

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

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1 **Abstract**

2 People differ in their lay theories about how and why the financial well-being of
3 individuals changes over time or varies between individuals. We introduce a measure of causal
4 attributions of financial uncertainty—the CAFU Scale—and find that such attributions can be
5 reliably described along three distinct dimensions, respectively capturing the extent to which
6 changes in financial well-being are perceived to be: (1) knowable and within individuals’ control
7 due to individual factors such as effort (“Rewarding”); (2) knowable and outside of individuals’
8 control due to systemic factors such as favoritism and discrimination (“Rigged”); and (3)
9 inherently unpredictable and determined by chance events (“Random”). In a sample
10 representative of the U.S. population on various demographic characteristics ($N = 1102$), we find
11 that differences in these beliefs are associated with political ideology, revealing a predicted
12 pattern: conservatives scored higher on the Rewarding subscale and liberals scored higher on the
13 Rigged and Random subscales, even when controlling for key demographics. Moreover, we find
14 that these three dimensions predict responses to different policy messages when controlling for
15 political ideology. In three preregistered experiments (combined $N = 2560$), we observe
16 increased support for various social welfare policies when we highlighted aspects of these
17 policies that are compatible with people’s beliefs about financial well-being. Likewise, we
18 observe increased support for political candidates when they expressed their positions in a way
19 that is compatible with people’s beliefs. Thus, this work can help better understand drivers of
20 political attitudes and guide in crafting more persuasive policy messaging.

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

22

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

25 Economic inequality is on the rise around the globe (Alvaredo et al., 2018; Piketty & Saez,
26 2014; Saez & Zucman, 2016; Zucman, 2019). The issue has become a top priority in politics, and
27 many politicians are seeking ways to garner broad support for proposals designed to address
28 inequality. This is not an easy task. Although people show a surprising degree of consensus in
29 their preference for a more equal society (Kiatpongsan & Norton, 2014; Norton & Ariely, 2011),
30 they often disagree on when, why, and how the government should intervene through social
31 welfare policies. Such disagreements may arise in part because people vary in their beliefs about
32 what causes differences in financial well-being. For instance, surveys suggest that people’s
33 political and policy attitudes may be influenced by the extent to which they think that poverty or
34 wealth is caused by structural, individualistic, or fatalistic factors (Bobbio et al., 2010; Bullock et
35 al., 2003; Cozzarelli et al., 2001; Feagin, 1972; Feather, 1974; Furnham, 1982a, 1982b; Henry et
36 al., 2004; Kluegel & Smith, 1986; Lepianka et al., 2009; Sahar, 2014; Weiner et al., 2011;
37 Zucker & Weiner, 1993).

38 Changes in economic conditions and voters’ beliefs about the ability of politicians to
39 manage these conditions are pivotal factors determining the outcomes of elections (Kinder &
40 Kiewiet, 1979; Lewis-Beck & Stegmaier, 2000; Sides et al., 2017; Vavreck, 2014). To
41 successfully persuade voters, campaigns must therefore speak not only to objective economic
42 indicators that reflect citizens’ financial well-being—such as unemployment and wage growth—
43 but also to voters’ subjective beliefs about factors that drive changes and/or individual
44 differences in financial well-being. Beyond this, policy preferences among different audiences
45 can be shaped by how a policy is labeled or characterized. For instance, one study found that

46 political conservatives (but not liberals) find a policy labeled “carbon offset” more appealing
47 than an equivalent “carbon tax,” because the latter has particularly negative associations for
48 conservatives (Hardisty et al., 2010).

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

63 Distinguishing lay beliefs about uncertainty in financial well-being can help us understand
64 what drives disagreements concerning social welfare policy. Moreover, it can help us understand
65 how and why different policy messages appeal to different groups. Individuals who would
66 normally disagree politically may be persuaded to favor the same social welfare policy or
67 political candidate, if only the arguments used in favor of the policy or candidate are aligned
68 with the beliefs that the individuals hold about changes in financial well-being. Before

69 developing our hypotheses in more detail, we next explain how our approach synthesizes two
70 research streams: one that examines the relationship between perceived fairness and control, and
71 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 a form of intervention (i.e., redistribution), people are often
77 thought to rely on the *accountability principle*, which states that “a person’s fair allocation (e.g.,
78 of income) varies in proportion to the relevant variables that he can influence (e.g., work effort)
79 but not according to those that he cannot reasonably influence (e.g., a physical handicap)”
80 (Konow, 2000, p. 1073). 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 both redistribution decisions that were made both by stakeholders
89 and by impartial spectators (Cappelen et al., 2007; Cappelen et al., 2013; Chavanne, 2018;
90 Konow, 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 would judge the correct answer to a trivia
112 question as purely epistemic (i.e., knowable), whereas they would see the outcome of a future
113 coin flip as purely aleatory (i.e., random). More generally, different people may perceive

114 different degrees of both epistemicness and aleatoriness in uncertain events—for instance, one
115 person may see the outcome of a basketball game as both more knowable in advance and
116 determined more by 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 the more epistemic they see a task
120 and they prefer longer evaluation windows the more aleatory they see a task (Fox, Tannenbaum
121 et al., 2021). In other research, perceived nature of uncertainty has been found to predict the
122 language that people use to communicate their uncertainty (Ülkümen et al., 2016), the extremity
123 and accuracy of probability judgments (Tannenbaum et al., 2016), stock market investment
124 behaviors (Walters et al., 2021) and willingness to bet under conditions of uncertainty or
125 ambiguity (Fox, Goedde-Menke et al., 2021). This framework may be especially germane to the
126 question of social welfare policy preferences because it distinguishes two qualitatively distinct
127 ways in which changes in financial well-being can be out of one’s control: in inherently
128 predictable ways and/or random ways.

129 **Synthesizing Literatures**

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

137 however, that people may, in fact, make a critical distinction between the cases: Alex's inability
138 to pay rent is the result of an exogenous factor that is seen as random (a natural disaster),
139 whereas Ben's inability to pay rent is the result of an exogenous factor that is seen as systemic
140 and thus more predictable in advance (discrimination). We expect that people may differ in the
141 extent to which they see random versus knowable factors outside of one's control as common
142 drivers of change in financial well-being, and that these factors may suggest distinct kinds of
143 interventions and/or 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 any combination 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 behaviors could be self-destructive (rather than rewarding) as when a lazy person
169 predictably loses financial standing over time, and epistemic-exogenous behaviors 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 - cultural or ethnic background/socio-economic status	Redistribution
Random	Aleatory	Exogenous	Random and not within control of the individual	...chance events, such as: - accidents/natural disasters - lottery windfalls/serendipity	Risk-pooling

176

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
182 using the revenue from a progressive income tax to subsidize the cost of health care for the poor.
183 At the same time, the system may function as social insurance, by pooling the risk of unforeseen
184 health care costs among all people. Finally, there may be restrictions built into the system, with
185 the intention of incentivizing desirable behavior and/or deter people from taking advantage of
186 others—for instance if coverage is made conditional on work requirements.

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

200 In particular, we hypothesize that people who score higher on the Rewarding dimension
201 will be more supportive of a social welfare policy when its tendency to motivate effort or
202 resourcefulness is emphasized. Such an *Incentivizing* message stresses the need for welfare
203 support to be made conditional on individual inputs in order to restrict assistance to the deserving
204 and/or to motivate desirable behavior. Second, we hypothesize that people who score higher on
205 the Rigged dimension will be more supportive of a social welfare policy when its goal of helping
206 traditionally disadvantaged groups is emphasized. Such a *Redistribution* message focuses on
207 repairing imbalance in society and may therefore be particularly attractive to people who believe
208 that changes in financial well-being can be attributed to knowable factors that are beyond the
209 control of the individual. Finally, we hypothesize that people who score higher on the Random
210 dimension will be more supportive of a social welfare policy when it is characterized as a form
211 of 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 taking into account the association with demographic variables and other
218 related psychological constructs (Study 1). Next, we leverage these insights to test our
219 predictions that policy messages highlighting Incentivizing, Redistribution, and Risk-pooling are
220 more persuasive to individuals with lay theories that are high on Rewarding, Rigged, and
221 Random dimensions, respectively. In particular, we examine how beliefs about changes in
222 financial well-being are associated with rated importance of different goals that a government

223 may pursue (Study 2), the relative persuasiveness of messages that highlight these different goals
224 for various social welfare policies (Study 3) and support for political candidates who speak about
225 these different goals (Study 4)—all while controlling for differences in political ideology. For all
226 of these studies we preregistered hypotheses, materials, sample size, inclusion criteria, and key
227 analyses prior to data collection (see preregistrations for [Study 1](#), [Study 2](#), [Study 3](#), and [Study 4](#)).

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 the large majority of lay theories that
237 spontaneously occur to people is bolstered by results of a follow-up test, reported in the
238 Supplemental Material (Study S1A) and described further 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, a variable that is widely used in earlier
242 psychological research and that can serve as an initial indication for whether beliefs about the
243 uncertainty in financial well-being are relevant for sensitivity to policy messaging. Liberals on
244 the political left and conservatives on the right have often been described to differ in their
245 openness to change, their preference for stability, and their acceptance of inequality (Hirsh et al.,

246 2010; Jost, 2017; Jost et al., 2009; McCrae, 1996). According to Jost et al. (2003), conservative
247 ideology is characterized in part by a need to “avoid change, disruption, and ambiguity (...) and
248 to explain, order, and justify inequality among groups and individuals.” Conservatives and
249 liberals also differ in their lay beliefs about free will; conservatives tend to believe that people
250 have more autonomous control over their behavior (Carey & Paulhus, 2013; Everett et al., 2020).
251 These differences may be a reason why conservatives tend to favor internal causal attributions
252 for outcomes in life. Conservatives are for instance more likely than liberals to believe that
253 poverty is caused by a lack of effort (Zucker & Weiner, 1993) and to blame the poor for their
254 own plight (Weiner et al., 2011).

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

293 **Method**

294 *Participants*

295 We recruited participants through Lucid’s Fulcrum Academia service ($N = 1102$; 52%
296 female, $M_{\text{age}} = 44.01$, $SD_{\text{age}} = 16.63$). We aimed to recruit 1000 participants and ended up with
297 partial or complete data for 1168 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 was
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 Causal Attributions of Financial Uncertainty Scale (CAFU). We
307 adapted scale items from the Epistemic-Aleatory Rating Scale (EARS; Fox, Tannenbaum et al.,
308 2021). In the first part of the survey, participants rated their level of agreement (1 = “not at all”;
309 7 = “very much”) with nine statements that assessed the perceived nature of uncertainty in a
310 “person’s change in financial well-being from one year to the next.” The nine items were

¹ We conducted a post-hoc sensitivity analysis for a single coefficient in a multiple regression analysis with 3 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 presented in random order on a single page. Three items were designed to assess the extent to
312 which participants perceived changes in financial well-being as knowable based on inputs such
313 as effort and skill, and were averaged into a single *Rewarding* score. Three items were designed
314 to assess the extent to which participants perceived changes in financial well-being as knowable
315 based on systemic factors such as discrimination and favoritism, and were averaged into a single
316 *Rigged* score. Three items were designed to assess the extent to which participants perceived
317 changes in financial well-being as being due to chance events and were averaged into a single
318 *Random* score.² See Table 2 for all items of the CAFU Scale and Table 3 for scale descriptive
319 statistics, measures of internal consistency, and correlation coefficients.

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

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

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

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

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

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

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.

344

345 **Table 3**

346 *Studies 1-4 CAFU Scale Descriptive Statistics, Measures of Internal Consistency, and*

347 *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	

348 *Note.* α = Cronbach’s alpha; ω_t = McDonald’s omega total; ω_h = McDonald’s omega

349 hierarchical; *r* = Pearson’s correlation coefficient.

350 **Results**

351 In this section we examine psychometric properties and validity of the CAFU Scale (cf.
352 Flake et al., 2017): in particular, we test its factor structure, demonstrate measurement
353 invariance, and test its concurrent validity against related constructs.

354 *Examining the Factor Structure of the CAFU Scale*

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

363 *Testing Measurement Invariance*

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

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

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

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

378

379 **Table 4**

380 *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

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

386 **Table 5**387 *Study 1 Differences in Fit Indices for Tests of Metric and Scalar Invariance on Gender, Age, and*388 *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

389 *Note.* CFI = comparative fit index; TLI = Tucker-Lewis fit index; RMSEA = root mean square

390 error of approximation; SRMR = standardized root mean square residual. Tests are passed when

391 Δ CFI \geq -0.015 and Δ RMSEA \leq 0.01. Criteria based on Hussey and Hughes (2020), Hu and

392 Bentler (1999), Chen (2007), and Putnick and Bornstein (2016).

393

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

395 Figure 2 displays the association between political ideology and scores on the three CAFU

396 subscales. Confirming our expectations, participants who rated themselves as more politically

397 conservative tended to score higher on the Rewarding dimension ($r = 0.13, p < .001$), lower on398 the Rigged dimension ($r = -0.20, p < .001$), and lower on the Random dimension ($r = -0.09, p =$ 399 $.005$).

400 To examine concurrent validity, we specified a series of structural equation path models

401 testing each dimension (Rewarding, Rigged, and Random) as a latent variable predictor of

402 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).

403 for individual subscales, as displayed in Figure 3, then simultaneously for all subscales, as
404 displayed in Figure 4.

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

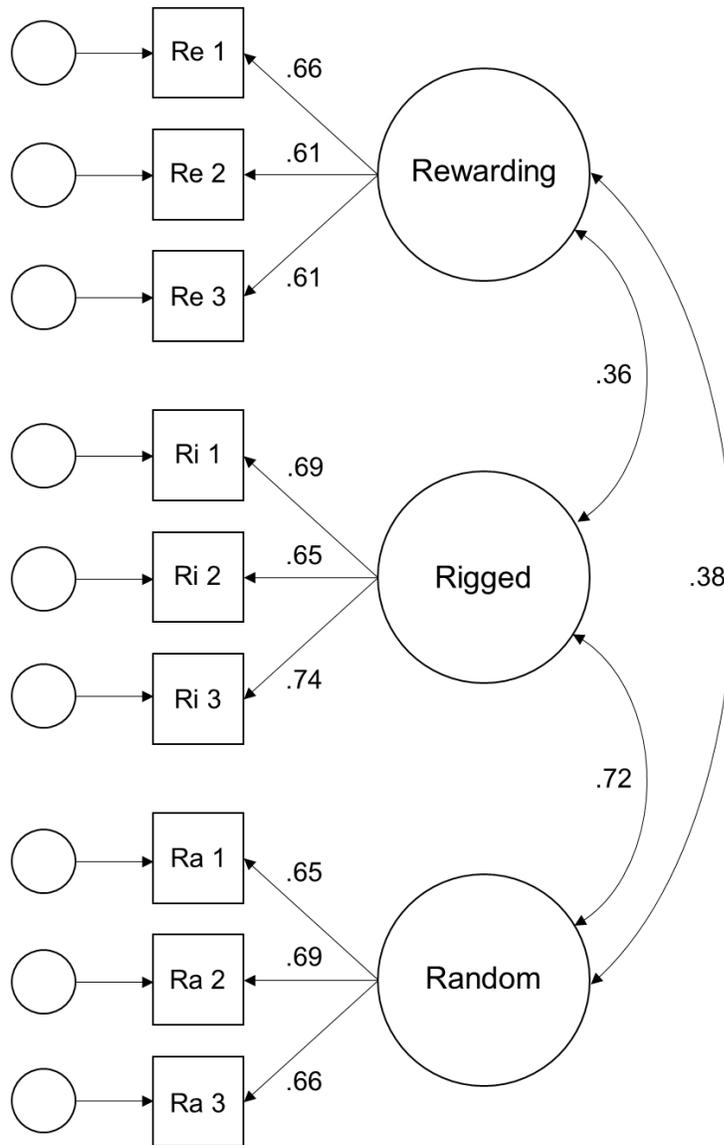
414

415

416 **Figure 1**

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

418 *Random as Latent Variables.*



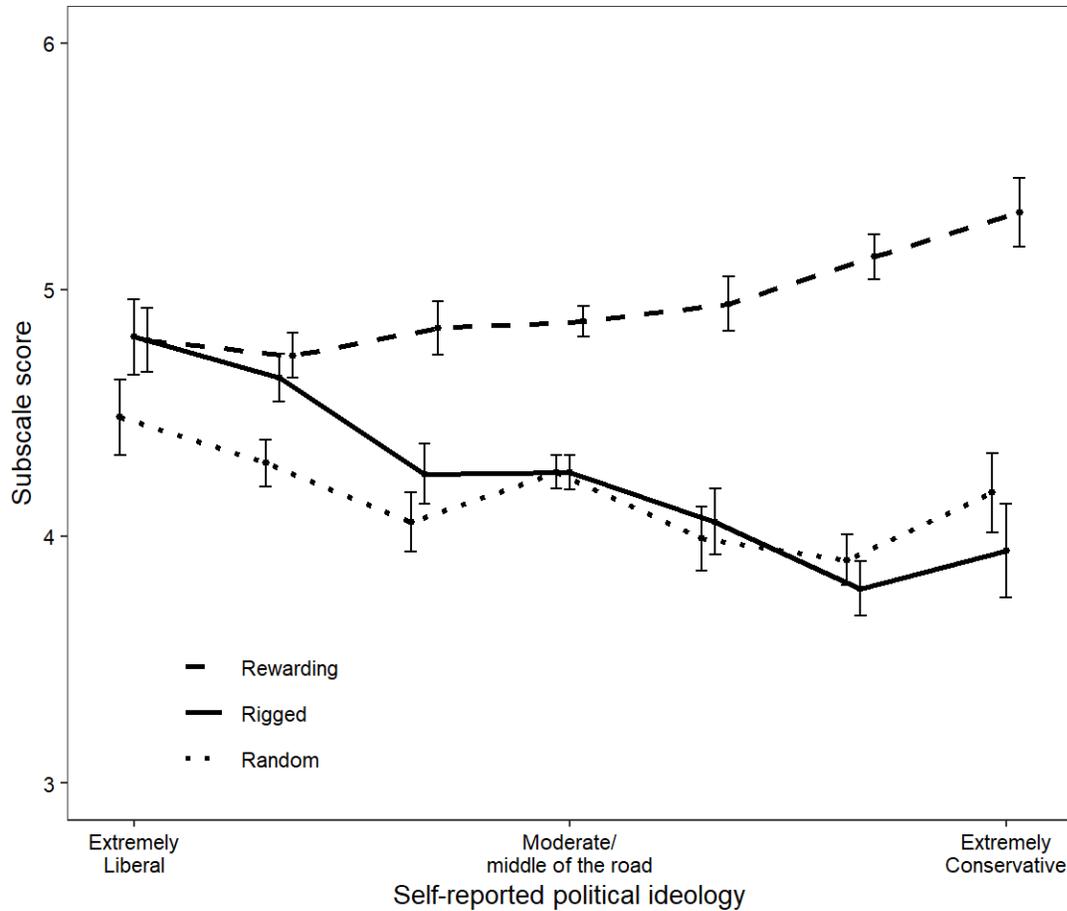
419

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

421 arrows) indicate standardized latent variable covariances.

422 **Figure 2**

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



424

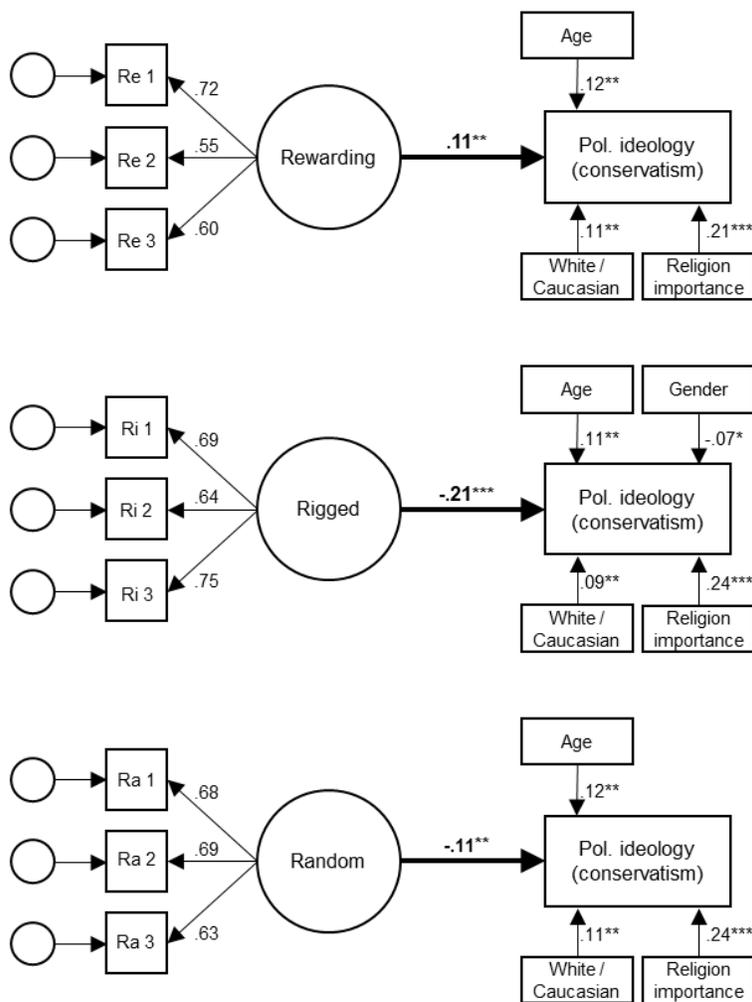
425 *Note.* Bars indicate standard errors.

426

427 **Figure 3**

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

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



430

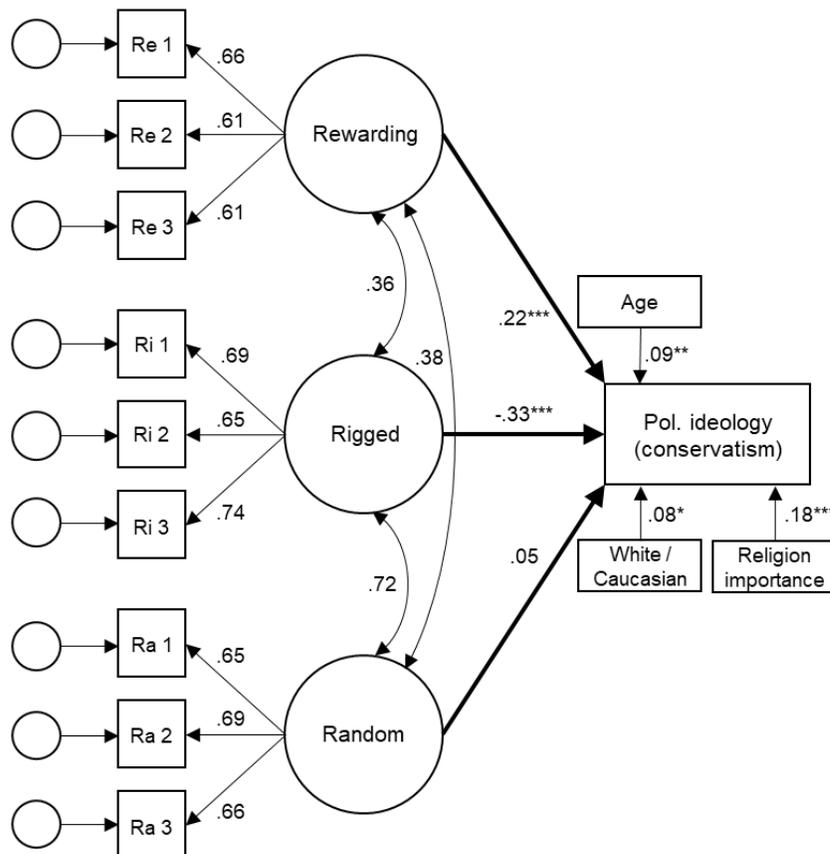
431 *Note.* Numbers on the left indicate standardized factor loadings. Numbers on the right indicate
 432 standardized regression coefficients for all significant predictors (* $p < .05$, ** $p < .01$, *** $p <$
 433 $.001$). Predictors that were included in the models but were not significant: only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

436

437 **Figure 4**

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

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



440

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

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

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

444 $.001$). Predictors that were included in the models but were not significant: gender, only child,

445 subjective SES, household income, Hispanic/Latino, religion, college degree, married, employed,

446 children, first born, U.S. born.

447

448 *Predicting Political Ideology when Controlling for Related Constructs*

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

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

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

471 whether the Rewarding, Rigged, and Random subscales of the CAFU remain significant
472 predictors of political ideology (see Table 8). The positive prediction of political ideology
473 (conservatism) by the Rewarding dimension and the negative prediction of political ideology the
474 Rigged dimension remain significant in this full model. Other significant predictors of political
475 ideology are age, ethnicity (white/Caucasian), SDO, RWA, meritocratic beliefs, and causal
476 attribution of poverty. The Random dimension is no longer a significant predictor of political
477 ideology. Figure 5 shows the absolute standardized regression coefficients of the included
478 variables.
479

480 **Table 6**

481 *Study 1 Prediction of Political Ideology (Higher is more Conservative) by CAFU Subscales, Controlling for Social Dominance*
 482 *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						483
Rigged				-0.19[-0.25, -0.12]	-0.16	<.001			484
Random							-0.12[-0.19, -0.05]	-0.09	485
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	486
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	487
Intercept	0.14 [-0.41, 0.70]		.610	1.63 [1.09, 2.16]		<.001	1.17 [0.65, 1.69]		488
Observations	1035			1035			1035		489
R^2	.20			.22			.20		490
Adjusted R^2	.20			.22			.20		491

501 **Table 7**

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

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

Effect	Model 1			Model 2			Model 3		504
	<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	505 506
Rewarding	0.14 [0.05, 0.23]	0.10	.002						507
Rigged				-0.24[-0.31, -0.17]	-0.20	<.001			508
Random							-0.16[-0.24, -0.09]	-0.13	<.001
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	509 510 511
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	<.001
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	.040
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	.092
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	<.001
Intercept	3.34 [2.80, 3.88]		<.001	4.53 [4.04, 5.02]		<.001	4.32 [3.81, 4.82]		512 513 <.001
Observations	1040			1040			1040		
R^2	.09			.12			.10		
Adjusted R^2	.08			.11			.09		

514 **Table 8**

515 *Study 1 Prediction of Political Ideology (Higher is more Conservative) by CAFU Subscales,*
 516 *Controlling for Socio-demographic Variables and Individual Differences Measures (Model 2) in*
 517 *a Linear Regression.*

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
GSJ				-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

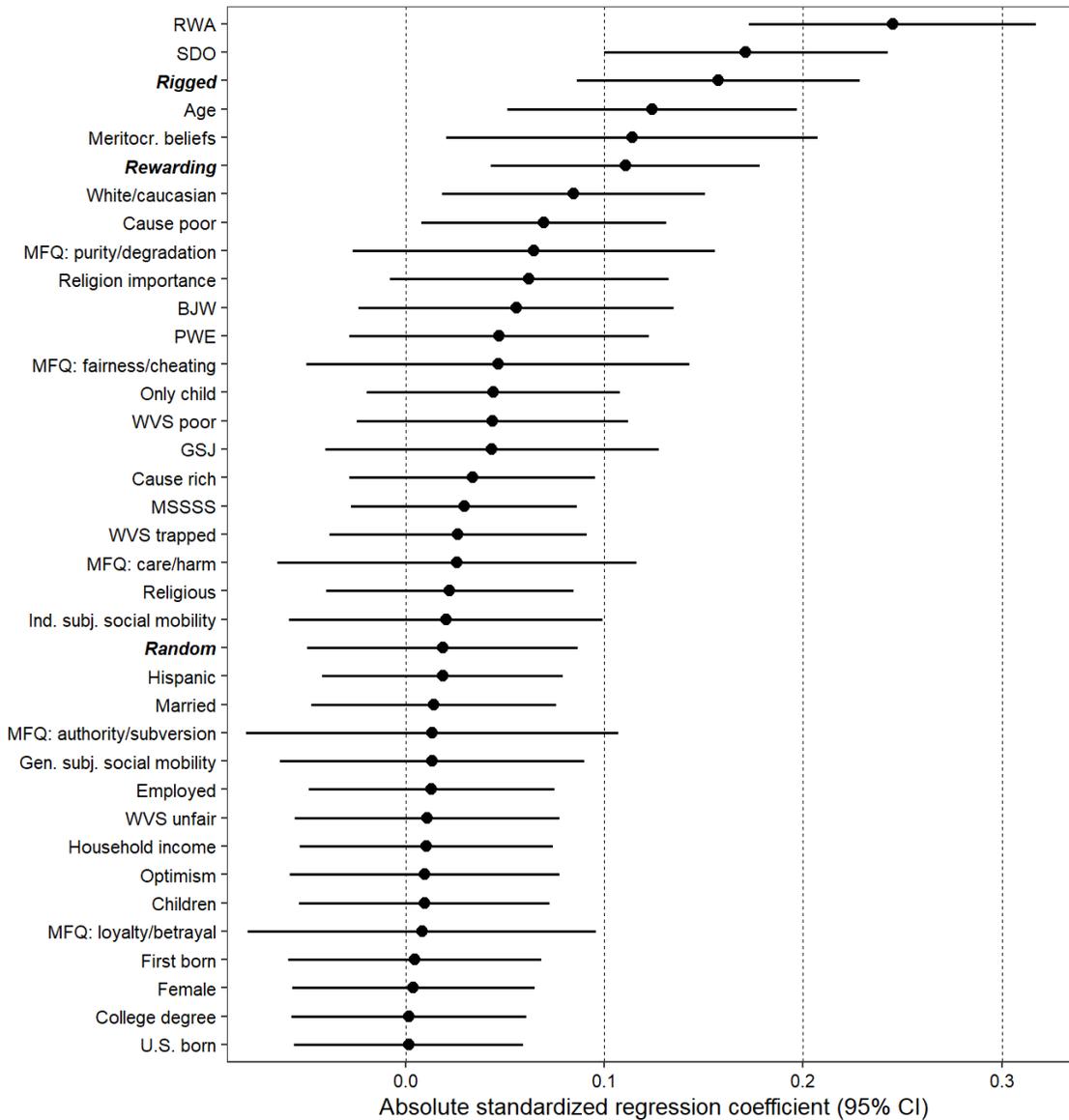
Societal social mobility			0.02 [-0.11, 0.15]	0.01	.733
Individual social mobility			0.03 [-0.09, 0.15]	0.02	.612
MFQ: care/harm			-0.04[-0.19, 0.10]	-0.03	.573
MFQ: fairness/cheating			-0.07[-0.23, 0.08]	-0.05	.344
MFQ: loyalty/betrayal			0.01 [-0.12, 0.15]	0.01	.851
MFQ: authority/subversion			-0.02[-0.17, 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	1096		958		
R^2	.07		.29		
Adjusted R^2	.07		.26		

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

522 **Figure 5**

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

524 *Sociodemographic Variables in a Linear Regression.*



525

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

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

528 WVS = World Values Survey; GSJ = General System Justification; MSSSS = MacArthur Scale of

529 Subjective Social Status.

530 Discussion

531 The results from Study 1 confirm that people’s beliefs about changes in financial well-
532 being can best be described along three conceptually distinct dimensions: Rewarding, Rigged,
533 and Random. We designed the CAFU Scale to measure lay theories in this context. To
534 understand how people think about changes in financial well-being, we need more than a single
535 dimension of perceived individual control, more than two distinct dimensions of beliefs about the
536 role of discretionary and exogenous factors determining financial outcomes, and more than a
537 distinction between knowable and random uncertainty. By combining insights from different
538 lines of past research, we come to a more nuanced mapping of lay theories, one that recognizes
539 that some exogenous factors determining financial well-being are perceived as knowable
540 whereas other exogenous factors are perceived as random.

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

550 Past research has focused on beliefs about the degree of individual control as a predictor of
551 political ideology. Using the model proposed here, with three conceptually and structurally
552 distinct dimensions, we can go a step further and examine the relative importance of the

553 knowable and random elements of those beliefs. We find that the two knowable dimensions
554 (Rewarding and Rigged) have greater standardized associations with political ideology than the
555 Random dimension does. This suggests that we should not simply equate beliefs about a lack of
556 individual control with beliefs about the role of luck in determining financial outcomes. People
557 intuitively distinguish between the knowable and the random, and this distinction matters when
558 trying to explain political preferences.

559 Contrary to our preregistered prediction, the prediction of political ideology by the Random
560 dimension was no longer significant after controlling for the Rewarding and the Rigged
561 dimensions. People’s political preferences seem to be connected more strongly to their beliefs
562 about the Rewarding and Rigged nature of changes in financial well-being. Beliefs about
563 randomness, however, are not as naturally tied to political beliefs, possibly because people are
564 unlikely to fully appreciate the impact of luck on life outcomes (Frank, 2016). One potential
565 strategy for revealing the importance of the Random dimension is to explicitly link aspects of a
566 policy to the randomness of changes in financial well-being—a notion that we will test in the
567 studies that follow.

568 In this study and the studies that follow, we focus on capturing lay theories concerning
569 *future changes* in financial well-being, rather than lay theories concerning what determines
570 *current states* of financial well-being (i.e., causes of current wealth inequality). We expected that
571 beliefs about changes in financial well-being would be more relevant to people’s policy
572 preferences and we designed the statements of the CAFU Scale to reflect this focus: participants
573 are asked about “a person’s change in financial well-being from one year to the next.” Of course,
574 it is possible that people’s lay theories about the determinants of current states of financial well-
575 being are different from their lay theories about future changes in financial well-being. Likewise,

576 it is possible that the strength of associations between different dimensions is more or less strong
577 when framed in terms of states rather than changes. To explore this possibility, we conducted an
578 additional study, comparing the association between political ideology and the standard CAFU
579 versus a modified version of the scale. The standard version of the CAFU was designed to
580 capture lay theories about future changes in financial well-being as usual, which we refer to in
581 this section as “CAFU Changes.” The modified version of the CAFU was designed to capture lay
582 theories about current states of financial well-being by asking participants to evaluate various
583 causes of “whether a person is rich or poor,” which we refer to in this section as “CAFU States.”
584 See the Supplemental Material for details on the study and its results.

585 We first examined the factor structure and tested for measurement invariance, finding no
586 evidence that the factor structure of CAFU States is different from CAFU Changes. We then
587 examined the associations between political ideology and the Rewarding, Rigged, and Random
588 subscales, respectively. For both versions, participants who rated themselves as more politically
589 conservative tended to score higher on the Rewarding dimension ($r_{\text{Changes}} = 0.35, p < .001$; r_{States}
590 $= 0.31, p < .001$), lower on the Rigged dimension ($r_{\text{Changes}} = -0.34, p < .001$; $r_{\text{States}} = -0.43, p <$
591 $.001$), and lower on the Random dimension ($r_{\text{Changes}} = -0.08, p = .019$; $r_{\text{States}} = -0.20, p < .001$).
592 See Table 9 for the results of a series of linear regressions, showing that the positive association
593 between the Rewarding subscale and political ideology is significantly weaker when using
594 CAFU States than when using CAFU Changes; the negative association between the Random
595 subscale and political ideology is significantly stronger when using CAFU States than when
596 using CAFU Changes; the association between the Rigged subscale and political ideology is not
597 significantly different when using CAFU States than when using CAFU Changes. Taken
598 together, these results indicate that the factor structure of lay theories about financial well-being

599 and its directional association with political ideology does not depend on whether people
600 consider changes versus states of financial well-being. At the same time, the strength of the
601 association between each subscale and political ideology may vary modestly under these two
602 versions.

603 Now that we have established how people differ in their beliefs concerning changes in
604 financial well-being, we can predict how they will respond to different messages in support of
605 social welfare policy. Study 2 examines how the Rewarding, Rigged, and Random dimensions
606 are uniquely associated with rated importance of different goals that a government may pursue
607 when allocating resources.

608

609 **Table 9**

610 *Prediction of Political Ideology (Higher is More Conservative) by CAFU Subscales and the Interaction with Scale Version (CAFU*
 611 *States versus CAFU Changes) in a Linear Regression.*

Effect	Model 1			Model 2			Model 3		612
	<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	613
Rewarding	0.57 [0.47, 0.68]	0.38	<.001						614
Rigged				-0.48[-0.56, -0.39]	-0.35	<.001			615
Random							-0.11[-0.20, -0.02]	-0.08	616
States vs. Changes	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	617
Rew. × States	-0.14[-0.28, -0.00]	-0.20	.045						618
Rig. × States				-0.08[-0.20, 0.04]	-0.12	.171			619
Ran. × States							-0.15[-0.28, -0.03]	-0.19	620
Intercept	0.71 [0.19, 1.23]		.007	5.63 [5.24, 6.03]		<.001	3.96 [3.59, 4.33]		621
Observations	1759			1759			1759		622
R^2	.11			.15			.02		623
Adjusted R^2	.11			.15			.02		624

625 **Study 2**

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

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

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

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

646 To test these hypotheses we will compare the direction and strength of the associations
647 between beliefs about changes in financial well-being and the rated importance of the different

648 government goals. We predict that: (a) scores on the Rewarding subscale will be more positively
649 associated with rated importance of the Incentivizing goal versus the other two goals, (b) scores
650 on the Rigged subscale will be more positively associated with rated importance of the
651 Redistribution goal versus the other two goals, and (c) scores on the Random subscale will be
652 more positively associated with rated importance of the Risk-pooling goal versus the other two
653 goals.

654 **Methods**

655 *Participants*

656 We recruited participants through Amazon's Mechanical Turk ($N = 1207$; 55% female,
657 $M_{\text{age}} = 37.98$, $SD_{\text{age}} = 14.00$). We aimed to recruit 1200 participants and ended up with partial or
658 complete data for 1227 participants. We removed data of 20 participants before analyses because
659 they did not give responses for all key variables.

660 *Procedure & Materials*

661 In the first section of the survey, participants read about three distinct goals in a random
662 order that the government might pursue: (1) "The government should use resources to
663 incentivize and enable people to pull themselves out of financial hardship and realize their full
664 potential"; (2) "The government should allocate resources to individuals belonging to
665 disadvantaged groups that routinely experience financial hardship"; (3) "The government should
666 pool resources to support people when they happen to experience unforeseeable financial
667 hardship". These three goals we label in our analysis Incentivizing, Redistribution, and Risk-
668 pooling, respectively. Participants rated each goal on how important it is for the U.S. government
669 to pursue (1 = "not important at all"; 7 = "extremely important").

670 In the second section, participants completed the CAFU Scale as in Study 1. Table 3
671 displays scale descriptive statistics and measures of internal consistency. We randomized the
672 order of the first section (the rating and ranking of government goals) and the second section (the
673 CAFU Scale).

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

677 **Results**

678 We specified a linear mixed model—which took each participant by government goal
679 rating as the unit of analysis (for a total of 3681 observations)—to treat participants as random
680 effects, thus accounting for the individual-level variation in responses to the government goals.
681 As fixed effects the model included scores on the three subscales of the CAFU (Rewarding,
682 Rigged, and Random), the government goal (Incentivizing, Redistribution, and Risk-pooling),
683 and the nine interactions between the three CAFU subscales and three government goals. Our
684 key prediction is that six of these nine interactions will be significant such that rating on a given
685 CAFU subscale (e.g., Rewarding) is more positively associated with rated importance of the
686 most compatible government goal (i.e., Incentivizing) than the two less compatible goals (i.e.,
687 Redistribution and Risk-pooling). We make no prediction concerning the relative associations
688 between the government goals hypothesized to be less compatible with a given CAFU subscale.
689 To test our key hypotheses, we examined the fixed interaction effects between government goal
690 and Rewarding, Rigged, and Random.⁵

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,

691 The results of this analysis show that five of the six predicted two-way interactions were
692 statistically significant (see Table 10 and Figure 6). Higher scores on the Rewarding subscale are
693 associated more positively with rated importance of the Incentivizing goal than rated importance
694 of the Redistribution goal and the Risk-pooling goal. Higher scores on the Rigged subscale are
695 associated more positively with rated importance of the Redistribution goal than rated
696 importance of the Incentivizing goal and the Risk-pooling goal. Higher scores on the Random
697 subscale are associated more positively with rated importance of the Risk-pooling goal than rated
698 importance of the Incentivizing goal. The one predicted interaction for which we find no support
699 is between the Random subscale and rated importance of the Risk-pooling goal compared to the
700 Redistribution goal. Table 10 shows that we find similar results when controlling for political
701 ideology and its interaction with rated importance of each of the three government goals. We
702 present a similar analysis of absolute rather than signed associations in the Supplemental
703 Material.

704 To better understand the rated importance of the three goals, we can examine the
705 differences in Figure 6 at the low end and the high end of the three CAFU subscales. For
706 instance, participants on the low end of the Rewarding subscale rated the Incentivizing goal as
707 less important than the Redistribution and Risk-pooling goals. Participants on the high end of the
708 Rewarding subscale rated the Incentivizing goal as more important than the Risk-pooling goal,
709 which is again rated more important than the Incentivizing argument.

710 Figure 6 also shows a main effect that we can interpret: scores on the Rigged subscale are
711 associated positively with rated importance of all three government goals, also when controlling
712 for political ideology. Although we did not predict this effect, in hindsight it strikes us as not

2018) and the R-packages lme4 (Version 1.1.21; Bates et al., 2015), and lmerTest (Version 3.1.0; Kuznetsova et al., 2017).

713 surprising that participants scoring higher on the Rigged subscale are more supportive of all three
714 government goals.
715

716 **Table 10**

717 *Study 2 Prediction of Rated Importance of Government Goals by Fixed Effects of Interest,*
 718 *Controlling for Political Ideology and Its Interaction with Government Goal (Model 2) in*
 719 *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 \times Pool. vs. Inc.	-0.21[-0.28, -0.14]	-0.14	<.001	-0.19[-0.26, -0.11]	-0.13	<.001
Rewarding \times Red. vs. Inc.	-0.30[-0.37, -0.23]	-0.21	<.001	-0.23[-0.31, -0.16]	-0.16	<.001
Rewarding \times Red. vs. Pool.	-0.09[-0.16, -0.02]	-0.06	.013	-0.05[-0.12, 0.03]	-0.03	.220
Rigged \times Pool. vs. Inc.	0.15 [0.08, 0.21]	0.12	<.001	0.12 [0.05, 0.19]	0.10	<.001
Rigged \times Red. vs. Inc.	0.32 [0.25, 0.38]	0.26	<.001	0.24 [0.18, 0.31]	0.20	<.001
Rigged \times Red. vs. Pool.	0.17 [0.11, 0.23]	0.14	<.001	0.12 [0.06, 0.19]	0.10	<.001
Random \times Pool. vs. Inc.	0.08 [0.02, 0.15]	0.07	.011	0.08 [0.02, 0.15]	0.07	.012
Random \times Red. vs. Inc.	0.06 [-0.01, 0.12]	0.05	.077	0.06 [-0.01, 0.12]	0.05	.074
Random \times Red. vs. Pool.	-0.03[-0.09, 0.04]	-0.02	.441	-0.02[-0.09, 0.04]	-0.02	.475
Pol. id. \times Pool. vs. Inc.				-0.06[-0.11, -0.01]	-0.07	.011
Pol. id. \times Red. vs. Inc.				-0.17[-0.21, -0.12]	-0.19	<.001
Pol. id. \times 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	3621			3612		
Pseudo R^2 (fixed effects)	.21			.28		

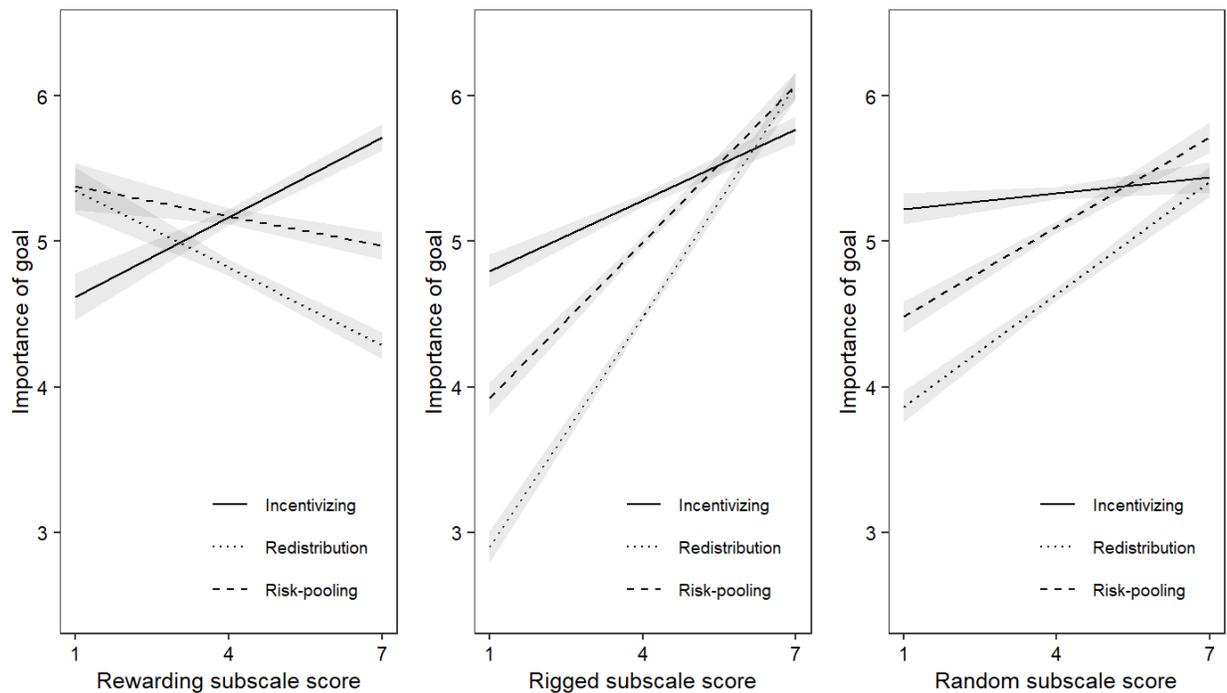
720 *Note.* Shaded rows indicate predicted interactions. Pool. = Risk-pooling goal; Inc. =

721 Incentivizing goal; Red. = Redistribution goal.

722

723 **Figure 6**

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



726

727 *Note.* Bands indicate standard errors.

728

729 **Discussion**

730 Study 2 shows that Rewarding, Rigged, and Random beliefs uniquely predict rated
 731 importance of Incentivizing, Redistribution, and Risk-pooling goals for social welfare policy,
 732 respectively. While Study 1 showed an association between these lay theories and political
 733 ideology, the compatibility effect observed in Study 2 remained strikingly similar when
 734 controlling for political ideology. We now turn to an exploration of how people’s beliefs about

735 changes in financial well-being predict the appeal of different policy messages and political
736 candidates, controlling for political ideology.

737 **Study 3**

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

757 **Method**

758 ***Participants***

759 We recruited participants through Amazon's Mechanical Turk ($N = 517$; 54% female, M_{age}
760 $= 34.83$, $SD_{\text{age}} = 14.55$). We aimed to recruit 500 participants and ended up with partial or
761 complete data for 517 participants. We removed data of 14 participants before analyses because
762 they did not give responses for all key variables.

763 ***Procedure & Materials***

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

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

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

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

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

798 **Results**

799 We specified a linear mixed model—which took each participant by policy argument rating
800 as the unit of analysis (for a total of 6204 observations)—to treat participants as random effects.
801 As fixed effects the model included scores on the three subscales of the CAFU (Rewarding,
802 Rigged, and Random), the policy argument (Incentivizing, Redistribution, and Risk-pooling),

803 and the nine interactions between the three CAFU subscales and three policy arguments.⁶ Our
804 key prediction is that six of these nine interactions will be significant such that rating on a given
805 CAFU subscale (e.g., Rewarding) is more positively associated with persuasive impact of the
806 most compatible policy argument (i.e., Incentivizing) than the two less compatible arguments
807 (i.e., Redistribution and Risk-pooling). We make no prediction concerning the relative
808 associations between the policy arguments hypothesized to be less compatible with a given
809 CAFU subscale.

810 The results of this analysis show that all six predicted two-way interactions were
811 statistically significant (see Table 11 and Figure 7). Higher scores on the Rewarding subscale are
812 associated more positively with persuasive impact of the Incentivizing argument than persuasive
813 impact of the Redistribution argument and the Risk-pooling argument. Higher scores on the
814 Rigged subscale are associated more positively with persuasive impact of the Redistribution
815 argument than persuasive impact of the Incentivizing argument and the Risk-pooling argument.
816 Higher scores on the Random subscale are associated more positively with persuasive impact of
817 the Risk-pooling argument than persuasive impact of the Incentivizing argument and the
818 Redistribution argument. Table 11 shows that we find similar results when controlling for
819 political ideology and its interaction with persuasive impact of each of the policy arguments. We
820 present a similar analysis of absolute rather than signed associations in the Supplemental
821 Material.

822 To better understand the persuasiveness of the three types of messages, we can examine the
823 differences in Figure 7 at the low end and the high end of the three CAFU subscales. For

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.

824 instance, for participants on the low end of the Rigged subscale, all three types of arguments are
825 equally persuasive. For participants on the high end of the Rigged subscale, the Redistribution
826 argument is more persuasive than the Risk-pooling argument, which is again more persuasive
827 than the Incentivizing argument.

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

834

835 **Table 11**836 *Study 3 Prediction of Persuasive Impact of Policy Arguments by Fixed Effects of Interest,*837 *Controlling for Political Ideology and its Interaction with Policy Argument (Model 2) in Linear*838 *Mixed Models.*

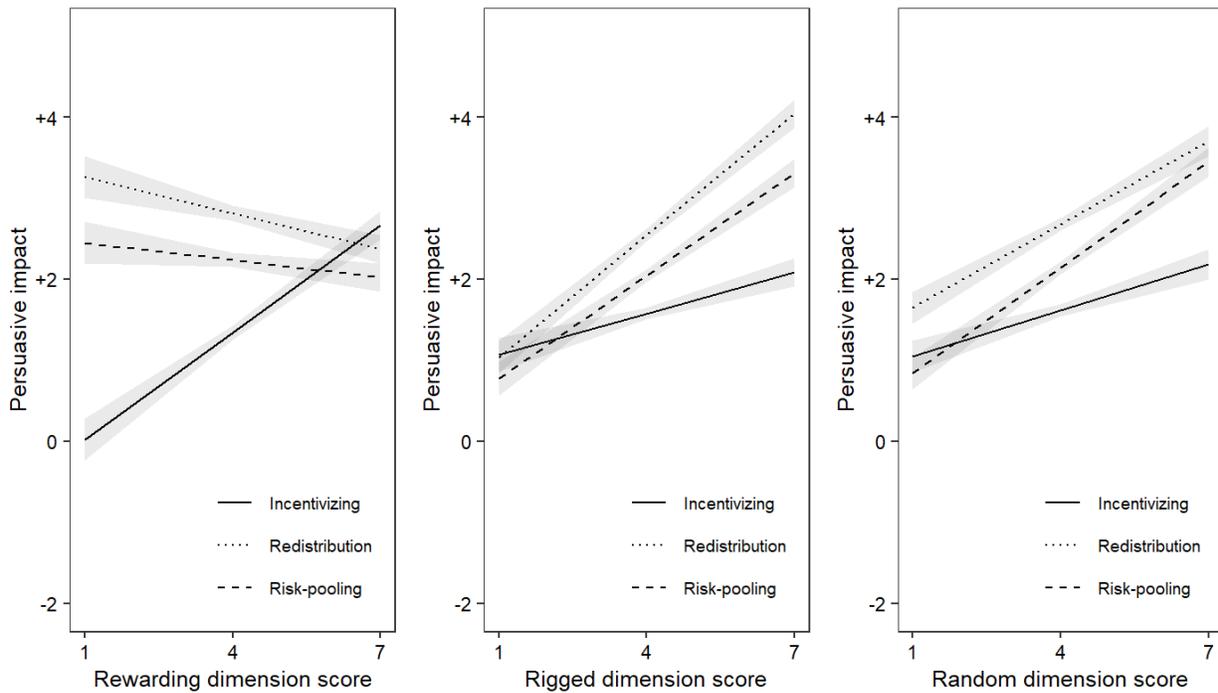
Effect	Model 1			Model 2		
	<i>b</i> [95% <i>CI</i>]	β	<i>p</i>	<i>b</i> [95% <i>CI</i>]	β	<i>p</i>
Rewarding	0.33 [0.20, 0.45]	0.15	<.001	0.36 [0.23, 0.48]	0.17	<.001
Rigged	0.24 [0.12, 0.36]	0.13	<.001	0.20 [0.08, 0.33]	0.11	.001
Random	0.16 [0.03, 0.28]	0.08	.016	0.16 [0.04, 0.29]	0.08	.010
Political 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	6203			6191		
Pseudo R^2 (fixed effects)	.12			.15		

839 *Note.* Shaded rows indicate predicted interactions. Pool. = Risk-pooling goal; Inc. =
 840 Incentivizing goal; Red. = Redistribution goal; Edu. = Tuition-free higher education; Dis. =
 841 Disaster recovery program; Food. = Food purchasing assistance; Hea. = Universal health
 842 coverage.

843

844 **Figure 7**

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



847

848 *Note.* Bands indicate standard errors.

849

850 **Discussion**

851 Study 3 shows that people with different lay theories about changes in financial well-being
 852 are persuaded by different arguments in favor of various social welfare policies. In particular, we

853 find that Incentivizing arguments are especially persuasive to people scoring high (versus low)
854 on the Rewarding subscale; Redistribution arguments are especially persuasive to people scoring
855 high (versus low) on the Rigged subscale; and Risk-pooling arguments are especially persuasive
856 to people scoring high (versus low) on the Random subscale.

857 **Study 4**

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

862 **Method**

863 *Participants*

864 We recruited participants through Amazon's Mechanical Turk ($N = 836$; 57% female, M_{age}
865 $= 34.34$, $SD_{\text{age}} = 11.12$). We aimed to recruit 1200 participants and ended up with partial or
866 complete data for 1283 participants. We removed data of 50 participants before analyses because
867 they did not give responses for all key variables. Also, because this study required participants to
868 read a greater number of arguments per response than previous studies, we preregistered a plan
869 to remove participants who spent less than 15 seconds reading at least one of the three
870 candidates' statements. This led us to remove data of an additional 397 participants.

871 *Procedure & Materials*

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

876 government programs should encourage desirable behavior by helping people who deserve it
877 most (e.g., “The government should improve the higher education system by giving financial
878 support to students, conditional on their academic performance. This way, the system would
879 provide financial incentives to successful students who deserve it most, thereby motivating all
880 students to work hard and strive for excellence.”) A second candidate articulated Redistribution
881 arguments, stating that government programs should use tax money to help disadvantaged
882 groups in society (e.g., “The government should invest tax money to improve the higher
883 education system, by providing financial support to students from disadvantaged backgrounds or
884 from low-income households. In other words, the system should assist those who would
885 otherwise not have the means to pay for higher education.”) A third candidate articulated Risk-
886 pooling arguments, stating that government programs should pool tax-money to cover for the
887 risk of unfortunate events (e.g., “The government should improve the higher education system by
888 creating a large pool of money which can be used to collectively pay for the education of every
889 individual, regardless of whether arbitrary circumstances have left them more or less able to
890 pay.”) We labeled candidates generically (“Candidate A,” “Candidate B,” and “Candidate C.”)

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

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

902 **Results**

903 *Confirmatory Analyses*

904 We specified a linear mixed model—which took each participant by candidate rating as the
905 unit of analysis (for a total of 2508 observations)—to treat participants as random effects. As
906 fixed effects the model included scores on the three subscales of the CAFU (Rewarding, Rigged,
907 and Random), the candidate (Incentivizing, Redistribution, and Risk-pooling), and the nine
908 interactions between the three CAFU subscales and three candidates.⁷ Our key prediction is that
909 six of these nine interactions will be significant such that rating on a given CAFU subscale (e.g.,
910 Rewarding) is more positively associated with rated support for the most compatible candidate
911 (i.e., Incentivizing) than the two less compatible candidates (i.e., Redistribution and Risk-
912 pooling). We make no prediction concerning the relative associations between the candidates
913 hypothesized to be less compatible with a given CAFU subscale.

914 The results of this analysis show that five of the six predicted two-way interactions were
915 statistically significant (see Table 12 and Figure 8). Higher scores (versus lower) on the
916 Rewarding subscale are associated more positively with rated support for the Incentivizing
917 candidate than the Redistribution candidate and the Risk-pooling candidate. Higher scores
918 (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.

919 Redistribution candidate than the Incentivizing candidate. Higher scores (versus lower) on the
920 Random subscale are associated more positively with rated support for the Risk-pooling
921 candidate than the Incentivizing candidate and the Redistribution candidate. The one predicted
922 interaction for which we find no support is between the Rigged subscale and rated support for the
923 Redistribution candidate compared to the Risk-pooling candidate. Table 12 shows that we find a
924 qualitatively identical pattern when controlling for political ideology and its interaction with
925 rated support for each of the three candidates. We present a similar analysis of absolute rather
926 than signed associations in the Supplemental Material.

927

928

929 **Table 12**930 *Study 4 Prediction of Rated Support for Candidates by Fixed Effects of Interest, Controlling for*931 *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	2508			2499		
Pseudo R^2 (fixed effects)	.19			.25		

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

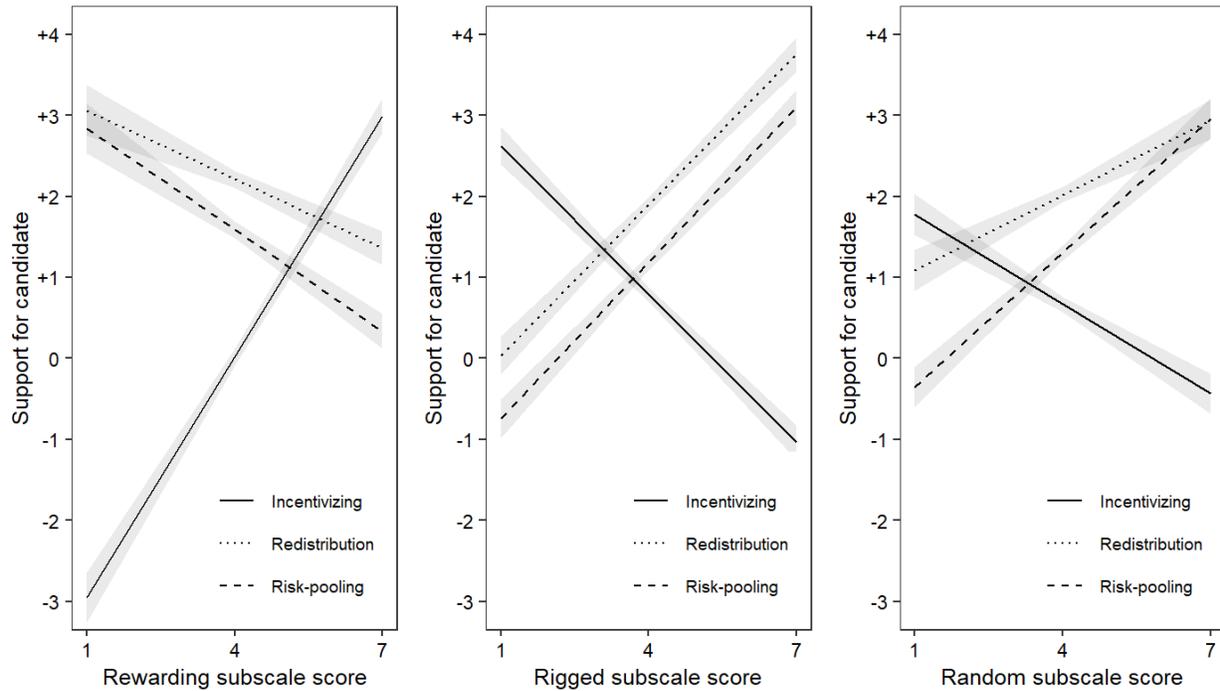
933 Incentivizing goal; Red. = Redistribution goal.

934

935

936 **Figure 8**

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



939
 940 *Note.* Bands indicate standard errors.

941
 942 ***Exploratory Analyses***

943 To explore the prediction of voting by the Rewarding, Rigged, and Random subscales, we
 944 conducted three separate binary logistic regressions, one for whether or not participants voted for
 945 each candidate. The results in Table 13 show that scores on the Rewarding subscale are
 946 positively associated with the likelihood of voting for the Incentivizing candidate; scores on the
 947 Rigged subscale are positively associated with the likelihood of voting for the Redistribution
 948 candidate; scores on the Random subscale are positively associated with the likelihood of voting

949 for the Risk-pooling candidate. An analysis using multinomial logistic regression is presented in
 950 the Supplemental Material.

951

952 **Table 13**

953 *Study 4 Prediction of Likelihood of Voting for Each Candidate by CAFU Subscales in Binary*
 954 *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]
Redistribution 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]

955

956 **Discussion**

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

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

961 **General Discussion**

962 People vary in their lay theories about what causes changes in financial well-being over
963 time, and these beliefs are closely associated with our political and policy preferences. In four
964 preregistered studies using a total of $N = 3662$ participants, we find that individual differences in
965 beliefs about changes in financial well-being are reliably captured along three dimensions that
966 we label Rewarding, Rigged, and Random. We measure such beliefs using a new 9-item scale
967 called the Causal Attributions of Financial Uncertainty Scale (CAFU) that loads on these three
968 dimensions. Whereas political conservatives tend to see changes in financial well-being as more
969 knowable and based on individual factors such as effort (Rewarding), liberals tend to see these
970 changes as both more knowable due to systemic factors such as discrimination and favoritism
971 (Rigged), and as governed more by chance factors (Random). Furthermore, we find evidence for
972 compatibility effects in the messaging about various social welfare policies. Messages favoring
973 social welfare policies are more persuasive to the extent that they contain arguments that are
974 compatible with the target audience's lay theories about changes in financial well-being.
975 Incentivizing policy arguments are more persuasive to people who score higher on the
976 Rewarding subscale; Redistribution arguments are more persuasive to people who score higher
977 on the Rigged subscale; and Risk-pooling arguments are more persuasive to people who score
978 higher on the Random subscale.

979 Preferences concerning financial redistribution policy are complex and derive from
980 multiple sources. Current self-interest certainly plays a role. Some authors have argued that
981 preferences concerning redistribution derive from people's assessment of how redistribution will

982 affect them financially, either now or in the future (Benabou & Ok, 2001; Meltzer & Richard,
983 1981; Piketty, 1995). Moreover, people in the United States with a household income below
984 \$50,000 prefer a more equal distribution of wealth than those with a household income above
985 \$100,000 (Norton & Ariely, 2011). Meanwhile, the wealthiest 5% of Americans have been found
986 to prefer lower rates for top income tax and estate tax as compared to the general population
987 (Cohn et al., 2019).

988 This said, one's current financial status cannot fully explain disagreements concerning
989 economic redistribution and social welfare policy. Although the poor are generally more in favor
990 of redistribution, they tend to hold less favorable views of redistribution to the extent that they
991 see opportunities to move up the economic ladder (Alesina & La Ferrara, 2005; Bjørnskov et al.,
992 2013; Shariff et al., 2016). People also care about the process through which the distribution is
993 determined, even if they themselves have no stake in the matter (Almás et al., 2020; Cohn et al.,
994 2019; Fisman, et al., 2015; Fisman, et al., 2017; Starmans et al., 2017; Trump, 2020; Tyler,
995 2011).

996 A more complete understanding of the sources of policy preferences requires an accurate
997 model of how people think about changes in financial well-being. The findings in this article
998 confirm a model that combines perceptions of individual control with a distinction between the
999 perceived knowability and perceived randomness of uncertainty in financial well-being, yielding
1000 a three-dimensional model. Importantly, these lay theories predict support for different
1001 candidates and messages, even when controlling for self-interest (as indicated by income and
1002 other demographics) and political ideology.

1003 **Scale Development, Construct Validity, and Generalizability**

1004 We introduced the nine-item CAFU Scale to capture lay theories of financial well-being
1005 along three dimensions. We derived the dimensional structure of this scale by synthesizing two
1006 streams of literature: one that examines the relationship between perceived fairness and control,
1007 and one that examines distinct dimensions of subjective uncertainty. These scale items were
1008 adapted and expanded from the EARS—a scale designed to capture the epistemic and aleatory
1009 dimensions of uncertainty (Fox, Tannenbaum et al., 2021).

1010 The scale-development method we used has the advantage of yielding a clear
1011 conceptualization of the underlying construct(s), and a scale that is grounded in logic and prior
1012 research. Based on the previous literature and the examination of the scale’s structural and
1013 concurrent validity in Study 1, we believe that the CAFU Scale is reasonably comprehensive at
1014 capturing lay theories of financial well-being. Factors that are beyond an individual's control can
1015 be perceived as high or low in epistemicness and as high or low in aleatoriness, as measured by
1016 the epistemic-discretionary (i.e., Rewarding) subscale and the epistemic-exogenous (i.e., Rigged)
1017 subscale, respectively. Factors that are within the individual's control are, by its very nature,
1018 knowable and not random, and are therefore captured by the aleatory-exogenous (i.e., Random)
1019 subscale.

1020 Naturally, theory-driven, deductive scale development has its limitations. Although we have
1021 strong a priori reasons to assume that the three-dimensional structure can capture a
1022 comprehensive range of lay theories concerning changes or differences in financial well-being, it
1023 is certainly possible that our scale misses some lay theories that may occur to some individuals.
1024 As a post-hoc test of the comprehensiveness of our scale, we asked 50 self-reported Democratic
1025 voters and 50 self-reported Republican voters to “list all of the causes, reasons, or factors that
1026 come to mind” that explain changes or differences in financial well-being for individuals. In

1027 total, these 100 participants provided 524 responses. We next asked participants to assign their
1028 own beliefs to one of three categories as characterized by the CAFU subscales or a fourth
1029 residual category (“none of the above fits well”). A coder independently assigned each listed
1030 belief to a category, agreeing with participants 74.6% of the time. We note that the participants
1031 only used the residual category themselves for 4.6% of listed beliefs. Further details are
1032 provided in the Supplemental Materials, Study S1A.

1033 We also acknowledge that we did not have direct empirical evidence to confirm the scale’s
1034 content validity when we ran the studies reported in this paper. It is possible that the items of
1035 each subscale are not representative of all aspects of the underlying dimension that they are
1036 designed to capture (Simms, 2008). For instance, it is possible that some individuals believe that
1037 changes in financial well-being are knowable and outside of the individual’s control in the sense
1038 that the poor are structurally advantaged over the rich. This belief would not be captured by all
1039 items on the Rigged subscale, because we use the item “...depends on the person’s initial status
1040 and wealth (i.e., rich tend to get richer and poor tend to get poorer).” This said, we note that in
1041 the aforementioned reasons-generating exercise detailed in in Supplemental Study S1A, we saw
1042 very few instances in which participants spontaneously generated thoughts about the system
1043 being rigged in favor of the poor.

1044 Interestingly, it may be the case that Rigged attributions are associated with perceptions of
1045 human causes (e.g., discrimination by a landlord) and Random attributions are associated with
1046 perceptions of non-human causes (e.g., a natural disaster). This said, both Rigged and Random
1047 constructs can logically accommodate both human and non-human causes. For instance, a car
1048 accident may harm a person’s financial well-being in a random way but be attributed to a human
1049 cause. Likewise, an algorithm for determining who gets a mortgage may discriminate against

1050 particular populations in a “rigged” way but be attributed to a non-human cause. While we
1051 believe that these latter examples are exceptions, we designed our scale to be able to capture both
1052 human and non-human causes.

1053 Finally, we hasten to add that further research will be needed to generalize our conclusions
1054 concerning the CAFU’s ability to predict political preferences and policy message preferences.
1055 First, we tested only a small set of government goals, policies, and policy arguments. In Studies
1056 3 and 4, we selected proposals for social welfare policy that we expected to be somewhat
1057 familiar to participants based on the political debate in the United States at the time that the
1058 studies were conducted. In Studies 2-4, we selected government goals and policy arguments that
1059 we expected to be compatible with the three proposed dimensions of beliefs about changes in
1060 financial well-being. Second, we surveyed only Americans at a particular time in history. Thus,
1061 our findings relate to contemporary thinking regarding the selected set of policies and messages,
1062 and do not necessarily generalize to different contexts or cultures (Gergen, 1973). Future
1063 research might explore the generalizability of these findings.

1064 **The Emergence of Lay Theories About Financial Well-being**

1065 People’s lay theories about what causes financial well-being to change over time may or
1066 may not accord with objective causes and are largely influenced by subjective interpretation. For
1067 instance, if an able-bodied individual gets poorer because he does not work very hard, an
1068 observer may see this as laziness in a system that is inherently rewarding. Alternatively, an
1069 observer may construe this behavior as the result of the individual being frustrated by a system
1070 that is rigged against him and has repeatedly thwarted his previous attempts to get ahead. Finally,
1071 an observer may see this behavior as the result of bad luck in having been born with traits that
1072 are not rewarded in life—losing what Warren Buffet once referred to as the “ovarian lottery”

1073 (Weisenthal, 2013). Of course, these attributions are not mutually exclusive and may vary in
1074 their relative salience; as we have shown, perceptions of causes of change in financial well-being
1075 vary along three distinct dimensions.

1076 There is ample evidence that people's experiences shape the way they view the structure of
1077 society, including the causes of changes and differences in financial well-being (Browman et al.,
1078 2019; Hunt, 1996; Kunovich & Slomeczynski, 2007; Manstead, 2018; McCall et al., 2017; Mijs,
1079 2018, 2019; Shariff et al., 2016; Wiwad et al., 2021). Of course, individuals' views of economic
1080 inequality and mobility may be systematically biased (Alesina et al., 2018; Cruces, et al., 2013;
1081 Davidai & Gilovich, 2015; Hauser & Norton, 2017; Hvidberg et al., 2020; Kraus et al., 2017;
1082 Kraus & Tan, 2015; Kiatpongsan & Norton, 2014; Norton & Ariely, 2011; Norton, et al., 2014).
1083 For instance, Americans' underestimation of inequality in their country may cause them to
1084 overestimate the degree of economic mobility, due to a greater perception that economic
1085 outcomes are within an individual's control (Davidai, 2018). Lay theories may derive from a
1086 need to rationalize inequality, fulfilling a basic psychological need to understand and explain the
1087 world around us (Benabou & Tirole, 2006; Day & Fiske, 2017; Jost et al., 2004; Kraus & Tan,
1088 2015; Piff et al., 2018; Trump, 2018; Trump & White, 2018).

1089 Future research could further investigate how personal history and context shape individual
1090 differences on the Rewarding, Rigged, and Random dimensions. Recent macroeconomic trends
1091 could be systematically related to the distribution of lay theories about changes in financial well-
1092 being. For instance, following recessions more people may come to view the system as less
1093 inherently rewarding. Alternatively, individual experience may lead people to shift their lay
1094 beliefs over time. For instance, a person suddenly knocked into poverty by a natural disaster may
1095 come to appreciate the critical role of randomness in determining changes in financial well-

1096 being. Finally, one might imagine that contextual cues could temporarily shift people's lay
1097 theories. For instance, news about protests against discrimination may cause some individuals to
1098 temporarily appreciate the extent to which the system is rigged. Indeed, in one study, after
1099 participants were prompted to consider why some people are poor for reasons beyond their
1100 control, they came to favor egalitarian and redistributive policies (Piff et al., 2020).

1101 **Crafting Persuasive Policy Messages**

1102 In this article we have demonstrated that understanding people's causal attributions of
1103 financial uncertainty can inform the design of more persuasive policy messages. We identified
1104 specific policy arguments that are compatible with each dimension and demonstrated how these
1105 arguments can be put to use in the political arena. A natural next step would be to test whether or
1106 not these insights can be used to win over specific groups of voters and build coalitions.

1107 Effective targeted messaging requires an ability to identify individual beliefs along the
1108 Rewarding, Rigged, and Random dimensions, preferably based on publicly available or
1109 observable socio-demographic variables. As a preliminary exploration of this approach we
1110 examined data from Study 1, conducting a series of linear regressions with Rewarding, Rigged,
1111 and Random scores as the dependent variables and the full set socio-demographic characteristics
1112 as predictors.⁸ The strongest predictor of the Rewarding subscale was higher rated importance of
1113 religion ($\beta = 0.18, p < .001$). Meanwhile, the strongest predictor of the Random subscale was
1114 lower household income ($\beta = -0.10, p = .007$). Interestingly, the strongest predictor of the Rigged
1115 dimension was marital status ($\beta = -0.09, p = .013$); participants who were not married scored
1116 higher on the Rigged subscale. While these results provide a first hint about how specific groups

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

1117 might be targeted, further research is needed to identify differences in lay theories of financial
1118 well-being from combinations of observable variables.

1119 One obvious way of identifying subgroups for tailored messaging opportunities is based on
1120 political ideology and/or political party affiliation. As we have shown, conservatives, on average,
1121 believe that changes in financial well-being are more Rewarding, less Rigged, and slightly less
1122 Random, as compared to liberals. Thus, when the goal is to persuade conservatives to support a
1123 particular social welfare policy, it may be most persuasive to emphasize an Incentivizing
1124 message about how the policy would create opportunities for hard-working individuals to
1125 prosper without allowing non-deserving individuals to take advantage. In contrast, when the goal
1126 is to persuade liberals to support the same social welfare policy, it may be most persuasive to
1127 either emphasize a redistribution message about how the policy would repair structural
1128 inequalities by helping routinely disadvantaged groups in society, or emphasize a risk-pooling
1129 message about how the policy would collectively insure everyone against the risk of
1130 unforeseeable negative outcomes.

1131 In the current studies we find preliminary evidence that people of different political
1132 ideologies indeed respond differently to policy messages. Figure 9 shows the prediction of the
1133 different dependent variables by political ideology in Studies 2-4. It is easy to see from the
1134 Figure that Incentivizing messages tended to garner more support from the most conservative
1135 individuals than Risk-Pooling and Redistribution messages for government intervention (Study
1136 2), various social welfare policies (Study 3), and political candidates (Study 4).

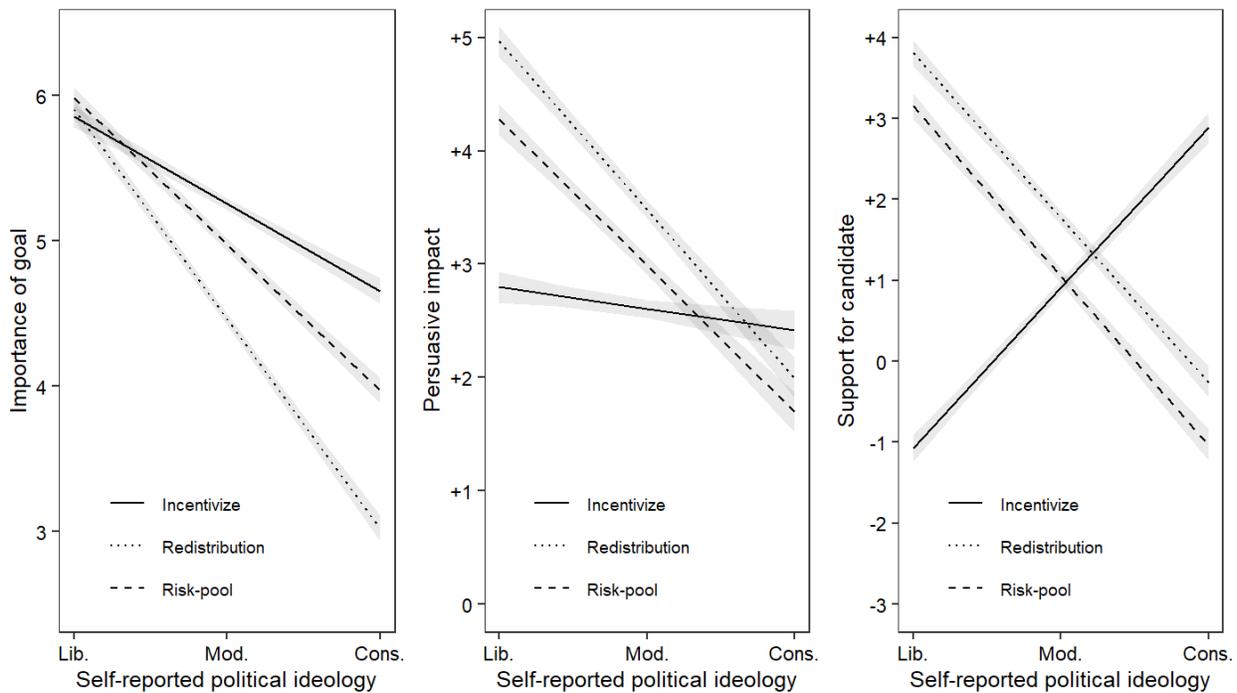
1137 Targeted messaging to different audiences is not always a feasible or preferable strategy.
1138 This raises the question of whether or not it is possible to craft messages that combine all three
1139 elements that are uniquely attractive to people with different lay theories. Of course there could

1140 be a risk to combining messages. Adding elements to an otherwise persuasive message that are
 1141 incompatible with the target audience’s beliefs may backfire and undermine the message’s
 1142 effectiveness. That is, multiple simultaneous messages could provide something for each
 1143 constituency to dislike rather than like. Early indications suggest this may not be the case: in a
 1144 preliminary exploration of this phenomenon we found that under certain conditions, messages
 1145 that combine Incentivizing, Redistribution, and Risk-pooling elements can broaden support over
 1146 messages that contain only one of these elements (Bogard et al., 2021).

1147

1148 **Figure 9**

1149 *Prediction of Importance Rating of Government Goals (Study 2, Left Panel), Persuasive Impact*
 1150 *of Policy Arguments (Study 3, Middle Panel), and Rated Support for Political Candidates (Study*
 1151 *4, Right Panel) by Political Ideology.*



1152

1153 *Note.* Lib. = Liberal; Mod. = Moderate; Cons. = Conservative. Bands indicate standard errors.

1154 Bridging the Divide on Social Welfare Policy

1155 The present findings provide some guidance concerning not only how to more effectively
1156 customize messages to different groups, but also on how to enhance the appeal of certain policies
1157 to a broader audience and thus help bridge the political divide. When people disagree about a
1158 particular policy, this disagreement may stem in part from a failure to define what exactly the
1159 policy entails—who it helps, on what basis, and with what purpose. It may be possible to draw
1160 opinions closer together by highlighting different aspects of a policy in a way that speaks to
1161 multiple lay theories of financial well-being. For instance, previous research finds that supporters
1162 and opponents of affirmative action had different kinds of policies in mind when judging the
1163 matter, but that most people from both sides were in favor of an affirmative action policy when it
1164 was made clear how that policy upheld the (incentivizing) principle of merit (Reyna et al., 2005).
1165 Similarly, disagreements regarding the social welfare policies studied here—from subsidized
1166 health care and tuition-free education to food stamps and unemployment benefits—may also
1167 arise from a lack of shared understanding about such policies. This leaves open the possibility of
1168 using a broader combination of policy messages that speak to multiple lay theories of financial
1169 well-being to bridge the political divide.

1170 Ideological and attitudinal divides also exist between people from different countries.
1171 There is considerable variance in the level and type of welfare spending across countries (Alber,
1172 2010; Alesina et al., 2001; Schwabish et al., 2006), just as there is variance in public views on
1173 economic inequality (Kerr, 2014; Kiatpongsan & Norton, 2014; Osberg & Smeeding, 2006; Piff
1174 et al., 2020; Reeskens & Van Oorschot, 2013). Past research has connected these differences to
1175 how people in different countries think about the role of luck and effort in determining economic
1176 outcomes (Alesina & Glaeser, 2004). Future research could revisit this issue for a more detailed

1177 examination of how countries differ in their respective distributions of Rewarding, Rigged, and
1178 Random beliefs. Such an examination provides some insight into why countries invest in
1179 different social welfare policies, why particular political candidates or parties are more popular
1180 in one country than in another, and how consensus regarding social welfare policies can be
1181 reached across communities with different beliefs, attitudes, and preferences.

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