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**Are defaults supportive of autonomy? An examination of nudges under the lens  
of Self-Determination Theory**

Alexios Arvanitis,<sup>1</sup> Konstantinos Kalliris,<sup>2</sup> & Konstantinos Kaminiotis<sup>1</sup>

<sup>1</sup>University of Crete

<sup>2</sup> De Montfort University

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Author Note

Alexios Arvanitis, Department of Psychology, University of Crete;  
Konstantinos Kalliris, Leicester De Montfort Law School, Leicester; Konstantinos  
Kaminiotis, Department of Psychology, University of Crete.

Please address correspondence to Alexios Arvanitis, Department of  
Psychology, University of Crete, Gallos Campus 74100, Rethymno. E-mail:  
a.arvanitis@uoc.gr

### Abstract

Nudges, one of the rapidly growing law-making and public policy tools, are considered by their proponents to have a generally neutral effect on autonomy. Our study is the first to test nudges under the prism of Self-Determination Theory, a motivational theory which posits that autonomy is a basic psychological need. We focus on a specific type of nudge, defaults, and test it within the context of making a choice among a hypothetical set of insurance programs for post-graduate students. Results show that the experience of an Internal Perceived Locus of Causality (I-PLOC) is negatively affected by defaults when the number of options is low but there is no effect when it is high. In other words, people are less likely to view themselves as the origin of their choices when defaults are in place and when options are manageable. The experience of an I-PLOC has a positive effect on self-regulation and vitality, partially mediated by perceived competence. We suggest that since even mild manipulations show an undermining effect on autonomy, the so-called ‘libertarian paternalistic’ interventions should be evaluated on the basis of their effect on basic need satisfaction, self-regulation and vitality, all of which are associated with autonomy according to Self-Determination Theory.

*Keywords:* self-determination theory, nudges, libertarian paternalism, autonomy, self-authorship.

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Self-Determination Theory

Nudging is a rapidly growing law-making and public policy tool that is utilized by many governments around the world (Reisch, Sunstein, & Gwozdz, 2017). Nudges are interventions that “steer people in particular directions but that also allow them to go their own way” (Sunstein, 2015a, p. 417). Pre-selected options, better known as *defaults*, provide a familiar example: in many countries, being an organ donor or being enrolled in a health insurance or pension scheme is the default choice (made by the government or one’s employer) but individuals retain the ability to ‘opt-out’, that is, request that they be removed from the list of organ donors or the relevant schemes.

To count as a nudge, the intervention must be easy to avoid and, therefore, several traditional methods of legal intervention, such as fines, imprisonment, subsidies and taxation, are ruled out. Thaler and Sunstein (2008) claim that a subtle arrangement of people’s choices, which they named “choice architecture” can steer them towards good choices while still allowing them to choose differently. This includes good choices *for themselves*, a scheme that is now widely discussed under the somewhat oxymoronic label *libertarian paternalism*. Libertarian paternalism promises “to influence choices in a way that will make choosers better off, as judged by themselves” (Thaler & Sunstein, 2008, p. 5).

Nudges receive considerable criticism on different grounds. For example, nudges may not result in choices that are consistent with the nudgees’ preferences (Bovens, 2009; Nagatsu, 2015). They do not only target the welfare of the nudgee but are also beneficial for other people, thereby classifying them not only as a paternalist but also as a political tool that should be evaluated as such (Clavien, 2018; Guala &

Mittone, 2015). Their legitimacy is also questioned on the basis of criteria concerning both their means and their ends (Engelen, 2019). Perhaps the most important objection to nudges is that they undermine people's autonomy, even though their liberty remains generally unaffected (Bovens, 2009; Hausman & Welch, 2010; Nagatsu, 2015). Objections of course relate to the issue of how autonomy is defined. The different definitions employed in the relevant literature can be classified under three categories: freedom of choice, agency and self-constitution (Vugts, Van Den Hoven, De Vet, & Verweij, 2018). Therefore, the issue of autonomy can be approached under different, meaningful perspectives.

Within this wide debate on the impact of nudges on autonomy, we will focus on an empirical question: Do nudges actually allow people to go their own way? In order to answer this question, we have to be able to measure whether the way people are headed is actually their own, after they have been nudged. As in every other case of seemingly libertarian policies that claim to allow individuals to go their own way, we need to take the viewpoint of the individuals themselves in order to fully evaluate nudges (Arvanitis & Kalliris, 2017). This entails adopting a psychological perspective, within which we will operationalize the aspects of autonomy that were mentioned above. Proper evaluation of nudges generally requires more evidence in order to examine the claim that they are evidence-based (Grüne-Yanoff, 2016). In this endeavor we will rely on Self-Determination Theory (SDT), a motivational theory that has been built "brick by brick" on the basis of empirical research (Ryan & Deci, 2019).

### **A psychological-motivational perspective on nudges**

A psychological perspective is different to the behavioral economics' perspective from which the study of nudges has emerged. Although, in some ways,

behavioral economics developed when psychology found its way into economics (exemplified by the Nobel Prize that was awarded to the psychologist Daniel Kahneman in 2002), it has held onto the concept of preferences in order to approach human behavior (Berg & Gigerenzer, 2010). Indeed, nudges are based on the recognition that people systematically deviate from a preference-satisfying behavior and are used in order to bring them on the right track. On the other hand, psychology is not bound by the concept of preferences. Self-Determination Theory in particular does not have a view of autonomy as a state in which people act according to preferences. People could act according to their preferences and equally be autonomous or non-autonomous depending on the type of motivation. For example, they may consistently prefer to perform behavior that produces an external reward than maintain internal values. This is not considered autonomous behavior according to SDT.

Self-Determination Theory asserts that at the core of the *self* there is an organismic inherent growth potential and an innate tendency for integration of structures, functions and experiences. In other words, individuals have a tendency to grow and incorporate aspects of their life into their *selves*. Once behavior is regulated by the *self*, rather than external structures or forces, it is regulated autonomously. It builds on the organism's talents and abilities and results in higher cognitive performance (e.g., Ryan, Connell, & Plant, 1990), creativity (e.g., Koestner, Ryan, Bernieri, & Holt, 1984), vitality, that is, having mental and physical energy (Ryan & Deci, 2008), and well-being (Ryan & Deci, 2000).

The development of SDT started from the work of Deci (1971), who was interested in examining the effect of rewards on intrinsically motivated activities. These are activities that the person pursues autonomously, without receiving any

rewards other than the activity itself. Deci (1971) found that rewards undermine intrinsic motivation and proposed, on the basis of a distinction made by De Charms (1968), that the effect was due to a shift in the feeling of personal causation: the participants shifted from having an Internal Perceived Locus of Causality (I-PLOC), that is, perceiving themselves as origins of their behavior, to having an External Perceived Locus of Causality (E-PLOC), that is, perceiving themselves as ‘pawns’ to external rewards.

Since the initial studies of Deci (1971), a rich body of research has shown that having an I-PLOC has positive effect on a wealth of aspects of human life, such as achievement and prosocial behavior (e.g., Ryan & Connell, 1989), physical activity (e.g., Chatzisarantis, Hagger, Biddle, Smith, & Wang, 2003), organizations (e.g., Gagne & Deci, 2014), education (e.g., Deci, Vallerand, Pelletier, & Ryan, 1991), and health (e.g., Williams, Grow, Freedman, Ryan, & Deci, 1996). Ryan & Connell (1989) created the first model of PLOC that has been enriched and tested and continues to be empirically supported (e.g., Sheldon, Osin, Gordeeva, Suchkov, & Sychev, 2017). Six types of regulation have now been proposed and empirically tested with regard to a wealth of activities: *amotivation*, that is, lack of intentionality to act (impersonal PLOC), *external regulation*, which is based on external controls such as rewards or punishments (E-PLOC), *introjected regulation*, which is based on internal controls such as guilt or pride (somewhat E-PLOC), *regulation through identification*, where the person identifies with the personal value of behavior (somewhat I-PLOC), *integrated regulation*, where a person not only identifies with a behavior but also integrates that identification within other aspects of the self (I-PLOC), and *intrinsic regulation*, where an act is performed for the sake of the act itself, that is, out of interest or enjoyment (I-PLOC). The latter three forms of regulation are considered

autonomous types of regulation and have been associated with a wealth of positive life outcomes (Ryan, Huta, & Deci, 2008). Moreover, individuals have a natural propensity to transform external into internal regulations, a process called *internalization*, but this process largely depends on contextual factors (Deci, Eghrari, Patrick, & Leone, 1994).

Within SDT, the concept of PLOC has proven useful in empirical work as an operationalization for the concept of autonomy (Ryan & Deci, 2017). I-PLOC has both an experienced and a functional aspect. On the one hand, it is associated with having the *experience* of perceived choice, volition and I-PLOC and, on the other hand, it is connected to deeper functions of organismic integration. In this sense, apart from its phenomenological property, the I-PLOC also has a functional role that relates to the types of regulation mentioned above, as well as the positive functional outcomes that are associated with them. Autonomy -and the I-PLOC- can be conceptualized both through its phenomenological property (the self-as-*me*) as well as through its deeper functional properties (the self-as-*process*; for a fuller discussion see Ryan & Deci, 2017).

It is important, for our purposes, to note the practical connection of the I-PLOC to autonomy within SDT. On the one hand, autonomy is the theoretical concept that refers to the sense that one's actions emanate from oneself and has empirically been shown to be undermined under the presence of contextual factors such as rewards, threats, deadlines, surveillance (Deci & Ryan, 1987). Research has also shown that it is essential for psychological growth, integrity and well-being and therefore qualifies as a need (Deci & Ryan, 2000). On the other hand, the I-PLOC operationalizes the theoretical concept of autonomy in empirical research.



The support of autonomous regulation is essentially the support of the organism's integrative and growth potential. Years of research show that this is possible by providing support not only for the need for autonomy but for all three basic psychological needs, namely the needs for autonomy, competence and relatedness (Deci & Ryan, 2000). *Autonomy* is the need to self-regulate, *competence* is the need to achieve mastery and *relatedness* is the need to connect to others. The needs do not necessarily each have an isolated functional effect on the human organism but there also appear to be synergistic effects. For example, Dysvik, Kuvaas, & Gagné (2013) found that competence support has a positive effect on work motivation only if autonomy is supported at the same time. Sierens, Vansteenkiste, Goossens, Soenens, & Dochy (2009) found that competence support interacts with autonomy support in order to produce a positive effect on self-regulated learning. Deci, La Guardia, Moller, Scheiner, & Ryan (2006) showed how autonomy and relatedness complement each other in producing fulfilling relationships. Therefore, in order to facilitate autonomous regulation, the environment must often go beyond simply providing nutrients for autonomy toward providing support for relatedness and competence as well.

### **Options and autonomy**

In order for people to be able to go their own way, there should be enough 'ways' to choose from, that is, enough options. There is an intuitive appeal to the idea that having more options are, other things being equal, preferable to having less options, which seems to be no more than a rule of thumb or an 'empirical generalization in philosophical discussions' (Dworkin, 1982). This view is closely linked to the idea that autonomy as self-rule is, at least in part, an exercise concept: enjoying an adequate range of options allows us to make life-shaping choices, provided that other

factors do not restrict our autonomy (Raz, 1986; for a relevant discussion also see Kalliris, 2017). However, there also seems to be considerable appeal in the view that having to make *too many* choices can be overwhelming, undesirable and ultimately damaging to personal well-being (Schwartz, 2000). Baumeister, Bratslavsky, Muraven, & Tice (1998) suggest that making choices could generally result in ego-depletion, that is, a temporary state for reduced willingness to engage in voluntary action caused by a prior exercise of choice, although this is more probable when the prior choice was controlled, rather than autonomous (Moller, Deci, & Ryan, 2006). When such choices are indeed controlled, meaning that people feel compelled to make them, and individuals would rather not make those decisions themselves (because they are, for example, too complicated or otherwise burdensome), they may prefer them to be made for them by someone else. Then both their autonomy and well-being would be benefited because they would save valuable time that they could spend on other issues (Shah, Mullainathan, & Shafir, 2012). Some nudges appear to qualify as ‘pre-made decisions’ of this kind and defaults are perhaps the most obvious example of such a decision on the part of the government. In his discussion of defaults, Sunstein (2014) defends this particular type of nudging by relying, among other arguments, on a similar point regarding defaults and autonomous decision-making. He argues that active choosing increases the cost of decision-making by imposing large and unwelcome burdens to choosers, such as choosing every simple feature of their internet connection plan or any other scheme or setting that is too technical or complicated. Defaults can relieve individuals of this burden and, furthermore, reduce the risk of error. Again, when active choosing becomes too technical or overwhelming, people would be better off in terms of both autonomy and well-being by relying on the default option, assuming that the choice architect who

sets the default has the necessary expertise and does not produce policies that simply reflect her own choices (Ambuehl, Bernheim & Ockenfels, 2019; Beraldo, 2017).

Health insurance and pension schemes can illustrate the point: in theory, many individuals would be frustrated by the volume of the work required to choose the plan that best works for them among an overwhelming number of highly technical options and it may make sense to assume that they would not consider their autonomy restricted by a preselected default.

### **Scope of the study**

The study aims to explore the effects of default nudges on autonomy, as conceptualized through the SDT framework, in the context of health insurance schemes. For the purposes of this study the imposition of a nudge will be as mild as pressing a button on the remote control to change the television station after a popular program. Even with very low switching costs, people will tend to stay on the same television channel after the end of a popular television program, thereby illustrating the power of defaults (Esteves-Sorenson & Perretti, 2012). We chose a mild manipulation, with similar switching costs, in order to explore the minimum effects of defaults on autonomy. At the same time, we wanted to test the effect of the number of options. As mentioned in the previous paragraph, defaults may be welcome when a choice becomes burdensome due to an unmanageable number of options. We therefore expected that undermining effects of defaults on autonomy would be present only with a manageable number of options, compared to a large number of options in which the default would have no effect. In other words, we expected that a default will have negative impact when options are manageable. We also expected that our mild manipulation would only have an immediate effect on the proximal aspect of experienced autonomy, and more particularly the experienced I-PLOC, whereas any

effects on distal functional aspects would be partially mediated by the fulfillment of the need for competence (on the basis of the synergistic effects of the basic psychological needs).

## **Method**

### **Participants and design**

One hundred and thirty-nine undergraduate psychology students from the University of Crete participated in this study. Of these 87.1% were women and the mean age was 20.46 ( $SD = 3.54$ ). The experiment was based on a 2 (Default: Yes, No) x 2 (No. of options: 3,9) between-subjects design.

### **Procedure and materials**

Participants responded voluntarily to a research announcement made by one of the authors at the end of university lectures. They were informed that the study involved the selection of health insurance programs and gave written informed consent, in line with the World Medical Association's declaration of Helsinki. Due to the nature of the task, we anticipated minimal emotional involvement on the part of participants.

Deception was kept to a minimum and involved the true purpose of the study as well as its experimental design, since the study was presented as a European Union survey on possible future health insurance programs. After completion, participants were thoroughly debriefed on the exact nature of the study, were probed for suspicion, and were excused.

The materials started with a one-page description of the study, explaining that the number of post-graduate students around Europe has increased and that the European Union has decided to pilot-test a subsidized health insurance program that requires 10% of the total cost to be covered by the students themselves. Participants were asked to evaluate these programs. The description of the study also introduced

the two manipulations. In terms of the *Number of options*, students were either told that the study involved the pilot-testing of three insurance programs or they were told that it involved the pilot-testing of nine insurance programs. The programs were then presented in a brief table. In terms of the *Default*, students were either told in one short paragraph that the European Union had pre-selected a specific program (the selection was denoted by a tick next to the label of the program) or they were told nothing (and the programs had no tick next to their labels).

The participants were then given a short description of the categories that were necessary to evaluate the health insurance programs. The categories were 13 in total, and referred to coverage of treatment within the country and abroad, check-ups, surgery, doctor fees, exclusive nurse, room classes, surgical allowance etc. After being familiarized with the basic properties of health insurance programs, participants were presented with the specifics of each program. There were many variations in aspects of the programs, including their price, which varied from 130 to 170 Euros per year.

A table of the health insurance programs was subsequently given to the participants (either three or nine programs, depending on condition) and they were called on to indicate the insurance program of their choice by writing an 'X' next to it. If the participants were in the Default condition, the pre-selected program had already a tick next to it. If they agreed with the default, they were requested to leave it that way. If they disagreed with the default, they were requested to write an 'X' next to the program of their choice.

Finally, participants were asked to fill in a questionnaire with the following scales: a twelve-item, constructed for the purposes of this study, Experienced Autonomy Scale (similar to Reeve, Nix & Ham, 2003) with the subscales *perceived*

*choice* (with items such as “I believe I had little choice in selecting an insurance program”;  $\alpha = .69$ ) *volition* (“I feel relaxed by the selection of the insurance program”;  $\alpha = .81$ ) and *locus of causality* (“I feel the selection I made is a product of my own thoughts”;  $\alpha = .84$ ), the Subjective Vitality Scale (SVS; Ryan & Frederick, 1997;  $\alpha = .84$ ), the Situational Motivation Scale (SIMS; Guay, Vallerand & Blanchard, 2000; amotivation  $\alpha = .85$ , external regulation  $\alpha = .76$ , identified regulation  $\alpha = .74$ , intrinsic regulation  $\alpha = .87$ ), and the Perceived Competence Scale (adapted from Williams & Deci, 1996;  $\alpha = .90$ ). The Perceived Competence Scale was used as a measure of fulfillment of the need for competence, while SVS, as a measure of physical and mental energy, and SIMS, as a measure of self-regulation, were employed as measures for the functional aspect of autonomy. A 7-point scale (1=not true, 4=somewhat true, 7=completely true) was used for all items.

## Results

### Effect of Default on participant choice of insurance program

For our mild manipulation to have an effect on choice, we expected that participants would tend to choose the default option when they were presented with one. Indeed,  $40/69 = 58\%$  of participants chose the exact same option in the default condition, while  $27/70 = 38,6\%$  of participants chose the default option in the no-default condition,  $\chi^2(1) = 5.238, p = .022$ . Therefore, our manipulation worked as expected.

### Effect of Default and No. of options on locus of causality

We performed a 2 (Default: Yes, No) x 2 (No. of options: 3,9) ANOVA with locus of causality as our dependent variable (*see Figure 2*). We found a main effect of Default,  $F(1,134) = 8.024, p = .005, \eta_p^2 = .056$ , with participants reporting higher internal locus of causality in the no-default condition ( $M = 5.84, SD = .99$ ) than the default condition ( $M = 5.27, SD = 1.39$ ). This effect was qualified by a significant Default x

No. of options interaction,  $F(1,134) = 7.039, p = .009, \eta_p^2 = .05$ . Simple main effects analysis showed that in the condition of 3 programs, locus of causality was higher in the no-default condition ( $M = 6.16, SD = .83$ ) than in the default condition ( $M = 5.06, SD = 1.42, F(1,134) = 15.047, p < .001$ ). There was no statistical significant difference in the condition of the 9 programs,  $F(1,134) = .016, ns$ .

Moreover, within the default condition, participants that did not choose the default option had higher internal locus of causality ( $M = 5.88, SD = 1.21$ ) than the participants that did choose the default option ( $M = 4.83, SD = 1.35, t(67) = 3.344, p = .001$ ).

Last, we performed 2-way ANOVAs on perceived choice, volition, perceived competence, vitality and Situational Relative Autonomy Index (SRAI, calculated from the SIMS as follows:  $2 \times \text{intrinsic motivation} + \text{identified regulation} - \text{external regulation} - 2 \times \text{amotivation}$ , cf. Grolnick & Ryan, 1997). No main effects or interactions were significant.

### **Locus of causality and functional aspects of autonomy**

In order to determine the ways in which experienced aspects of autonomy and, more specifically, the experienced aspect of the I-PLOC predicts functional aspects of autonomy (i.e., self-regulation, measured by SRAI, and vitality, measured by SVS), we performed a path analysis (see *Figure 2*). We predicted that the experienced I-PLOC would positively predict self-regulation and, through it, vitality but the effect would be partially mediated by perceived competence. This was expected on the basis of the synergistic effects of the basic psychological needs and their functional significance. The fit of the model was very good,  $\chi^2(1) = .134, p = .714, RMSEA < .001, SRMR = .0085, GFI = 1, NFI = .998$ . As expected, the effect of the experienced locus of causality on SRAI was partly mediated by perceived competence and the

effect on vitality was mediated by both SRAI and perceived competence. Indirect effects are reported in *Table 1*.

### **Discussion**

Defaults are often described by their proponents as having a neutral effect on autonomy because they do not exclude any options for the chooser. Our study, the first that approaches nudges under the prism of Self-Determination Theory (SDT), shows that even a mild default will result in a less internal PLOC (in terms of its experienced aspect) when participants are called to choose among a manageable set of options. What counts as manageable would of course vary with the type and the particulars of every choice. In our study, the choice involved a rather distant and hypothetical insurance program and we, therefore, expected participants to have a low threshold for the number of options they would willingly engage in. Only when the constructed insurance program involved the manageable number of three options did the default have an undermining effect on autonomy.

Our mild manipulation had no effect on other experienced aspects of autonomy such as perceived choice and volition or functional aspects of autonomy such as self-regulation or vitality. This might be taken to mean that mild defaults cause a minor, even negligible, negative effect on autonomy, that is an effect that would be closer to the picture drawn by nudge theorists. However, on the basis of our path analysis, participants' experience of an internal perceived locus of causality does seem to have positive effect on self-regulation and vitality, partially mediated by perceived competence. This mechanism of support of autonomy for competence (for more, see Ryan & Moller, 2016) accounts more fully for the kind of need-supportive process that is necessary for the promotion of autonomous types of regulation and the achievement of higher vitality. In this sense, a supportive environment is an



environment that provides nutrients for all needs. In the context of our experimental setting and in terms of autonomy support, the absence of defaults and the grouping of options so that they appear manageable might be required. However, it would not suffice. In terms of competence support, differing levels of options (e.g., the chance to choose among either three or nine insurance programs or the opportunity to elaborate on the initial three programs or, even, the prospect of receiving differing amounts of information) would offer the appropriate level of challenge for each citizen and the structure necessary for the satisfaction of the need for competence. After all, the selection of a –paternalistic– intervention does not necessarily have to be between allowing a chaotic choice with an unmanageable number of options on the one hand and imposing a default on the other. An arrangement of choices, in the spirit of a slightly different choice architecture, that aims to ‘manage’ a large number of options and, perhaps, categorize them conveniently is perfectly conceivable.

The effort to find remedies for need-thwarting effects of nudges may expand to include remedies for more traditional paternalistic interventions. If mild nudges do, in fact, under specific circumstances, have a negative impact on aspects of autonomy, it is worth asking how negative an impact a more traditional paternalistic intervention, such as small fines, may have. Traditional legal paternalism of course does not emerge as a natural candidate for facilitating self-regulation. Sometimes it even takes the form of a legal statute that makes the self-harmful conduct in question a criminal offense. When this offense is punishable by imprisonment (as it is often the case with the use of drugs and other illegal substances), the effect on autonomy is devastating. However, when the paternalistic law punishes the self-harmful conduct by means, for example, of a small fine, the relevance of this discussion becomes obvious. The question that follows naturally concerns the conditions under which a small fine will

support autonomy. One possibility is that mild punishment will have minimum negative impact on autonomy if it is accompanied by a strong informational component, in line with the position that rewards which are informational do not have adverse effects on autonomous motivation (Deci, Koestner, & Ryan, 1999).

According to SDT, all external events have two functional aspects: a controlling and an informational aspect. The controlling aspect facilitates an E-PLOC whereas the informational aspect facilitates an I-PLOC (Ryan, 1982). The impact of any external event on autonomy is dependent upon which of the two aspects becomes salient. Traditional paternalism gives prominence to rewards and punishments and therefore emphasizes controlling aspects. Bringing out an informational aspect will inevitably pose a challenge. However, the same challenge must be met by libertarian paternalism. A default, for example, may carry with it the information that it is endorsed by an expert (Sunstein, 2013). On the other hand, it has also been argued that nudges work best in the dark (Bovens, 2009), in the sense that being transparent about a nudge's purpose and function undermines its efficiency. A study casts doubt on this assumption, finding that being transparent about the purpose or potential influence of a default (or both) does not change the way people make decisions (Bruns, Kantorowicz-Reznichenko, Klement, Luistro Jonsson, & Rahali, 2018). This informational aspect of the influence of nudging on autonomy warrants further discussion (especially through the lens of SDT) just as it does in the case of traditional legal paternalism.<sup>1</sup> If we adopt the SDT perspective, the main question for both approaches is how such information may provide autonomy support, facilitate integration, and result in higher vitality and well-being. These remarks challenge the

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<sup>1</sup> These points similarly apply to non-paternalistic interventions that may take the form of nudges or incentives. In this paper, we focus on paternalism because paternalistic ends make autonomy-restricting means more difficult to justify.

implied dichotomy between traditional legal paternalism and libertarian paternalism, in the sense that, firstly, nudges can undermine aspects of autonomy, as shown by the current study; and, secondly, traditional legal paternalism can impose minor restrictions of autonomy that are not necessarily more regrettable than those discussed in our study of nudges, especially if they are accompanied by adequate information that can be consciously processed and internalized.

Information seems to be crucial for internalization and, more importantly, for integration (Deci, Eghrari, Patrick, & Leone, 1994). Informed people actively enacting their intrinsic tendencies is arguably the ideal form of self-authorship and the best way for people to choose what is best for them. Internalization of a behavior and, more so, its integration secures that people will choose what is best for them across situations and will produce lasting behavior change that will minimize the necessity for further paternalistic interventions. The motivational perspective of SDT can, therefore, help in the minimization of excessive nannyism by the state (Le Grand, & New, 2015). Mols, Haslam, Jetten, & Steffens (2015) make a similar argument about the need for internalization, although they specifically refer to *norm* internalization and approach nudges from the scope of Social Identity Theory. From an SDT perspective, our study shows that defaults will shift PLOC outward when the number of options is low and should probably be avoided. In cases where the number of options is exceedingly high and need-supportive options are too expensive, defaults do emerge as an efficient and inexpensive way to help people to make the right choice for them, without a seemingly heavy further burden on autonomy. However, their evaluation should always be context-dependent and take into account the issues that have been addressed in this article. Sunstein (2015b) correctly points out that nudges should be evaluated in the proper context rather than as a mere abstraction. We agree

and feel that their evaluation should open up to include their effect on need satisfaction, self-regulation and vitality. The same applies for more traditional paternalistic interventions.

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*Table 1*

Indirect effects of locus of causality and perceived competence on functional aspects of autonomy

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Locus of causality → SRAI	.086*
Locus of causality → Vitality	.120**
Perceived competence → Vitality	.142***

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*Note* Scores indicate standardized indirect effects.

\*  $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

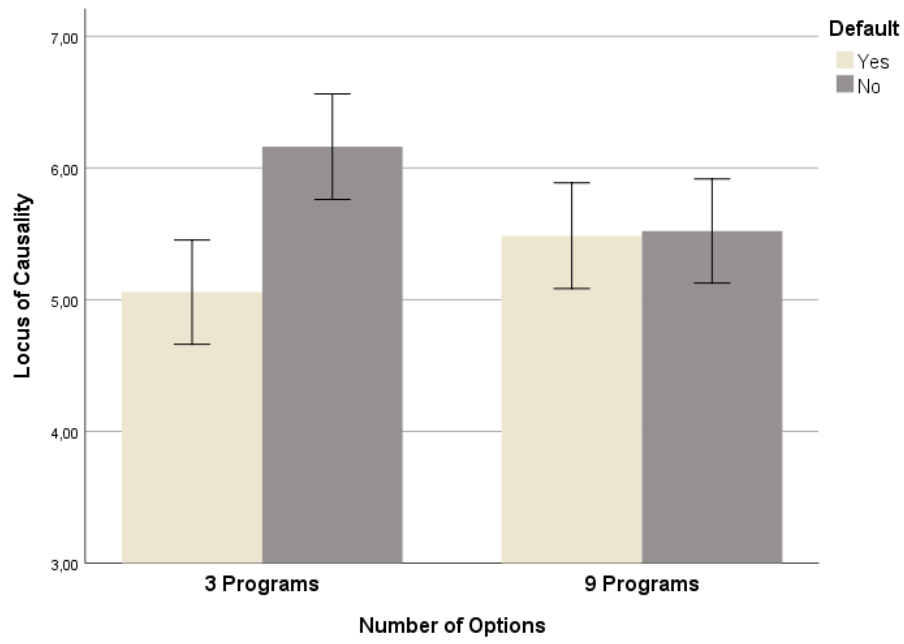


Figure 1. Locus of Causality as a function of Default and Number of Options

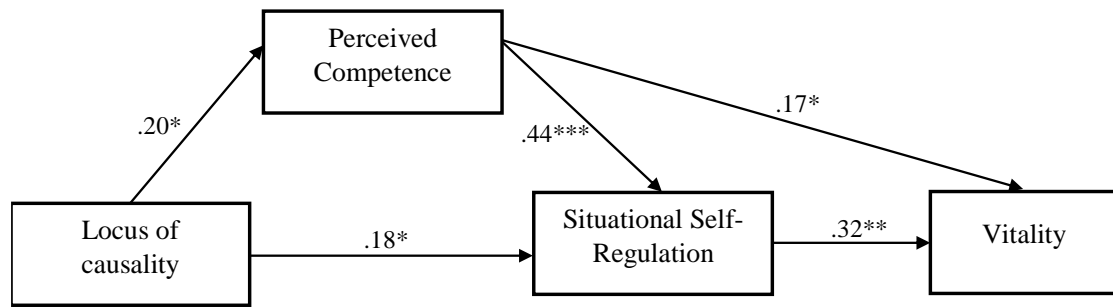


Figure 2 Standardized direct effects within a model of the functional aspect of autonomy