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

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### **Lay Theories of Financial Well-being**

#### **Predict Political and Policy Message Preferences**

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

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

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

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

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

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

## 72 **Fair Allocations and Control**

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

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

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

### 105   **Subjective Dimensions of Uncertainty**

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

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

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

### 129 **Synthesizing Control and Subjective Uncertainty Frameworks**

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

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

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

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

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

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

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

174 **Table 1**175 *Overview of the Rewarding, Rigged, and Random dimensions.*

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

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

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

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

### 213 **Overview of Studies**

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

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

### 228 **Study 1**

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

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

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

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

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

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

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

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

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

## 293 **Method**

### 294 *Participants*

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

### 305 *Procedure & Materials*

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

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

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

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

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

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

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

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

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

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


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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.

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345

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

Study 1								
Subscale	<i>M</i>	<i>SD</i>	$\alpha$	$\omega_t$	$\omega_h$	<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>	$\alpha$	$\omega_t$	$\omega_h$	<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>	$\alpha$	$\omega_t$	$\omega_h$	<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>	$\alpha$	$\omega_t$	$\omega_h$	<i>r</i> ( , Rew.)	<i>r</i> ( , Rig.)	<i>r</i> ( , Ran.)
Rewarding	4.72	1.12	0.71	0.71	0.71		-.07	-.04
Rigged	4.37	1.33	0.76	0.76	0.76	-.07		.47
Random	4.16	1.24	0.75	0.75	0.75	-.04	.47	

349 *Note.*  $\alpha$  = Cronbach's alpha;  $\omega_t$  = McDonald's omega total;  $\omega_h$  = McDonald's omega350 hierarchical; *r* = Pearson's correlation coefficient.

## 351 **Results**

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

### 355 *Examining the Factor Structure of the CAFU Scale*

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

### 365 *Testing Measurement Invariance*

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

---

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

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

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

380

381 **Table 4**

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

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

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

388 **Table 5**389 *Study 1 Differences in Fit Indices for Tests of Metric and Scalar Invariance on Gender, Age, and*390 *Political Ideology.*

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

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

395

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

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

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

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

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

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

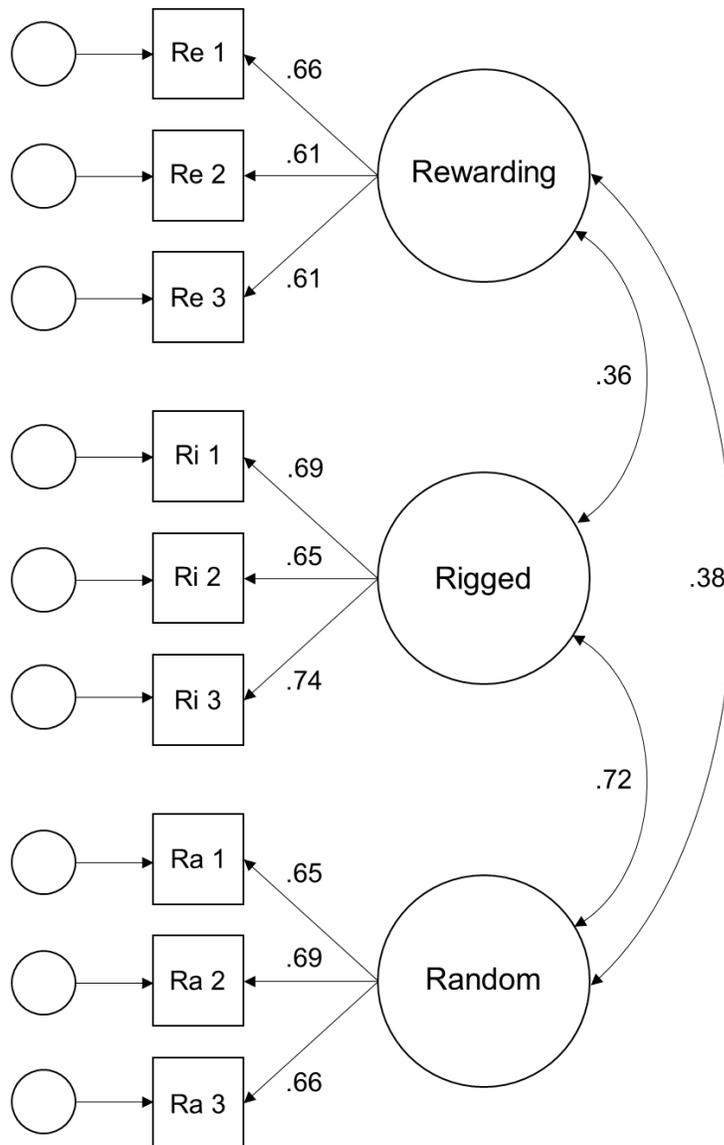
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417

418 **Figure 1**

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

420 *Random as Latent Variables.*



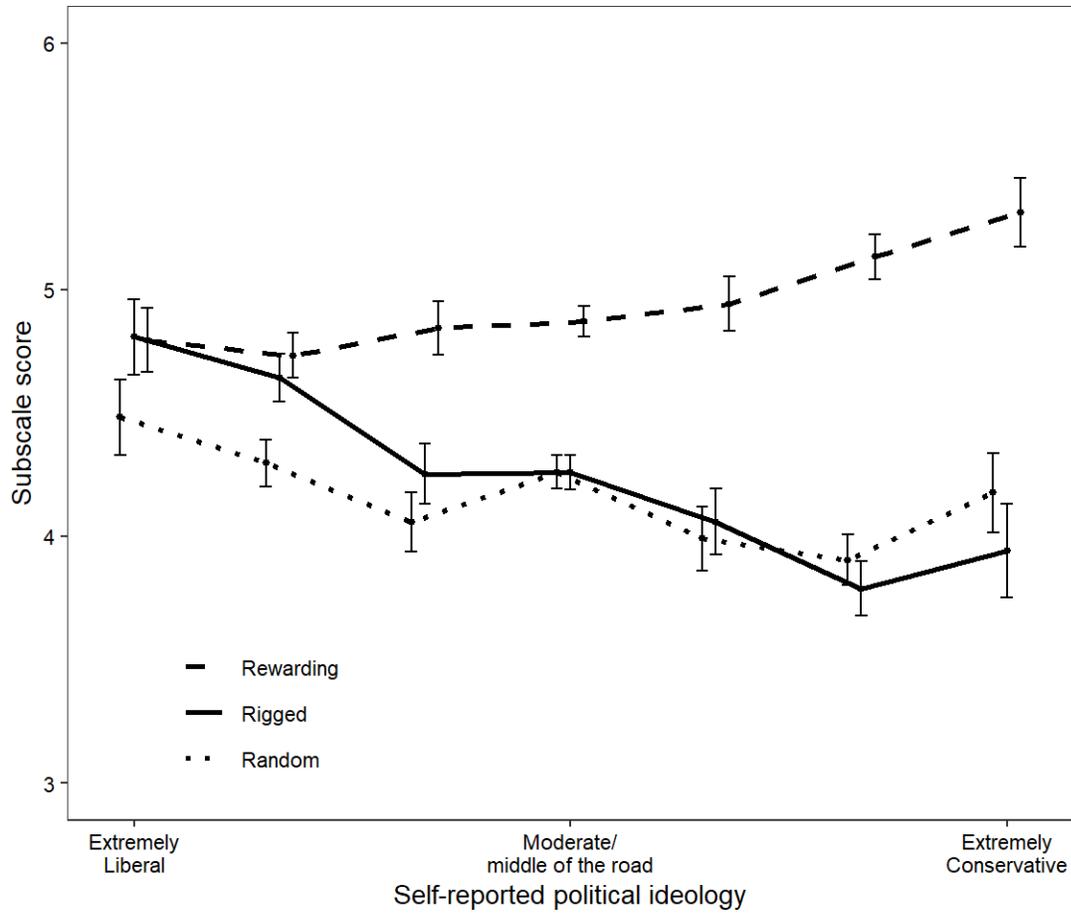
421

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

423 arrows) indicate standardized latent variable covariances.

424 **Figure 2**

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



426

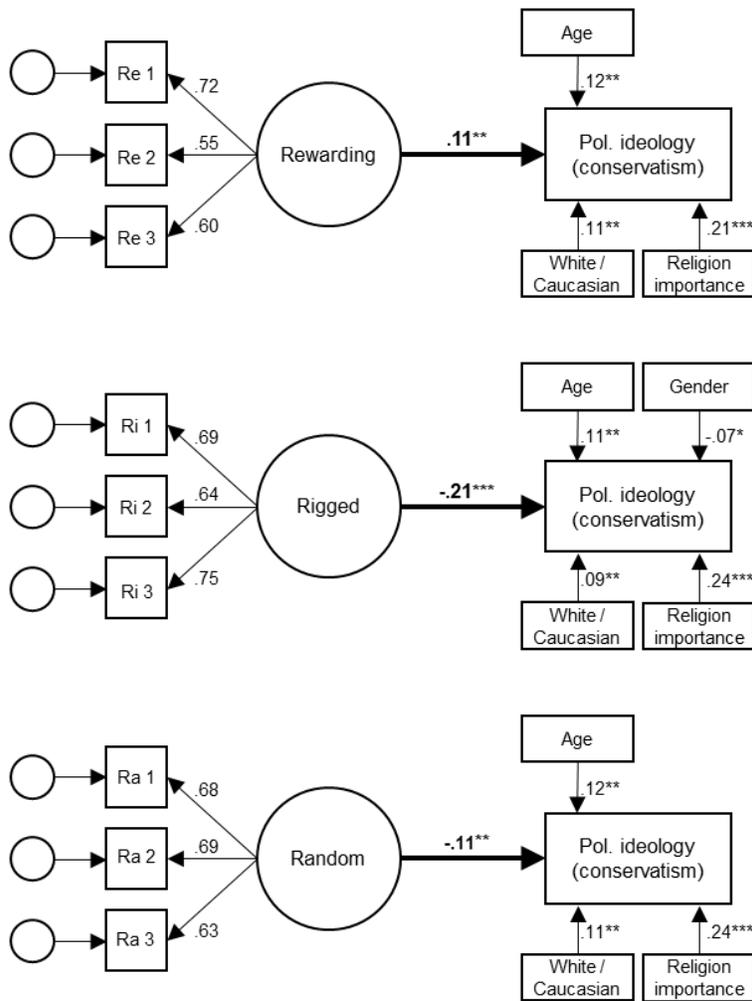
427 *Note.* Bars indicate standard errors.

428

429 **Figure 3**

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

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



432

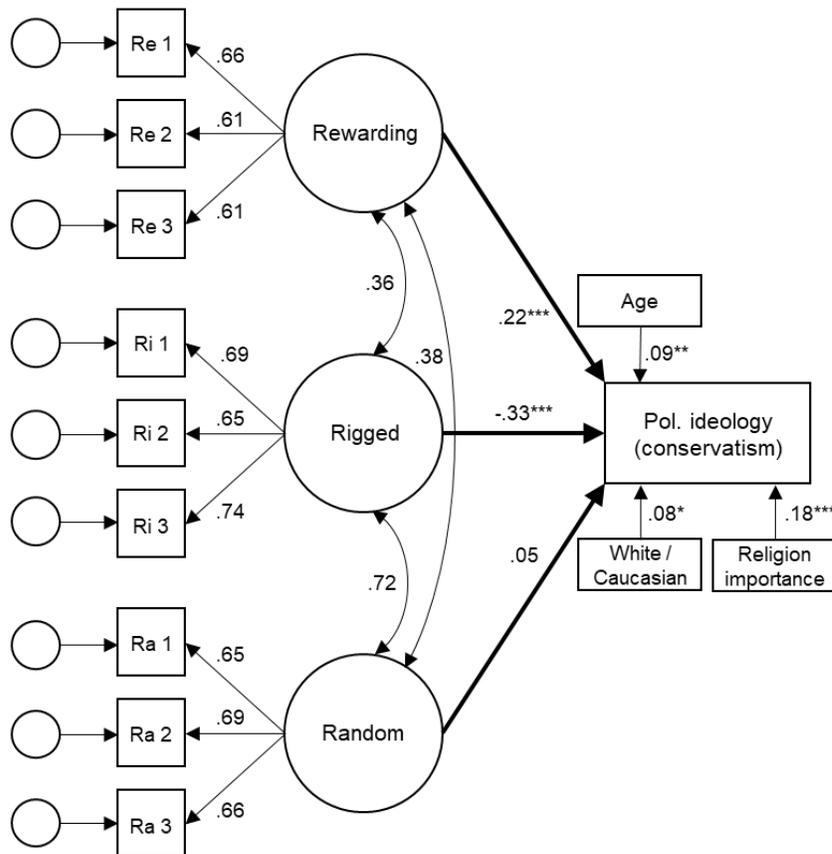
433 *Note.* Numbers on the left indicate standardized factor loadings. Numbers on the right indicate  
 434 standardized regression coefficients for all significant predictors (\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p <$   
 435  $.001$ ). Predictors that were included in the models but were not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

438

439 **Figure 4**

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

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



442

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

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

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

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

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

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

449

450 *Predicting Political Ideology when Controlling for Related Constructs*

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

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

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

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

484 **Table 6**

485 *Study 1 Prediction of Political Ideology (Higher is more Conservative) by CAFU Subscales, Controlling for Social Dominance*

486 *Orientation (SDO) and Right-Wing Authoritarianism (RWA) in Linear Regressions.*

Effect	Model 1			Model 2			Model 3	
	<i>b</i> [95% <i>CI</i> ]	$\beta$	<i>p</i>	<i>b</i> [95% <i>CI</i> ]	$\beta$	<i>p</i>	<i>b</i> [95% <i>CI</i> ]	$\beta$
Rewarding	0.12 [0.04, 0.20]	0.08	.003					
Rigged				-0.19[-0.25, -0.12]	-0.16	<.001		
Random							-0.12[-0.19, -0.05]	-0.09
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
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
Intercept	0.14 [-0.41, 0.70]		.610	1.63 [1.09, 2.16]		<.001	1.17 [0.65, 1.69]	
Observations	1,035			1,035			1,035	
$R^2$	.20			.22			.20	
Adjusted $R^2$	.20			.22			.20	

505 **Table 7**

506 *Study 1 Prediction of Political Ideology (Higher is More Conservative) by CAFU Subscales, Controlling for the Five Subscales of the*  
 507 *Moral Foundations Questionnaire (MFQ) in Linear Regressions.*

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

518 **Table 8**

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

Effect	Model 1			Model 2		
	<i>b</i> [95% <i>CI</i> ]	$\beta$	<i>p</i>	<i>b</i> [95% <i>CI</i> ]	$\beta$	<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

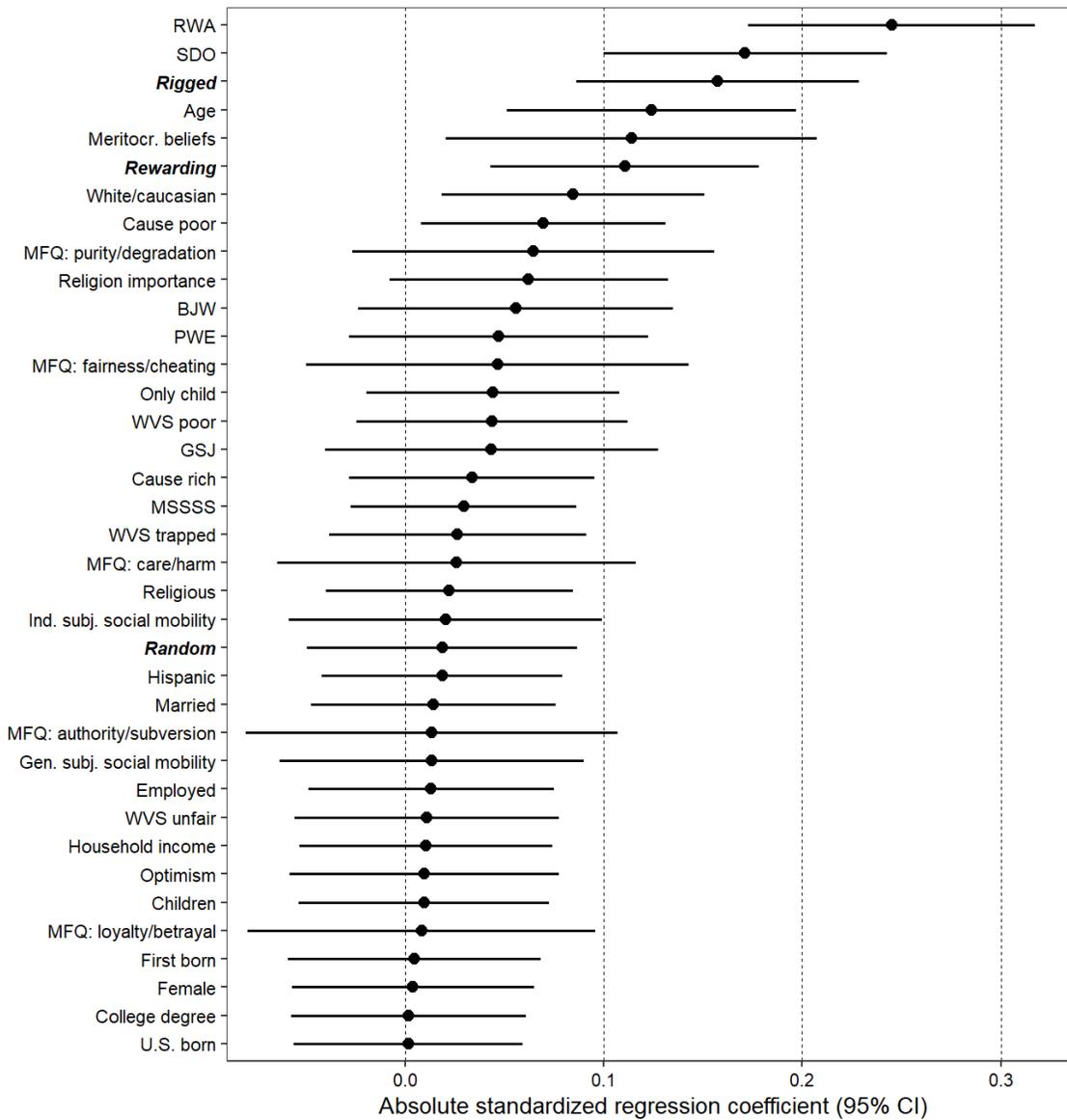
Societal social mobility			0.02 [-0.11, 0.15]	0.01	.733
Individual social mobility			0.03 [-0.09, 0.15]	0.02	.612
MFQ: care/harm			-0.04[-0.19, 0.10]	-0.03	.573
MFQ: fairness/cheating			-0.07[-0.23, 0.08]	-0.05	.344
MFQ: loyalty/betrayal			0.01 [-0.12, 0.15]	0.01	.851
MFQ: authority/subversion			-0.02[-0.17, 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	1,096		958		
$R^2$	.07		.29		
Adjusted $R^2$	.07		.26		

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

526 **Figure 5**

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

528 *Sociodemographic Variables in a Linear Regression.*



529

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

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

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

533 Subjective Social Status.

**534 Discussion**

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

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

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

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

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

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

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

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

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

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

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

622

623 **Table 9**

624 *Prediction of Political Ideology (Higher is More Conservative) by CAFU Subscales and the Interaction with Scale Version (CAFU*  
 625 *Interpersonal versus CAFU Intrapersonal) in a Linear Regression.*

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

639

**Study 2**

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

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

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

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

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

## 669 **Methods**

### 670 *Participants*

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

### 675 *Procedure & Materials*

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

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

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

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

## 692 **Results**

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

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

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

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

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

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

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

730

731 **Table 10**

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

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

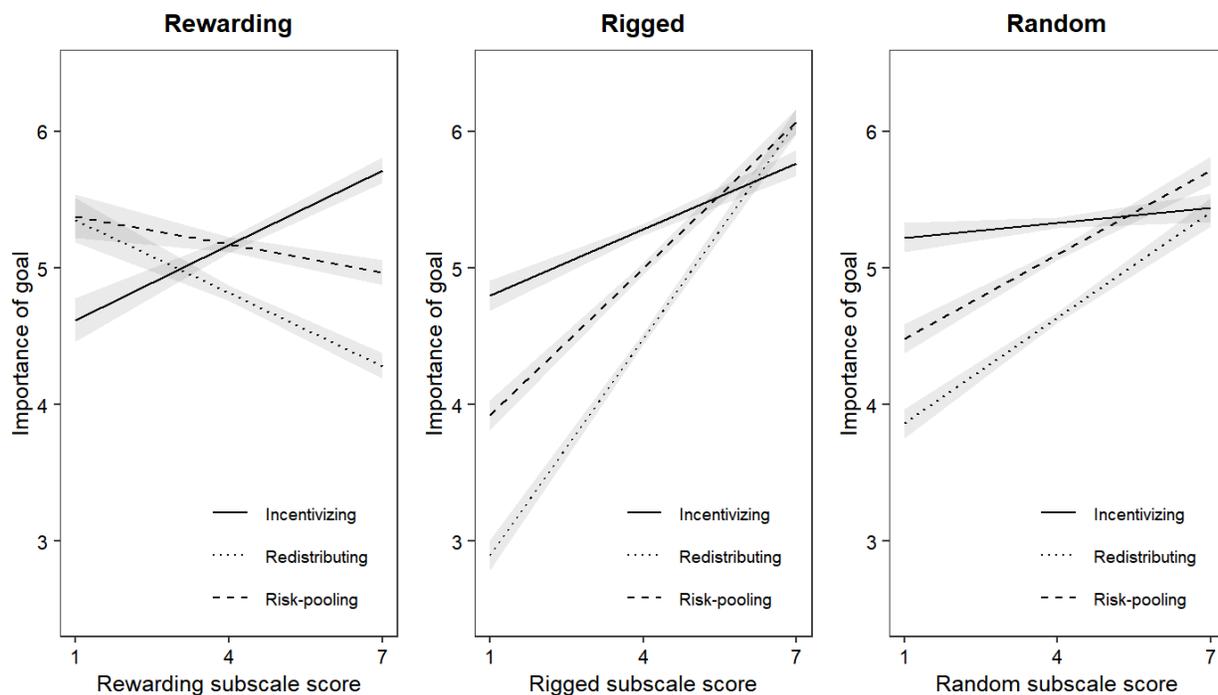
735 *Note.* Shaded rows indicate predicted interactions. Pool. = Risk-pooling goal; Inc. =

736 Incentivizing goal; Red. = Redistributing goal.

737

738 **Figure 6**

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



741

742 *Note.* Bands indicate standard errors.

743

744 **Discussion**

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

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

### 752 **Study 3**

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

### 772 **Method**

773 ***Participants***

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

778 ***Procedure & Materials***

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

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

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

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

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

### 813 **Results**

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

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

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

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

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

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

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

849

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

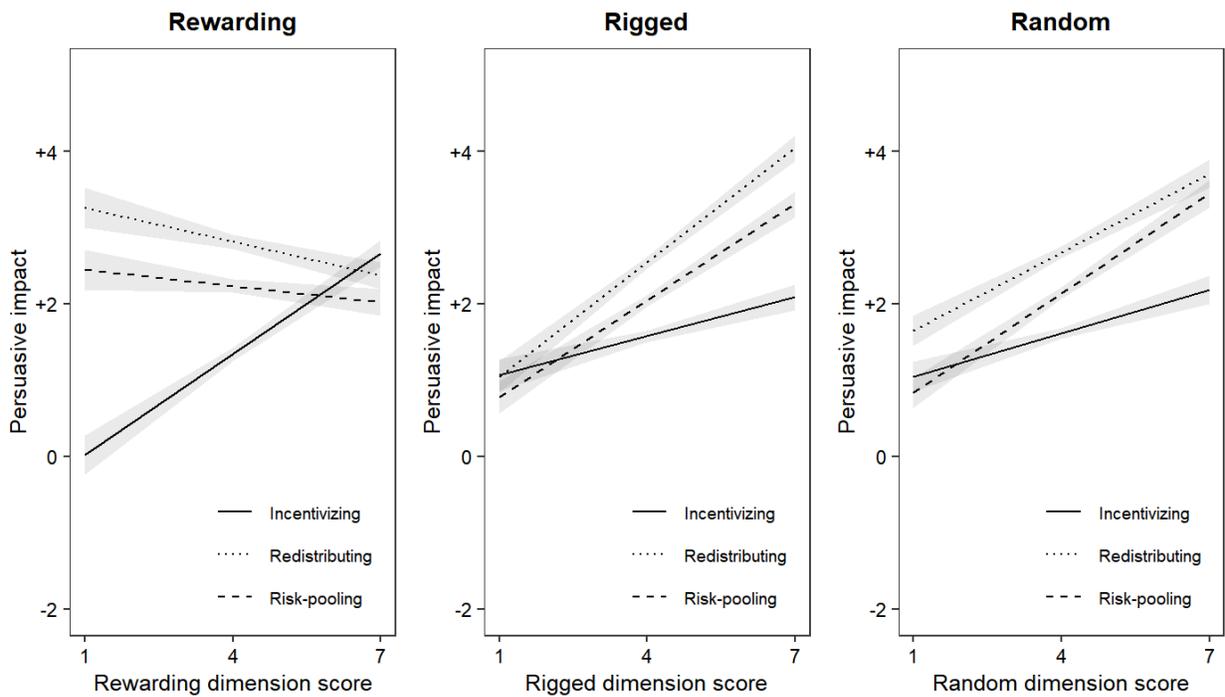
Effect	Model 1			Model 2		
	<i>b</i> [95% <i>CI</i> ]	$\beta$	<i>p</i>	<i>b</i> [95% <i>CI</i> ]	$\beta$	<i>p</i>
Rewarding	0.33 [0.20, 0.45]	0.15	<.001	0.36 [0.23, 0.48]	0.17	<.001
Rigged	0.24 [0.12, 0.36]	0.13	<.001	0.20 [0.08, 0.33]	0.11	.001
Random	0.16 [0.03, 0.28]	0.08	.016	0.16 [0.04, 0.29]	0.08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

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

858

859 **Figure 7**

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



862

863 *Note.* Bands indicate standard errors.

864

865 **Discussion**

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

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

#### 872 **Study 4**

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

#### 877 **Method**

##### 878 *Participants*

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

##### 886 *Procedure & Materials*

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

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

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

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

## 917   **Results**

### 918   *Confirmatory Analyses*

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

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

---

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

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

942

943

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

Effect	Model 1			Model 2		
	<i>b</i> [95% <i>CI</i> ]	$\beta$	<i>p</i>	<i>b</i> [95% <i>CI</i> ]	$\beta$	<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 × Pool. vs. Inc.	-1.11[-1.33, -0.90]	-0.46	<.001	-0.73[-0.95, -0.51]	-0.30	<.001
Rewarding × Red. vs. Inc.	-1.01[-1.23, -0.79]	-0.41	<.001	-0.61[-0.83, -0.39]	-0.25	<.001
Rewarding × Red. vs. Pool.	0.11 [-0.11, 0.32]	0.04	.342	0.12 [-0.10, 0.33]	0.05	.297
Rigged × Pool. vs. Inc.	0.94 [0.74, 1.14]	0.46	<.001	0.50 [0.29, 0.70]	0.24	<.001
Rigged × Red. vs. Inc.	1.04 [0.84, 1.23]	0.50	<.001	0.58 [0.37, 0.78]	0.28	<.001
Rigged × Red. vs. Pool.	0.10 [-0.10, 0.29]	0.05	.345	0.08 [-0.12, 0.28]	0.04	.440
Random × Pool. vs. Inc.	0.31 [0.09, 0.53]	0.14	.005	0.23 [0.03, 0.44]	0.10	.028
Random × Red. vs. Inc.	0.04 [-0.18, 0.26]	0.02	.719	-0.03[-0.24, 0.17]	-0.01	.751
Random × Red. vs. Pool.	-0.27[-0.49, -0.05]	-0.12	.015	-0.27[-0.48, -0.06]	-0.12	.012
Pol. id. × Pool. vs. Inc.				-0.95[-1.12, -0.79]	-0.58	<.001
Pol. id. × Red. vs. Inc.				-0.98[-1.14, -0.82]	-0.59	<.001
Pol. id. × Red. vs. Pool.				-0.03[-0.19, 0.13]	-0.02	.731
Intercept	4.70 [3.60, 5.80]		<.001	2.88 [1.73, 4.04]		<.001
Observations	2,508			2,499		
Pseudo $R^2$ (fixed effects)	.19			.25		

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

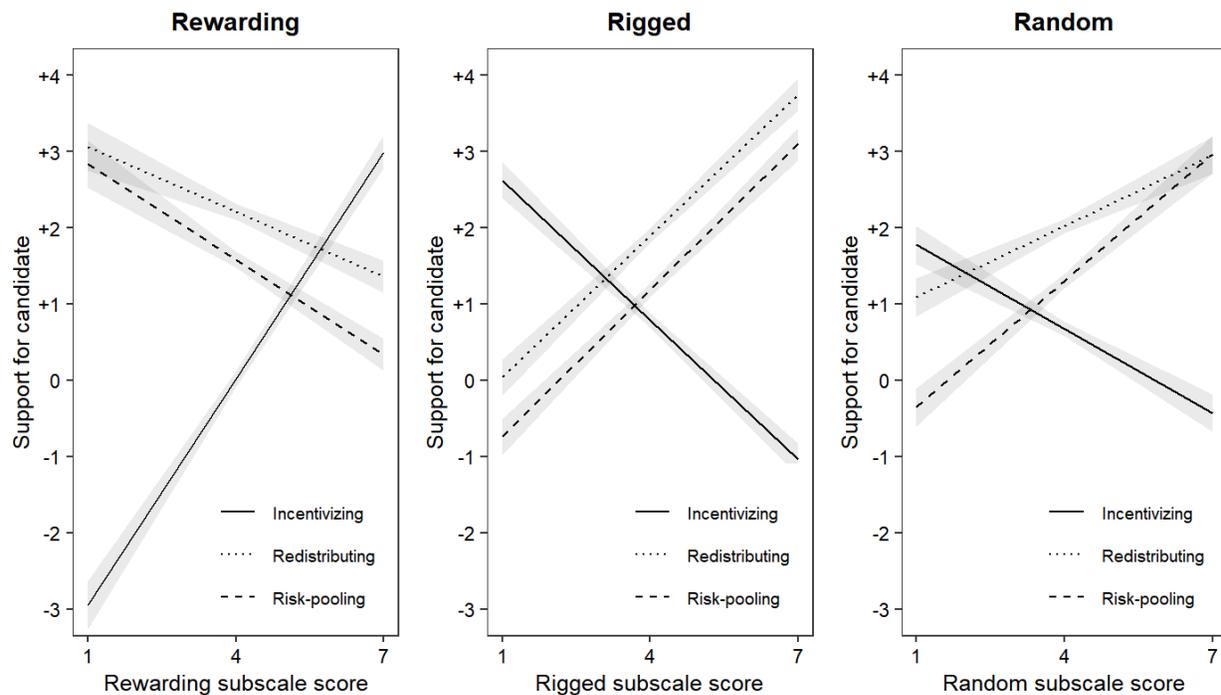
948 Incentivizing goal; Red. = Redistributing goal.

949

950

951 **Figure 8**

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



954

955 *Note.* Bands indicate standard errors.

956

957 ***Exploratory Analyses***

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

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

966

967 **Table 13**

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

Incentivizing candidate						
Effect	<i>b</i>	<i>SE</i>	$\chi^2$	<i>p</i>	OR	95% <i>CI</i> OR
Rewarding	0.47	0.08	38.40	<.001	1.60	[1.38, 1.86]
Rigged	-0.36	0.07	29.58	<.001	0.70	[0.62, 0.80]
Random	-0.18	0.07	6.31	.012	0.84	[0.73, 0.96]
Redistributing candidate						
Effect	<i>b</i>	<i>SE</i>	$\chi^2$	<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>	$\chi^2$	<i>p</i>	OR	95% <i>CI</i> OR
Rewarding	-0.25	0.07	13.65	<.001	0.78	[0.68, 0.89]
Rigged	0.11	0.06	3.10	.078	1.12	[0.99, 1.27]
Random	0.20	0.07	8.33	.004	1.22	[1.07, 1.40]

970

971 **Discussion**

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

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

### 976 **General Discussion**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

### 1123 **Crafting Persuasive Policy Messages**

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

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

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

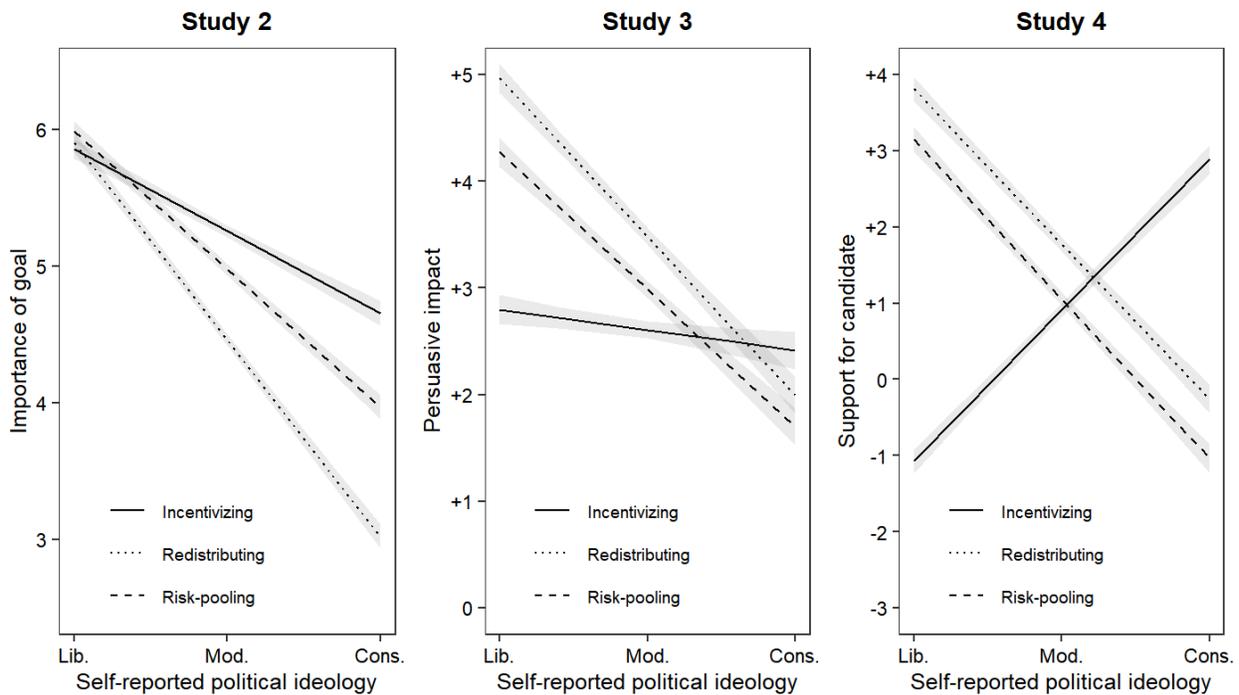
1141         One obvious way of identifying subgroups for tailored messaging opportunities is based on  
1142 political ideology or political party affiliation. As we have shown, conservatives, on average,  
1143 believe that changes in financial well-being are more Rewarding, less Rigged, and slightly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

---

<sup>8</sup> See the Supplemental Material for complete results of these analyses.

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

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



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

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

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

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

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

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

**References**

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