility effects in the context of specific
874 policies. We now turn to the question of whether these effects extend to support for political
875 candidates who speak about multiple policies in ways that accord with lay theories about changes
876 in financial well-being.

877 **Method**

878 *Participants*

879 We recruited participants through Amazon's Mechanical Turk ($N = 836$; 57% female, M_{age}
880 $= 34.34$, $SD_{\text{age}} = 11.12$). We aimed to recruit 1,200 participants and ended up with partial or
881 complete data for 1,283 participants. We removed data of 50 participants before analyses
882 because they did not give responses for all key variables. Also, because this study required
883 participants to read a greater number of arguments per response than previous studies, we
884 preregistered a plan to remove participants who spent less than 15 seconds reading at least one of
885 the three candidates' statements. This led us to remove data of an additional 397 participants.

886 *Procedure & Materials*

887 In the first section of the survey, we asked participants to imagine that they would be
888 choosing between three political candidates in a local election. We presented participants with
889 each candidate's views concerning higher education, disaster recovery, and food purchasing
890 assistance. One candidate articulated Incentivizing arguments for all three policies, stating that

891 government programs should encourage desirable behavior by helping people who deserve it
892 most (e.g., “The government should improve the higher education system by giving financial
893 support to students, conditional on their academic performance. This way, the system would
894 provide financial incentives to successful students who deserve it most, thereby motivating all
895 students to work hard and strive for excellence.”) A second candidate articulated Redistributing
896 arguments stating that government programs should use tax money to help disadvantaged groups
897 in society (e.g., “The government should invest tax money to improve the higher education
898 system, by providing financial support to students from disadvantaged backgrounds or from low-
899 income households. In other words, the system should assist those who would otherwise not have
900 the means to pay for higher education.”) A third candidate articulated Risk-pooling arguments
901 stating that government programs should pool tax-money to cover for the risk of unfortunate
902 events (e.g., “The government should improve the higher education system by creating a large
903 pool of money which can be used to collectively pay for the education of every individual,
904 regardless of whether arbitrary circumstances have left them more or less able to pay.”) We
905 labeled candidates generically (“Candidate A,” “Candidate B,” and “Candidate C.”)

906 We asked participants to rate the extent to which they would oppose or support this
907 candidate in a local election, on an 11-point scale (-5 = “strongly oppose”; 0 = “neither oppose
908 nor support”; +5 = “strongly support”). The candidates were presented and evaluated on separate
909 pages and in an order that was randomized for each participant. Next, on a separate page, we
910 reminded participants of their prior candidate evaluations, and gave participants the option to re-
911 read all arguments and then asked them, “If you would have to choose between these three,
912 which candidate would you vote for?”

913 The second and third sections of the survey were similar to the previous studies.
914 Participants completed the CAFU scale and a series of demographic and political identity items.
915 See Table 3 for scale descriptive statistics and measures of internal consistency, and see the
916 Supplemental Material for full details on procedures and measures.

917 **Results**

918 *Confirmatory Analyses*

919 We specified a linear mixed model—which took each participant-by-candidate rating as the
920 unit of analysis (for a total of 2,508 observations)—to treat participants as random effects. As
921 fixed effects the model included scores on the three subscales of the CAFU (Rewarding, Rigged,
922 and Random), the candidate (Incentivizing, Redistributing, and Risk-pooling), and the nine
923 interactions between the three CAFU subscales and three candidates.⁷ Our key prediction is that
924 six of these nine interactions will be significant such that rating on a given CAFU subscale (e.g.,
925 Rewarding) is more positively associated with rated support for the most compatible candidate
926 (i.e., Incentivizing) than the two less compatible candidates (i.e., Redistributing and Risk-
927 pooling). We make no prediction concerning the relative associations between the candidates
928 hypothesized to be less compatible with a given CAFU subscale.

929 The results of this analysis show that five of the six predicted two-way interactions were
930 statistically significant (see Table 12 and Figure 8). Higher scores (versus lower) on the
931 Rewarding subscale are associated more positively with rated support for the Incentivizing
932 candidate than the Redistributing candidate and the Risk-pooling candidate. Higher scores
933 (versus lower) on the Rigged subscale are associated more positively with rated support for the

⁷ To interpret the nature of the interaction effects, we run the same mixed model twice with different reference levels for the factor candidate: once with Risk-pooling candidate as reference level and once with Incentivizing candidate as reference level.

934 Redistributing candidate than the Incentivizing candidate. Higher scores (versus lower) on the
935 Random subscale are associated more positively with rated support for the Risk-pooling
936 candidate than the Incentivizing candidate and the Redistributing candidate. The one predicted
937 interaction for which we find no support is between the Rigged subscale and rated support for the
938 Redistributing candidate compared to the Risk-pooling candidate. Table 12 shows that we find a
939 qualitatively identical pattern when controlling for political ideology and its interaction with
940 rated support for each of the three candidates. We present a similar analysis of absolute rather
941 than signed associations in the Supplemental Material.

942

943

944 **Table 12**945 *Study 4 Prediction of Rated Support for Candidates by Fixed Effects of Interest, Controlling for*946 *Political Ideology and its Interaction with Candidate (Model 2) in Linear Mixed Models.*

Effect	Model 1			Model 2		
	<i>b</i> [95% <i>CI</i>]	β	<i>p</i>	<i>b</i> [95% <i>CI</i>]	β	<i>p</i>
Rewarding	0.76 [0.61, 0.92]	0.31	<.001	0.57 [0.41, 0.72]	0.23	<.001
Rigged	-0.39[-0.53, -0.25]	-0.19	<.001	-0.17[-0.32, -0.03]	-0.08	.019
Random	0.01 [-0.14, 0.17]	0.01	.855	0.05 [-0.10, 0.19]	0.02	.549
Political ideology				0.47 [0.35, 0.58]	0.28	<.001
Pool. vs. Inc.	0.62 [-0.94, 2.17]	0.23	.437	4.46 [2.83, 6.08]	0.23	<.001
Red. vs. Inc.	1.53 [-0.03, 3.08]	0.49	.055	5.48 [3.85, 7.10]	0.49	<.001
Red. vs. Pool.	0.91 [-0.65, 2.46]	0.25	.252	1.02 [-0.61, 2.64]	0.25	.220
Rewarding \times Pool. vs. Inc.	-1.11[-1.33, -0.90]	-0.46	<.001	-0.73[-0.95, -0.51]	-0.30	<.001
Rewarding \times Red. vs. Inc.	-1.01[-1.23, -0.79]	-0.41	<.001	-0.61[-0.83, -0.39]	-0.25	<.001
Rewarding \times Red. vs. Pool.	0.11 [-0.11, 0.32]	0.04	.342	0.12 [-0.10, 0.33]	0.05	.297
Rigged \times Pool. vs. Inc.	0.94 [0.74, 1.14]	0.46	<.001	0.50 [0.29, 0.70]	0.24	<.001
Rigged \times Red. vs. Inc.	1.04 [0.84, 1.23]	0.50	<.001	0.58 [0.37, 0.78]	0.28	<.001
Rigged \times Red. vs. Pool.	0.10 [-0.10, 0.29]	0.05	.345	0.08 [-0.12, 0.28]	0.04	.440
Random \times Pool. vs. Inc.	0.31 [0.09, 0.53]	0.14	.005	0.23 [0.03, 0.44]	0.10	.028
Random \times Red. vs. Inc.	0.04 [-0.18, 0.26]	0.02	.719	-0.03[-0.24, 0.17]	-0.01	.751
Random \times Red. vs. Pool.	-0.27[-0.49, -0.05]	-0.12	.015	-0.27[-0.48, -0.06]	-0.12	.012
Pol. id. \times Pool. vs. Inc.				-0.95[-1.12, -0.79]	-0.58	<.001
Pol. id. \times Red. vs. Inc.				-0.98[-1.14, -0.82]	-0.59	<.001
Pol. id. \times Red. vs. Pool.				-0.03[-0.19, 0.13]	-0.02	.731
Intercept	4.70 [3.60, 5.80]		<.001	2.88 [1.73, 4.04]		<.001
Observations	2,508			2,499		
Pseudo R^2 (fixed effects)	.19			.25		

947 *Note.* Shaded rows indicate predicted interactions. Pool. = Risk-pooling goal; Inc. =

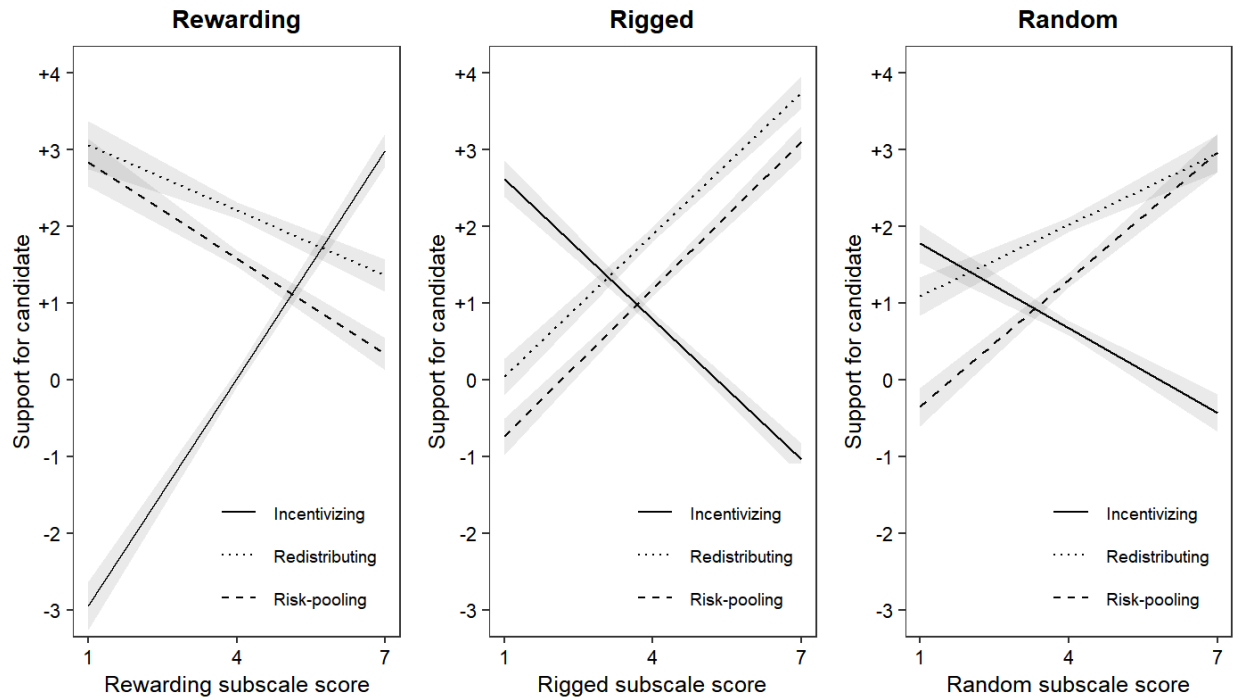
948 Incentivizing goal; Red. = Redistributing goal.

949

950

951 **Figure 8**

952 *Study 4 Prediction of Rated Support for each of the Three Political Candidates by Rewarding,*
 953 *Rigged, and Random Subscales, Controlling for Political Ideology.*



954

955 *Note.* Bands indicate standard errors.

956

957 ***Exploratory Analyses***

958 To explore the prediction of voting by the Rewarding, Rigged, and Random subscales, we
 959 conducted three separate binary logistic regressions, one for whether or not participants voted for
 960 each candidate. The results in Table 13 show that scores on the Rewarding subscale are
 961 positively associated with the likelihood of voting for the Incentivizing candidate; scores on the
 962 Rigged subscale are positively associated with the likelihood of voting for the Redistributing
 963 candidate; and scores on the Random subscale are positively associated with the likelihood of

964 voting for the Risk-pooling candidate. We present an analysis using multinomial logistic
 965 regression in the Supplemental Material.

966

967 **Table 13**

968 *Study 4 Prediction of Likelihood of Voting for Each Candidate by CAFU Subscales in Binary*
 969 *Logistic Regressions.*

Incentivizing candidate						
Effect	<i>b</i>	<i>SE</i>	χ^2	<i>p</i>	OR	95% <i>CI</i> OR
Rewarding	0.47	0.08	38.40	<.001	1.60	[1.38, 1.86]
Rigged	-0.36	0.07	29.58	<.001	0.70	[0.62, 0.80]
Random	-0.18	0.07	6.31	.012	0.84	[0.73, 0.96]
Redistributing candidate						
Effect	<i>b</i>	<i>SE</i>	χ^2	<i>p</i>	OR	95% <i>CI</i> OR
Rewarding	-0.17	0.07	6.54	.011	0.85	[0.74, 0.96]
Rigged	-0.23	0.06	15.33	<.001	1.27	[1.13, 1.43]
Random	-0.01	0.07	0.03	.856	0.99	[0.87, 1.12]
Risk-pooling candidate						
Effect	<i>b</i>	<i>SE</i>	χ^2	<i>p</i>	OR	95% <i>CI</i> OR
Rewarding	-0.25	0.07	13.65	<.001	0.78	[0.68, 0.89]
Rigged	0.11	0.06	3.10	.078	1.12	[0.99, 1.27]
Random	0.20	0.07	8.33	.004	1.22	[1.07, 1.40]

970

971 **Discussion**

972 In Studies 2 and 3 we established that Incentivizing, Redistributing, and Risk-pooling goals
 973 and arguments are compatible with beliefs along the Rewarding, Rigged, and Random

974 dimensions, respectively. Study 4 extends this insight concerning argument-belief compatibility
975 to predict which political candidate people will support.

976 **General Discussion**

977 In this paper we have argued that people vary in their lay theories about what causes
978 changes in financial well-being over time, and that these beliefs predict their political and policy
979 message preferences. In four preregistered studies using a total of $N = 3,662$ participants, we find
980 that individual differences in beliefs about changes in financial well-being are reliably captured
981 along three dimensions that we label Rewarding, Rigged, and Random. We measure such beliefs
982 using a new 9-item measure called the Causal Attributions of Financial Uncertainty (CAFU)
983 scale that loads on these three dimensions. Whereas political conservatives tend to see changes in
984 financial well-being as more knowable and based on individual factors such as effort
985 (Rewarding), liberals tend to see these changes as both more knowable due to systemic factors
986 such as discrimination and favoritism (Rigged), and as governed more by chance factors
987 (Random). It is worth emphasizing that in our model, lay theories can vary independently along
988 these three dimensions so that different constellations of beliefs may predict distinct patterns of
989 political preferences. For instance, in ongoing work (Bogard et al., 2021) we find that Americans
990 who reported voting for both Democratic candidate Barack Obama in 2012 and Republican
991 candidate Donald Trump in 2016 tended to score higher on the Rewarding subscale than
992 respondents who consistently voted for Democratic candidates and also tended to score higher on
993 the Rigged subscale than respondents who consistently voted for Republican candidates.

994 Furthermore, we find evidence for compatibility effects in messaging about various social
995 welfare policies. Messages supporting such policies are more persuasive to the extent that they
996 contain arguments that are compatible with the target audience's lay theories about changes in

997 financial well-being. Arguments that highlight the incentivizing nature of a policy are more
998 persuasive to people who score higher on the Rewarding dimension; arguments that highlight the
999 redistributive nature of a policy are more persuasive to people who score higher on the Rigged
1000 dimension; and arguments that highlight the risk-pooling nature of a policy are more persuasive
1001 to people who score higher on the Random dimension.

1002 People's preferences about policies that redistribute income or wealth are complex and
1003 derive from multiple sources. Current self-interest certainly plays a role. Some authors have
1004 argued that preferences concerning redistribution derive from people's assessment of how
1005 redistribution will affect them financially, either now or in the future (Benabou & Ok, 2001;
1006 Meltzer & Richard, 1981; Piketty, 1995). Moreover, people in the United States with household
1007 incomes below \$50,000 prefer a more equal distribution of wealth than those with household
1008 incomes above \$100,000 (Norton & Ariely, 2011). Meanwhile, the wealthiest 5% of Americans
1009 have been found to prefer lower rates for top income tax and estate tax as compared to the
1010 general population (Cohn et al., 2019).

1011 This said, one's own current financial status cannot fully explain disagreements concerning
1012 economic redistribution and social welfare policy. Although the poor are generally more in favor
1013 of redistribution, they tend to hold less favorable views of redistribution to the extent that they
1014 believe there are real opportunities to move up the economic ladder (Alesina & La Ferrara, 2005;
1015 Bjørnskov et al., 2013; Shariff et al., 2016). People also care about the process through which the
1016 initial distribution is determined, even if they themselves have no stake in the matter (Almås et
1017 al., 2020; Cohn et al., 2019; Fisman, et al., 2015; Fisman, et al., 2017; Starmans et al., 2017;
1018 Trump, 2020; Tyler, 2011).

1019 A more complete understanding of policy preferences requires an accurate model of how
1020 people think about changes in financial well-being. The findings in this article accord with a
1021 three-dimensional model that combines perceptions of individual control with a distinction
1022 between the perceived knowability and perceived randomness of uncertainty in financial well-
1023 being. Importantly, these lay theories predict support for different candidates and messages, even
1024 when controlling for political ideology as well as income and other demographics.

1025 **Scale Development, Construct Validity, and Generalizability**

1026 We introduced the nine-item CAFU scale to capture lay theories of financial well-being
1027 along three dimensions. We derived the dimensional structure of this scale by synthesizing two
1028 streams of literature: one that examines the relationship between perceived fairness and control,
1029 and one that examines distinct dimensions of subjective uncertainty. The scale items were
1030 adapted and expanded from the EARS—a scale designed to capture the epistemic and aleatory
1031 dimensions of uncertainty (Fox, Tannenbaum et al., 2021).

1032 The scale-development method we used has the advantage of yielding a clear
1033 conceptualization of the underlying construct(s) and a scale that is grounded in prior research.
1034 Based on the previous literature and the examination of the scale's structural and concurrent
1035 validity in Study 1, we believe that the CAFU scale is reasonably comprehensive at capturing lay
1036 theories of financial well-being. Factors that are beyond an individual's control can be perceived
1037 as high or low in epistemicness and as high or low in aleatoriness, as measured by the epistemic-
1038 exogenous (i.e., Rigged) subscale and the aleatory-exogenous (i.e., Random) subscale,
1039 respectively. Factors that are within the individual's control are, by their very nature, knowable
1040 and not random, and are therefore captured by the epistemic-discretionary (i.e., Rewarding)
1041 subscale.

1042 Naturally, theory-driven, deductive scale development has its limitations. Although we have
1043 strong a priori reasons to assume that the three-dimensional structure can capture a
1044 comprehensive range of lay theories concerning changes or differences in financial well-being, it
1045 is certainly possible that our scale misses some lay theories. As a post-hoc test of the
1046 comprehensiveness of our scale, we asked 50 self-reported Democratic voters and 50 self-
1047 reported Republican voters to “list all of the causes, reasons, or factors that come to mind” that
1048 explain changes or differences in financial well-being for individuals. In total, these 100
1049 participants provided 524 responses. We next asked participants to assign their own beliefs to
1050 one of three categories as characterized by the CAFU subscales or a fourth residual category
1051 (“none of the above fits well”). A coder independently assigned each listed belief to a category,
1052 agreeing with participants 74.6% of the time. We note that the participants only used the residual
1053 category themselves for 4.6% of listed beliefs. Further details are provided in the Supplemental
1054 Material, Study S1A.

1055 We also acknowledge that we did not have direct empirical evidence to confirm the scale’s
1056 content validity when we ran the studies reported in this paper. It is possible that the items of
1057 each subscale are not representative of all aspects of the underlying dimension that they are
1058 designed to capture (Simms, 2008). For instance, it is possible that some individuals believe that
1059 changes in financial well-being are knowable and outside of the individual’s control in the sense
1060 that the poor are structurally *advantaged* over the rich. This belief would not be captured by all
1061 items on the Rigged subscale, because we use the item “...depends on the person’s initial status
1062 and wealth (i.e., rich tend to get richer and poor tend to get poorer).” This said, we note that in
1063 the aforementioned reasons-generating exercise detailed in in Supplemental Study S1A, we saw

1064 very few instances in which participants spontaneously generated thoughts about the system
1065 being rigged in favor of the poor.

1066 Interestingly, it may be the case that Rigged attributions are associated with perceptions of
1067 human causes (e.g., discrimination by a landlord) and Random attributions are associated with
1068 perceptions of non-human causes (e.g., a natural disaster). This said, both Rigged and Random
1069 constructs can logically accommodate both human and non-human causes. For instance, a car
1070 accident may harm a person’s financial well-being in a “random” way but be attributed to a
1071 human cause. Likewise, an algorithm for determining who gets a mortgage may discriminate
1072 against particular populations in a “rigged” way but be attributed to a non-human cause. While
1073 we believe that these latter examples are exceptions, we designed our scale to be able to capture
1074 both human and non-human causes.

1075 Finally, we hasten to add that further research will be needed to generalize our conclusions
1076 concerning the CAFU’s ability to predict political preferences and policy message preferences.
1077 First, we tested only a subset of government goals, policies, and policy arguments. In Studies 3
1078 and 4, we selected proposals for social welfare policy that we expected to be familiar to
1079 participants based on the political debate in the United States at the time that the studies were
1080 conducted. In Studies 2-4, we selected government goals and policy arguments that we expected
1081 to be compatible with the three proposed dimensions of beliefs about changes in financial well-
1082 being. Second, we surveyed only Americans at a particular time in history. Thus, our findings
1083 relate to contemporary thinking regarding the selected set of policies and messages, and do not
1084 necessarily generalize to different contexts or cultures (Gergen, 1973). Future research might
1085 explore the generalizability of these findings.

1086 **The Emergence of Lay Theories About Financial Well-being**

1087 People's lay theories about what causes financial well-being to change over time may or
1088 may not accord with objective causes and are largely subjective. For instance, if an able-bodied
1089 individual gets poorer because he does not work very hard, an observer may see this as laziness
1090 in a system that is inherently rewarding. Another observer may construe this behavior as the
1091 result of the individual being frustrated by a system that is rigged against him and has repeatedly
1092 thwarted his previous attempts to get ahead. Yet another observer may see this behavior as the
1093 result of bad luck in having been born with traits that are not rewarded in life—losing what
1094 Warren Buffet once referred to as the “ovarian lottery” (Weisenthal, 2013). Of course, these
1095 attributions are not mutually exclusive and may vary in their relative salience.

1096 There is ample evidence that people's experiences shape the way they view the structure of
1097 society, including the causes of changes and differences in financial well-being (Browman et al.,
1098 2019; Hunt, 1996; Kunovich & Slomczynski, 2007; Manstead, 2018; McCall et al., 2017; Mijs,
1099 2018, 2019; Shariff et al., 2016; Wiwad et al., 2021). Of course, individuals' views of economic
1100 inequality and mobility may be systematically biased (Alesina et al., 2018; Cruces, et al., 2013;
1101 Davidai & Gilovich, 2015; Gimpelson & Treisman, 2018; Hauser & Norton, 2017; Hvidberg et
1102 al., 2020; Kraus et al., 2017; Kraus & Tan, 2015; Kiatpongsan & Norton, 2014; Norton & Ariely,
1103 2011; Norton, et al., 2014). For instance, Americans' underestimation of inequality in their
1104 country may cause them to overestimate the degree of economic mobility, due to a greater
1105 perception that economic outcomes are within an individual's control (Davidai, 2018). Lay
1106 theories may derive from a need to rationalize inequality, fulfilling a basic psychological need to
1107 understand and explain the world around us (Benabou & Tirole, 2006; Day & Fiske, 2017; Jost
1108 et al., 2004; Kraus & Tan, 2015; Piff et al., 2018; Trump, 2018; Trump & White, 2018).

1109 Future research could further investigate how personal history and context shape individual
1110 differences on the Rewarding, Rigged, and Random dimensions. Recent macroeconomic trends
1111 could be systematically related to the distribution of lay theories about changes in financial well-
1112 being. For instance, following recessions more people may come to view the system as less
1113 inherently rewarding. Alternatively, individual experience may lead people to shift their lay
1114 beliefs over time. For instance, a person suddenly knocked into poverty by a natural disaster may
1115 come to appreciate the critical role of randomness in determining changes in financial well-
1116 being. Finally, one might imagine that contextual cues could temporarily shift people's lay
1117 theories. For instance, news about protests against discrimination may cause some individuals to
1118 temporarily appreciate the extent to which the system is rigged. The notion that rethinking causes
1119 of differences in financial well-being could influence policy preferences finds support in a recent
1120 study in which participants came to favor egalitarian and redistributive policies after they were
1121 prompted to consider why some people are poor for reasons beyond their control (Piff et al.,
1122 2020).

1123 **Crafting Persuasive Policy Messages**

1124 In this article we have demonstrated that understanding people's causal attributions of
1125 financial uncertainty can inform the design of more persuasive policy messages. We identified
1126 specific policy arguments that are compatible with each dimension and demonstrated how these
1127 arguments can be put to use in the political arena. A natural next step would be to test whether
1128 these insights can be used to win over specific groups of voters and build coalitions.

1129 Effective targeted messaging requires an ability to identify individual beliefs along the
1130 Rewarding, Rigged, and Random dimensions, preferably based on publicly available or
1131 observable socio-demographic variables. As a preliminary exploration of this approach we

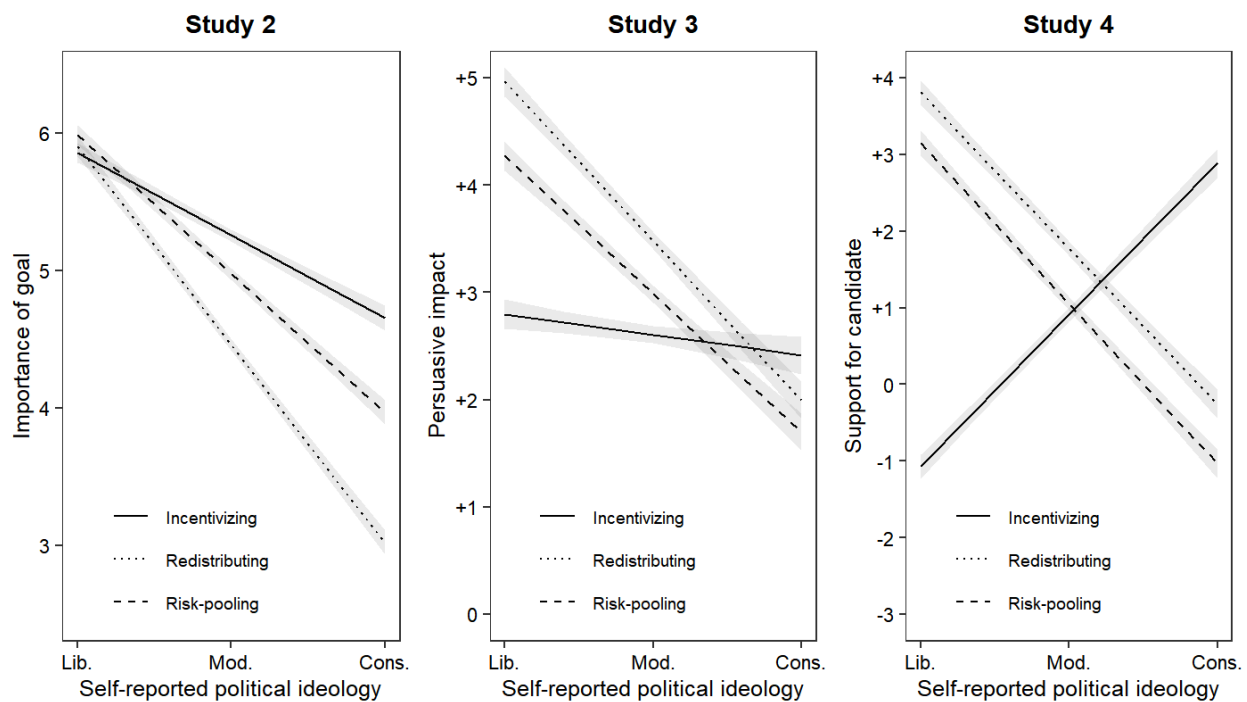
1132 examined data from Study 1, conducting a series of linear regressions with Rewarding, Rigged,
1133 and Random scores as the dependent variables and the full set socio-demographic characteristics
1134 as predictors.⁸ The strongest predictor of the Rewarding subscale was higher rated importance of
1135 religion ($\beta = 0.18, p < .001$). Meanwhile, the strongest predictor of the Random subscale was
1136 lower household income ($\beta = -0.10, p = .007$). Interestingly, the strongest predictor of the Rigged
1137 dimension was marital status ($\beta = -0.09, p = .013$); participants who were not married scored
1138 higher on the Rigged subscale. While these results provide a first hint about how specific groups
1139 might be targeted, further research is needed to identify differences in lay theories of financial
1140 well-being from combinations of observable variables.

1141 One obvious way of identifying subgroups for tailored messaging opportunities is based on
1142 political ideology or political party affiliation. As we have shown, conservatives, on average,
1143 believe that changes in financial well-being are more Rewarding, less Rigged, and slightly less
1144 Random, as compared to liberals. Thus, when the goal is to encourage conservatives to support a
1145 particular social welfare policy, it may be most persuasive to emphasize an Incentivizing
1146 message about how the policy would create opportunities for hard-working individuals to
1147 prosper without allowing non-deserving individuals to take advantage. In contrast, when the goal
1148 is to encourage liberals to support the same social welfare policy, it may be most persuasive to
1149 either emphasize a redistributing message about how the policy would repair structural
1150 inequalities by helping routinely disadvantaged groups in society, or emphasize a risk-pooling
1151 message about how the policy would collectively insure all eligible individuals against the risk of
1152 unforeseeable negative outcomes. Indeed, in the current studies we find some evidence that
1153 people of different political ideologies respond differently to messages that make different

⁸ See the Supplemental Material for complete results of these analyses.

1154 aspects of the same policy salient. Figure 9 shows the prediction of the different dependent
 1155 variables by political ideology in Studies 2-4. It is easy to see from the Figure that Incentivizing
 1156 messages tended to garner more support from the most conservative individuals than Risk-
 1157 Pooling and Redistributing messages for government intervention (Study 2), various social
 1158 welfare policies (Study 3), and political candidates (Study 4).

1159 **Figure 9**
 1160 *Prediction of Importance Rating of Government Goals (Study 2, Left Panel), Persuasive Impact*
 1161 *of Policy Arguments (Study 3, Middle Panel), and Rated Support for Political Candidates (Study*
 1162 *4, Right Panel) by Political Ideology.*



1163
 1164 *Note.* Lib. = Liberal; Mod. = Moderate; Cons. = Conservative. Bands indicate standard errors.

1165 **Bridging the Divide on Social Welfare Policy**

1166 The present findings provide some guidance concerning not only how to more effectively
 1167 customize messages to different groups, but also on how to enhance the appeal of certain policies

1168 to a broader audience and thus help bridge the political divide. When people disagree about a
1169 particular policy, this disagreement may stem in part from a failure to define what exactly the
1170 policy entails—who it helps, on what basis, and with what purpose. It may be possible to draw
1171 opinions closer together by highlighting different aspects of a policy in a way that speaks to
1172 multiple lay theories of financial well-being. For instance, previous research finds that supporters
1173 and opponents of affirmative action had different kinds of policies in mind when judging the
1174 matter, but that most people from both sides were in favor of an affirmative action policy when it
1175 was made clear how that policy upheld the (incentivizing) principle of merit (Reyna et al., 2005).
1176 Similarly, disagreements regarding the social welfare policies studied here—from subsidized
1177 health care and tuition-free education to food stamps and unemployment benefits—may also
1178 arise from a lack of shared understanding about such policies. This leaves open the possibility of
1179 using a broader combination of policy messages that speak to multiple lay theories of financial
1180 well-being to bridge the political divide. Indeed, in a preliminary exploration of this phenomenon
1181 we document an instance in which messages that combine Incentivizing, Redistributing, and
1182 Risk-pooling elements can broaden support over messages that contain only one of these
1183 elements (Bogard et al., 2021).

1184 Ideological and attitudinal divides also exist between people from different countries.
1185 There is considerable variance in the level and type of welfare spending across countries (Alber,
1186 2010; Alesina et al., 2001; Schwabish et al., 2006), just as there is variance in public views on
1187 economic inequality (Kerr, 2014; Kiatpongsan & Norton, 2014; Osberg & Smeeding, 2006; Piff
1188 et al., 2020; Reeskens & Van Oorschot, 2013). Past research has connected these differences to
1189 how people in different countries think about the role of luck and effort in determining economic
1190 outcomes (Alesina & Glaeser, 2004). Future research could revisit this issue for a more detailed

1191 examination of how countries differ in their respective distributions of Rewarding, Rigged, and
1192 Random beliefs. Such an examination provides some insight into why different countries invest
1193 in different social welfare policies, why particular political candidates or parties are more
1194 popular in one country than in another, and how consensus regarding social welfare policies can
1195 be reached across communities with different beliefs, attitudes, and preferences.

References

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- Adler, N. E., Epel, E. S., Castellazzo, G., & Ickovics, J. R. (2000). Relationship of subjective and objective social status with psychological and physiological functioning: Preliminary data in healthy, white women. *Health Psychology, 19*(6), 586–592.
<https://doi.org/10.1037/0278-6133.19.6.586>
- Alber, J. (2010). What the European and American welfare states have in common and where they differ: Facts and fiction in comparisons of the European social model and the United States. *Journal of European Social Policy, 20*(2), 102–125.
<https://doi.org/10.1177/0958928709358791>
- Alesina, A., & Angeletos, G. M. (2005). Fairness and redistribution. *American Economic Review, 95*(4), 960–980. <https://doi.org/10.1257/0002828054825655>
- Alesina, A., & Glaeser, E. L. (2004). *Fighting poverty in the US and Europe: A world of difference*. Oxford University Press. <https://doi.org/10.1093/0199267669.003.0001>
- Alesina, A., Glaeser, E., & Sacerdote, B. (2001). Why doesn't the US have a European-style welfare system? *Brooking Papers on Economic Activity, 2001*(2), 187–277.
<https://doi.org/10.1353/eca.2001.0014>
- Alesina, A., & La Ferrara, E. (2005). Preferences for redistribution in the land of opportunities. *Journal of Public Economics, 89*(5–6), 897–931.
<https://doi.org/10.1016/j.jpubeco.2004.05.009>
- Alesina, A., Stantcheva, S., & Teso, E. (2018). Intergenerational mobility and preferences for redistribution. *American Economic Review, 108*(2), 521–54.
<https://doi.org/10.1257/aer.20162015>

- 1218 Almås, I., Cappelen, A. W., & Tungodden, B. (2020). Cutthroat capitalism versus cuddly
1219 socialism: Are Americans more meritocratic and efficiency-seeking than Scandinavians?
1220 *Journal of Political Economy*, 128(5), 1753–1788. <https://doi.org/10.1086/705551>
- 1221 Altemeyer, B. (1988). *Enemies of freedom: Understanding right-wing authoritarianism*. Jossey-
1222 Bass.
- 1223 Alvaredo, F., Chancel, L., Piketty, T., Saez, E., & Zucman, G. (2018). *World inequality report*.
1224 Harvard University Press. <https://doi.org/10.4159/9780674984769>
- 1225 Bates, D., Mächler, M., Bolker, B., & Walker, S. (2015). Fitting linear mixed-effects models
1226 using lme4. *Journal of Statistical Software*, 67(1), 1–48.
1227 <http://doi.org/10.18637/jss.v067.i01>
- 1228 Benabou, R., & Ok, E. A. (2001). Social mobility and the demand for redistribution: The Poup
1229 hypothesis. *The Quarterly Journal of Economics*, 116(2), 447–487.
1230 <https://doi.org/10.1162/00335530151144078>
- 1231 Benabou, R., & Tirole, J. (2006). Belief in a just world and redistributive politics. *The Quarterly*
1232 *Journal of Economics*, 121(2), 699–746. <https://doi.org/10.1162/qjec.2006.121.2.699>
- 1233 Bizumic, B., & Duckitt, J. (2018). Investigating right wing authoritarianism with a very short
1234 authoritarianism scale. *Journal of Social and Political Psychology*, 6(1), 129–150.
1235 <https://doi.org/10.5964/jspp.v6i1.835>
- 1236 Bjørnskov, C., Dreher, A., Fischer, J. A., Schnellenbach, J., & Gehring, K. (2013). Inequality
1237 and happiness: When perceived social mobility and economic reality do not match.
1238 *Journal of Economic Behavior & Organization*, 91, 75–92.
1239 <https://doi.org/10.1016/j.jebo.2013.03.017>

- 1240 Boateng, G. O., Neilands, T. B., Frongillo, E. A., Melgar-Quiñonez, H. R., & Young, S. L.
1241 (2018). Best practices for developing and validating scales for health, social, and
1242 behavioral research: A primer. *Frontiers in Public Health*, 6, 149.
1243 <https://doi.org/10.3389/fpubh.2018.00149>
- 1244 Bobbio, A., Canova, L., & Manganelli, A. M. (2010). Conservative ideology, economic
1245 conservatism, and causal attributions for poverty and wealth. *Current Psychology*, 29(3),
1246 222–234. <https://doi.org/10.1007/s12144-010-9086-6>
- 1247 Bogard, J., Ülkümen, G., Krijnen, J. M. T., & Fox, C. R. (2021). Political messaging and
1248 uncertainty beliefs. Manuscript in Preparation.
- 1249 Browman, A. S., Destin, M., Kearney, M. S., & Levine, P. B. (2019). How economic inequality
1250 shapes mobility expectations and behaviour in disadvantaged youth. *Nature Human*
1251 *Behaviour*, 3(3), 214–220. <https://doi.org/10.1038/s41562-018-0523-0>
- 1252 Bullock, H. E., Williams, W. R., & Limbert, W. M. (2003). Predicting support for welfare
1253 policies: The impact of attributions and beliefs about inequality. *Journal of Poverty*, 7(3),
1254 35–56. https://doi.org/10.1300/j134v07n03_03
- 1255 Cappelen, A. W., Hole, A. D., Sørensen, E. Ø., & Tungodden, B. (2007). The pluralism of
1256 fairness ideals: An experimental approach. *American Economic Review*, 97(3), 818–827.
1257 <https://doi.org/10.1257/aer.97.3.818>
- 1258 Cappelen, A. W., Konow, J., Sørensen, E. Ø., & Tungodden, B. (2013). Just luck: An
1259 experimental study of risk-taking and fairness. *American Economic Review*, 103(4),
1260 1398–1413. <https://doi.org/10.1257/aer.103.4.1398>

- 1261 Carey, J. M., & Paulhus, D. L. (2013). Worldview implications of believing in free will and/or
1262 determinism: Politics, morality, and punitiveness. *Journal of Personality*, *81*(2), 130–
1263 141. <https://doi.org/10.1111/j.1467-6494.2012.00799.x>
- 1264 CFPB. (2015). Financial well-being: The goal of financial education. Retrieved from
1265 https://files.consumerfinance.gov/f/201501_cfpb_report_financial-well-being.pdf
- 1266 Chavanne, D. (2018). Headwinds, tailwinds, and preferences for income redistribution. *Social*
1267 *Science Quarterly*, *99*(3), 851–871. <https://doi.org/10.1111/ssqu.12477>
- 1268 Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance.
1269 *Structural Equation Modeling: A Multidisciplinary Journal*, *14*(3), 464–504.
1270 <https://doi.org/10.1080/10705510701301834>
- 1271 Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence
1272 Erlbaum.
- 1273 Cohn, A., Jessen, L. J., Klasnja, M., & Smeets, P. (2019). Why do the rich oppose redistribution?
1274 An experiment with America’s top 5%. Available at SSRN 3395213.
1275 <https://doi.org/10.2139/ssrn.3395213>
- 1276 Cozzarelli, C., Wilkinson, A. V., & Tagler, M. J. (2001). Attitudes toward the poor and
1277 attributions for poverty. *Journal of Social Issues*, *57*(2), 207–227.
1278 <https://doi.org/10.1111/0022-4537.00209>
- 1279 Cruces, G., Perez-Truglia, R., & Tetaz, M. (2013). Biased perceptions of income distribution and
1280 preferences for redistribution: Evidence from a survey experiment. *Journal of Public*
1281 *Economics*, *98*, 100–112. <https://doi.org/10.1016/j.jpubeco.2012.10.009>

- 1282 Dalbert, C. (1999). The world is more just for me than generally: About the personal belief in a
1283 just world scale's validity. *Social Justice Research, 12*(2), 79–98.
1284 <https://doi.org/10.1023/A:1022091609047>
- 1285 Davidai, S. (2018). Why do Americans believe in economic mobility? Economic inequality,
1286 external attributions of wealth and poverty, and the belief in economic mobility. *Journal*
1287 *of Experimental Social Psychology, 79*, 138–148.
1288 <https://doi.org/10.1016/j.jesp.2018.07.012>
- 1289 Davidai, S., & Gilovich, T. (2015). Building a more mobile America—One income quintile at a
1290 time. *Perspectives on Psychological Science, 10*(1), 60–71.
1291 <https://doi.org/10.1177/1745691614562005>
- 1292 Day, M. V., & Fiske, S. T. (2017). Movin' on up? How perceptions of social mobility affect our
1293 willingness to defend the system. *Social Psychological and Personality Science, 8*(3),
1294 267–274. <https://doi.org/10.1177/1948550616678454>
- 1295 Day, M. V., Fiske, S. T., Downing, E. L., & Trail, T. E. (2014). Shifting liberal and conservative
1296 attitudes using moral foundations theory. *Personality and Social Psychology Bulletin,*
1297 *40*(12), 1559–1573. <https://doi.org/10.1177/0146167214551152>
- 1298 Duckitt, J., & Sibley, C. G. (2010). Personality, ideology, prejudice, and politics: A dual-process
1299 motivational model. *Journal of Personality, 78*(6), 1861–1894.
1300 <https://doi.org/10.1111/j.1467-6494.2010.00672.x>
- 1301 Everett, J. A., Clark, C. J., Meindl, P., Luguri, J. B., Earp, B. D., Graham, J., & Ditto, P. H.
1302 (2020). Political differences in free will belief are associated with differences in
1303 moralization. *Journal of Personality and Social Psychology.*
1304 <https://doi.org/10.1037/pspp0000286>

- 1305 Feagin, J. R. (1972). Poverty: We still believe that God helps those who help themselves.
1306 *Psychology Today*, 6(6), 101–110.
- 1307 Feather, N. T. (1974). Explanations of poverty in Australian and American samples: The person,
1308 society, or fate? *Australian Journal of Psychology*, 26(3), 199–216.
1309 <https://doi.org/10.1080/00049537408255231>
- 1310 Feinberg, M., & Willer, R. (2019). Moral reframing: A technique for effective and persuasive
1311 communication across political divides. *Social and Personality Psychology Compass*,
1312 13(12), e12501. <https://doi.org/10.1111/spc3.12501>
- 1313 Fisman, R., Jakiela, P., & Kariv, S. (2017). Distributional preferences and political behavior.
1314 *Journal of Public Economics*, 155, 1–10. <https://doi.org/10.1016/j.jpubeco.2017.08.010>
- 1315 Fisman, R., Jakiela, P., Kariv, S., & Markovits, D. (2015). The distributional preferences of an
1316 elite. *Science*, 349(6254), aab0096–aab0096. <https://doi.org/10.1126/science.aab0096>
- 1317 Flake, J. K., Pek, J., & Hehman, E. (2017). Construct validation in social and personality
1318 research: Current practice and recommendations. *Social Psychological and Personality
1319 Science*, 8(4), 370–378. <https://doi.org/10.1177/1948550617693063>
- 1320 Fong, C. (2001). Social preferences, self-interest, and the demand for redistribution. *Journal of
1321 Public Economics*, 82(2), 225–246. [https://doi.org/10.1016/s0047-2727\(00\)00141-9](https://doi.org/10.1016/s0047-2727(00)00141-9)
- 1322 Fox, C. R., Goedde-Menke, M., & Tannenbaum, D. (2021). Ambiguity aversion and epistemic
1323 uncertainty. Working paper, UCLA Anderson School of Management.
- 1324 Fox, C. R., Tannenbaum, D., Ülkümen, G., Walters, D. J., & Erner, C. (2021). Credit, blame,
1325 luck, and the perceived nature of uncertainty. Manuscript in preparation.

- 1326 Fox, C. R., & Ülkümen, G. (2011). Distinguishing two dimensions of uncertainty. In W. Brun,
1327 G. Keren, G. Kirkebøen, & H. Montgomery (Eds.), *Perspectives on Thinking, Judging,*
1328 *and Decision Making* (pp. 21–35). Universitetsforlaget.
- 1329 Frank, R. H. (2016). *Success and luck: Good fortune and the myth of meritocracy*. Princeton
1330 University Press. <https://doi.org/10.1515/9781400880270>
- 1331 Furnham, A. (1982a). Why are the poor always with us? Explanations for poverty in Britain.
1332 *British Journal of Social Psychology, 21*(4), 311–322. [https://doi.org/10.1111/j.2044-](https://doi.org/10.1111/j.2044-8309.1982.tb00553.x)
1333 [8309.1982.tb00553.x](https://doi.org/10.1111/j.2044-8309.1982.tb00553.x)
- 1334 Furnham, A. (1982b). Explanations for unemployment in Britain. *European Journal of Social*
1335 *Psychology, 12*(4), 335–351. <https://doi.org/10.1002/ejsp.2420120402>
- 1336 Gallup. (1998). Have and have-nots: Perceptions of fairness and opportunity. Retrieved from
1337 <https://news.gallup.com/poll/9877/havenots-perceptions-fairness-opportunity-1998.aspx>.
- 1338 Gergen, K. J. (1973). Social psychology as history. *Journal of Personality and Social*
1339 *Psychology, 26*(2), 309–320.
- 1340 Gimpelson, V., & Treisman, D. (2017). Misperceiving inequality. *Economics & Politics, 30*(1),
1341 27–54. doi:10.1111/ecpo.12103
- 1342 Graham, J., Haidt, J., Koleva, S., Motyl, M., Iyer, R., Wojcik, S., & Ditto, P. (2013). Moral
1343 foundations theory: The pragmatic validity of moral pluralism. In M. P. Zanna (Ed.),
1344 *Advances in experimental social psychology* (pp. 55–130). Elsevier.
1345 <https://doi.org/10.1016/b978-0-12-407236-7.00002-4>
- 1346 Graham, J., Haidt, J., Motyl, M., Meindl, P., Iskiwitch, C., & Mooijman, M. (2018). Moral
1347 foundations theory: On the advantages of moral pluralism over moral monism. In K.
1348 Gray & J. Graham (Eds.), *The atlas of moral psychology: Mapping good and evil in the*

- 1349 *mind* (pp. 211–222). Guilford Press. [https://doi.org/10.1016/b978-0-12-407236-7.00002-](https://doi.org/10.1016/b978-0-12-407236-7.00002-4)
1350 4
- 1351 Graham, J., Haidt, J., & Nosek, B. A. (2009). Liberals and conservatives rely on different sets of
1352 moral foundations. *Journal of Personality and Social Psychology*, *96*(5), 1029–1046.
1353 <https://doi.org/10.1037/a0015141>
- 1354 Graham, J., Nosek, B. A., Haidt, J., Iyer, R., Koleva, S., & Ditto, P. H. (2011). Mapping the
1355 moral domain. *Journal of Personality and Social Psychology*, *101*(2), 366–385.
1356 <https://doi.org/10.1037/a0021847>
- 1357 Haidt, J., & Graham, J. (2007). When morality opposes justice: Conservatives have moral
1358 intuitions that liberals may not recognize. *Social Justice Research*, *20*(1), 98–116.
1359 <https://doi.org/10.1007/s11211-007-0034-z>
- 1360 Hardisty, D. J., Johnson, E. J., & Weber, E. U. (2010). A dirty word or a dirty world? Attribute
1361 framing, political affiliation, and query theory. *Psychological Science*, *21*(1), 86–92.
1362 <https://doi.org/10.1177/0956797609355572>
- 1363 Hauser, O. P., & Norton, M. I. (2017). (Mis)perceptions of inequality. *Current Opinion in*
1364 *Psychology*, *18*, 21–25. <https://doi.org/10.1016/j.copsyc.2017.07.024>
- 1365 Henry, P. J., Reyna, C., & Weiner, B. (2004). Hate welfare but help the poor: How the
1366 attributional content of stereotypes explains the paradox of reactions to the destitute in
1367 America. *Journal of Applied Social Psychology*, *34*(1), 34–58.
1368 <https://doi.org/10.1111/j.1559-1816.2004.tb02536.x>
- 1369 Hinkin, T. R. (1995). A review of scale development practices in the study of organizations.
1370 *Journal of Management*, *21*(5), 967–988. <https://doi.org/10.1177/014920639502100509>

- 1371 Hirsh, J. B., DeYoung, C. G., Xu, X., & Peterson, J. B. (2010). Compassionate liberals and polite
1372 conservatives: Associations of agreeableness with political ideology and moral values.
1373 *Personality and Social Psychology Bulletin*, 36(5), 655–664.
1374 <https://doi.org/10.1177/0146167210366854>
- 1375 Ho, A. K., Sidanius, J., Kteily, N., Sheehy-Skeffington, J., Pratto, F., Henkel, K. E., Foels, R., &
1376 Stewart, A. L. (2015). The nature of social dominance orientation: Theorizing and
1377 measuring preferences for intergroup inequality using the new sdo₇ scale. *Journal of*
1378 *Personality and Social Psychology*, 109(6), 1003–1028.
1379 <https://doi.org/10.1037/pspi0000033>
- 1380 Ho, A. K., Sidanius, J., Pratto, F., Levin, S., Thomsen, L., Kteily, N., & Sheehy-Skeffington, J.
1381 (2012). Social dominance orientation: Revisiting the structure and function of a variable
1382 predicting social and political attitudes. *Personality and Social Psychology Bulletin*,
1383 38(5), 583–606. <https://doi.org/10.1177/0146167211432765>
- 1384 Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis:
1385 Conventional criteria versus new alternatives. *Structural Equation Modeling: A*
1386 *Multidisciplinary Journal*, 6(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- 1387 Hunt, M. O. (1996). The individual, society, or both? A comparison of Black, Latino, and White
1388 beliefs about the causes of poverty. *Social Forces*, 75(1), 293–322.
1389 <https://doi.org/10.1093/sf/75.1.293>
- 1390 Hussey, I., & Hughes, S. (2020). Hidden Invalidity Among 15 Commonly Used Measures in
1391 Social and Personality Psychology. *Advances in Methods and Practices in Psychological*
1392 *Science*, 3(2), 166–184. <https://doi.org/10.1177/2515245919882903>

- 1393 Hvidberg, K. B., Kreiner, C., & Stantcheva, S. (2020). *Social position and fairness views* (NBER
1394 Working Paper No. w28099). National Bureau of Economic Research.
1395 <https://www.nber.org/papers/w28099>
- 1396 Jost, J. T. (2017). Ideological asymmetries and the essence of political psychology. *Political*
1397 *Psychology*, 38(2), 167–208. <https://doi.org/10.1111/pops.12407>
- 1398 Jost, J. T., Banaji, M. R., & Nosek, B. A. (2004). A decade of system justification theory:
1399 Accumulated evidence of conscious and unconscious bolstering of the status quo.
1400 *Political Psychology*, 25(6), 881–919. <https://doi.org/10.1111/j.1467-9221.2004.00402.x>
- 1401 Jost, J. T., Federico, C. M., & Napier, J. L. (2009). Political ideology: Its structure, functions,
1402 and elective affinities. *Annual Review of Psychology*, 60, 307–337.
1403 <https://doi.org/10.1146/annurev.psych.60.110707.163600>
- 1404 Jost, J. T., Glaser, J., Kruglanski, A. W., & Sulloway, F. J. (2003). Political conservatism as
1405 motivated social cognition. *Psychological Bulletin*, 129(3), 339–375.
1406 <https://doi.org/10.1037/0033-2909.129.3.339>
- 1407 Kay, A. C., & Jost, J. T. (2003). Complementary justice: Effects of “poor but happy” and “poor
1408 but honest” stereotype exemplars on system justification and implicit activation of the
1409 justice motive. *Journal of Personality and Social Psychology*, 85(5), 823–837.
1410 <https://doi.org/10.1037/0022-3514.85.5.823>
- 1411 Kerr, W. R. (2014). Income inequality and social preferences for redistribution and
1412 compensation differentials. *Journal of Monetary Economics*, 66, 62–78.
1413 <https://doi.org/10.1016/j.jmoneco.2014.03.002>

- 1414 Kiatpongsan, S., & Norton, M. I. (2014). How much (more) should CEOs make? A universal
1415 desire for more equal pay. *Perspectives on Psychological Science*, *9*(6), 587–593.
1416 <https://doi.org/10.1177/1745691614549773>
- 1417 Kidwell, B., Farmer, A., & Hardesty, D. M. (2013). Getting liberals and conservatives to go
1418 green: Political ideology and congruent appeals. *Journal of Consumer Research*, *40*(2),
1419 350–367. <https://doi.org/10.1086/670610>
- 1420 Kinder, D. R., & Kiewiet, D. R. (1979). Economic discontent and political behavior: The role of
1421 personal grievances and collective economic judgments in congressional voting.
1422 *American Journal of Political Science*, 495–527. <https://doi.org/10.2307/2111027>
- 1423 Kluegel, J. R., & Smith, E. R. (1986). *Beliefs about inequality: Americans' views of what is and*
1424 *what ought to be*. Taylor & Francis.
- 1425 Konow, J. (1996). A positive theory of economic fairness. *Journal of Economic Behavior &*
1426 *Organization*, *31*(1), 13–35. [https://doi.org/10.1016/s0167-2681\(96\)00862-1](https://doi.org/10.1016/s0167-2681(96)00862-1)
- 1427 Konow, J. (2000). Fair shares: Accountability and cognitive dissonance in allocation decisions.
1428 *American Economic Review*, *90*(4), 1072–1091. <https://doi.org/10.1257/aer.90.4.1072>
- 1429 Kraus, M. W., Rucker, J. M., & Richeson, J. A. (2017). Americans misperceive racial economic
1430 equality. *Proceedings of the National Academy of Sciences*, *114*(39), 10324–10331.
1431 <https://doi.org/10.1073/pnas.1707719114>
- 1432 Kraus, M. W., & Tan, J. J. (2015). Americans overestimate social class mobility. *Journal of*
1433 *Experimental Social Psychology*, *58*, 101–111. <https://doi.org/10.1016/j.jesp.2015.01.005>
- 1434 Krawczyk, M. (2010). A glimpse through the veil of ignorance: Equality of opportunity and
1435 support for redistribution. *Journal of Public Economics*, *94*(1–2), 131–141.
1436 <https://doi.org/10.1016/j.jpubeco.2009.10.003>

- 1437 Kunovich, S., & Slomeczynski, K. M. (2007). Systems of distribution and a sense of equity: A
1438 multilevel analysis of meritocratic attitudes in post-industrial societies. *European*
1439 *Sociological Review*, 23(5), 649–663. <https://doi.org/10.1093/esr/jcm026>
- 1440 Kuznetsova, A., Brockhoff, P. B., & Christensen, R. H. B. (2017). lmerTest package: Tests in
1441 linear mixed effects models. *Journal of Statistical Software*, 82(13), 1–26.
1442 <https://doi.org/10.18637/jss.v082.i13>
- 1443 Lammers, J., & Baldwin, M. (2018). Past-focused temporal communication overcomes
1444 conservatives' resistance to liberal political ideas. *Journal of Personality and Social*
1445 *Psychology*, 114(4), 599–619. <https://doi.org/10.1037/pspi0000121>
- 1446 Lepianka, D., Van Oorschot, W., & Gelissen, J. (2009). Popular explanations of poverty: A
1447 critical discussion of empirical research. *Journal of Social Policy*, 38(3), 421–438.
1448 <https://doi.org/10.1017/s0047279409003092>
- 1449 Lewis-Beck, M. S., & Stegmaier, M. (2000). Economic determinants of electoral outcomes.
1450 *Annual Review of Political Science*, 3(1), 183–219.
1451 <https://doi.org/10.1146/annurev.polisci.3.1.183>
- 1452 Manstead, A. S. (2018). The psychology of social class: How socioeconomic status impacts
1453 thought, feelings, and behaviour. *British Journal of Social Psychology*, 57(2), 267–291.
1454 <https://doi.org/10.1111/bjso.12251>
- 1455 McCall, L., Burk, D., Laperrière, M., & Richeson, J. A. (2017). Exposure to rising inequality
1456 shapes Americans' opportunity beliefs and policy support. *Proceedings of the National*
1457 *Academy of Sciences*, 114(36), 9593–9598. <https://doi.org/10.1073/pnas.1706253114>
- 1458 McCrae, R. R. (1996). Social consequences of experiential openness. *Psychological Bulletin*,
1459 120(3), 323–337. <https://doi.org/10.1037/0033-2909.120.3.323>

- 1460 Meltzer, A. H., & Richard, S. F. (1981). A rational theory of the size of government. *Journal of*
1461 *Political Economy*, 89(5), 914–927. <https://doi.org/10.1086/261013>
- 1462 Mijs, J. J. (2018). Inequality is a problem of inference: How people solve the social puzzle of
1463 unequal outcomes. *Societies*, 8(3), 64. <https://doi.org/10.3390/soc8030064>
- 1464 Mijs, J. J. (2019). The paradox of inequality: income inequality and belief in meritocracy go
1465 hand in hand. *Socio-Economic Review*, 39, <https://doi.org/10.1093/ser/mwy051>
- 1466 Norton, M. I., & Ariely, D. (2011). Building a better America—one wealth quintile at a time.
1467 *Perspectives on Psychological Science*, 6(1), 9–12.
1468 <https://doi.org/10.1177/1745691610393524>
- 1469 Norton, M. I., Neal, D. T., Govan, C. L., Ariely, D., & Holland, E. (2014). The not-so-common-
1470 wealth of Australia: Evidence for a cross-cultural desire for a more equal distribution of
1471 wealth. *Analyses of Social Issues and Public Policy*, 14(1), 339–351.
1472 <https://doi.org/10.1111/asap.12058>
- 1473 Osberg, L., & Smeeding, T. (2006). “Fair” inequality? Attitudes toward pay differentials: The
1474 United States in comparative perspective. *American Sociological Review*, 71(3), 450–
1475 473. <https://doi.org/10.1177/000312240607100305>
- 1476 Oxoby, R. J., & Spraggon, J. (2008). Mine and yours: Property rights in dictator games. *Journal*
1477 *of Economic Behavior & Organization*, 65(3–4), 703–713.
1478 <https://doi.org/10.1016/j.jebo.2005.12.006>
- 1479 PEW. (2018). 2018 midterm voters: Issues and political values. Retrieved from
1480 [https://www.people-press.org/2018/10/04/2018-midterm-voters-issues-and-political-](https://www.people-press.org/2018/10/04/2018-midterm-voters-issues-and-political-values)
1481 values.

- 1482 Piff, P. K., Kraus, M. W., & Keltner, D. (2018). Unpacking the inequality paradox: The
1483 psychological roots of inequality and social class. In J. Olson (Ed.), *Advances in*
1484 *experimental social psychology* (Vol. 57, pp. 53–124). Academic Press.
1485 <https://doi.org/10.1016/bs.aesp.2017.10.002>
- 1486 Piff, P. K., Wiwad, D., Robinson, A. R., Aknin, L. B., Mercier, B., & Shariff, A. (2020). Shifting
1487 attributions for poverty motivates opposition to inequality and enhances egalitarianism.
1488 *Nature Human Behaviour*, 4(5), 496–505. <https://doi.org/10.1038/s41562-020-0835-8>
- 1489 Piketty, T. (1995). Social mobility and redistributive politics. *The Quarterly Journal of*
1490 *Economics*, 110(3), 551–584. <https://doi.org/10.230/2946692>
- 1491 Piketty, T., & Saez, E. (2014). Inequality in the long run. *Science*, 344(6186), 838–843.
1492 <https://doi.org/10.1126/science.1251936>
- 1493 Pratto, F., Sidanius, J., Stallworth, L. M., & Malle, B. F. (1994). Social dominance orientation: A
1494 personality variable predicting social and political attitudes. *Journal of Personality and*
1495 *Social Psychology*, 67(4), 741–763. <https://doi.org/10.1037/0022-3514.67.4.741>
- 1496 Putnick, D. L., & Bornstein, M. H. (2016). Measurement invariance conventions and reporting:
1497 The state of the art and future directions for psychological research. *Developmental*
1498 *Review*, 41, 71–90. <https://doi.org/10.1016/j.dr.2016.06.004>
- 1499 R Core Team. (2018). R: A language and environment for statistical computing. Vienna, Austria:
1500 R Foundation for Statistical Computing. Retrieved from <https://www.R-project.org/>
- 1501 Reeskens, T., & Van Oorschot, W. (2013). Equity, equality, or need? A study of popular
1502 preferences for welfare redistribution principles across 24 European countries. *Journal of*
1503 *European Public Policy*, 20(8), 1174–1195.
1504 <https://doi.org/10.1080/13501763.2012.752064>

- 1505 Reyna, C., Tucker, A., Korfmacher, W., & Henry, P. (2005). Searching for common ground
1506 between supporters and opponents of affirmative action. *Political Psychology*, *26*(5),
1507 667–682. <https://doi.org/10.1111/j.1467-9221.2005.00438.x>
- 1508 Rosseel, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical*
1509 *Software*, *48*(2), 1–36. Retrieved from <http://www.jstatsoft.org/v48/i02/>
- 1510 Saez, E., & Zucman, G. (2016). Wealth inequality in the United States since 1913: Evidence
1511 from capitalized income tax data. *The Quarterly Journal of Economics*, *131*(2), 519–578.
1512 <https://doi.org/10.1093/qje/qjw004>
- 1513 Sahar, G. (2014). On the importance of attribution theory in political psychology. *Social and*
1514 *Personality Psychology Compass*, *8*(5), 229–249. <https://doi.org/10.1111/spc3.12102>
- 1515 Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from
1516 neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the life
1517 orientation test. *Journal of Personality and Social Psychology*, *67*(6), 1063–1078.
1518 <https://doi.org/10.1037/0022-3514.67.6.1063>
- 1519 Schwabish, J. A., Smeeding, T. M., & Osberg, L. (2006). Income distribution and social
1520 expenditures. In D. Papadimitriou (Ed.), *The distributional effects of government*
1521 *spending and taxation* (pp. 247–288). Palgrave Macmillan.
1522 https://doi.org/10.1057/9780230378605_9
- 1523 Shariff, A. F., Wiwad, D., & Aknin, L. B. (2016). Income mobility breeds tolerance for income
1524 inequality: Cross-national and experimental evidence. *Perspectives on Psychological*
1525 *Science*, *11*(3), 373–380. <https://doi.org/10.1177/1745691616635596>
- 1526 Sides, J., Tesler, M., & Vavreck, L. (2017). The 2016 US election: How Trump lost and won.
1527 *Journal of Democracy*, *28*(2), 34–44. <https://doi.org/10.1353/jod.2017.0022>

- 1528 Simms, L. J. (2008). Classical and modern methods of psychological scale construction. *Social*
1529 *and Personality Psychology Compass*, 2(1), 414–433. <https://doi.org/10.1111/j.1751->
1530 [9004.2007.00044.x](https://doi.org/10.1111/j.1751-9004.2007.00044.x)
- 1531 Starmans, C., Sheskin, M., & Bloom, P. (2017). Why people prefer unequal societies. *Nature*
1532 *Human Behaviour*, 1(4), 0082. <https://doi.org/10.1038/s41562-017-0082>
- 1533 Tannenbaum, D., Fox, C. R., & Ülkümen, G. (2016). Judgment extremity and accuracy under
1534 epistemic vs. Aleatory uncertainty. *Management Science*, 63(2), 497–518.
1535 <https://doi.org/10.1287/mnsc.2015.2344>
- 1536 Trump, K. S. (2018). Income inequality influences perceptions of legitimate income differences.
1537 *British Journal of Political Science*, 48(4), 929–952.
1538 <https://doi.org/10.1017/s0007123416000326>
- 1539 Trump, K. S. (2020). When and why is economic inequality seen as fair. *Current Opinion in*
1540 *Behavioral Sciences*, 34, 46–51. <https://doi.org/10.1016/j.cobeha.2019.12.001>
- 1541 Trump, K. S., & White, A. (2018). Does inequality beget inequality? Experimental tests of the
1542 prediction that inequality increases system justification motivation. *Journal of*
1543 *Experimental Political Science*, 5(3), 206–216. <https://doi.org/10.1017/xps.2018.2>
- 1544 Tyler, T. (2011). Procedural justice shapes evaluations of income inequality: Commentary on
1545 Norton and Ariely (2011). *Perspectives on Psychological Science*, 6(1), 15–16.
1546 <https://doi.org/10.1177/1745691610393981>
- 1547 Ülkümen, G., Fox, C. R., & Malle, B. F. (2016). Two dimensions of subjective uncertainty:
1548 Clues from natural language. *Journal of Experimental Psychology: General*, 145(10),
1549 1280–1297. <https://doi.org/10.1037/xge0000202>

- 1550 Vavreck, L. (2014). Want a better forecast? Measure the campaign not just the economy. *PS:*
1551 *Political Science & Politics*, 47(2), 345–347.
1552 <https://doi.org/10.1017/s1049096514000183>
- 1553 Voelkel, J. G., & Feinberg, M. (2018). Morally reframed arguments can affect support for
1554 political candidates. *Social Psychological and Personality Science*, 9(8), 917–924.
1555 <https://doi.org/10.1177/1948550617729408>
- 1556 Voelkel, J. G., Mernyk, J. S., & Willer, R. (2020). Resolving the progressive paradox: The
1557 effects of moral reframing on support for economically progressive candidates. Retrieved
1558 from [10.31234/osf.io/mtfjn](https://osf.io/mtfjn)
- 1559 Walters, D. J., Ülkümen, G., Tannenbaum, D., Erner, C., & Fox, C. R. (2021). Investor behavior
1560 under epistemic versus aleatory uncertainty. Working paper, INSEAD.
- 1561 Weiner, B., Osborne, D., & Rudolph, U. (2011). An attributional analysis of reactions to poverty:
1562 The political ideology of the giver and the perceived morality of the receiver. *Personality*
1563 *and Social Psychology Review*, 15(2), 199–213.
1564 <https://doi.org/10.1177/1088868310387615>
- 1565 Weisenthal, J. (2013). We Love What Warren Buffett Says About Life, Luck, And Winning The
1566 'Ovarian Lottery'. Retrieved from [https://www.businessinsider.com/warren-buffett-on-](https://www.businessinsider.com/warren-buffett-on-the-ovarian-lottery-2013-12?international=true&r=US&IR=T)
1567 [the-ovarian-lottery-2013-12?international=true&r=US&IR=T](https://www.businessinsider.com/warren-buffett-on-the-ovarian-lottery-2013-12?international=true&r=US&IR=T)
- 1568 Wilson, M. S., & Sibley, C. G. (2013). Social dominance orientation and right-wing
1569 authoritarianism: Additive and interactive effects on political conservatism. *Political*
1570 *Psychology*, 34(2), 277–284. <https://doi.org/10.1111/j.1467-9221.2012.00929.x>

- 1571 Wiwad, D., Mercier, B., Piff, P. K., Shariff, A., & Aknin, L. B. (2021). Recognizing the impact
1572 of Covid-19 on the poor alters attitudes towards poverty and inequality. *Journal of*
1573 *Experimental Social Psychology*, *93*, 104083. <https://doi.org/10.1016/j.jesp.2020.104083>
- 1574 Wolsko, C., Ariceaga, H., & Seiden, J. (2016). Red, white, and blue enough to be green: Effects
1575 of moral framing on climate change attitudes and conservation behaviors. *Journal of*
1576 *Experimental Social Psychology*, *65*, 7–19. <https://doi.org/10.1016/j.jesp.2016.02.005>
- 1577 WVS. (n.d.). World values survey wave 3 (1995–1998).
1578 <http://www.worldvaluessurvey.org/WVSDocumentationWV3.jsp>.
- 1579 Zucker, G. S., & Weiner, B. (1993). Conservatism and perceptions of poverty: An attributional
1580 analysis. *Journal of Applied Social Psychology*, *23*(12), 925–943.
1581 <https://doi.org/10.1111/j.1559-1816.1993.tb01014.x>
- 1582 Zucman, G. (2019). Global wealth inequality. *Annual Review of Economics*, *11*(1), 109–183.
1583 <https://doi.org/10.1146/annurev-economics-080218-025852>