Conceptualizing motivational pathways to political engagement: A test of self-determination theory in the political domain

Alexander Wuttke^{1*}

¹Chair for Political Psychology, University of Mannheim, Mannheim, Baden-Württemberg, Germany

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* Corresponding author

E-mail: alexander.wuttke@uni-mannheim.de (AW)

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Abstract

Why do citizens engage with politics and how can we systemize the various motivational pathways to political engagement? A prominent line of psychological research views human motivation as structured by the degree of perceived self-determination. This study applies self-determination to the political domain and tests the theorized dimensionality of political motivation and its behavioral implications. Specifically, self-determination theory proposes that controlled motivation leads to short-lived and superficial behavior. But when political engagement is enacted

28 out of self-determined motivation (for the pleasure the activity provides or its inherent value) then
29 the behavior should be self-sustained and effortful. Although self-determination theory has proven
30 useful to explain motivation in various life domains, survey data from Germany provide only weak
31 empirical support for the motivational typology in politics. In multiple rounds of data collection,
32 the theorized dimensions of political motivation could not be clearly distinguished from each
33 other. Moreover, despite some evidence for the functional significance of perceived self-
34 determination in the political domain, the theory's predictions received no consistent empirical
35 support. This study informs scholars of self-determination theory about the theory's boundary
36 conditions and scholars of political participation about theoretical dead-ends and avenues of
37 future research.

38

39

40 **Introduction¹**

41 We all look alike when casting a ballot at the voting booth. We take up a pen, tick a cross, post the
42 ballot and leave. Yet, despite the seeming similarity when conducting this and other forms of po-
43 litical engagement citizens differ considerably in the motives that led them to political action. Be-
44 cause the reasons for why we engage in politics differ, how we do so also differs. When a person
45 considers voting a sacred act of great importance, then she might take her time and consider
46 closely where to tick the cross. If a person perceives voting as an unpleasing chore, she might cast
47 the vote within seconds to quickly revert to what she actually values doing with her spare time.
48 Hence, this paper develops the proposition that discernable reasons for political action exist and
49 that these distinct motivations determine whether and how individuals engage with politics.

50 The motivational typology of political engagement developed in this study aims to shed
51 new light on the various predictors that previous research has identified as conducive to political
52 engagement: Among other motivators, identity, social pressures, utility calculations, habits and
53 mobilization efforts were shown to energize citizens into political engagement (1,2). Yet, despite
54 the vast number of proposed pathways that lead citizens to political action, a systemizing frame-
55 work of political engagement's motivational underpinnings is missing, and we thus do not have a
56 good understanding of how the factors go together, how they differ and how they resemble each
57 other. Instead of adding yet another piece to the puzzle, this study thus tries to take stock, to zoom
58 out, and to bring order into the various motivational pathways to political engagement.

59 One reason for the lack of such a framework is that no self-evident criterion is apparent to
60 discern different types of behavioral regulations. Here, political science could benefit from the field
61 of motivation science which studies the reasons that move people into action. Self-determination
62 theory, one of the most influential psychological theories about the motivational underpinnings of
63 human behavior (3), considers the degree to which actors subjectively experience their behavior
64 as self-determined as the central determinant of whether and how people act. Based on that

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65 premise, a vast literature has repeatedly shown that in various domains of life perceived self-de-
66 termination structures how individuals engage in a behavior and whether they will re-engage with
67 it in the future (4–7). By importing a theoretically meaningful criterion that has proven useful for
68 discerning motivators in other life domains, the principle of perceived self-determination may
69 help to help structure the myriad of predictors of political engagement that the political science
70 literature has identified. Moreover, the criterion of perceived self-determination and its associated
71 theoretical edifice provides a unique explanatory lever as it helps predict how each behavioral
72 regulation fuels distinct modes of carrying out an activity. In particular, self-determination theory
73 posits that more autonomous reasons for action lead to more self-sustained types of engagement
74 that are conducted more effortfully while more controlled forms of engagement are conducted
75 more superficially and are more context-dependent.

76 Even though SDT has been applied extensively across scientific disciplines (4–7), the theory
77 and its conceptual toolbox are hardly acknowledged in research on political engagement (but see
78 8). Early attempts by psychologists to develop SDT measures for the political domain (9–11) did
79 not gain traction and no efforts were undertaken to systematically assess the value of self-deter-
80 mination theory for the study of political engagement. That political science and other scholars on
81 political engagement have neglected SDT is surprising considering the importance of self-deter-
82 mination as a central concept in classical (12) and contemporary (13) theorizing of politics. Paying
83 tribute to the concept’s relevance in political theorizing and the demonstrated utility of the crite-
84 rion of self-determination to differentiate motivations in other sciences, this study will rely on SDT
85 to devise a typology of political motivation and to test its usefulness to systemize and predict
86 whether and how citizens engage with politics.

87 In devising the typology of political motivation, this article will proceed in several steps.
88 First, based on a review of attempts to classify motivational pathways to political action, I will
89 argue that self-determination theory may provide theoretical import to the study of political par-
90 ticipation by providing a typology that systemizes existing motivational pathways. Moreover, ap-
91 plying the theory on the political domain enables to derive novel hypotheses to explain whether
92 and how citizens will engage with politics based on their level and type of motivation towards the
93 political domain. To test whether SDT’s account of human motivation can account for citizens’

94 reasons for political engagement, in three studies with survey data from Germany I develop, test
95 and revise a novel measure of political motivation as a multi-dimensional construct. This scale of
96 political motivation was embedded in multiple longitudinal and cross-sectional surveys with ob-
97 servational and experimental elements and tested with self-reported and behavioral measures of
98 political engagement.

99 The results indicate that the SDT-inspired motivational typology of human motivation cap-
100 tures some of the motivational pathways to political action but, altogether, the original and a re-
101 vised measure of political motivation failed to delineate distinct types of motivation as suggested
102 by self-determination theory. In terms of predictive validity, there is some evidence for a role of
103 perceived self-determination in determining whether and how citizens engage with politics. Yet,
104 the findings are mixed and do not replicate with the revised motivation battery. Also, further anal-
105 yses suggest that measurement confounding due to the reliance on self-reports for both outcome
106 and explanatory variables may have induced spurious correlations that do not reflect meaningful
107 properties of motivation. Altogether, while providing tentative evidence for a functional signifi-
108 cance of self-determination in political engagement, envisaging of motivation along the long the
109 lines of self-determination theory does not systemize or explain behavior in the political domain
110 as well as in other areas of life.

111

112 **Pathways to Political Engagement**

113 Typologies are useful for their complexity-reducing functions as they “carve up the uni-
114 verse into comprehensive, mutually exclusive, and hierarchical categories” (14). Systemization at-
115 tempts are particularly useful when scientific literatures entail vast numbers of similar concepts.
116 The literature on political engagement is such a case where 176 distinct concepts were identified
117 to explain but one form of political engagement, voter turnout (15).²

118 When typologies are based on theoretical principles, delineating entities in a systematic
119 way can provide conceptual import because they enable theory-driven predictions about how

² Political engagement entails all kinds of attention and activities that are directed towards the polity (16).

120 entities in particular categories behave differently than others. Such systemization attempts exist
121 on the antecedents of political engagement but each of them comes with shortcomings.

122 In the following, I will briefly discuss existing systematizations to then demonstrate how
123 each of them can be mapped on a new, SDT-inspired typology of political motivation. To simplify
124 the discussion, I will focus on the political participation subliterature that considers the role of
125 norms in fostering political engagement. Because norms feature prominently in electoral studies'
126 seminal studies (17–19) and have taken center stage ever since (1,2), the literature on norms
127 serves as an illustrative case for the multiplicity and ambiguity of motivational pathways to polit-
128 ical engagement.

129 One attempt to bring order into the predictors of norm-abiding behavior in the political
130 domain is to distinguish between external and internal motivators (20). On the one hand, influ-
131 ences from the environment can affect behavior such es the expectations of friends to join for a
132 political activity (21–24). On the other hand, norm-abiding behaviors may originate from pres-
133 sures within oneself. Mediated through systems of emotional sanctioning (25,26) such as feelings
134 of guilt or shame (27,28) such internal pressures may arise when, for instance, a person realizes
135 that she has not lived up to her duties as a good citizen (Blais and Daoust, 2020). What we can take
136 away from this systemization attempt is the idea to differentiate norm-abiding behaviors in the
137 political domain that either have origins outside or within the actor. Still, the typology's conceptual
138 clarity is limited because any motivating influence must be processed internally to elicit behavioral
139 outcomes. Ultimately, all behavior therefore has internal antecedents which questions the explan-
140 atory value of separating internal from external influences.

141 Another systemization attempt distinguishes between instrumental and expressive moti-
142 vators (29). Instrumental considerations play a role when citizens weigh the (social) costs and
143 benefits associated with norm transgressions such as abstaining from voting (23). These instru-
144 mental motivations can be distinguished from pleasure-driven activities such political hobbyism
145 (30) for which no instrumental outcomes materialize beyond the rewards that are inherent to the
146 behavior itself (2,31). What we can take away from this systemization attempt is the idea to dif-
147 ferentiate behaviors that are inherently valuable from other forms of motivators. Still, contrasting
148 instrumental with, by implication, non-instrumental behaviors is a blurry distinction because all

149 behaviors have some subjective value to the actor if the action is the result of a conscious choice
150 (32,33).

151 A final attempt to systemize norm-abiding behaviors is to distinguish between activities
152 that we want to engage in and activities that we have to engage in (34). Wanting-to-motivation
153 subsumes behaviors like joining in a protest movement for the psychological rewards such as
154 pride (31), activities that are enacted out of moral conviction (35) or moral imperative (36) or any
155 form of identity expression for political purposes (37). Activities are driven by having-to-motiva-
156 tion when we they are driven by fear of social sanctions or legal punishments (27). What we can
157 take away from this systemization attempt is the importance of self-endorsement as opposed to
158 external enforcement of one's action. Wanting-to-behaviors may be understood as reflecting the
159 actors' internal preferences while having-to-activities contradict personal preferences and are en-
160 acted for reasons that are outside one's control. In this vein, wanting-to and having-to motivation
161 mirrors the distinction between internal and external motivations, entailing similar issues of un-
162 clear concept boundaries.

163 One problem of these classification attempts is the reliance on seemingly objective proper-
164 ties, such as whether particular behavioral regulations have internal/external (38) or instrumen-
165 tal/expressive (29) properties. In contrast, most motivation theories (39,40) including self-deter-
166 mination theory (3) adopt a phenomenological perspective on motivation. Phenomenology posits
167 that human beings may experience identical situations in a different way. Trying to understand
168 human behavior as it is subjectively experienced by the respective agents avoids the need for as-
169 sumptions about individual perceptions of a given situation. This approach circumvents classifi-
170 cation problems that arise when it is not self-evident how individuals perceive a certain situation
171 with certain objective properties.

172 Systemizing motivation from a phenomenological perspective looks at the differences in
173 individual experiences for a given type of activity. From this perspective, we can then also investi-
174 gate whether subjective experiences are associated with how and how often individuals carry out
175 an activity.

176 According to self-determination theory (3), the degree of perceived self-determination (or
177 autonomy) is the central dimension of human motivation. SDT's main thrust is that human beings

178 do not like feeling controlled and helpless but rather want to act volitionally, that is in line with
179 their inner sense of selves. Specifically, self-determination is described as experiencing “an action
180 [as fitting] with interests and integrated values that one is wholeheartedly behind” (3). From this
181 perspective, some activities are highly autonomous which entail the experience of self-endorse-
182 ment and self-initiation. Highly controlled behavior entails feelings of pressure that are beyond
183 one’s control. Self-determination theory thus posits that human motivation is structured and may
184 be systemized by the degree of self-determination a person experiences when carrying out an ac-
185 tivity (3).

186 Along the continuum of perceived self-determination from more controlled to more auton-
187 omous motivation, SDT distinguishes four types of behavioral regulations (Figure 1). On the lower
188 end of the self-determination continuum is external motivation which denotes classical incentiv-
189 izing in the forms of sticks and carrots. These motivating stimuli may come in a friendly (rewards)
190 or unfriendly (sanctions) fashion and they may be exerted by diverse agents such as friends or
191 parents or institutional arrangements. Still, the common characteristic of external motivation is
192 the perception of acting in reaction to influences outside one’s control. Introjected motivation also
193 drives through motivational systems of sticks and carrots. But these pressures have internal ori-
194 gins through feelings of shame or pride. They resemble the ‘tyranny of the shoulds’. As it reflects
195 partial internalization of previously external demands, introjected motivation is experienced as
196 slightly more autonomous. However, because introjected motivation results from incomplete in-
197 ternalization it has been described as swallowing regulations without digesting (41). Ordered
198 even higher on the continuum of self-determination, identified motivation reflects deeper inter-
199 nalization. Identified motivation flows from norms and values that were previously alien to oneself
200 and which are now consciously self-endorsed and integrated into one’s sense of self. Finally, in-
201 trinsic motivation – the highest level of self-determination – does not require internalization. In-
202 stead of abiding by norms or pressures, intrinsically motivated behaviors are enacted for their
203 inherently satisfying conditions. While for practical purposes SDT scholars often group the behav-
204 ioral regulations at the lower (controlled motivation) and the upper end of the continuum of per-
205 ceived self-determination (autonomous motivation), all in all this motivational typology thus al-
206 lows to distinguish four conceptually distinct reasons for actions.

207 **Figure 1. Types of Motivation on the Continuum of Relative Autonomy.**

208

Overview of the four types of motivations with illustrative examples in the political domain. Controlled and Autonomous Motivation refer to frequently employed groupings of motivation.

209

210 The SDT-typology of human motivation has proven useful in other domains of life, but
211 should we expect it to also apply to politics? According to self-determination theory, motivation is
212 rooted in basic psychological needs and deeply engrained in processes of social-psychological
213 functioning (3). Because these psychological needs are considered universal across time and cul-
214 ture (42), SDT implies a broad scope of the typology of motivation. Notably, tentative evidence
215 suggests that basic need satisfaction also matters in the political domain as need satisfaction have
216 been shown to correlate with citizen’s political orientations (8,43,but see 44). These findings may
217 indicate that the foundational processes that were theorized to underlie the SDT-inspired typology
218 may also be at play in the political domain.

219 Nonetheless, even if the psychosocial underpinnings proposed by self-determination the-
220 ory also apply to the political domain, acting in the political domain may be so distinct from be-
221 havior in other life domains that the motivational processes towards political engagement are

222 unique and pose an exception to the theory's general scope. While plausible, this argument would
223 go against a line of reasoning in the political participation literature that explicitly does not con-
224 sider political engagement a behavior of its own type but tries to understand political engagement
225 by building upon better-understood phenomena from other life domains (30).

226 Some characteristics of the political domain suggest that the SDT-typology of motivation
227 may even be particularly well suited to map onto political engagement. As discussed above, norms
228 are pervasive in the political domain and play a central role in energizing people into political ac-
229 tion. Fittingly, the SDT-typology of human motivation provides a framework to account for the
230 motivation impact of formal and informal norms as it distinguishes three distinct pathways
231 through which norms may fuel action. Consider the voting norm as an example that can energize
232 political engagement through different motivational pathways. Some voters perceive the civic duty
233 of voting in terms of a "moral imperative" (36). Applying the SDT-typology, these voters can be
234 seen as driven by identified motivation who engage in self-endorsed behavior that accords with
235 their integrated values. The voting norm may also be at play when canvassers threaten to inform
236 neighbors about one's abstention from voting (28). In this case, the voting norm would likely acti-
237 vate external motivation. In yet another instance, the voting norm may have been partially inter-
238 nalized and thus lead to voter turnout through introjected motivation by feelings of shame or
239 pride. Hence, the SDT-inspired typology provides a conceptual framework to delineate the various
240 pathways to norm-abiding political behavior which is a central determinant of political engage-
241 ment.

242 Another piece of evidence for the applicability on politics becomes clear when attempting
243 to map the previously discussed systemization attempts of political motivation onto this new ty-
244 pology. Offering a more fine-grained distinction of "external" or "internal" motivators, the SDT ty-
245 pology considers different degrees to which a previously external demand has been taken in by
246 the actor, ranging from external over introjected to identified motivation. Superseding the distinc-
247 tion of "expressive" and "instrumental" behaviors, under the label of intrinsic motivation the new
248 typology retains the class of expressive behaviors that are enacted for their own sake. Notably, in
249 this conception intrinsic motivation differs from "instrumental" motivators such as monetary re-
250 wards or social sanctions not by the absence of any tangential value (because experiencing

251 pleasure also has psychological value). Instead, intrinsic motivation is character-
252 ing a higher degree of self-determination when engaging in intrinsically motivated behaviors com-
253 pared to rewards or social sanctions that are often experienced as more controlling. Finally, the
254 distinction of having-to- and wanting-to-motivation is reflected in the continuum of self-determi-
255 nation which embodies the degree to which individuals perceive themselves as being in control of
256 their actions. Overall, previous attempts to systemize political action map onto the new motiva-
257 tional typology while the typology also helps overcoming some of their conceptual problems.

258 All of these arguments give reason to believe that the SDT typology may help to grasp mo-
259 tivation in the political domain. To validate this claim empirically, we can test whether the theory's
260 propositions on the structure of human motivation reflect how citizens engage with politics. One
261 core proposition of self-determination theory is the continuum structure of motivation (45). Based
262 on the tenet that the four types of motivation can be ordered meaningfully on a continuum of self-
263 determination, SDT posits that conceptually close behavioral regulations correlate more strongly
264 with each other than types of motivations that are conceptually more remote on the continuum of
265 self-determination.

266 ***Continuum hypothesis:*** *The correlation between the levels of political motivation is stronger*
267 *between conceptually close than between remote types of motivation.*

268

269 Importantly, the introduction of the new typology is not merely a conceptual exercise. It enables
270 to derive testable predictions of whether and how a person engages with politics, depending on
271 their motivational propensities. The law of low effort (46) suggests as a general principle that in-
272 dividuals will choose the more effortless route from multiple behavioral options to achieve a par-
273 ticular goal. With the SDT typology at hand, we can qualify these expectations.

274 When citizens are driven by introjected or external motivation, the law of low effort should
275 apply and individuals will invest no more efforts than they consider necessary to comply with the
276 internal or external pressures that animated the action in the first place. Things stand differently
277 for identified or intrinsic motivation. When the behavior itself is the goal, it makes less sense for
278 individuals to minimize their engagement in doing what they like. Hence, the less self-determined

279 one's motivation the more a person is inclined to minimize efforts when conducting a particular
280 behavior.

281 In the political domain, one dimension that illustrates the role of differences in effort is cog-
282 nitive involvement. It is not hard to imagine a news junkie who enjoys politics (intrinsic motiva-
283 tion) and is glued to the television when a presidential debate is aired. On the other hand, a student
284 in civic education class who is required to watch the same debate (external motivation) may only
285 hope for the class to end, paying scant attention to what happens on the screen. In this vein, indi-
286 viduals who engage with politics predominantly for controlled reasons (external and introjected
287 motivation) should exhibit more superficial processing of political information whereas autono-
288 mous reasons for engagement (intrinsic and identified motivation) should stimulate deeper cog-
289 nitive involvement with politics.

290 ***Deep engagement hypothesis:*** Higher vs. lower levels of controlled types of motivation are
291 associated with more shallow processing of political information while higher vs. lower levels of
292 autonomous motivation is associated with deeper processing of political information.

293
294 Besides predicting the quality of political behavior, the SDT typology implies predictions about the
295 quantity of political behavior. The more self-determined a person's motivation to engage with pol-
296 itics the more self-sustained the activity will be. Because intrinsically motivated behaviors are en-
297 acted for their own rewards, no additional (e.g., external) motivational stimulus is required to en-
298 ergize citizens into political engagement. Therefore, individuals with high levels of intrinsic polit-
299 ical motivation will seek political encounters more frequently than citizens who do not find joy in
300 politics.

301 The implications of external motivation for the frequency of political engagement are indi-
302 rect. Because external motivation reflects one's susceptibility to external stimuli, high levels of ex-
303 ternal motivation will only elicit behavioral responses when an external stimulus is present. Be-
304 cause the behavior will fade away once the external incentive is no longer active, political behavior
305 based on external motivation is less self-sustained and more context-dependent compared to be-
306 havior fueled by intrinsic political motivation.

307 **External motivation hypothesis:** *External motivation has no independent effect on engage-*
308 *ment but moderates the influence of situational stimuli on political engagement.*

309 **Autonomous motivation hypothesis:** *Higher levels on autonomous types of political moti-*
310 *vation compared to low levels of motivation are associated with higher frequencies of political en-*
311 *gagement.*

312

313 **Empirical Findings**

314 **Study I**

315 **Measures**

316 **Political Motivation.** The development of a political motivation scale drew from evidence
317 on the measurement of motivation in the tradition of self-determination theory. Instruments to
318 assess motivation usually rely on respondents' self-reported introspections regarding the motives
319 for engaging in specific behaviors (4–7,47). Although self-reports are subject to biases (48), they
320 remain the standard paradigm for assessing motivation for its distinct capacity to tap into the re-
321 spondents' subjective experience which is essential to the phenomenological perspective on mo-
322 tivation.

323 In terms of question structure and question-wording, the political motivation scale was
324 modeled after previous attempts to measure political motivation (9–11) and validated SDT-scales
325 in other life domains (4–7,47). All of these scales ask respondents to rate the degree to which dif-
326 ferent reasons for enacting particular behaviors apply to them. Using this approach on political
327 engagement, respondents were given a list of reasons for political engagement, and they rated the
328 applicability of each of these reasons to make them engage with politics.

329 Asking respondents to rate the reasons for an activity requires to specify a target behavior.
330 Yet, although political behavior takes many forms, we are interested in motivation to engage with
331 politics generally. This measurement of political motivation is therefore based on the assumption
332 that each manifestation of political motivation may have its specificities but that there is an under-
333 lying motivation to engage with the political domain. Motivation to engage with a specific mani-
334 festation of political behavioral therefore reflects the latent motivational propensity to engage

335 with politics. Based on this idea, respondents were asked about three specific forms of political
336 engagement that capture various aspects of political engagement: electoral participation, uncon-
337 ventional participation, political news consumption. These behaviors were selected to cover both
338 active and passive as well as more and less prevalent forms of engagement (16).

339 To assess political motivation as a multi-dimensional concept, each of the reasons that the
340 respondents rated reflects one of the four dimensions of political motivation (sample item for in-
341 trinsic motivation: *"it always provides a good feeling when I do it"*, introjected: *"you are supposed to*
342 *do it, even if you are not in the mood for it"* identified: *"it is part of what defines me as a person"*,
343 External: *"otherwise, others would look down on me"*). With four dimensions of political motivation
344 and three specific forms of behavior for which motivation was queried, we arrive at a 12-item-
345 scale (see Appendix 1 for full scale). For example, to query identified motivation towards electoral
346 participation, respondents indicated the degree to which the following statement applied to them
347 on a 5-point scale: *"If I decided to go to vote and to cast a ballot at the next elections, I would do so*
348 *because... thereby I act according to my principles"*.

349 **Hypothetical Participation in an Election.** The survey included a vignette experiment
350 which was designed to assess the proclivity to participate in hypothetical elections. One vignette
351 that manipulated the presence of social influences is well suited to test the *external motivation*
352 *hypothesis*. In this vignette, respondents in the treatment group were informed that friends invited
353 them for a spontaneous dinner shortly before the closing of the polls. These friends suggested to
354 rather skip voting this time around. Respondents in the control group received no social cues
355 about voting.³ Self-reported probability to participate in the hypothetical election was measured
356 on a scale from 1-11 (see Appendix 2 for details).

357 **Cognitive Processing of Political Information.** To test the *deep engagement hypothesis*, an
358 unweighted summary index was created that reflects cognitive styles regarding the processing
359 political content. It consists of five items: one item on the need to evaluate, one item on the need

³ The factorial survey experiment contained additional vignettes (see appendix 2). The remaining vignette failed to in-
duce main effects on the dependent variable. Analyses on the moderating role of motivation are, therefore, not re-
ported in the main text for those vignettes.

360 for cognition, and three items on inclinations for deep cognitive involvement with political issues
361 (see Appendix 3).

362 **Participants**

363 The political motivation scale was included in Survey 33 of the Long-Term Online-Tracking of the
364 German Longitudinal Election Study. The Online-Tracking study draws respondents from forsa
365 omninet, a heterogeneous online panel whose participants were recruited through telephone in-
366 terviews. The realized sample of 1,023 completed interviews resembles the German online popu-
367 lation on socio-demographic variables (for details, see 49).

368

369 **Results**

370 Before testing the behavioral hypotheses on the consequences of political motivation, in a first
371 step, it is necessary to establish the validity of the political motivation measure. To do so, I assess
372 whether the observed structure of political motivation matches the tenets of self-determination
373 theory. To test for the theorized patterns of motivation among the respondents, I apply explora-
374 tory structural equation modeling (ESEM, 50).

375 ESEM resembles the theory-driven approach of confirmatory factor analysis while relaxing
376 the often-unrealistic assumption that indicators load on only one but not the other model factors.
377 ESEM has become particularly popular in motivation science where it is widely acknowledged that
378 motivational types can be distinguished conceptually but that, empirically, self-reported motiva-
379 tion items are not as clear-cut (4,51).⁴ One would therefore not expect the absence of cross-load-
380 ings but rather expect theory-consistent loadings patterns that reflect the continuum of self-de-
381 termination. For instance, indicators of intrinsic motivation may load onto the adjacent category
382 of identified motivation but should be clearly distinguishable from external motivation which lies
383 at the other end of the self-determination continuum.

⁴ ESEM is rotationally interdeterminant, i.e. the patterns of cross-loadings may vary between rotational methods. Here, Geomin rotation was applied. The results are substantially identical when quartimin-rotation is used.

384 Table 1 reports ESEM findings on the dimensionality of citizen's motivation to engage in
 385 politics. For each item, the grey cell indicates the target dimension the item was intended to meas-
 386 ure. Bold font indicates statistically significant factor loadings at the 0.05 level.

387 **Table 1. ESEM factor loadings, full model.**

	Intrinsic	Identified	Introjec- ted	External
Intrinsic				
<i>Unconv.</i>	0.91	0.09	-0.01	0.04
<i>Electoral</i>	0.07	0.84	0.06	0.7
<i>News</i>	0.08	0.09	0.77	-0.14
Identified				
<i>Unconv.</i>	0.94	-0.03	0.10	-0.04
<i>Electoral</i>	0.07	0.82	0.03	-0.20
<i>News</i>	-0.01	-0.06	1.04	0.06
Introjected				
<i>Unconv.</i>	0.32	0.12	0.03	0.38
<i>Electoral</i>	-0.12	0.98	-0.07	0.02
<i>News</i>	0.01	0.12	0.21	0.54
External				
<i>Unconv.</i>	0.11	-0.05	-0.04	0.43
<i>Electoral</i>	0.02	-0.06	-0.08	0.42
<i>News</i>	-0.12	0.04	0.12	0.62
<i>Goodness of Fit</i>				

<i>CFI</i>	0.967
<i>TLI</i>	0.909
<i>SRMR</i>	0.022
<i>RMSEA</i>	0.060

Note: Standardized factor loadings of an exploratory structural equation

model in MPLUS 6.11; Geomin-rotation; N=1.019; A priori target load-

ings designed to measure each factor are shown on grey background;

Loadings with $p < 0.05$ are shown in bold face. Correlation between intr-

ident: 0.32, intr-intro: 0.41; intr-ext: 0.05; ident-intro: 0.47, ident-ext: -

0.04; intro-extr: -0.04.

We first turn to goodness of fit indices which report about the match between the theoretically informed specification of a 4-dimensional factor structure and the empirically observed correlations between the twelve indicators. Rules of thumb (Marsh et al., 2004) suggest that Tucker-Lewis Index (TLI) and Comparative Fit Index (CFI) values greater than .9 and .95 indicate acceptable and excellent fits to the data. For Standardized Root Mean Square Residual (SRMR) and Root Mean Square Error of Approximation (RMSEA) values smaller than 0.08 and 0.06 indicate acceptable and good model fits. Against these benchmarks, the goodness of fit indices for this model (CFI: 0.967, TLI: 0.909, RMSEA: 0.022, SRMR: 0.060) are encouraging, often indicating an excellent fit of the specified model to the data. Yet, closer inspection of the loading patterns suggests deeper problems as these model fit partly represent loadings in unexpected directions.

If self-determination structures how citizens engage with politics, that is if some citizens are driven by autonomous reasons for political engagement while controlled motives determine political behavior for other citizens, then we would expect indicators to load strongly and significantly on their respective target factors, to load weaker on theoretically adjacent factors and to exhibit barely any or negative loadings on factors at the other end of the continuum of relative autonomy.

Table 1 shows that minimal requirements of a proper loading structure are violated in several cases; many items show no strong loading on their target factors. For instance, only one of the

three indicators that were intended to reflect intrinsic motivation for political engagement loads on the specified intrinsic factor whereas the remaining indicators load more strongly on other factors. Only for external motivation we observe consistent positive loadings from the factor's specified indicators. The loading patterns are most problematic with regards to introjected motivation where all target loading are below 0.32 which is considered a minimal loading size (52). Hence, for this model specification, the four dimensions of political motivation are not well reflected by the available indicators.

Because indicators do not always load strongly on the target concepts, cross-loadings are more pervasive than expected. Yet, the substantive patterns exhibit some resemblance with the hypothesized continuum structure of motivation. In several cases the cross-loadings point to conceptually adjacent factors which lends some credence to the notion that the principle of self-determination plays some role in structuring political motivation.

Summarizing the psychometric evidence, there is only a partial match between the observed data on citizens' motives for political engagement with the theorized typology of political motivation. These deficiencies could indicate substantive issues with the theory or issues with the chosen model specification. Unfortunately, because each factor is represented by only three indicators, there is not much for room for scale optimization by removing improper items which is a standard strategy in scale development (53). As one indicator ('Identified – news') was entirely off expectations (statistically significant negative loading on its target factor and strong cross-loading), it was removed in a revised measurement model to see whether that item conflated the loading structure of the remaining indicators.

ESEM results reported in Table 2 show that removing the weakly performing item led to a noticeable improvement of goodness of fit indices and clearer patterns of the loading structure. Still, the overall evidence on the psychometric quality of the measure remains mixed.

Table 2. ESEM factor loadings, reduced model

Intrinsic	Identified	Introjec-	External
		ted	

Intrinsic				
<i>Unconv.</i>	0.89	0.07	-0.03	0.07
<i>Electoral</i>	0.04	0.89	-0.01	0.10
<i>News</i>	0.31	0.34	0.07	-0.21
Identified				
<i>Unconv.</i>	1.02	-0.05	-0.00	-0.04
<i>Electoral</i>	0.05	0.84	-0.04	-0.17
Introjected				
<i>Unconv.</i>	0.32	0.12	0.15	0.32
<i>Electoral</i>	-0.17	0.95	0.02	0.02
<i>News</i>	0.02	-0.03	1.20	-0.01
External				
<i>Unconv.</i>	0.10	-0.02	-0.01	0.49
<i>Electoral</i>	-0.00	-0.05	0.01	0.46
<i>News</i>	-0.07	0.06	0.28	0.43
Goodness of Fit				
<i>CFI</i>	0.989			
<i>TLI</i>	0.963			
<i>SRMR</i>	0.013			
<i>RMSEA</i>	0.038			

437 Note: Standardized factor loadings of an exploratory structural equation
438 model in MPLUS 6.11; Geomin-rotation; N=1.019; A priori target load-
439 ings designed to measure each factor are shown on grey background;

440 Loadings with $p < 0.05$ are shown in bold face. Correlation between intr-
441 ident: 0.38, intr-intro: 0.14; intr-ext: -0.02; ident-intro: 0.17, ident-ext: -
442 0.13; intro-extr: 0.26.

443

444 Several pieces of evidence are in line with theoretical predictions. Goodness of fit indices
445 show that with this model specification respondents' self-reported motivation to engage in politics
446 can be represented well in a 4-dimensional structure. The excellent fit is remarkable when consid-
447 ering that the survey items were not crafted to increase inter-item correlations through highly
448 similar question wordings but instead to capture different aspects of each behavioral regulation
449 which usually attenuates fit indices. Also, two additional pieces of evidence support the increased
450 reliability of the revised model specification: no indicator loads negatively on its respective target
451 dimension and the highest loading for each factor is from its prespecified indicators.

452 Further support for the SDT-inspired typology of political motivation emerges when exam-
453 ining the cross-loadings. While external motivation is largely free of cross-loadings, the other be-
454 havioral regulations exhibit significant cross-loadings. Importantly, these cross-loadings mostly
455 conform with the expected meaningful structure of motivation as encapsulated in the *continuum*
456 *hypothesis*: most items show weak loadings on theoretically remote factors whereas items show
457 stronger loadings on the target factor or on conceptually close factors. In this vein, when compar-
458 ing the broader categories of autonomous (intrinsic, identified) and controlled (introjected, exter-
459 nal) forms of motivation, the strongest loadings are from indicators within the respective category
460 while indicators from the opposite category in most cases do not exhibit strong loadings.⁵ Hence,
461 these clusters of autonomous and controlled motivations are in line with the idea of a structuring
462 role of self-determination in citizens' reasons for political engagement.

463 However, the observed data are far from fully consistent with theoretical expectations. Var-
464 ious factor loadings are unexpectedly weak (e.g. the electoral participation item on intrinsic moti-
465 vation). Also, several factors are driven by a single item or they receive disproportionate amounts

⁵ The electoral item of introjected motivation is the exception here as it strongly loads on identified motivation as part of the category of autonomous motivation.

of cross-loadings. For instance, identified motivation receives substantial cross-loading from the intrinsic and introjected indicators. Notably, the identified factor is mostly determined by items that assess electoral participation, suggesting that the factor may capture a cluster of electoral participation items rather than the latent concept of identified motivation. To conclude, not all four theorized dimensions of political motivation are equally well represented in the data. Empirically, the boundaries between the types of motivation are not as clear as they are in theory.

In a next step I investigate correlations between the types of motivation to test whether, despite lacking discriminant validity of the measurement instruments, the predicted four factors of motivation still show the expected continuum structure. Table 3 shows that intrinsic motivation is moderately correlated with the other autonomous type of motivation (identified) but, as predicted, exhibits barely any correlation with external motivation. Likewise, external motivation correlates with its adjacent controlled type of motivation (introjected). Hence, citizens who find joy in politics will often find politics important but intrinsic motivation does not predict levels of controlled motivation. Altogether, the accumulated findings can be read as evidence for the presence of a systemic order of behavioral regulations in political motivation, providing initial evidence that akin to motivation in other life domains perceived self-determination serves as a structuring principle of motivation to engage with politics.

Table 3. Correlation matrix.

	[1]	[2]	[3]	[4]
<i>Intrinsic</i>	1			
<i>Identified</i>	0.46***	1		
<i>Introjected</i>	0.21***	0.20***	1	
<i>External</i>	0.02***	-	0.31***	1
		0.15***		

<i>Pol. Interest</i>	0.26***	0.37***	0.07*	-0.20***
<i>Civic Duty</i>	0.19***	0.58***	0.16**	-0.10

Note: ***: $p < 0.001$; **: $p < 0.01$; *: $p < 0.05$

For additional tests on the discriminant and convergent validity of the individual dimensions of the political motivation scale, Table 3 shows associations of each behavioral regulation with political interest and voting as a civic duty. Given that psychological gratifications such as joy and pleasure are central components of political interest (44), political interest should correlate with intrinsic political motivation. Since perceived importance of the political domain is another component of political interest (54), political interest should also correlate with identified motivation – and presumably less strongly – with introjected motivation. Yet, there is no theoretical reason to expect that higher levels of political interest should go along with higher levels of external motivation.

The correlation matrix supports the measures' convergent validity in that the expected correlations between political interest and autonomous forms of motivation are present. Also, the observed correlations support the measure's discriminant validity as correlations between political interest and controlled forms of motivation are absent or negative.

With regards to civic duty, theoretical reasoning would predict correlations with all dimensions of political motivation except external motivation because each of the other types entail some degree of endorsement of political participation. Above all, accepting the voting norm should go along with high levels of identified political motivation because identified motivation reflects the full internalization of political norms. Introjected motivation, as a form of superficial internalization, should exhibit weaker correlations. Intrinsic motivation should also exhibit weaker correlation than identified motivation because, conceptually, this type of motivation does not entail previously foreign contingencies that have been taken in.

Empirically, the correlation matrix reported in Table 3 shows the expected patterns between endorsing voting as a civic duty and the four types of political motivation, providing

510 additional evidence for the measure's validity and for the proposition that SDT's motivations ty-
511 pology maps onto the political domain.

512 Summing up the available findings so far, some evidence suggests that reasons for political
513 engagement are structured along a continuum of self-determination. In other words, there is some
514 evidence that political motivation could be measured and understood against the lenses of self-
515 determination theory. But the data also reveals significant deficiencies in discriminant validity.
516 The observed blurry boundaries between the four types of motivation could reflect either the the-
517 ory's limited applicability to the political domain or some problems with the employed measure.
518 Before I try to improve discriminant validity with a revised measure (Study 3), I use the available
519 data to conduct additional tests on the substantive hypotheses regarding the functional conse-
520 quences of political motivation.

521 When interpreting these results, the measure's imperfections must be kept in mind. Due to
522 the measure's deficiencies in clearly delineating adjacent types of political motivation, correlations
523 that were expected to arise for a particular type of motivation may also materialize for adjacent
524 dimensions. Still, the measure performs satisfactorily in capturing external motivation and the
525 data shows the expected patterns of a continuum structure of political motivation. Therefore, at
526 least at the end points of the continuum of self-determination (external and intrinsic motivation)
527 the observed data should be in line with the theoretical predictions.

528 With these caveats in mind, Figure 2 reports findings on the proposition that the more au-
529 tonomous types of motivation lead to self-sustained political engagement whereas external moti-
530 vation would not have any independent effects on the frequency of political action. Specifically,
531 Figure 2 shows average marginal effects on different political activities (turning out to vote, en-
532 gaging in political conversations or watching political news) obtained from eleven separate lo-
533 gistic and linear regressions with the four motivation variables as explanatory variables.

534 **Figure 2. Association between types of motivation and political engagement.**

535
536 Note: Results from eleven separate logistic or linear regressions with motivation as independent
537 variables. Reported are average marginal effects using the observed values approach with 95% con-
538 fidence intervals. The frequency of non-political internet usage works as a validation to test whether
539 the reported associations between political motivation and political engagement does not reflect
540 confounding with non-political dispositional differences: individuals with higher levels of autono-
541 mous motivation do not show generally show higher levels of media consumption.
542

543 The reported associations between motivation and political engagement underscores the
544 distinctiveness of the four types of political motivation. All in all, the findings reported in Figure 1
545 are in line with the *autonomous* and *external motivation hypothesis*: Higher levels of external mo-
546 tivation to engage with politics do not go along with more frequent electoral participation, political
547 conversations or political media consumption.⁶ This pattern is strikingly different with for the

⁶ No clear predictions were made for introjected motivation. Introjected motivation is a controlled type of motivation but as it entails having partly internalized political norms it may lead to self-sustained behavior on a small scale. Empirically, independent effects of introjected motivation are weak.

548 autonomous types of political engagement: Higher vs. levels of intrinsic and, to a lower extent,
549 identified motivation go along with higher frequencies of various forms of engagement with the
550 political domain.⁷

551 Having established that political motivation predicts *whether* a person engages in a behav-
552 ior, I turn to examining whether motivation predicts *how* citizens engage with the political domain.
553 To test the *deep cognition hypothesis*, Figure 2 also reports associations between political motiva-
554 tion and a summary index of five self-reported items on cognitive involvements with politics. Over-
555 all, the results square nicely with the idea that only autonomous political motivation goes along
556 with deeper processing of political content. In particular, the graph shows that correlations are
557 strongest for the most self-determined type of motivation (intrinsic) and weakest for the least self-
558 determined type of motivation (external). Respondents who engage with politics for the pleasure
559 they derive from political engagement show deeper processing of political information whereas
560 external motivation is even negatively associated with deep processing. Note that the self-reported
561 items of the cognitive depths can assess cognitive processes only indirectly and that they are po-
562 tentially subject to biases such as the desire to maintain self-esteem. Nonetheless, the results can
563 be interpreted as suggestive evidence that the typology of motivation predicts *how* a person will
564 engage with politics: When political involvement is driven by external pressures citizens seem to
565 engage with politics no more deeply than necessary, but cognitive depth is deeper the higher a
566 person's level of autonomous political motivation.

567 So far, the analysis has not provided any indication of direct effects of external motivation
568 on political engagement so that one might question whether external political motivation has any
569 role to play in shaping political behavior. The distinct role of external motivation was theorized as
570 moderating how citizens react to external stimuli with regards to political engagement. To test the
571 moderating role of external political motivation, we can make use of a vignette experiment that
572 was included in the GLES Tracking survey. The experiment assessed proclivities to participate in

⁷ The frequency of non-political internet usage works as a validation to underline that the reported associations between political motivation and political engagement does not reflect unobserved non-political association: individuals with higher levels of autonomous motivation do not show generally show higher levels of media consumption.

573 a hypothetical election. Respondents in the treatment group were induced to abstain for social
574 pressure by friends. The control group was not exposed to social cues.

575 Figure 3 shows that external motivation conditions effects of social pressure on the likeli-
576 hood of electoral participation:⁸ the higher one's level of external motivation the more important
577 were social considerations in the decision to turn out to vote. Therefore, the vignette experiment
578 suggests that external political motivation does have a role in determining the proclivity for polit-
579 ical engagement albeit it is not a direct one.

⁸ Further analyses on the moderating of social influences by political motivation show mixed results. Exploratory analyses using the GLES tracking data show that, against expectations, autonomous motivation also moderates social influence (see appendix 2), questioning whether the moderating role is distinct to external motivation.

580 **Figure 3. External Motivation Moderates Social Influence.**

581
582 Note: Outcome is the intention to participate in a hypothetical election. Histogram in
583 grey shows the distribution of external political motivation.

584 To sum up, the evidence collected in Study 1 gives some support for the SDT-inspired ty-
585 pology. Exploratory structural equation modelling on a battery of reasons for political engagement
586 supported and the theorized role of perceived self-determination in structuring political motiva-
587 tion. Yet, the measure fell short to clearly delineate the four types of political motivation.

588 Notably, despite the shortcomings in discriminant validity the substantive hypothesis tests
589 supported the idea that each dimension of political motivation distinctively predicts whether and
590 how citizens engage in politics. This is an important finding which hints at the theoretical import
591 of self-determination theory for politics.

592 Yet, it is curious that the substantive hypotheses received empirical support despite the
593 shortcomings of the measurement instrument. This disparity raises concerns that the reported
594 associations are spurious and reflect methodological artifacts. Study 1 relied heavily on self-re-
595 ported measures to assess both outcomes and explanatory variables. This is problematic because
596 shared variation could simply reflect common biases in the measure such as the inclination for
597 self-enhancement (55). Relying on self-reports to measure outcomes and explanatory variables
598 might introduce measurement-based confounding because the reported correlations might simply
599 capture individual differences in the tendency to incorrectly describe themselves as both highly
600 motivated and strongly involved with politics.

601 Two additional studies therefore seek to address two limitations of the present study. First,
602 Studies 2 and 3 will make use of other data types and measurement paradigms to alleviate the
603 problem of measurement confounding. Second, Study 3 employs a revised political motivation
604 measure.

605

606 **Study 2**

607 **Measures**

608 **Political Motivation.** An abbreviated short scale based on the original political motivation
609 scale was used to measure political motivation. One item for each dimension of political motivation
610 was used. Items were selected from the original battery based on factor loadings in Study 1.

611 **Turnout behavior, federal.** In each survey wave, respondents were asked about the inten-
612 tion to participate in the 2017 German federal elections. In later survey waves, respondents were
613 asked about retrospective participation.

614 **Turnout behavior, second-order.** Respondents who live in states in which subnational
615 elections were held during the duration of the campaign panel, respondents were asked about
616 participation in the provincial elections. All respondents of wave 11 were asked about participa-
617 tion in the European Parliament election. A second-order election variable was created that is 1
618 for respondents who reported participation in all eligible second-order elections and 0 if they ab-
619 stained from at least one second-order election.

Perceived turnout behavior among social contacts.

In each survey wave, respondents were asked about the perceived political behavior of their political conversation partner. For up to three social contacts respondents reported whether the respective person would turn out to vote at the federal election or not upcoming election or not. Additional information about the respective conversation partners were used link their perceived turnout behavior over time. To disentangle selection effects from persuasion effects (56), the following analysis focuses on intra-individual changes in perceived turnout intentions of those uniquely identified social contacts that the respondents mentioned in the first survey wave.

Participants

The short scale was included in the Campaign Panel of the German Longitudinal Election Study (57). The Campaign panel draws respondents from Respondi, a heterogeneous online panel whose participants were recruited online. With the primary goal of observing attitudes in the run-off to the German federal elections in September 2017, survey data was collected in eleven waves beginning in fall 2016. The last survey data was collected after the European Parliament elections 2019.

Results

The longitudinal data allows to investigate the potential role of political motivation in shaping individual orientations over the course of a political campaign. Overcoming self-reports on hypothetical behavior in an artificial setting, the longitudinal panel data gives the chance to examine concomitant changes in citizens' inclinations towards political engagement when the perceived social environment changes. Compared to the vignette experiment in Study 1, the longitudinal data thus allows for a more environmentally valid test of the *external motivation hypothesis* on the susceptibility to social influences. Because the data covers multiple elections, it also provides a new setting to examine the role of autonomous motivation for self-sustained behavior in different electoral settings.

First-order elections evoke greater spectacle, excitement, media coverage and mobilization efforts by political parties compared to second-order elections (58). In other words, first-order

649 election come with a larger array of motivational stimuli that may energize citizens to cast a ballot.
650 Participation at second-order elections requires greater motivational predispositions on the side
651 of the voters. Therefore, one would expect all types of motivation to stimulate the inclination of
652 voters to cast a ballot in first-order elections. But only autonomous types of motivation should
653 provide the self-sustained motivational nutrients that fuel participation in second-order election
654 when social and public pressures have receded.

655 Figure 4 displays results from eight bivariate logistic regressions of participation in second-
656 order elections with the motivation variables as explanatory concepts. We would expect signifi-
657 cant associations of intrinsic and identified motivation with turnout at both types of elections. In-
658 trojected and external motivation should, if anything, predict turnout only for high salience elec-
659 tions. Yet, this is not what Figure 4 shows. In particular, introjected motivation should matter for
660 high salience elections but not for low salience elections. Hence, there is no empirical support for
661 the tenet that the multi-dimensional conception of political motivation is well suited to explain
662 electoral participation in varying political contexts.

663 **Figure 4. Motivation and Electoral Participation in Second Order Elections.**

664

665 Note: Shown are odds ratios with 95% confidence intervals.

666 The panel data allows for another test of political motivation’s role in determining individual re-
667 actions to a changing environment. Table 4 reports the results of a fixed effects regression analysis
668 that leverages intra-individual variation in the perception of voting intentions among one’s social
669 contacts. Simply put, I compare voting intention across survey waves to examine whether a previ-
670 ous nonvoter decides to vote when their contacts also change their minds on electoral participa-
671 tion. The first column (“Basic”) shows positive effects for two out of three discussion partners:
672 When the most frequent or second most frequent discussion partner of a respondent decides to
673 turn out to vote after having previously been undecided or reluctant, then the respondent is also
674 likely to change intention to participate.

675

676 **Table 4. Effects of changes in turnout intention among discussants on changes on turnout**
677 **intention of the respondents.**

	Basic	Interaction
Discussant1	0.04*** (0.01)	0.10* (0.04)
Discussant2	0.03* (0.01)	-0.03 (0.04)
Discussant3	0.01 (0.01)	-0.01 (0.04)
Disc1*Intrinsic		0.09 (0.06)
Disc1*Identified		-0.32*** (0.06)

Disc1*Introjected	0.15**	
	(0.05)	
Disc1*External	-0.24***	
	(0.07)	
Disc2*Intrinsic	-0.01	
	(0.07)	
Disc2*Identified	0.01	
	(0.07)	
Disc2*Introjected	0.10	
	(0.06)	
Disc2*External	-0.08	
	(0.05)	
Disc3*Intrinsic	-0.08	
	(0.06)	
Disc3*Identified	0.02	
	(0.07)	
Disc3*Introjected	0.08	
	(0.06)	
Disc3*External	-0.04	
	(0.06)	
Constant	0.87***	0.90***
	(0.02)	(0.02)
Wave controls	Yes	Yes
N	9,718	7,461
Groups	7485	5299

Notes: Results from a linear fixed effects regression analysis. Discussant variables denote the effect of intra-individual dynamics in perceived turnout

680 intentions among discussions partners on changes in the respondent's turn-
681 out intentions; Reported are b coefficients from fixed effects linear regres-
682 sions; Discussant 1-3 is the person who the respondents talks most, second-
683 most or third-most frequently with. *: $p < 0,05$, **: $p < 0,01$, ***: $p < 0,001$.

684 The *external motivation hypothesis* posits a higher susceptibility to these kinds of social in-
685 fluences among citizens with higher levels of external political motivation compared to citizens
686 with lower external political motivation. However, against expectations, highly externally moti-
687 vated citizens are less and not more likely to adjust to the turnout intention of their discussion
688 partners.

689 These results are not consistent with the findings on the susceptibility to social influences
690 from the more artificial setting of a vignette experiment in Study 1. The inconsistency could be due
691 to the lower psychometric quality of the abbreviated short scale. Yet, a correlation matrix on asso-
692 ciations between the motivation variables and with criterion variables do not hint at lower discri-
693 minant or convergent validity compared to the original scale (see Appendix 4). Moreover, collaps-
694 ing both indicators of controlled motivation (introjected, external) into a summary index also does
695 not lead to a positive statistically significant moderation effect of controlled motivation (not re-
696 ported).

697 Altogether, in two analyses on campaign panel data the SDT-inspired typology of political
698 motivation did not help to explain political behavior. Against predictions, the functional significance
699 of motivation did not vary across high and low salience election and external motivation did not
700 moderate the susceptibility to social influence. These findings cast doubt on the predictive validity
701 of political motivation. They can be interpreted as tentative evidence that the effects of political mo-
702 tivation become more fragile when tested with more suitable data that is less prone to measurement
703 biases.

704

705 **Study 3**

706 **Measures**

707 **Political Motivation.** The political motivation scale was revised in several ways (see Appen-
708 dix 1 for question wordings). First, a larger pool of 19 items was used to assess the four dimensions
709 of political motivation. The increased number of items allows for the potential removal of items that
710 do not exhibit the expected psychometric properties while still maintaining multiple indicators for
711 each dimension of political motivation. Second, instead of querying reasons for different manifest
712 forms of political motivation on each page of the questionnaire, the target object of motivation is
713 political engagement generally. Specifically, after reading an introductory statement that illustrates
714 various forms of political engagement respondents were asked to rate different reasons for “engag-
715 ing with or engaging in politics”. Third, question wordings were revised.

716 **Criterion Variables.** The revised measure of political motivation was part of a larger sur-
717 vey which also examined how respondents process the content of a political video that was em-
718 bedded in the survey (<https://youtu.be/mQHHb0l105Y>). The survey also contained an experi-
719 mental stimulus that was administered after the political motivation battery. Findings on the ex-
720 periment are reported elsewhere (44) and are not of substantive interest for the research question
721 of this study. Because most experimental conditions yielded null effects and because no interactive
722 effects with political motivation was found (44), I analyze the survey cross-sectionally, averaging
723 across experimental conditions (Appendix 5 shows that results do not differ across experimental
724 groups).

725

726 Three indicators capture how respondents engaged with the political video that was em-
727 bedded in the survey.

728 **Political Engagement, Behavioral Choice 1.** Dummy variable indicating whether the re-
729 spondent opted to watch a political video over seemingly nonpolitical options. (Note that all re-
730 spondents watched the same political video irrespective of video choice.)

731 **Political Engagement, Behavioral Choice 2.** Dummy variable indicating whether the re-
732 spondent opted to watch, without receiving additional monetary incentives, yet another political
733 video after the survey was officially completed.

734 **Political Engagement, Subjective Experience.** Unweighted summary index of four Lik-
735 ert-scale variables on self-reported enjoyment of watching the political video during the survey
736 (Sample item: “*I enjoyed watching this video very much*”).

737 The indicators *Political Engagement, Behavioral Choice 1, 2* reflect an inclination towards
738 political engagement and should correlate with intrinsic and identified political motivation but not
739 with external motivation (*autonomous motivation hypothesis, external motivation hypothesis*). *Po-*
740 *litical Engagement, Behavioral Choice 2* and *Political Engagement, Subjective Experience* assess per-
741 ceived and anticipated inherent gratification of watching the political video and should therefore
742 strongly correlate with intrinsic political motivation.

743

744 Three indicators assess how the respondents processed the political video they watched,
745 all of which should correlate positively with intrinsic and identified motivation and negatively
746 with introjected and external motivation (*deep engagement hypothesis*).

747 **Depth of Processing, Subjective Self-Report.** The subjective measure on the depth of pro-
748 cessing the political video is an unweighted summary index of two Likert-scale items assessing
749 respondents’ perception of the invested efforts while watching the video (sample item: “*I watched*
750 *the video very attentively*”).

751 **Depth of Processing, Objective.** Count of correct answers to three open-response ques-
752 tions about the video’s content. Based on a detailed codebook (see Supplement 2), the open-ended
753 responses were classified by a coder who was unaware of the respondents’ treatment conditions.

754 **Depth of Processing, Behavioral.** Dummy variable indicating whether respondents have
755 prematurely skipped the video is used (time on questionnaire page).

756

757 **Participants**

758 1,500 respondents were drawn from the ResponDi Panel, which is a heterogeneous online access
759 panel with about 70.000 active participants who were recruited offline and online. Socio-demo-
760 graphic quotas (age, education, gender) were employed to ensure that the sample more closely
761 resembles the German population. Among participants with completed interviews, 50% were fe-
762 male. Concerning formal education, 25% of participants had university-entrance diploma, 33% no

763 degree or only at the lowest formal level ('Hauptschule') and the remaining had intermediary for-
 764 mal levels of education. Age quotas were set to an equal distribution of participants in groups of
 765 18–29, 30–39, 40–49, 50–59 and 60 or more years of age. While the obtained sample cannot be
 766 considered a random draw of the German population, the employed quotas ensure variance on
 767 basic socio-demographic variables.

768

769 **Results**

770 Following the procedures from Study 1, I employ Exploratory Structural Equation Model-
 771 ling to reveal the patterns that underlie citizens' motives for political engagement (Table 5). With
 772 regards to goodness fit indices, the four-dimensional model specification closely matches the new
 773 data (CFI: 0.962, TLI: 0.935, RMSEA: 0.017, SRMR: 0.062). Mirroring results from Study 1, how-
 774 ever, a closer inspection of the loading structure again reveals that not all dimensions are repre-
 775 sented equally well in the data.

776 **Table 5. ESEM factor loadings, full model.**

	Intrinsic	Identified	Introjec- ted	External
Intrinsic				
<i>Intr1</i>	1.02	0.10	-0.05	-0.03
<i>Intr2</i>	1.14	-0.18	-0.04	0.01
<i>Intr3</i>	1.35	-0.10	-0.03	0.00
<i>Intr4</i>	1.04	-0.27	0.06	0.03
Identified				
<i>Ident1</i>	0.91	0.34	0.01	-0.04
<i>Ident2</i>	0.91	0.20	-0.01	0.09
<i>Ident3</i>	0.67	0.15	0.37	0.05

<i>Ident4</i>	0.84	0.01	0.20	0.08
<i>Ident5</i>	0.83	-0.03	0.33	-0.05
Introjected				
<i>Intro1</i>	0.20	0.31	0.16	0.44
<i>Intro2</i>	0.46	0.11	0.21	0.20
<i>Intro3</i>	0.19	0.10	0.52	0.10
<i>Intro4</i>	0.03	0.03	0.63	0.44
<i>Intro5</i>	0.06	-0.07	0.41	0.62
External				
<i>Ext1</i>	-0.00	0.15	-0.38	0.67
<i>Ext2</i>	0.29	0.01	0.14	0.51
<i>Ext3</i>	0.06	-0.02	-0.13	0.79
<i>Ext4</i>	-0.06	-0.11	-0.04	0.82
<i>Ext5</i>	-0.12	-0.02	0.08	0.85
<i>Goodness of Fit</i>				
<i>CFI</i>	0.962			
<i>TLI</i>	0.935			
<i>SRMR</i>	0.017			
<i>RMSEA</i>	0.062			

777 Note: Standardized factor loadings of an exploratory structural equation model in
778 MPLUS 8; Geomin-rotation; N=1.629; A priori target loadings designed to measure each
779 factor are shown on grey background; Loadings with p<0.05 are shown in bold face.
780 Correlation between intr-ident:0.09, intr-intro: 0.68; intr-ext: 0.30; ident-intro: 0.02,
781 ident-ext: -0.13; intro-extr: 0.29.

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Intrinsic and external motivation and, to a lesser degree, introjected motivation exhibit the expected loading patterns: The specified indicators load strongly on the respective dimensions. The data supports the instrument’s discriminant validity in that cross-loadings on other dimensions are lower than the loadings on the target dimension. Cross-loadings are also theory-consistent as significant cross-loadings usually point to a conceptually adjacent dimension. In these regards, the revised instrument represents a considerable improvement over the initial version.

However, replicating problems from the initial scale, the dimension of identified political motivation is again not well represented in the data. Only one of its specified indicators loads significantly on the respective dimension. The indicators of identified motivation instead load on the intrinsic and, to a lesser degree, the introjected dimensions. Hence, the available indicators of political motivation do not cleanly correspond to the theorized four dimensions of political motivation.

It is possible that some indicators failed in conveying the intended meaning. Defunct indicators could then disturb the overall factor structure even when the remaining items serve their function well. Based on recommendations by 52 (52), items with loadings lower than 0.32 on the target factor or with exceeding cross-loading were removed.

In a first step, one item per factor was removed (Introjected: Item 2, Identified: Item 1), which led to a modest but notable improvement of model fit (CFI: 0.977, TLI: 0.958, RMSEA: 0.052, SRMR: 0.016). Further reiterating this process, I removed another weakly loading item from the introjected and the identified dimensions which again led to a modest increase in model fit, now achieving excellent goodness of fit indices (CFI: 0.987, TLI: 0.974, RMSEA: 0.012, SRMR: 0.042, see Table 6).

805 **Table 6. ESEM factor loadings, optimized model**

	Intrinsic	Identified	Introjected	External
Intrinsic				
<i>Intr1</i>	1.02	0.04	0.00	-0.03

<i>Intr2</i>	1.09	-0.22	-0.02	0.01
<i>Intr3</i>	1.09	-0.15	0.01	-0.00
<i>Intr4</i>	0.98	0.25	0.03	0.04
Identified				
<i>Ident1</i>	0.96	0.34	0.02	-0.00
<i>Ident2</i>	0.94	0.15	0.01	0.10
<i>Ident3</i>	0.65	0.12	0.44	-0.06
Introjected				
<i>Intro3</i>	0.16	0.03	0.62	0.05
<i>Intro4</i>	0.02	0.01	0.68	0.40
<i>Intro5</i>	0.06	-0.07	0.41	0.59
External				
<i>Ext1</i>	0.03	0.12	-0.30	0.66
<i>Ext2</i>	0.26	-0.01	0.23	0.48
<i>Ext3</i>	0.04	-0.01	-0.05	0.77
<i>Ext4</i>	-0.08	-0.05	-0.01	0.82
<i>Ext5</i>	-0.11	0.01	0.12	0.83
<i>Goodness of Fit</i>				
<i>CFI</i>	0.987			
<i>TLI</i>	0.974			
<i>SRMR</i>	0.012			
<i>RMSEA</i>	0.042			

806 Note: Standardized factor loadings of an exploratory structural equation model in
807 MPLUS 8.1; Geomin-rotation; N=1.629; A priori target loadings designed to measure
808 each factor are shown on grey background; Loadings with $p < 0.05$ are shown in bold
809 face. Correlation between intr-ident: 0.09, intr-intro: 0.68; intr-ext: 0.30; ident-intro:
810 0.02, ident-ext: -0.13; intro-extr: 0.29.

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812 The optimized measurement model in Table 6 suggests that the revised scale succeeds to
813 capture the intrinsic, introjected, external but not the identified dimension of political motivation.
814 Compared to Study 1, cross-loadings are minimized and mostly in line with the theorized ordering
815 on the continuum of self-determination. Altogether, except for identified motivation the revised
816 measure represents a major improvement over the original instrument in terms of loading pat-
817 terns and goodness of fit indices.

818 The failure to capture identified motivation could have different reasons. Substantively, the
819 conceptual distinction between engaging in politics for deeply internalized reasons (identified),
820 for the inherent pleasure (intrinsic) or for grudgingly accepted norms (introjected) does not ade-
821 quately reflect the motivational pathways that lead citizens to political action. Alternatively, the
822 typology could have conceptual value. But capturing identified motivation as a distinct factor could
823 fail due to limitations of introspection as a method to gauge motivation. In any case, having failed
824 to identify this factor of political motivation in two data sets and different model specifications I
825 conclude that identified motivation cannot be represented as well in the political domain as in
826 other domains of life.

827 When working with this measure we must therefore keep in mind the low validity of the
828 identified dimension and that the intrinsic factor mixes loadings from indicators of both autono-
829 mous types of motivation. With these caveats in mind, the model fit suggests that the remaining
830 dimensions are well represented and can serve to test whether these dimensions predict political
831 engagement in line with the derived hypotheses.

832 Table 7 shows the correlation matrix of political motivation using predicted factor scores.
833 In contrast to the results obtained with the instrument from Study 1, the revised measure does not
834 exhibit a consistent continuum structure. The consistently low correlations of the identified

dimension are unsurprising given the previous results, but other findings are unexpected. For instance, the correlation between intrinsic and introjected motivation is much stronger than one could predict based on self-determination theory for conceptually remote types of motivation. Strikingly, the correlation between the two controlled types of motivation (external, introjected) is not markedly stronger than the correlation between types of motivation at the end points of the continuum of self-determination (intrinsic, external). These results therefore suggest that the problems of the revised instrument of political motivation exceed beyond identified motivation, casting more fundamental doubts on the value of self-determination theory in the political domain.

Table 7. Correlation between types of motivation.

	[1]	[2]	[3]	[4]
<i>Intrinsic</i>	1			
<i>Identified</i>	0.11***	1		
<i>Introjected</i>	0.80***	0.06***	1	
<i>External</i>	0.34***	-	0.31***	1
		0.19***		
<i>Pol. Interest</i>	0.76***	0.15***	0.65***	0.21***
<i>Civic Duty</i>	0.36***	0.00	0.42***	-0.28***

Note: ***, p<0.001; **,p<0.01; *,p<0.05

Additional theory-inconsistent evidence emerges when examining the associations of political motivation with criterion variables (Table 7). The strong correlations of political interest with intrinsic motivation and the weak correlations with external motivation square with theoretical predictions but the remaining evidence is unexpected. It is unexpected that reluctant, half-

850 hearted motivation to engage with politics (introjected) correlates as strongly with political inter-
851 est as curiosity- and pleasure-driven political motivation (intrinsic). Civic duty also shows no com-
852 prehensible correlation patterns. Altogether, the revised measure of political motivation does not
853 fare well on basic tests of convergent and discriminant validity. Although (or because) the meas-
854 urement model has improved for the revised political motivation measure over the original instru-
855 ment, the derived motivation scores are not in line with the theoretical propositions of political
856 motivation. These observed patterns show no evidence that political motivation is meaningfully
857 structured by the degree of perceived self-determination.

858 The failure to meet basic validity tests and to recover the expected continuum structure
859 makes it unlikely that the substantive hypotheses receive empirical support when tested with the
860 new scale. The *deep engagement hypothesis* posits that higher levels of autonomous political moti-
861 vation will go along with deeper processing of the video because respondents with strong intrinsic
862 or identified motives should value or enjoy engaging with the video for its political content. In
863 contrast, respondents who are driven by controlled motivation have no reason think deeply about
864 a video they do not enjoy or care about and should therefore be inclined to prematurely skip it or
865 to process it superficially. In addition to predicting how subjects process political content, political
866 motivation should also predict *whether* respondents seek to engage with political media in the first
867 place. According to the *autonomous motivation hypothesis*, higher levels of intrinsic and identified
868 motivation stimulate the inclination to choose politics over other alternatives whereas no corre-
869 lation was expected for external motivation. (No prediction were made for introjected motivation).

870 Figure 5 shows the results of linear or logistic regressions analyses (depending on the scale
871 of the outcome variable) with the four political motivation variables as sole independent variables.
872 In contrast to Study 1, these analyses include behavioral outcome measures which reflect prefer-
873 ences for political over seemingly unpolitical content (choice 1) and for more vs. less political con-
874 tent (choice 2).

875 **Figure 5. Political Motivation and Political Engagement.**

877 Leaving the ill-measured dimension of identified motivation aside, the data supports the
878 idea that the each of the dimensions of political motivation have distinctive ramifications for citi-
879 zen behavior in the political domain. Consistent with theoretical expectations, Figure 5 shows that
880 higher levels of intrinsic political motivation consistently predict the frequency of behavioral
881 choices for politics whereas external motivation exhibits no or negative associations with political
882 engagement.

883 Intrinsically motivated citizens should seek political engagement even in the absence of ex-
884 ternal incentives in anticipation of the gratification that is inherent to political engagement. In-
885 deed, citizens with higher levels of intrinsic political motivation subjectively experienced watching
886 the videos as more enjoyable compared to citizens with low levels of intrinsic motivation. Unex-
887 pectedly, however, the association with self-reported enjoyment is even stronger for introjected
888 motivation than for intrinsic motivation. Given that perceiving pleasure is a perennial conceptual

property of intrinsic motivation this is yet another finding that questions the discriminant validity of the revised measure of political motivation.

Building on the law of low effort, the deep engagement hypotheses posited that citizens should process political content deeply when driven by autonomous motivation. In contrast, citizens with higher levels of controlled motivation should invest no more cognitive resources than necessary to satisfy the internal or external pressures that made them engage with politics. Study 1 found evidence for this proposition but only employed self-reported measures for which reporting biases could confound the correlations with self-reported political motivation.

Examining the correlations between intrinsic political motivation and self-reported (hollow circles) and behavioral and objective measures of depth of processing (filled circles) shows different results than in study 1. More specifically, the results indicate that measurement error may indeed confound substantive conclusions when only relying on self-reports.

Citizens who report intrinsic motives for political engagement also report having thought more deeply about the political video. Yet, alternative and arguably more valid measures of cognitive involvement do not show a significant, positive correlation with intrinsic motivation. Based on the manual coding of open-ended responses, higher vs lower levels of intrinsic motivation do not go along with more accurate statements about the content of the video. Moreover, individuals who report higher levels of intrinsic motivation even skip the political video earlier than subjects with low levels of intrinsic motivation. In other words, correlations of self-reported motivation with self-reported criterion variables do not replicate when behavioral or objective measures are used.

Altogether, Study 3 raises doubts. The different types of motivation do not go along with political behaviors in the predicted way and where correlations are theory-consistent there is evidence that methodological confounds are at play.

Discussion

A prominent line of psychological research suggests that human behavior is structured by perceived self-determination. This study applied self-determination theory to the political domain and tested if perceived self-determination also makes a difference for political engagement.

918 Established political science theories and practical strategies for fostering citizen participation
919 would be cast in a different light if perceived autonomy was structured the motivational pathways
920 to political engagement.

921 From the perspective of self-determination theory, citizens can be triggered into action by
922 autonomous reasons such stimulating a sense of importance (identified motivation) or enhancing
923 the pleasure people derive from political engagement (intrinsic) as well as by controlling stimuli
924 such as priming internal (introjected) or external pressures (external). Taking self-determination
925 as a structuring principle of human motivation seriously implies that only autonomous motivation
926 will lead to deep and self-sustained behaviors whereas controlled interactions with politics will
927 remain short-lived and superficial. From this perspective, promoting political engagement
928 through social or institutional enforcement appears like a straw fire that may effectively push cit-
929 izens towards political engagement (28), but will likely file that fail to elicit meaningful and dura-
930 ble behavioral changes. Hence, the SDT-inspired typology of political motivation that was pre-
931 sented in this study promised not only to advance political science conceptualization but also to
932 provide practical import.

933 Analyzing survey data from three studies shows some evidence that engaging with politics
934 for its perceived inherent value and engaging with politics for external pressures constitute dis-
935 tinct types of political motivation that can be empirically separated and that elicit specific behav-
936 ioral responses in line with theoretical propositions. Citizens who are intrinsically motivated re-
937 port more and deeper political engagement. Citizens with high levels of external motivation only
938 engage with politics when additional stimuli are present and try to minimize their involvement as
939 much as possible. These findings can be read as support for the functional significance of feeling
940 autonomous vs feeling controlled in one's political engagement, which constitutes a conceptual
941 distinction that has not received much attention in existing research on political participation.

942 However, when considering the SDT-inspired typology of political motivation as a whole,
943 empirical support for political motivation as a multi-dimensional concept that is ordered on a con-
944 tinuum of self-determination is rather weak. Employing various model specifications on two iter-
945 atively revised measures of political motivation revealed that the four theorized dimensions of
946 political motivation could not be clearly distinguished from each other. Intrinsic and external

947 motivation exhibited satisfactory discriminant and convergent validity but the types of motivation
948 at the center of the continuum did not show the expected properties, both in the measurement
949 model and in substantive tests. Importing SDT as a prominent psychological framework into po-
950 litical science for systemizing political motivation fails to provide the expected conceptual value
951 because, at best, the multi-dimensional typology collapses into one of the dichotomous contrasts
952 that already exist in the political science literature and that the typology was supposed to super-
953 sede.

954 It is worth noting that the theory-based measures and the theory-based predictions were
955 tested in one bundle. The empirical findings reported in this study point to errors in one of the
956 tested components when applying SDT to politics. As a consequence of the principle of underde-
957 termination (59), it is impossible to disentangle which element or which group of elements in the
958 interdependent web of main and auxiliary assumptions is violated. It is conceivable, for instance,
959 that future revisions of the political motivation scale might achieve a better representation of po-
960 litical motivation as a four-dimensional concept. A better measure may then also reveal more em-
961 pirical support for the substantive hypotheses.

962 In the present study, with three rounds of data collection, a revised measure that fared bet-
963 ter than the original instrument in retrieving motivation's theorized distinct dimensions even di-
964 minished the measure's predictive validity. Despite its demonstrated wide-spread applicability we
965 can conclude that self-determination theory does not fit to motivation to the political domain as it
966 reported to fit to motivation in other domains of life.

967 What explains the disparity between the applicability of SDT to politics to the political do-
968 main compared to other domains of life? At lot of meta-scientific research in recent years has es-
969 tablished the presence of pervasive publication biases that strongly distorts the published litera-
970 ture in the direction of clean, hypothesis-consistent findings (60,61). More recent evidence has
971 indicated that these distortions also exist among studies on scale validation (62). Because instru-
972 ments to mitigate publication biases such as registered reports or large-scale replication projects
973 are rare in the study of self-determination theory, the degree to which failed studies are un-
974 derrepresented in the published body of literature is unknown. Therefore, it is unclear whether
975 the failure to apply self-determination theory to politics constitutes an atypical outlier.

When comparing this to other published study on self-determination theory, another methodological aspect is noteworthy. Previous SDT studies often relied on self-reports for both outcome and explanatory variables. In the present study, theory-consistent correlations were found when measuring both the outcome and explanatory variables with self-report but not when objective or behavioral validation criteria were used. Measurement confounding may thus introduce spurious correlations that over-estimate the distinct effects of motivation on actual behavior. Against this backdrop, it is at least possible that the problems documented in this study do not reflect specifics of the political domain but more fundamental, lingering problems in the published literature on self-determination theory.

But if we take the overwhelming support for SDT in published literature at face value, then there is something distinct about the political domain that makes SDT less applicable to political motivation. Multiple reasons for this disparity are conceivable that all hint at avenues for further theorizing. For one, the political domain is a norm-laden domain. Because political engagement is seen as socially desirable respondents might have difficulties to keep motivational processes apart when reflecting on why they engage with politics. The pervasiveness of norms in the political domain also suggests that external motivation might not undermine perceived autonomy as much as it does in other life domains. People might interpret external pressure to engage with politics merely as hints at one's civic duties which is associated with more autonomous types of motivation.

Another specificity of the political domain is that "politics" is a particularly ambiguous term that has different meanings for different people (63). This fact might introduce difficulties to measure motivation through self-reports. In a similar vein, due to the vastness of the political domain, reasons for political engagement might be more multi-faceted compared to motivation in other life domains. This could make it more difficult for citizens to cleanly disentangle conceptually distinct but similar types of motivation that are located at the center of the continuum of self-determination. For instance, engaging with politics because you conceive yourself as a political person (identified motivation) or because you would feel guilty otherwise (introjected) may not represent different types of motivation in the minds of citizens. In fact, those who identify as political animals might be those who would punish themselves the most when they fail to live up to their ideals.

I005 These dynamics may play out differently in areas such as health or dieting where SDT has been
I006 successfully applied (5,64) where dieting out of bad consciousness and inner pressure may indeed
I007 feel entirely different to people compared to dieting as an expression of one's lifestyle. As a result
I008 of all these considerations, the method of introspection could be less useful to capture reasons for
I009 citizen engagement with politics. Altogether, it is conceivable that the typology of motivation
I010 might have some conceptual value also in the political domain but that in empirical practice it is
I011 harder than elsewhere to disentangle these types of motivation with introspection.

I012 **Conclusion**

I013 This study has tested the applicability of self-determination theory on the political domain and
I014 found some, limited evidence that can be interpreted as supporting a functional role of perceived
I015 self-determination in whether and how citizens engage but politics. Yet, multiple attempts to
I016 measure political motivation based on the conceptualization of motivation as a multi-dimensional
I017 construct along a continuum of perceived autonomy has failed and the distinct types of motivation
I018 were not consistently associated with the predicted political outcomes.

I019 This study is therefore helpful in two regards. For political science, it demonstrates dead-
I020 ends to avoid and it may foster conceptualizing of the motivational pathways to political engage-
I021 ment by presenting ideas from motivation science that could prove useful for the study of political
I022 participation in a revised, more domain-specific theory or when combined with novel measures
I023 that do not rely on self-reports to gauge motivation. For students of self-determination theory, the
I024 results presented here may have demonstrated the boundaries of the theory as the existing liter-
I025 ature has reported many successes in applying SDT while less is known about where self-determi-
I026 nation theory does not work.

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