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The effect of paternalistic alternatives on attitudes toward default nudges

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Abstract: Nudges are increasingly being proposed and used as a policy tool around the world. The success of nudges depends on public acceptance. However, several questions about what makes a nudge acceptable remain unanswered. In this paper, we examine whether policy alternatives to nudges influence the public's acceptance of these nudges: Do attitudes change when the nudge is presented alongside either a more paternalistic policy alternative (legislation) or a less paternalistic alternative (no behavioral intervention)? In two separate samples drawn from the Swedish general public, we find a very small effect of alternatives on the acceptability of various default nudges overall. Surprisingly, we find that when the alternative to the nudge is legislation, acceptance decreases and perceived intrusiveness increases (relative to conditions where the alternative is no regulation). An implication of this finding is that acceptance of nudges may not always automatically increase when nudges are explicitly compared to more paternalistic alternatives.

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The idea that barely noticeable changes in how choice alternatives are presented (i.e., nudges) can help people to make better decisions is viewed as a promising policy option by many. Nudges, such as strategic use of default rules, are therefore increasingly being proposed and used as a policy tool by government agencies around the world (Whitehead *et al.*, 2014; Halpern & Sanders, 2016). Compared to more traditional policy tools such as mandates and taxes, nudges are typically viewed as less paternalistic. Still, ethical concerns have been raised that the use of nudges is manipulative and thereby not as liberty preserving as it is often portrayed (e.g., see Bovens, 2009; Hausman & Welch, 2010; Whitman & Rizzo, 2015). This debate has spurred research exploring if and when individuals judge nudges as acceptable and nonintrusive to freedom of choice (Hagman *et al.*, 2015; Jung & Mellers, 2016; Sunstein, 2016; Reisch *et al.*, 2017; Sunstein *et al.*, 2017; Loibl *et al.*, 2018). Overall, these studies have shown that the acceptability of the use of nudges in public policy tends to be moderate to high across most countries. Common to these studies, however, is that they have not considered that the (un)stated policy alternative (i.e., legislation or no regulation) is likely to affect the evaluation of acceptability. A nudge intervention might seem like a good idea in the abstract, but be less appealing when placed in context. Conversely, the appeal of a nudge intervention may only become apparent in the context of a worse alternative. For instance, when judged separately from any salient alternative, a default intervention intended to increase organ donation may seem paternalistic. However, when compared to the alternative of legislation that all must donate their organs, the nudge intervention may now appear as a very good alternative. Put differently, preference reversals are likely to occur when nudges are evaluated in the context of an alternative (joint evaluation) compared to in isolation (separate evaluation; see Bazerman *et al.*, 1992; Hsee *et al.*, 1999). Here, we explore the extent to which attitudes toward the use of nudges in public policy are affected by stated alternatives to that nudge.

Understanding when and why people judge nudges as acceptable or not is critical since any public policy necessitates some level of public support in order to achieve its objective (Page & Shapiro, 1983; Tannenbaum *et al.*, 2017). Moreover, nudges may backfire and lead to adverse effects on the type of behavior they are trying to promote if they are implemented despite a lack of public support (Arad & Rubenstein, 2017). When exploring what aspects influence attitudes toward nudges, several conceptual distinctions that affect attitudes toward nudges have been highlighted. For example, nudges categorized as pro-self (i.e., focusing on enhancing private welfare) are preferred to nudges that are categorized as pro-social (i.e., focusing on enhancing social welfare; Hagman *et al.*, 2015). Similarly, nudges that target

83 reflective or conscious thinking are viewed as more acceptable compared to
84 nudges that play on individuals' intuitive thinking (Felsen *et al.*, 2013; Jung
85 & Mellers, 2016; Sunstein, 2016). Nudges that are educational and make
86 information more salient are also preferred compared to nudges that take
87 advantage of peoples' inattention and laziness (Sunstein, 2017a).

88 In addition to exploring general attitudes, some studies have also explored
89 the extent to which individual differences in worldviews/values systematically
90 influence nudge attitudes. Surprisingly, political affiliation is generally a weak
91 predictor of attitudes toward nudges (Reisch & Sunstein, 2016). Some evi-
92 dence, however, suggests that people with a 'communitarian worldview' are
93 more likely to exhibit positive nudge attitudes compared to those with a
94 more individualistic worldview (Hagman *et al.*, 2015). Similarly, people who
95 score high on libertarian values are also more likely to disapprove of nudges
96 in public policy (Jung & Mellers, 2016). Such findings are in line with theories
97 in social psychology suggesting that people with a more pronounced individu-
98 alistic worldview should be increasingly resistant to external control and thus
99 be less accepting of policies that can be seen as infringements of autonomy
100 (Kahan & Braman, 2006).

101 Common to all previous studies that have explored attitudes toward nudges is
102 that they have not explicitly specified what, if any, the alternative policy
103 approach is. Information about the relevant policy alternative will arguably
104 influence attitudes toward nudge interventions. We argue that evaluations concern-
105 ing the acceptability and intrusiveness of nudges are made just as we make
106 other judgments in life, where the 'goodness' or 'badness' of an outcome often is
107 evaluated relative to a reference point (Slovic *et al.*, 2002; Kahneman, 2011).
108 More specifically, we believe that making the more paternalistic alternative
109 (e.g., legislation) salient will make nudges appear more appealing (i.e., more
110 acceptable and less intrusive). Similarly, the use of nudges should appear as
111 less appealing when it is compared to a policy that claims to effectively change
112 nothing. This prediction is based on research by Sunstein (2017) that reports
113 data from a direct test of approval of nudges (default rule with an opt-out
114 option) versus legislation (making mandatory) for three initiatives: savings,
115 safe sex education and education about intelligent design. Approval for
116 nudges over legislation differed by 32–50%, with a majority always preferring
117 nudges. Thus, nudges appear to be more accepted than bans because "mandates
118 and bans face objections that do apply to nudges. Because people care about
119 agency and want to maintain it, they will be skeptical of initiatives that eliminate
120 it, even as they acknowledge that in some domains, coercion is amply justified"
121 (Sunstein, 2017, p. 32). Sunstein points out that many oppose legislation as such,
122 but that for nudges people have no general view, but instead construct attitudes
123 based on the information contained in the nudge itself.

Thus, we predict that explicitly stating information about policy alternatives will influence the extent to which nudges are viewed as acceptable and nonintrusive. This prediction is also in line with a recent study by Davidai and Shafir (2018), who found that people are less likely to endorse nudges when alternative nudges are presented simultaneously (joint evaluation) rather than separately (separate evaluation). In two studies conducted using representative Swedish samples, we explore the extent to which attitudes toward nudges systematically change when presented alongside a more paternalistic policy alternative (legislation) and a less paternalistic alternative (no regulation). We predict that nudges presented with a more paternalistic alternative will have greater acceptability and be perceived as less intrusive compared to the same nudge presented with a less paternalistic alternative. We examine this prediction for both pro-social and pro-self nudges. In general, we expect that pro-self nudges will be seen as more acceptable and less intrusive than pro-social nudges. Because of this, we predict that the effect of a given alternative will be greater for pro-social nudges. In addition, we also explore how individual differences depend on people's worldview and influence the malleability toward the use of nudges in public policy.

Study 1

Method

Sample and materials

A web-based survey administrated by CMA Research (a data collection company) was sent to a diverse sample of the adult Swedish population (aged 20–75 years). In total, 608 participants completed the survey (52.7% female, mean age 41.4 years). Thirty-three participants did not complete the full survey and were included in the analysis of overall acceptance, but were not included in the analysis of individual differences. The sample was drawn from a representative pool of the general population in Sweden with slightly greater income and education than average. Participants received a small amount of monetary compensation (approximately US\$1.50) for completing the survey.

The survey started with a general introduction that informed participants that behavioral interventions in public policy are becoming increasingly common and that the goal of the survey was to assess opinions among the general public about such interventions. All participants were then presented with a series of experimental tasks in which four nudge scenarios were included (in a random order).

All of the scenarios are shown in [Box 1](#). Each of these scenarios involved the strategic use of a default rule (i.e., changing opt in to opt out) in a specific policy area. The nudge scenarios were chosen to represent key policy areas and to include a common type of nudge intervention presented in the nudge literature (e.g., see Thaler & Sunstein, 2008; Sunstein, 2017b; Szaszi *et al.*, 2017). The scenarios followed the same basic structure. The first sentence presented the policy issue at hand and was then followed by a description of a suggested nudge intervention that involved strategic use of a default rule. Next, the intended goal of the intervention was stated (e.g., “the goal of this intervention is to increase the number of individuals who are organ donors”).

Box 1. Nudge scenarios translated from Swedish.^a

Organ donation (pro-social nudge)

There is a lack of organ donors in Sweden. In order to become an organ donor, it is now required that the individual him- or herself makes an active choice and announces his/her will to the healthcare service. If no active choice is made, the individual is assumed to not want to donate any organs in case of an accident. Studies have shown that many people want to register as donors, but few people actually do so. A proposed intervention to increase the number of organ donors is that everyone is automatically registered as organ donors. This means that people who *do not* want to be organ donors must actively contact the healthcare service and state that they would like to unregister.

The goal of this intervention is to increase the number of individuals who are organ donors.

[The alternative to this intervention is to do nothing at all to increase the number of individuals who are organ donors.]

{The alternative to this intervention is to introduce legislation that makes everyone an organ donor without the possibility to unregister.}

Climate compensation (pro-social nudge)

Carbon dioxide emissions in connection with air travel have a negative impact on the climate. To compensate for this negative impact, there is usually a voluntary climate compensation fee that airline travelers can choose to pay. This fee goes to projects aimed at reducing carbon dioxide emissions corresponding to the emissions caused by the air travel. If no active choice is made, the individual is assumed to not want to pay the climate compensation fee. Studies have shown that many people want to climate compensate when they travel, but few people actually do so. A

206 proposed intervention to increase the number of people that climate com-
 207 pensate is that compensation is included in the price when you buy the
 208 journey. This means that people who *do not* want to pay the compensation
 209 fee must actively contact the travel agency and state that they do not want to
 210 pay the fee.

211 The goal of this intervention is to increase the number of individuals who
 212 compensate for air travel.

213 [The alternative to this intervention is to do nothing at all to increase the
 214 number of individuals who compensate for air travel.]

215 {The alternative to this intervention is to introduce legislation that makes
 216 it mandatory to pay a compensation fee for air travel.}

217 *Retirement savings (pro-self nudge)*

218 Most Swedes save too little for their retirement today, which can lead to a
 219 difficult financial situation when getting older. Individuals today must make
 220 a difficult financial situation when getting older. Individuals today must make
 221 an active choice to save extra for their retirement. If no active choice is made,
 222 it is assumed that the individual does not want to save extra for their retire-
 223 ment. Studies have shown that many people want to save more for retire-
 224 ment, but few people actually do so. A common way to increase your
 225 retirement savings is to spend a greater part of the salary on retirement
 226 savings. A proposed intervention to increase individuals' retirement savings
 227 is to automatically increase the amount selected for retirement with each
 228 wage increase. This means that people who *do not* want to increase the
 229 amount selected for retirement with each wage increase must contact their
 230 employer themselves and state that they do not want to increase retirement
 231 savings.

232 The goal of this intervention is to increase individuals' retirement savings.

233 [The alternative to this intervention is to do nothing at all to increase indi-
 234 viduals' retirement savings.]

235 {The alternative to this intervention is to introduce legislation that makes
 236 it mandatory to increase the amount selected for retirement with each wage
 237 increase.}

238 *Cancer screening (pro-self nudge)*

239 In Sweden, there are many who die from cancer who could have survived if
 240 the cancer had been discovered earlier. To get a cancer screening, it is now
 241 necessary for the individual to make an active choice and book a cancer
 242 screening themselves. If no active choice is made, it is assumed that the indi-
 243 vidual does not want to get a cancer screening. Studies have shown that many
 244 people want to get screened for cancer, but few people actually do so. A
 245
 246

proposed intervention to increase the number of people who participate in cancer screenings is that everyone is automatically called to a cancer screening in the year they turn 40. This means that people who *do not* want to be called for a cancer screening must actively contact the healthcare service and state that they do not want to be called for a cancer screening.

The goal of this intervention is to increase the number of individuals who get screened for cancer.

[The alternative to this intervention is to do nothing at all to increase the number of individuals who get screened for cancer.]

{The alternative to this intervention is to introduce legislation that makes it mandatory to get a cancer screening.}

^a The alternative is added to the control condition in [] for the no-regulation condition and in {} for the legislation-as-alternative condition.

Following each scenario, respondents were asked: Acceptability: “Do you find the described policy acceptable?” (yes or no), and Intrusiveness: “Do you think that the described policy restricts the individual’s freedom of choice?” (yes or no). These measures are our main dependent variables in the subsequent analyses.

In order to measure individual differences related to ideological worldview, we included the Cultural Cognition Short Scale (Kahan, 2014), which measures whether individuals are more or less prone to an individualistic or communitarian worldview (e.g., “The government interferes far too much in our everyday lives”) and the grid subscale with six items (1–4 Likert scale) measuring whether individuals are more or less prone to a hierarchical or egalitarian worldview (e.g., “Our society would be better off if assets were more evenly distributed”). Participants also answered the decision-style scale (Hamilton *et al.*, 2016), which measures the extent to which individuals make intuitive versus analytical decisions. The rational subscale had five items (1–5 Likert scale; e.g., “I prefer to gather all of the necessary information before committing to a decision”), and the intuitive subscale also had five items (1–5 Likert scale; e.g., “I rely on my first impressions when making decisions”). Additional measures included a measure of confidence in the present Swedish government (1 (not at all)–5 (completely), with the possibility to answer that they did not care about the subject) and political orientation (1 (far to the left)–7 (far to the right)) along with measures of age, gender and education.

Experimental design

The participants were randomly allocated to one of three conditions (legislation as alternative, no regulation and control) in a between-subjects

Table 1. Descriptive statistics of participants for each condition.

	Control	No regulation	Legislation as alternative	Total
<i>n</i>	219	209	213	641
Female	58%	53%	47%	53%
Mean age (years)	41.1	41.0	42.5	41.4

design. Table 1 shows the numbers of participants and demographics by condition.

In the legislation-as-alternative condition, the participants were informed that the alternative to the suggested intervention was to introduce legislation to enforce a certain behavior instead of merely encouraging it. Moreover, participants were informed that if the default change was not accepted, then legislation would be adopted.

In the no-regulation condition, participants were informed that the alternative to each suggested intervention was “to do nothing at all” to encourage the behavior. Furthermore, participants were explicitly informed after each scenario that if the intervention was not accepted, then nothing else would be done to solve the problem that the intervention was designed to handle.

In the control condition, participants were only informed that this survey was performed in order to measure the public’s attitude toward different interventions to increase various behaviors. No additional information about alternatives to the intervention was given.

Based on Hagman *et al.* (2015), two nudge policies were classified *a priori* as pro-social (organ donation and climate compensation) and two nudge policies were classified as pro-self (retirement saving and cancer screening).

Results and discussion

Effects of alternative conditions

The answers to each of the four scenarios were summed to create a rate of acceptance measure ranging from 0 (not accepting any of the nudges) to 4 (accepting every nudge). An intrusiveness rate measure was created in the same way. Figure 1 presents the effect of alternatives across all four scenarios. A χ^2 -test was conducted to examine whether there was any difference in the proportion of participants that accepted the nudge (acceptance rate) between the alternative conditions. Across conditions, no significant difference for acceptance rate was found ($\chi^2(8) = 8.78$, $p = 0.361$). However, intrusiveness ratings differed between conditions ($\chi^2(8) = 16.49$, $p = 0.036$), such that the legislation-as-alternative condition was judged by more participants to be

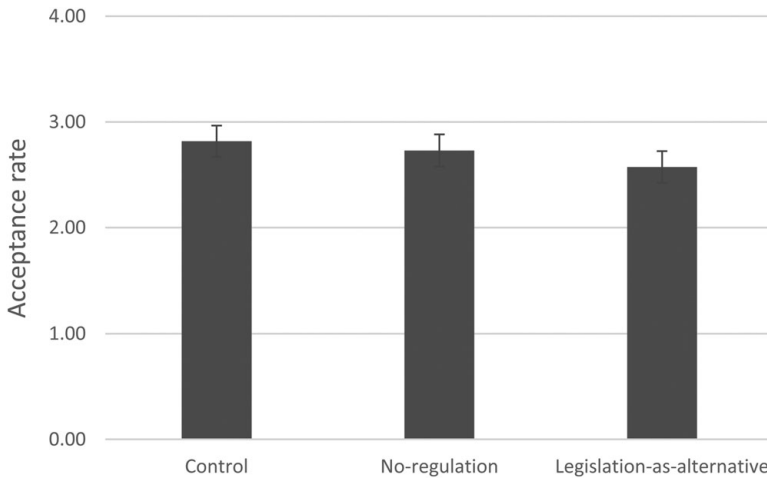


Figure 1. Acceptance rates of nudges divided by condition. Error bars are 95% confidence intervals.

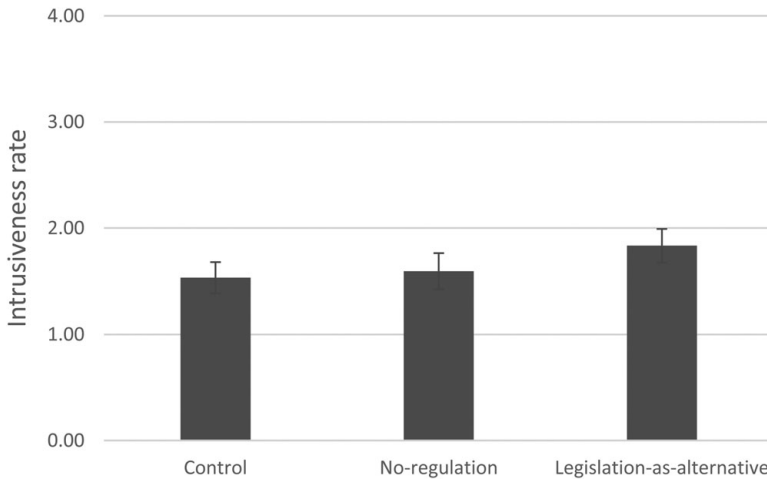


Figure 2. Intrusiveness rates of nudges divided by condition. Error bars are 95% confidence intervals.

intrusive than both the no-regulation condition and control conditions (Figure 2). Thus, we find no effect of our main manipulation on acceptability when we had expected that the legislation-as-alternative manipulation would be the nudge condition accepted by most participants. We also expected that the nudges in the legislation-as-alternative manipulation would be seen as

the least restrictive by a majority of the participants. Instead, we find the opposite result.

Effects of pro-social versus pro-self domain

The two scenarios *a priori* categorized as pro-self were more accepted ($M = 1.41$, $n = 631$) than pro-social scenarios ($M = 1.29$, $n = 629$) ($\chi^2(4) = 48.81$, $p < 0.001$). Furthermore, pro-self scenarios were perceived as less intrusive ($M = 0.76$, $n = 631$) than pro-social scenarios ($M = 0.89$, $n = 629$) ($\chi^2(4) = 69.95$, $p < 0.001$).

Figures 3 and 4 present the acceptance and intrusiveness rates across the alternative conditions and pro-social/pro-self nudges. As can be seen, there are no interactions and the overall pattern from our main findings holds for both pro-social and pro-self domains.

Effects of individual differences

In order to investigate individual factors that affect acceptance rates, a multiple regression was conducted (Table 2). In the regression, a dummy variable for the no-regulation condition (1/0) and legislation-as-alternative condition (1/0) and a dummy for higher education (1/0) were included along with control variables for age, gender, individualism, egalitarianism, intuitive and rational decision style, political orientation and confidence in the government.

The results show that 12.4% of the variance could be explained with two variables ($F(11, 584) = 7.505$, $p < 0.001$) where the acceptance rate was lower for more individualistic participants ($\beta = -0.082$, $p < 0.001$) and more egalitarian participants had a higher acceptance rate ($\beta = 0.051$, $p = 0.001$), with no other significant effects for the other variables.

A similar analysis was run for intrusiveness (Table 3). That analysis showed that 7.1% of the variance could be explained with three variables ($F(11, 584) = 4.036$, $p < 0.001$) where the intrusiveness rate was higher in the legislation-as-alternative condition ($\beta = 0.228$, $p = 0.048$) and the intrusiveness rate was higher for more individualistic participants ($\beta = 0.060$, $p < 0.001$) and more egalitarian participants had a lower intrusiveness rate ($\beta = -0.040$, $p = 0.019$), with no other significant effects for the other variables.

We expected that more individualistic respondents would be more accepting of nudges in the legislation-as-alternative condition (to avoid the legislation) and less accepting when the alternative was to do nothing (no-regulation condition). Separate regressions for each condition show that respondents who scored higher on the cultural cognition worldview group scale (i.e., those who are more individualistic) are significantly less accepting of the nudges in both the control condition ($p = 0.003$) and in the no-regulation condition ($p < 0.001$). However, this was not the case for the legislation-as-alternative

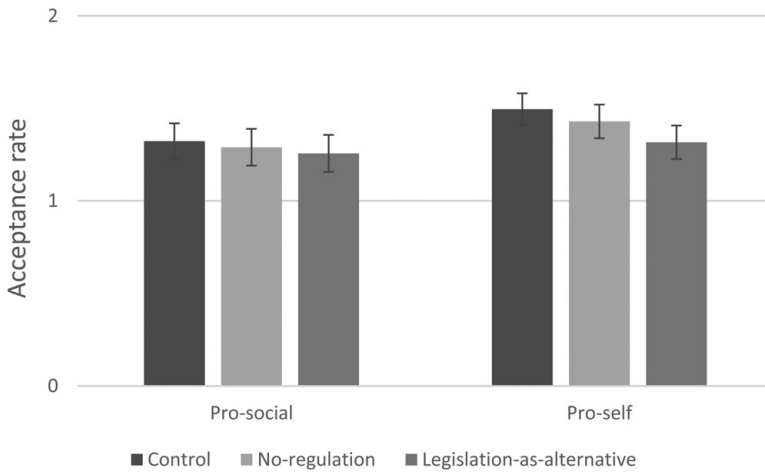


Figure 3. Acceptance rates of pro-social and pro-self nudges divided by condition. Error bars are 95% confidence intervals.

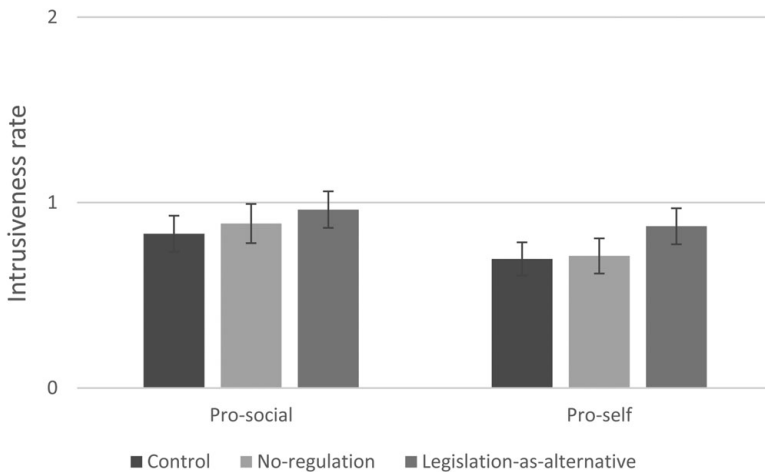


Figure 4. Intrusiveness rates of pro-social and pro-self nudges divided by condition. Error bars are 95% confidence intervals.

condition ($p = 0.106$). Furthermore, respondents who scored higher on the cultural cognition worldview grid scale (i.e., more egalitarian) were significantly more accepting of nudges in both the control alternative condition ($p = 0.022$) and in the no-regulation condition ($p = 0.008$), but not in the legislation-as-alternative condition ($p = 0.300$). Regarding the other individual

Table 2. Linear regression analyses exploring the influences of individual differences on acceptance rates.

	β	Confidence interval		β (standardized)	p-value
		Lower bound	Upper bound		
No-regulation (dummy)	-0.110	-0.321	0.100	-0.046	0.303
Legislation (dummy)	-0.196	-0.404	0.011	-0.083	0.064
Higher education (dummy)	-0.083	-0.260	0.095	-0.037	0.361
Female	-0.066	-0.248	0.116	-0.029	0.478
Age	-0.006	-0.012	0.001	-0.071	0.073
Individualism	-0.082	-0.111	-0.053	-0.249	<0.001
Egalitarian	0.051	0.021	0.082	0.154	0.001
Rational decision style	0.027	0.000	0.055	0.080	0.054
Intuitive decision style	0.015	-0.011	0.042	0.047	0.259
Political orientation	0.029	-0.041	0.099	0.039	0.421
Confidence in the government	0.021	-0.067	0.109	0.022	0.641

Table 3. Linear regression analyses exploring the influences of individual differences on intrusiveness rates.

	β	Confidence interval		β (standardized)	p-value
		Lower bound	Upper bound		
No-regulation (dummy)	0.004	-0.114	0.223	0.001	0.974
Legislation (dummy)	0.228	-0.226	0.454	0.092	0.048
Higher education (dummy)	0.042	0.002	0.235	0.018	0.671
Female	-0.135	-0.152	0.064	-0.057	0.183
Age	0.002	-0.333	0.009	0.018	0.662
Individualism	0.060	-0.006	0.091	0.172	<0.001
Egalitarian	-0.040	0.028	-0.007	-0.112	0.019
Rational decision style	-0.006	-0.073	0.024	-0.017	0.681
Intuitive decision style	0.014	-0.037	0.043	0.041	0.347
Political orientation	0.000	-0.015	0.077	0.000	0.994
Confidence in the government	0.012	-0.076	0.108	0.012	0.807

difference measures, no systematic pattern emerges. For judged intrusiveness, more individualistic respondents find the nudges to be significantly more restricting to freedom of choice in the no-regulation condition ($p = 0.025$), but not for the other conditions. These results suggest that both individualists and egalitarians are affected by the presented alternative.

493 In summary, Study 1 showed, in contrast to our hypothesis, that there was
 494 no difference in acceptance when we provided explicit information about the
 495 alternative, and there was a difference in the unexpected direction for perceived
 496 intrusiveness to freedom of choice. How can this result be understood? Before
 497 addressing other possible theoretical explanations, we must address a potential
 498 methodological limitation: that the manipulation of alternatives was not strong
 499 enough. Given the prevalence and strength of effects of alternatives document-
 500 ed elsewhere in the judgment and decision-making literature (e.g., Kahneman
 501 & Tversky, 1979; Tversky & Kahneman, 1992; Fredrick *et al.*, 2009; Hsee &
 502 Zhang, 2010; Kahneman, 2011) there are good reasons to think that our
 503 manipulation should have worked as intended. However, given the lack of
 504 effect of our manipulation, we conducted a direct replication in Study 2 that
 505 included manipulation checks as well as different dependent variables (interval
 506 scales instead of binary choices) for both acceptance and intrusiveness.

508 Study 2

509 *Sample and materials*

510 A web-based survey administrated by the same data collection company as in
 511 Study 1 was sent to a diverse sample (different from Study 1) of the adult
 512 Swedish population (aged 18–65 years). In total, 962 participants completed
 513 the survey (54.9% female, mean age 41.3 years). The sample was drawn
 514 from a representative pool of the general population in Sweden, with slightly
 515 higher income and education than average. Participants received a small mon-
 516 etary compensation (approximately US\$1.50) for completing the survey. The
 517 survey for Study 2 had the same experimental design and nudge scenarios as
 518 in Study 1, with the addition of an attention check and a manipulation
 519 check and a new response format for the two main dependent variables.
 520 Moreover, participants answered the same worldview and decision-style
 521 scales as in Study 1. Information about age, gender and education was also col-
 522 lected. Table 4 shows the demographics for each condition.

523 Following each scenario, respondents were asked to rate: (1) acceptability:
 524 “Do you find the described policy acceptable?” where the participants could
 525 circle any number between –3 (totally unacceptable) and 3 (totally acceptable);
 526 and (2) intrusiveness: “Do you think that the described policy restricts the indi-
 527 vidual’s freedom of choice?” with a –3 (totally unrestricting) to 3 (totally
 528 restricting) format. These measures are our main dependent variables in the
 529 subsequent analyses.

530 In addition, we measured attitudes toward the goal of the intervention (“Is it
 531 desirable to achieve to goal of x?” 1 (not at all)–5 (very) with a possibility to
 532
 533

Table 4. Descriptive statistics of participants for each condition.

	Control	No-regulation	Legislation-as-alternative	Total
<i>n</i>	230	227	235	692
Correct on manipulation	20%	36%	72%	43%
Female	55%	54%	55%	55%
Mean age (years)	41.4	41.1	41.3	41.3

answer that they did not care about the subject). Here, an attention check was administered with the same response format (the participants were given a number they should provide in order to show that they were attentive). The central manipulation check to assess whether the alternative manipulation was successful consisted of the question “What was the alternative given to the suggestion you have answered in this survey?” with the possibility to answer: “No alternative was given” (correct in the control condition), “The alternative was to do nothing to affect people’s behavior” (correct in the no-regulation condition) or “The alternative was to introduce legislation to affect people’s behavior” (correct in the legislation-as-alternative condition). As can be seen in Table 4, a majority of the participants in the legislation-as-alternative condition (72%) passed the manipulation check, whereas fewer passed the manipulation check for both the no-regulation condition (36%) and the control condition (20%). In the subsequent analyses, we therefore include pass/fail on the manipulation check as a between-subjects variable.

Results and discussion

Effects of alternative conditions

The answers for each of the four scenarios were added together to create a sum of acceptance measures ranging from -12 (very unaccepting) to 12 (very accepting). An intrusiveness sum measure was created in the same way. Figure 5 presents the effect of alternatives on acceptance across all four scenarios. A two (manipulation check; passed or failed) by three conditions (control, no regulation, legislation as alternative) analysis of variance was conducted to examine whether there was any difference in acceptance rate between the alternative conditions. A main effect across conditions was found with a significant difference for acceptance rate ($F(2, 686) = 9.855$, $p < 0.001$, $\eta = 0.028$), where the no-regulation condition had the highest acceptance rate ($n = 227$, $M = 4.61$, $SD = 4.58$) with the control condition ($n = 230$, $M = 4.50$, $SD = 4.64$) in the middle and the legislation-as-alternative condition with the lowest acceptance rate ($n = 235$, $M = 3.28$, $SD = 4.82$).

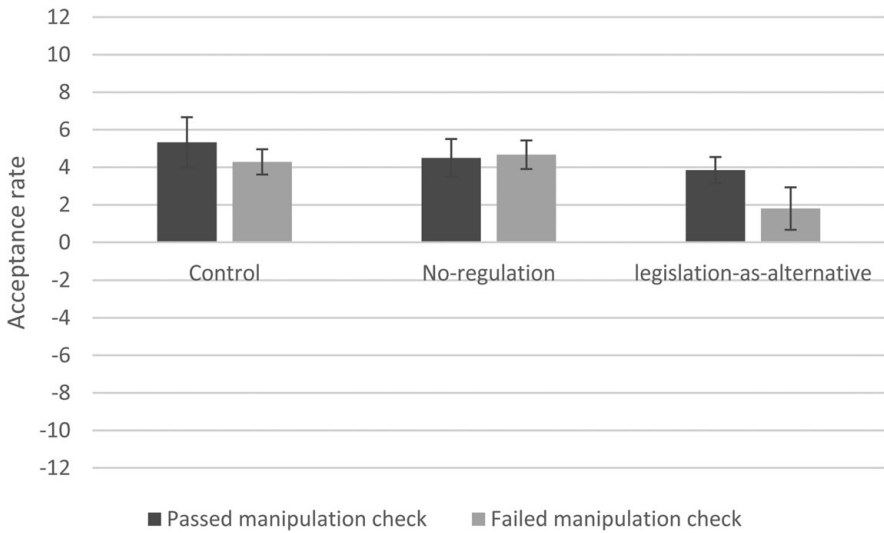


Figure 5. Acceptance rates for each condition and manipulation check. Error bars are 95% confidence intervals.

A Sidak *post-hoc* test shows that the participants in the legislation-as-alternative condition were significantly less accepting compared to both the control condition (mean difference: -1.98 , $p < 0.001$) and the no-regulation condition (mean difference: -1.76 , $p = 0.001$), and there is no difference between the other conditions (mean difference: 0.223 , $p = 0.960$). A significant main effect of the manipulation check was also found for acceptance rate ($F(1, 686) = 5.812$, $p = 0.016$, $\eta = 0.008$), where participants who answered correctly on the manipulation check in general had a greater acceptance rate ($M = 4.26$, $SD = 4.69$) compared to participants who answered incorrectly ($M = 4.02$, $SD = 4.74$). No significant interaction effect between condition and manipulation check was found ($F(2, 686) = 2.824$, $p = 0.060$, $\eta = 0.008$).

Figure 6 presents the effects of alternatives on intrusiveness across all four scenarios. A main effect across conditions was found with a significant difference for intrusiveness rate ($F(2, 686) = 6.349$, $p = 0.002$, $\eta = 0.018$), where the no-regulation condition had the lowest intrusiveness rate ($n = 227$, $M = -2.18$, $SD = 4.84$) with the control conditions ($n = 230$, $M = -2.08$, $SD = 4.81$) in the middle and the legislation-as-alternative condition with the highest intrusiveness rate ($n = 235$, $M = -0.82$, $SD = 4.91$). A Sidak *post-hoc* test shows that the participants in the legislation-as-alternative condition rated the scenarios as significantly more intrusive compared to both the control condition (mean difference: 1.686 , $p = 0.005$) and the no-regulation condition (mean difference:

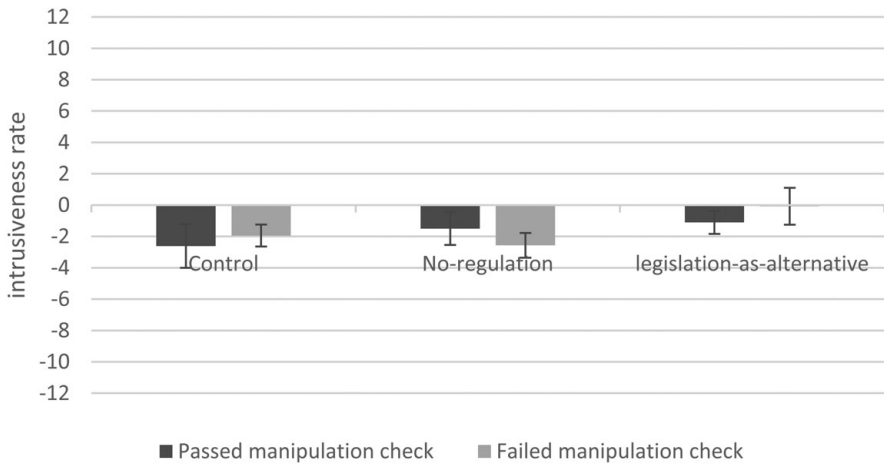


Figure 6. Intrusiveness rates for each condition and manipulation check. Error bars are 95% confidence intervals.

1.441, $p = 0.009$), and there is no difference between the other conditions (mean difference: -0.244 , $p = 0.9653$). No significant main effect of the manipulation check was found for intrusiveness rate ($F(1, 686) = 0.248$, $p = 0.619$, $\eta = 0.000$) and no significant interaction effect between condition and manipulation check was found ($F(2, 686) = 2.627$, $p = 0.073$, $\eta = 0.008$).

Effect of pro-social versus pro-self domain

Data pooled across all conditions for the two scenarios *a priori* categorized as pro-self showed a higher acceptance rate ($n = 692$, $M = 2.47$, $SD = 2.49$) compared to two scenarios *a priori* categorized as pro-social ($n = 692$, $M = 1.65$, $SD = 3.15$) ($t(691) = -6.822$, $p < 0.001$, $d = 0.260$).

Furthermore, as can be seen in Figure 7, the pro-self scenarios had a significantly greater acceptance rate ($n = 230$, $M = 2.64$, $SD = 2.39$) compared to pro-social scenarios ($n = 230$, $M = 1.86$, $SD = 3.10$) in the control condition ($t(229) = -3.928$, $p < 0.001$, $d = 0.260$). The pro-self scenarios also had a significantly greater acceptance rate ($n = 227$, $M = 2.77$, $SD = 2.49$) compared to pro-social scenarios ($n = 227$, $M = 1.84$, $SD = 3.05$) in the no-regulation condition ($t(226) = -4.406$, $p < 0.001$, $d = 0.293$), and pro-self scenarios ($n = 235$, $M = 2.02$, $SD = 2.52$) had a significantly greater acceptance rate compared to pro-social scenarios ($n = 235$, $M = 1.26$, $SD = 3.27$) in the legislation-as-alternative condition ($t(234) = -3.503$, $p = 0.001$, $d = 0.229$).

Pro-self scenarios (data pooled across all conditions for the two scenarios *a priori* categorized as pro-self) had a greater intrusiveness rate ($n = 692$,

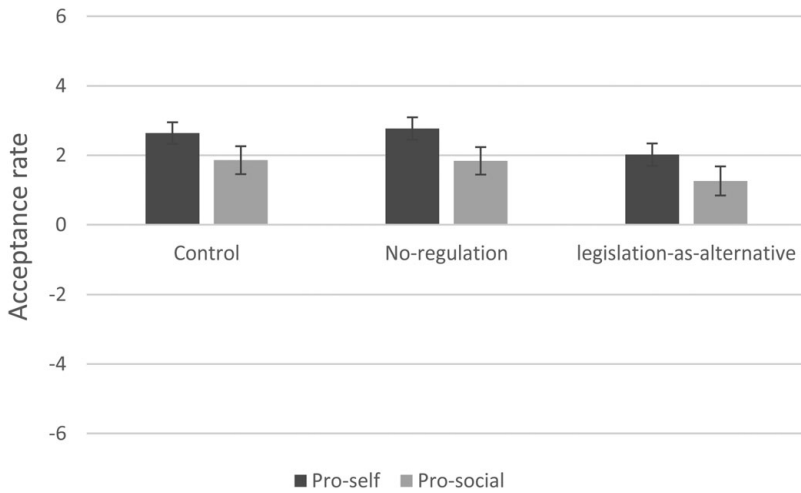


Fig. 7 - B/W online, B/W in print

Figure 7. Acceptance rates of pro-social and pro-self nudges divided by condition. Error bars are 95% confidence intervals.

$M = -1.31$, $SD = 2.65$) compared to the two scenarios *a priori* categorized as pro-social ($n = 692$, $M = -0.37$, $SD = 3.09$) ($t(691) = -8.142$, $p < 0.001$, $d = 0.310$).

Furthermore, as can be seen in [Figure 8](#), the pro-self scenarios had a significantly greater intrusiveness rate ($n = 230$, $M = -1.54$, $SD = 2.54$) compared to pro-social scenarios ($n = 230$, $M = -0.53$, $SD = 3.13$) in the control condition ($t(229) = -5.016$, $p < 0.001$, $d = 0.331$). The pro-self scenarios also had a significantly greater intrusiveness rate ($n = 227$, $M = -1.60$, $SD = 2.65$) compared to pro-social scenarios ($n = 227$, $M = -0.58$, $SD = 3.05$) in the no-regulation condition ($t(226) = 5.098$, $p < 0.001$, $d = 0.339$), and pro-self scenarios ($n = 235$, $M = -0.80$, $SD = 2.69$) had a significantly greater intrusiveness rate compared to pro-social scenarios ($n = 235$, $M = -0.02$, $SD = 3.05$) in the legislation-as-alternative condition ($t(234) = 3.979$, $p = 0.001$, $d = 0.260$).

Effects of individual differences

In order to investigate individual factors that may affect acceptance rates, a multiple regression was conducted ([Table 5](#)). In the regression, a dummy variable for the no-regulation condition (1/0) and the legislation-as-alternative condition (1/0), manipulation check (1/0) and a dummy variable for higher education (1/0) were included, along with control variables for age, gender, individualism, egalitarianism, intuitive decision style and rational decision style.

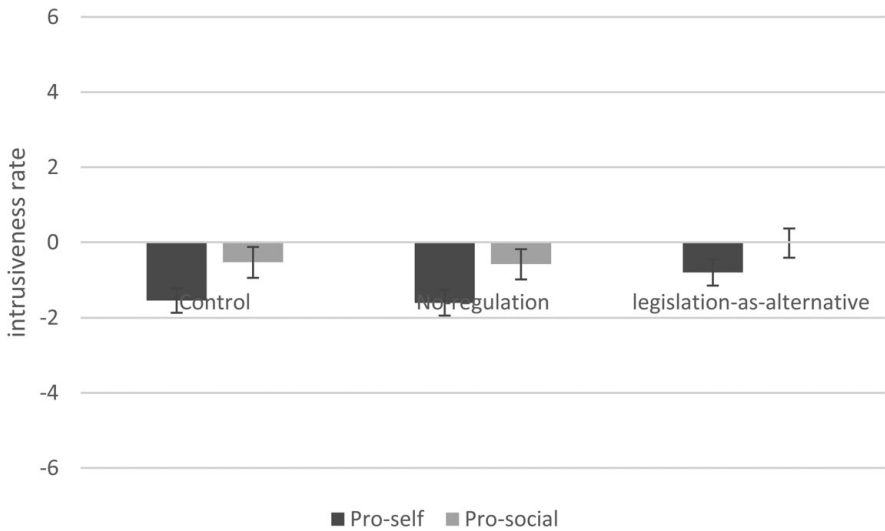


Figure 8. Intrusiveness rates of pro-social and pro-self nudges divided by condition. Error bars are 95% confidence intervals.

Table 5. Linear regression analyses exploring the influences of individual differences on acceptance rate.

	β	Confidence interval		β (standardized)	p-value
		Lower bound	Upper bound		
No-regulation (dummy)	-0.264	-1.073	0.546	-0.026	0.523
Legislation (dummy)	-1.733	-2.620	-0.847	-0.174	<0.001
Manipulation check	0.901	0.166	1.637	0.095	0.016
Higher education (dummy)	-0.214	-0.899	0.472	-0.023	0.541
Female	0.511	-0.168	1.191	0.054	0.140
Age	-0.016	-0.042	0.009	-0.044	0.208
Individualist	-0.522	-0.623	-0.420	-0.379	<0.001
Egalitarian	0.292	0.151	0.433	0.155	<0.001
Rational decision style	0.065	-0.052	0.182	0.041	0.276
Intuitive decision style	0.082	-0.023	0.187	0.060	0.124

The results show that 17.4% of the variance could be explained with four variables ($F(9, 677) = 14.283$, $p < 0.001$) where the acceptance rate was lower in the legislation-as-alternative condition ($\beta = -1.733$, $p < 0.001$). The acceptance rate was also lower for more individualistic participants

Table 6. Linear regression analyses exploring the influences of individual differences on intrusiveness rate.

	β	Confidence interval		β (standardized)	p-value
		Lower bound	Upper bound		
No-regulation (dummy)	0.166	-0.680	1.012	0.016	0.700
Legislation (dummy)	1.370	0.443	2.297	0.133	0.004
Manipulation check	-0.122	-0.891	0.647	-0.012	0.755
Higher education (dummy)	0.314	-0.402	1.031	0.032	0.389
Female	-0.124	-0.834	0.587	-0.013	0.733
Age	0.007	-0.020	0.034	0.019	0.603
Individualist	0.547	0.441	0.654	0.384	<0.001
Egalitarian	-0.141	-0.289	0.007	-0.072	0.061
Rational decision style	-0.084	-0.207	0.039	-0.051	0.179
Intuitive decision style	-0.109	-0.218	0.001	-0.076	0.052

($\beta = -0.522$, $p < 0.001$) and more egalitarian participants had a greater acceptance rate ($\beta = 0.292$, $p < 0.001$), along with the participants who answered correctly on the manipulation check ($\beta = 0.901$, $p = 0.016$), with no other significant effects for the other variables. The finding from Study 1 that more individualistic (and egalitarian) participants differed in their acceptance rating in the legislation-as-alternative condition compared to the other conditions was not replicated.

A similar analysis was run for intrusiveness (Table 6). The results show that 16.0% of the variance could be explained with two variables ($R^2 = 0.160$, $F(9, 677) = 12.938$, $p < 0.001$). The intrusiveness rate was greater in the legislation-as-alternative condition ($\beta = 1.370$, $p = 0.004$) and the intrusiveness rate was also higher for more individualistic participants ($\beta = 0.547$, $p < 0.001$), with no other significant effects for the other variables. The finding from Study 1 that more individualistic (and egalitarian) participants differed in their intrusiveness rating in the legislation-as-alternative condition compared to the other conditions was not replicated.

In summary, Study 2 replicates and strengthens the findings from Study 1 that, contrary to our original predictions, the legislation-as-alternative condition was rated as least accepted and as most intrusive. We find that this pattern holds for both pro-social and pro-self scenarios. Importantly, the main effect including all participants (an intention-to-treat analysis) holds for both participants who answered the manipulation check correctly and for the participants who answer incorrectly. Even if we find a main effect of the manipulation check question with participants who answered correctly

rating acceptance as higher, the general pattern that legislation as alternative is least accepted holds for both groups of participants.

General discussion and conclusions

In this study, we set out to examine whether providing explicit information about the alternatives to nudges would change the acceptability of nudges. We expected that making legislation a salient alternative would make nudges more acceptable compared to providing no information or giving information that everything would stay the same (since the nudge would be a less paternalistic alternative compared to legislation). However, we found no difference in acceptance when we provided explicit information about the alternative and an effect in the opposite direction for perceived intrusiveness to freedom of choice in Study 1. We replicated and strengthened these findings in Study 2 using both a different dependent variable (interval scale rather than binary choice) and manipulation checks. In Study 2, we found that the legislation-as-alternative condition was rated as the least accepted and most intrusive (both for participants who passed and those who failed the manipulation check). Thus, two studies using large representative samples show results that are opposite to what we predicted. How can these results be understood?

One interpretation of our results is that the respondents might use a form of heuristic responding induced by the alternative. Relevant here is the affect heuristic (Slovic *et al.*, 2002; Slovic & Västfjäll, 2010), which has shown that people, instead of using careful analysis, rely on their feelings when making judgments (Västfjäll *et al.*, 2014, 2016). For instance, when people are asked to judge the risk versus benefit of an activity, they draw on their general affective feelings (good/bad) for the activity rather than carefully analyzing the pros and cons of that activity. Slovic *et al.* (2002), for instance, found that people used the affect heuristic when making judgments about the risks and benefits of activities and technologies (e.g., nuclear power). A main finding was that people who associate negative feelings with nuclear energy see the technology as having little benefit and of high risk. People who instead have positive feelings associated with nuclear energy judge the activity to be beneficial and of low risk. It is possible that our manipulation worked in a similar way: simply presenting the nudge together with legislation (something that people could possibly associate with negative feelings) decreases the attractiveness of the nudge. Similarly, presenting a nudge next to the status quo alternative (nothing would happen), which arguably most people who dislike paternalism would associate with positive feelings, could spill over to the nudge, effectively making it more attractive.

Another possibility is that salient alternatives may be used in different ways by different individuals. It is likely that some individuals favor legislation and therefore might be willing to reject the nudge. If people think the behavior is important enough to promote, then they might find the tradeoff between paternalism and efficiency to be fine, assuming that most people think that legislation is more effective than nudges. This could be especially relevant to the Swedish context, where citizens historically have had a high level of trust that the government will act in the best interests of its citizens. Effectiveness has been shown to increase the acceptance of nudges (Petrescu *et al.*, 2016). If the group that accepts the nudge in the legislation-as-alternative condition (to avoid legislation) is of similar size to the group that would rather see legislation instead of a nudge (i.e., rejecting the nudge in favor of legislation), the net effect would be zero. If this was the case, then this should be possible to capture indirectly with our individualistic measure. In Study 1, we found that that more (compared to less) individualistic participants had a lower level of acceptance for nudges in the control and no-regulation scenarios, and acceptance was highest when legislation was the alternative. However, the pattern is reversed for less individualistic participants. In Study 2, we instead found that, overall, more individualistic participants were less accepting across the manipulations (replicating Hagman *et al.*, 2015). These findings suggest that individual differences (especially individualistic versus collectivistic worldviews) are important for general acceptance and perceived intrusiveness of nudges and that, furthermore, individual differences may sometimes interact with information about policy alternatives. Thus, an important lesson for policy is that ‘one nudge does not fit all’ (Hagman *et al.*, 2015) – that sometimes the same information will be differently received by different people. This result is consistent with previous research showing the importance of worldviews/values for attitudes toward nudges (Hagman *et al.*, 2015; Jung & Mellers, 2016) and also relates to the notion that the political affiliation of the sender proposing a nudge, as well as the worldview of the receiver of the nudge policy, jointly determine acceptability (Tannebaum *et al.*, 2017).

Importantly, though, we replicate the finding that pro-self nudges overall are more acceptable compared to pro-social nudges (Hagman *et al.*, 2015). Thus, in spite of the overall high level of acceptance of nudges (Sunstein, 2017a), interventions aimed at promoting predominantly private welfare are preferred over interventions aimed at promoting predominantly social welfare. This finding suggests that policy-makers will be more successful in implementing pro-self nudges. Additionally, information campaigns highlighting the benefit for the individual rather than society may increase acceptance of policy changes.

An important possible limiting condition for this research is that we only conducted our studies in a Swedish sample. Even though previous research has reported a rather homogenous view on different nudges in Europe (Sunstein, 2017a) or when comparing Swedish and US samples (Hagman *et al.*, 2015), it is very possible that the effect of more paternalistic alternatives would be different in societies that are more focused on individualistic motives. Sweden has had a longstanding tradition involving a strong welfare state emphasizing collective and uniform solutions throughout the public sector. In contrast, the political discourse in, for example, the USA has traditionally emphasized more liberal values related to freedom of choice. Thus, an important task for future research is to examine whether the effects of alternatives found in a Swedish context translate to other cultures.

In summary, this study set out to demonstrate that comparing a nudge to an explicit alternative that is more paternalistic (legislation) or less paternalistic (no regulation at all) should systematically affect acceptability. However, we found surprisingly little effect on the overall acceptance of nudges regardless of the alternative, and when we found an effect, it was in the opposite direction to our prediction – when the alternative to the nudge is legislation, acceptance decreases. While these findings must be replicated and extended, an interesting implication of our study is that acceptance of nudges may not always automatically increase when legislation is added as an alternative or used as a reference point.

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