



Viewpoint

Beyond carrots and sticks: Europeans support health nudges

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ABSTRACT

All over the world, nations are using “health nudges” to promote healthier food choices and to reduce the health care costs of obesity and non-communicable diseases. In some circles, the relevant reforms are controversial. On the basis of nationally representative online surveys, we examine whether Europeans favour such nudges. The simplest answer is that majorities in six European nations (Denmark, France, Germany, Hungary, Italy, and the UK) do so. We find majority approval for a series of nudges, including educational messages in movie theaters, calorie and warning labels, store placement promoting healthier food, sweet-free supermarket cashiers and meat-free days in cafeterias. At the same time, we find somewhat lower approval rates in Hungary and Denmark. An implication for policymakers is that citizens are highly likely to support health nudges. An implication for further research is the importance of identifying the reasons for cross-national differences, where they exist.

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1. Introduction

1.1. The popularity of nudges

Despite millions of euros and dollars spent by governments worldwide to combat obesity and steer individuals towards healthier lifestyles, global obesity rates have risen substantially over the last three decades, presenting a major public health problem in both the developed and developing world. In Europe, obesity levels are high and rising.¹ Unhealthy diets now rank with alcohol and tobacco smoking as a global cause of preventable non-communicable diseases (Ng et al., 2014; WHO, 2013). Particularly alarming is the fact that child overweight and obesity rates have risen markedly to high levels in many countries worldwide.²

Public health policy directed at countering this pandemic has included a range of health interventions using a multitude of instruments and policies, executed on all levels (individual, family, school, neighborhood, city, nation state). The outcomes, however, have been mixed (Bailey and Ross Harper, 2015; Dobbs et al., 2014). While public policies promoting healthier lifestyles are broadly accepted (in particular when directed to children), public acceptance seems to depend on a range of factors that have yet

to be fully specified, including the perceived level of intrusiveness of the policies (which may or may not match the actual level) as well as the preexisting attitudes of the respondents (Mazzocchi et al., 2015).

As a result, governments worldwide have become increasingly interested in innovative policy tools to curb the obesity crisis, including “nudges” (e.g., Cohen et al., 2016), such as disclosure policies, warnings, reminders, and feedback (e.g., Halpern, 2016; Hawkes et al., 2015). Like a GPS device, these nudges are designed to steer individuals in certain directions without limiting their freedom of choice (Thaler and Sunstein, 2008). Examples include simplification of information and choices, framing and priming of messages, defaults, positioning of products in supermarkets and cafeterias, self-pledges, and multiple elements of purposeful choice architecture applied to physical or virtual contexts (e.g., Sunstein, 2014). The promise of such approaches is that they may have large effects on health without forcing anyone to do anything and indeed without imposing strictly economic incentives (such as taxes or subsidies) of any kind (id.). Of course such effects must be established rather than merely assumed.

A notable incident occurred in the summer of 2016, when a surprised public witnessed the virtual game Pokémon GO motivating a hard-to-reach target group of teenagers (and also playful adults, including one of the present authors) to move and walk through the parks and streets. The game, having been downloaded over 500 million times worldwide, did so by harnessing *homo ludens*' competitiveness and quest for fun; a little nudge that (at least for a while) did what years of education and information could not

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E-mail address: lr.ikl@cbs.dk (L.A. Reisch).¹ http://ec.europa.eu/eurostat/statistics-explained/index.php/Overweight_and_obesity_-_BMI_statistics (accessed 30.12.2016).² <http://www.who.int/end-childhood-obesity/en/> (accessed 30.12.2016).

do. Although this gamification nudge has since lost most of its appeal, it increased physical activity also for younger age groups over several weeks (Althoff et al., 2016; Howe et al., 2016). Small as it is, the incident underscores the potential effects of behavioural stimuli other than regulation, financial incentives, and taxes.

In fact, growing evidence demonstrates the potential effectiveness of nudges (see Sunstein and Reisch, 2017, for an extended overview) in areas as diverse as health and wealth, poverty and development, and environment and climate change. Public officials across the globe are currently “testing-learning-adapting-sharing” their practical experiences with nudging strategies (e.g., BIT, 2015; SBST, 2016; Sousa Lourenco et al., 2016). Not only is nudging a low-cost intervention with the potential to promote healthier lifestyle choices without the need for restrictive regulation (Arno and Thomas, 2016), but nudge-based policies have also led to increases in healthier dietary or nutritional choices as measured by changes in healthy choice frequency or overall caloric consumption (ibid.). In light of the increasing empirical evidence, therefore, the question whether behavioural economics is contributing to making our populations healthier (Loewenstein et al., 2012) can be answered in the affirmative.

Nonetheless, critics of behaviourally based regulation protest that citizens, on principle, do not like to be “nudged” by their governments. One objection is that nudges can be manipulative and insufficiently transparent (as opposed to legal instruments or fiscal instruments). Another complaint is that paternalistic nudgers are themselves prone to biases and use heuristics; that is, the same behavioural anomalies that nudgers seek to compensate for or harness may beset public officials. Yet another critique is that nudges focus on the individual while the substantial problem lies in the food environment (e.g., Schröder and Lyon, 2013). We believe, however, these concerns can successfully be addressed by insisting on avoiding manipulation, with full transparency of the nudges and their aims, and with a kind of choice architecture for choice architects (Sunstein, 2016b). It is noteworthy that when made transparent, nudges have been found to be effective (e.g., Brunus et al., 2016; Loewenstein et al., 2015; Steffel et al., 2016). And highlighting the non-conscious processes by which some nudge interventions may work has not decreased their acceptability in earlier studies (Petrescu et al., 2016; but see Jung and Mellers, 2016).

At least to appearances, however, the public debate on nudging seems more positive in the English-speaking world (i.e., the UK, U.S., Australia) than in, for example, German-speaking countries, where prominent individuals and groups have seemed (and we emphasize that word) more critical of official use of behavioural science (i.e., a policy of experimenting, pilot testing, and thinking in feedback loops) and of the policy tools (the nudges) themselves. The ideological, legal, and philosophical issues underlying these objections are discussed elsewhere (see e.g., Blumenthal-Barby and Burroughs, 2012; Cohen et al., 2016; Department of Health Ireland, 2015; Sunstein, 2016b,c). Instead of relying on appearances, impressions, and anecdotes, we take an empirical approach here. As we shall see, the appearance of public debates is misleading; there is broad majority support for health nudges in a variety of nations.

To assess popular attitudes across Europe, we conducted representative online surveys in Denmark, France, Germany, Hungary, Italy, and the UK, asking respondents whether they approved or disapproved of a list of 15 nudges.³ These nudges covered a wide range of topics (including health, environment, donations, green

energy) and represented different levels of intrusiveness from weak (e.g., educational campaigns against overeating) to strong (e.g., a default of one meat-free day per week in public cafeterias). Stretching the research question and offering an extreme case, we deliberately included one item in the survey that we would not count as a nudge: subliminal advertising, even for a good cause (healthy eating), is clearly manipulative, not transparent, and is hence not acceptable to be used by governments. Somewhat surprisingly, the responses identified a substantial consensus among disparate nations – including majority opposition to subliminal advertising (Reisch and Sunstein, 2016).

The simplest and most important lesson we take from our findings is that if individuals believe that a nudge has legitimate goals and conforms to the interests or values of the majority, they are overwhelmingly likely to favour it. For this reason, and to that extent, public officials have a kind of permission slip from citizens in diverse nations, as they may not for mandates. This finding also fits with other research evidence that individuals do not oppose nudges as such. Rather, their judgments usually depend on whether the particular nudge is perceived as well-motivated and to fit with the interests and values of most of those it affects (Reisch and Sunstein, 2016). In this respect, policymakers need not worry that health nudges will run into the kind of objections, from majorities, that have sometimes surfaced in the academic and even public domain. Of course, public approval is not a sufficient justification for proceeding. Whether the public approves or disapproves, officials must consider the effects of any intervention on people’s welfare. They still have the challenging task of carefully weighing the costs and benefits of the respective nudges, of comparing their efficacy with other potential policy tools, and of fitting them into the larger policy toolbox (Gorski and Roberto, 2015; Hawkes et al., 2015).

1.2. Nudging for health

As noted, much of the individual and societal health burden is caused by such modifiable behaviours as smoking, unhealthy food consumption, and sedentary lifestyles. For that reason, governments worldwide have been drawn to health nudge interventions to steer individuals into healthier eating and, more generally, into healthier lifestyles (Bailey and Ross Harper, 2015; Cohen et al., 2016; Halpern, 2016; Matjasko et al., 2016; Wansink, 2013). Such tools are appealing as complements to or substitutes for other tools, including required nutritional standards (e.g., salt content) and fiscal measures (e.g., fat or soft drink taxes). Even isolated attempts at hard regulation (e.g., banning advertisements in children’s TV programming in Sweden or Quebec) and voluntary self-regulation by industry (e.g., the EU Pledge) appear to have achieved less than their advocates hoped. Increasing research evidence suggests that a key to changing nutritional and activity patterns is the purposeful design of living and consumption environments – the so-called choice architecture (Bucher et al., 2016; Halpern, 2016). Such architecture can influence the amount of calorie intake (Wansink et al., 2009); it might also assist in the maintenance of healthier lifestyles once adopted (Kelly et al., 2016).

In fact, policymakers have achieved good results with different types of health nudges, including commitment contracts for smoking cessation (Giné et al., 2010) and temptation bundling (Milkman et al., 2014). Health communication can be improved by the priming and framing of key information (Wilson et al., 2016). All such research combines to provide mounting empirical evidence for the World Health Organization’s mantra: “Make the healthier choice the easy choice” through easy access and broad availability and affordability of healthier options.

³ The full study has been published as: Reisch and Sunstein (2016), Do Europeans like nudges? *Judgment and Decision Making*.

As of now, over 150 governments worldwide enlist behavioural science, with particular emphasis on nudges (Ly and Soman, 2013; OECD, 2017; Sunstein, 2016a; Whitehead et al., 2014). For example, in 2010, the UK established a Behavioural Insights Team that has served as a model for many governments and now has an extensive track record in “nudging for health” (BIT, 2015). In 2014, the U.S. created its own Social and Behavioural Sciences Team. President Obama has formally embraced such approaches with his 2015 Executive Order endorsing the use of behavioural science to improve public service provision (including public health) (Obama, 2015). In 2015, both Germany and Australia established their own behavioural science teams, with the latter making systematic use of behaviourally based policies in the health sector (Halpern, 2016). The Netherlands and some Nordic countries have been systematically using behaviour-based health policies for many years and evaluate these programs regularly. In all these countries, “nudging for health” is considered an attractive additional option in the health policy toolkit, one that promises to make health policies more effective, efficient, and acceptable.

This paper aims to provide some insights into the general acceptability and endorsement of health nudges among socio-demographically and politically defined population segments in six European nations. We begin by reviewing extant research on attitudes toward health nudges, which is not only scarce but limited to specific nudges and countries. We then outline our sampling and analysis method, survey instrument, types of nudges studied, key sociodemographic variables, and the political attitudes that may be relevant in explaining the findings for different countries. To measure the acceptability of the different health nudges in the six countries surveyed, we test several hypotheses using multilevel regression analysis. From these results, we extrapolate overall patterns, national characteristics, and the influence of political attitudes on social approval of health nudges, all with potential implications for research and policy.

2. Prior studies

To date, several valuable studies have employed interviews, surveys, experimental designs, or systematic evidence reviews to answer the question of whether the citizens of various nations endorse health nudges – and if yes, which ones.⁴ One such study of 952 individuals in Sweden and the U.S. found that strong majorities in both countries support nudges on smoking discouragement, smoking cessation, choice architecture for healthier cafeterias, and “traffic light” labelling of food items (Hagman et al., 2015). An earlier survey of 2775 individuals in Canada and the U.S. (Felsen et al., 2013) showed that individuals are favourably disposed to nudges that promote reflection and deliberation (System 2 nudges) and those that target or enlist more automatic processing (System 1 nudges) Kahneman, 2011 – but with stronger support for the former. The most comprehensive study to date, conducted in the U.S. (Jung and Mellers, 2016), also finds broad support for a wide range of nudges, several involving public health. It similarly found that System 2 nudges targeting deliberative processing are more popular than System 1 nudges targeting more automatic processing. It also found that certain personality characteristics (e.g., an empathetic tendency) seem to be associated with support for (certain) nudges, whereas others (e.g., individualistic or reactant tendencies) are associated with their rejection (ibid.). Another U.S. survey similarly found a preference for nudges that affect deliberative processing over nudges that affect automatic processing, though the preference was quali-

fied, and could shift with evidence that the latter was more effective (Sunstein, 2016d).

In an especially illuminating U.S. study, Tannenbaum et al. (2015) identify “partisan nudge bias”: People do not oppose nudges as such, and their judgments are importantly affected by the political valence of nudges and nudging. In particular, they found that if participants are told that certain nudges are supported by particular leaders or parties (including automatic enrollment for food stamp programmes and safe sex education), their general views about nudging can be greatly affected, suggesting the partisan nudge bias. They find, in short, that most people have no independent view of nudging as such; they form their judgments on the basis of what political interest nudges will serve. By contrast, mandates do run into objections as such (Sunstein, 2016c).

Particularly relevant for our study is a Dutch survey, comparing individual health nudge attitudes in Germany, the Netherlands, France, Italy, Poland, Bulgaria, and the UK, which found broad approval in those countries for health nudges (Junghans et al., 2016). It also found that consumer approval is influenced by the perceived intrusiveness of the nudge, gender, and the source of the nudge mediated by the degree to which this source is trusted. Not surprisingly, overall levels of approval are higher when perceived intrusiveness is low and the source is more trusted. Also more highly approved are nudges implemented by experts and industry as opposed to policy makers. Approval does not seem to be associated, however, with consumer political orientation, although women approve nudge policies on average more than men do. Rather, according to a comparative overview of the acceptability of government interventions for health-related behaviours (Diepeveen et al., 2013), nudge policy approval varies as a function of three factors: the targeted behaviour (with more support for smoking-related interventions), type of intervention (with most support for less intrusive interventions, those already implemented, and those targeting children and young individuals), and individual respondent characteristics (with the highest support coming from those who do not engage in the targeted behaviour, and women and older respondents more likely to endorse even more restrictive measures).

A qualitative interview study with UK consumers (Junghans et al., 2015) further indicated that most consumers approve of the concept if it is explained to them, especially in the realm of health behaviour, especially if the nudges are understood to benefit individuals and society, and especially if consumers understand the decision-making context and the reasoning behind the promotion of the targeted behaviour. Interestingly, these interviews revealed very little concern with the manipulative aspects of nudges. Nevertheless, Petrescu et al. (2016) showed that although consumers in both the UK and the U.S. find nudge interventions to reduce consumption of sugar-sweetened beverages more acceptable than taxation, they judge them less acceptable than education (which can be seen as a kind of nudge). Contrary to their predictions, however, these authors found no evidence that highlighting the non-conscious processes through which some nudge interventions may work decreases their acceptability, although highlighting the effectiveness of all interventions did seem to increase it.

Based on this initial empirical evidence as well as on own research in the U.S. (Sunstein, 2016c), we chose to study six countries representing different cultural and geographic regions of Europe, as well as different socioeconomic regimes, political traditions as well as stages of implementation of nutrition policies in general and health nudges in specific. More specifically, the sample encompasses a Nordic welfare state with a long tradition of paternalistic health policies and a public health care system (Denmark); a social market economy with a deep, historically grounded distrust of paternalism (Germany); a Central European post-socialist country

⁴ It might also be noteworthy that Denmark has the highest food prices in the EU and therewith in our country sample, see <http://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20170127-1?inheritedRedirect=true&redirect=%2Feurostat%2F> (accessed Jan 29, 2017).

(Hungary); two Southern European countries with different political regimes, problems, strengths, and political experience with nudging (France and Italy); and the UK, the country that has spearheaded nudging as a policy tool worldwide.

3. Evidence from Europe: a cross-national study

3.1. Our study⁵

Our nationally representative online surveys were administered to approximately 1000 respondents each in Denmark, France, Germany, Hungary, and Italy and to about 2000 respondents in the UK. In five of the countries, the questionnaires were filled out as part of a CAWI (computer assisted Web interview) omnibus survey, which being unavailable in Hungary was replaced by a CAWI ad hoc survey. The survey questionnaire built on prior work in the U.S. (Sunstein, 2016c), with some vignettes adjusted to the European setting. The nine items related to health included different nudge types, targeting either automatic System 1 or deliberative System 2, and reflected five different levels of intrusion: educative nudges (e.g., information campaigns), mandated information nudges (e.g., labels and warnings), defaults and choice architecture, choice editing, and manipulative stimuli (subliminal advertising). As noted above, the latter does not qualify as a “nudge” in our view but rather marks the boundary to unethical manipulation. Once developed, the fully structured questionnaire with randomized questions was translated into the respective languages and pretested. Approval was measured by the question “Do you approve or disapprove of the following hypothetical policy?” with two possible answers, “approve” or “disapprove”. The final survey was conducted online by GfK (*Gesellschaft für Konsumforschung*) during the first two weeks of September 2015.

3.2. Nudges

The nine health nudges can be grouped as follows in terms of increasing intrusiveness: (1) purely governmental campaigns to educate individuals (e.g., about childhood obesity, smoking, or overeating); (2) mandatory information nudges, imposed by the government on the private sector, requiring disclosure of nutritional value and health risks of food (e.g., calorie labels, high salt level warnings, nutritional traffic lights); (3) mandatory defaults and choice architecture for retailers to support healthy foods (sweet-free cashier zones; placement of healthy goods); (4) mandatory choice editing that goes beyond mere nudging (e.g., meat-free days in public cafeterias); and (5) mandatory subliminal advertising, imposed by government on movie theaters, to discourage individuals from smoking and overeating. While we would not count (5) as a “nudge” since it is not transparent but clearly hidden and manipulative, we included the item in the list to find out whether people would object to such an intervention (happily, they did!).

The mean approval ratings for these five intervention groups are reported as percentages in Table 1.

3.3. Sociodemographic variables and political preference

Although the survey collected data on several sociodemographic variables in all six countries, the limited comparability of region, income, education, and work status, coupled with the complexity of running comparative analysis using our chosen statistical tool, makes a full cross-country comparison infeasible. We therefore report comparative results for only two robust sociode-

mographic variables: age (coded in 12 categories from 1 “16–19 years” to 12 “>70 years”) and gender (a dummy coded as 0 “female,” 1 “male”). We also report political preference, measured by asking “In the last national election, which party did you vote for?” and clustered by political party into conservative, left-wing, liberal, green, populist, and other.

3.4. Statistical analysis

In a first step, we test for national differences in nudge approval rates (calculated as the mean score for all nine nudges) by running descriptive analyses, including ANOVA, over all countries. We then focus on the main analytic outcome, the approval/disapproval frequencies for individual health nudges by country shown above in Table 1. We check for significant differences in approval rates dependent on sociodemographic variables and political preferences within countries. Because the data have a nested structure, we run a multilevel logistic regression analysis with the specification of a two-level random intercept model in which the first level is country and the second is individual respondent. In samples such as ours, individual observations are generally not independent because individuals within one country tend to be more similar to each other than across countries. We therefore estimate the multilevel regression for each of the five intrusion-level groups – from weak to strong – with approval rates as the dependent variable, and age, gender, and political attitude on the individual and country levels as the independent variables.

4. Results

4.1. Approval of the nine health nudges

Comparing the approval of health nudges by country shows that, on average, approval is quite high: around 74% in Italy, UK, and France, followed by 69% in Germany, and 57% and 51% in Hungary and Denmark, respectively. An ANOVA confirms significant intercountry differences ($F = 173.15$, $p \leq 0.000$): although Italy, the UK, and France barely differ, Germany differs significantly from all other countries, as do Hungary and Denmark (see Fig. 1). (Note, however, that contrary to perception in some circles, Germany shows strong majority support for health nudges, and is significantly more supportive than Hungary and Denmark.)

4.1.1. Public education messages

The seemingly least intrusive of the nudges (in the sense that they involve mere information provision by the government) are (1) public education campaigns to reduce childhood obesity and (2) similar campaigns in movie theaters to discourage individuals from smoking and overeating. Both these interventions received overwhelming support in all six nations (see Fig. 2). Approval of the least intrusive (1) is very high in all countries (90.1%) – a finding that should be unsurprising in light of the mildness of the intervention and the fact that governments worldwide have spent decades implementing campaigns targeted at educating parents on healthier food and lifestyles. The second health nudge (2) (involving movie theaters and targeting overeating and smoking) however, received far less approval (63.3% overall), with Hungary and Denmark particularly showing approval rates markedly below those of the other nations.

4.1.2. Mandated information nudges

Three informational nudges designed to promote healthy eating took the form of mandates on the private sector: (3) calorie labels, (4) salt labels (for products with particularly high levels), and (5) a

⁵ For details of the sample, survey and analysis refer to Reisch and Sunstein (2016).

Table 1
Approval of the nine health nudges in the countries surveyed.

	IT	UK	FR	DE	HU	DK
<i>I - Public education messages</i>						
To reduce childhood obesity, the national government adopts a public education campaign, consisting of information that parents can use to make healthier choices for their children.	89	88	89	90	82	82
The federal government requires movie theaters to run public education messages designed to discourage individuals from smoking and overeating.	77	67	66	63	40	35
<i>II - Mandated information nudges</i>						
The federal government requires calorie labels at chain restaurants (such as McDonald's and Burger King)	86	85	85	84	74	63
The federal government requires labels on products that have unusually high levels of salt; for example, "This product has been found to contain unusually high levels of salt, which may be harmful to your health"	83	88	90	73	69	69
The federal government requires a "traffic light" system for food by which healthy foods would be sold with a small green label, unhealthy foods with a small red label, and foods that are neither especially healthy nor especially unhealthy with a small yellow label	77	86	74	79	62	52
<i>III - Defaults rules and choice architecture</i>						
A state law requires all large grocery stores to place their most healthy foods in a prominent, visible location.	78	74	85	63	59	48
To halt the rising obesity problem, the federal government requires large supermarket chains to keep cashier areas free of sweets	54	82	75	69	44	57
<i>IV - Choice editing</i>						
For reasons of public health and climate protection, the federal government requires cafeteria in public institutions (e.g., schools, public administration offices) to have one meat-free day per week	72	52	62	55	46	30
<i>V - Subliminal advertising</i>						
The federal government requires movie theaters to provide subliminal advertisements (i.e., advertisements that go by so quickly that individuals are not consciously aware of them) designed to discourage individuals from smoking and overeating	54	49	40	42	37	25

Note: Total support in percentages; unweighted results.

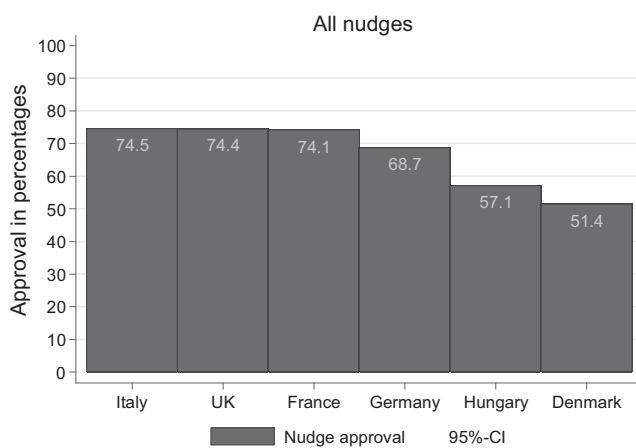


Fig. 1. Average approval ratings for the nine health nudges (all countries).

"traffic light" system" for more or less healthy food. Because such nudges require action by private institutions, they might seem more intrusive than governmental education campaigns, but on

average, all three earned majority support in all countries, with approval rates of 83.2% for calorie labels, 72.1% for salt labels, and 78.3% for "traffic light" labels (see Fig. 3). The latter particularly is surprising given that the political debate in many EU countries and within the European Parliament has shown considerable skepticism about such labelling, likely fueled by opposition from the food industry lobby.

4.1.3. Default rules and choice architecture

Default rules are often the most prominent and effective nudges; they tend to "stick" (primarily as a result of inertia or the informational signal that they contain) across diverse cultures and domains. We asked respondents about requiring large grocery stores to place healthy foods in a prominent, accessible location and keep cashier stations free from sweets (Fig. 4). Both these nudges are currently being tested by retailers in some EU countries, perhaps in an effort to avoid harsher regulation through voluntary action. Approval rates are quite high for both health defaults: 61.6% for healthy food placement and 68.8% for sweet-free cashier zones in supermarkets, but again with lower approval in Hungary and Denmark. The second proposal – for sweet-free

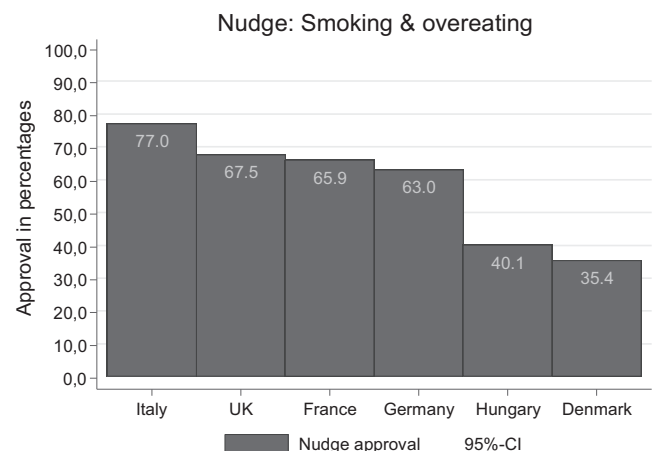
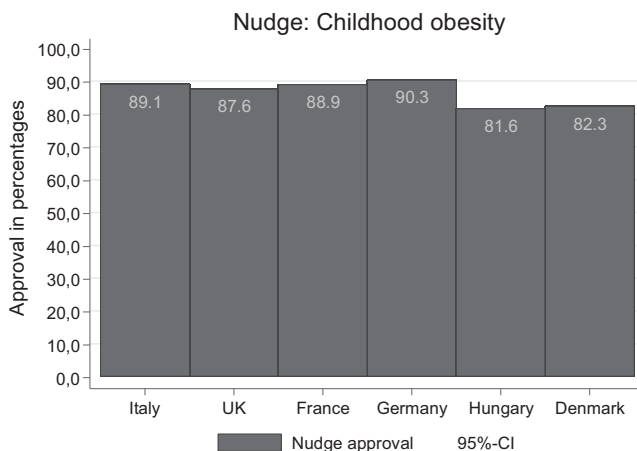


Fig. 2. Public education messages: total support in % (unweighted).

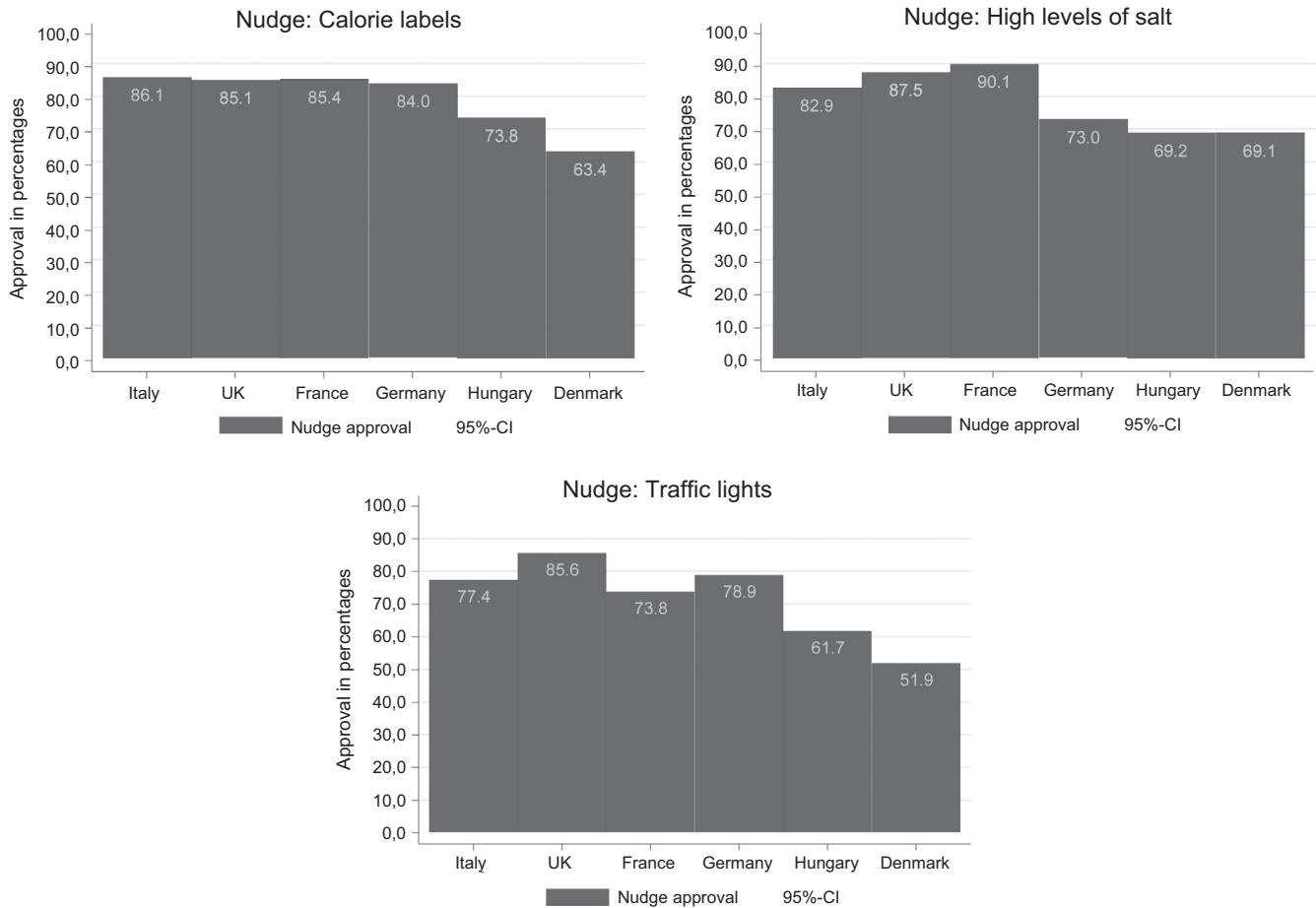


Fig. 3. Governmentally mandated information nudges (labels): total support in % (unweighted).

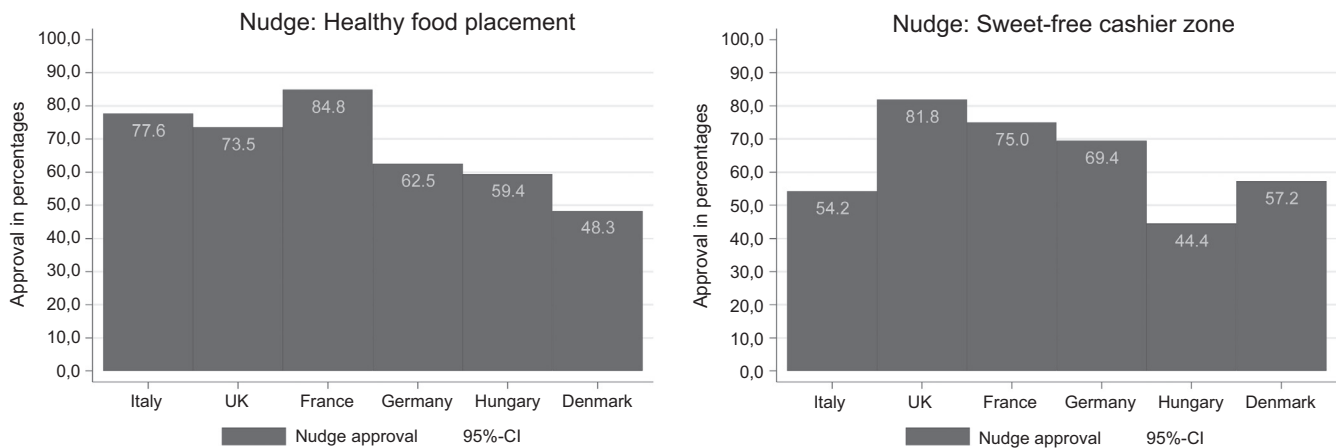


Fig. 4. Default rules and choice architecture in supermarkets: total support in % (unweighted).

cashier zones to avoid pestering by children and impulse buying by adults – has been controversial in European politics, which is hardly surprising given the fact that sweets are one of the product categories with the highest margin for retailers. Nevertheless, some retailers are now experimenting with sweet-free cashier stations, thereby offering individuals (including parents) a choice. Italy is a relative outlier on this issue, with approval levels similar to those in Hungary and Denmark.

4.1.4. Choice editing

Because choice editing eliminates choice in a particular setting, it can be regarded as quite intrusive. For example, the relatively strong government intervention requiring meat-free days in public institution cafeterias (which goes beyond a nudge) has given rise to heated debates in Germany. Nevertheless, as Fig. 5 shows, a majority of individuals (55.3%) in all but the two outlier countries (Hungary, Denmark) approved of this intervention.

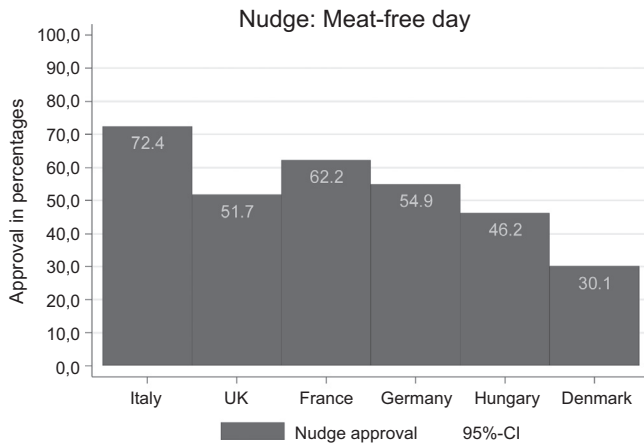


Fig. 5. Choice editing of a meat-free day: total support in % (unweighted).

4.1.5. Subliminal advertising

Finally, we asked respondents about a policy that might be expected to be widely rejected as a defining example of manipulation: compulsory subliminal advertising in movie theaters, designed to discourage smoking and overeating. This item was indeed widely opposed with an average approval rate of 42.5%, except for the puzzling phenomenon of majority or near-majority support in Italy and the UK (see Fig. 6).

4.2. Multilevel regression analysis

As previously explained, we estimate the multilevel regressions for the nine health nudges grouped into five levels of intrusion (from weak to strong) using approval rates as the dependent variable, and age, gender, and political attitudes on the individual and country levels as independent variables. We find broad support for most of the nine health nudges notwithstanding certain striking differences across the six countries (as shown in Figs. 1–6). We also test for approval differences across demographic categories and among groups with different political preferences within countries or groups of countries.

In this analysis (see Table 2), *country* explains between 3 and 11% of nudge approval, dependent on the nudge: the stronger the intrusiveness (from 3.2% to 9.1%), the more important the country effects and thus the more variance in nudge approval they explain. The sole exception is the low-intrusive Nudge 2, the “public education campaign in cinemas on smoking and overeating,” for which 11.4% of the variance is explained by country.

Gender effects follow the previously observed pattern: males generally show lower approval rates than females – for example, OR = 0.875 for high salt level and OR = 0.585 for healthy food placement (but no difference for the Nudge 2 campaign against smoking and overeating). Women are also notably more positive on choice editing in supermarkets, subliminal advertising, sweet-free cashier zones, and a meat-free day. *Age effects*, on the other hand, vary among nudges: the older the respondent, the lower the approval for subliminal ads, calorie labels, and a meat-free day but the higher the approval for childhood obesity education, salt labels, and sweet-free cashier zones (but with no age differences for other nudges). We thus note a slight linear trend of increasing approval with higher age.

Finally, *political preference* is discernible but generally modest, and it varies by nudge. In general, all other groups approve nudges less than conservatives, although not statistically significantly so in all cases. (We emphasize that this is a report on particular nudges tested; it would be easy to find nudges for which conservatives

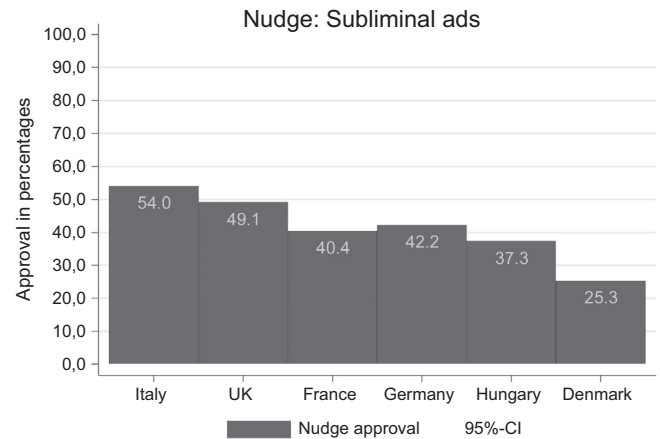


Fig. 6. Subliminal advertisements: total support in % (unweighted).

would show higher levels of approval than other groups.) But there are exceptions: Greens approve the meat-free day more than conservatives (OR = 1.65) but differ from conservatives only in this one aspect (e.g., their approval of subliminal ads is OR = 0.41). Left-wing voters also have quite similar approval rates to conservatives, but populists and liberals have generally lower approval rates than conservatives. The meat-free day is particularly disapproved by liberal voters but approved by Greens. Interestingly, the group that did not remember or did not vote shows comparably low approval of most health nudges.

5. Discussion

The basic picture is clear, and it suggests strong support for health nudges across Europe: We find majority approval for nearly all the interventions, with the expected gradient along intrusion level. (The only exception is subliminal advertising, which is not a nudge under our definition.) These findings echo previous evidence that health nudges typically enjoy majority approval.

As in all comparable studies, women approve more of all the health nudges, which might be partly explained by their being generally more health conscious (Beadsworth et al., 2002). Females in those countries also tend to eat less meat, and so might welcome additional policies that promote meat-reduced diets.

Despite the commonalities across nations, there are noteworthy differences. The public education campaigns in cinemas against smoking and overeating received only strong minority support in Denmark (40%) and Hungary (34%) but overwhelming majority support in Italy (77%), possibly because of the different smoking prevalence – and thus different reactive mechanisms – in these respective countries. Indeed, according to smoking statistics, Hungary and Denmark have a comparably high prevalence of men who smoke, ranking highest within our six countries.⁶

France and the UK, on the other hand, show a higher acceptance of the salt label nudge than Hungary, Denmark, and Germany, which might reflect the then-recent campaign against eating too much salt in both countries. Salt consumption has been targeted particularly in Hungary, with a tax on salty snacks and a tight regime regarding salt content on labels and in recipes (Trieu et al., 2015). UK respondents also show a higher approval for the positioning of sweets in retail: 80% in contrast to only 44% in Hungary. One reason might be that the UK has the highest obesity rate in our EU country sample, and some retailers (e.g., Tesco, Lidl) are

⁶ See <http://www.tobaccoatlas.org/country-data/>: In all statistics, Hungary stands out as heavy smoking country, and Denmark is in the upper middle field in Europe.

Table 2
Estimates of demographics and political attitude on health nudge approval: multilevel logistic regression analysis.

	I. Public education messages		II. Mandated information rules			III. Default rules and choice architecture		IV. Choice editing	V. Subliminal advertising
	Childhood obesity	Smoking & overeating	Calorie labels	High levels of salt	Traffic lights	Healthy food placement	Sweet-free cashier zone	Meat-free day	Subliminal ads
<i>Demographics</i>									
Male (dummy)	0.784*** [0.681, 0.903]	0.969 [0.876, 1.072]	0.821** [0.727, 0.928]	0.875* [0.775, 0.988]	0.782*** [0.699, 0.874]	0.585*** [0.526, 0.650]	0.728*** [0.655, 0.809]	0.683*** [0.619, 0.754]	0.800*** [0.725, 0.882]
Age (12 categories)	1.034* [1.010, 1.058]	1.004 [0.987, 1.021]	0.967** [0.948, 0.987]	1.043** [1.022, 1.063]	1.012 [0.993, 1.030]	1.014 [0.997, 1.032]	1.063*** [1.044, 1.082]	0.951** [0.936, 0.967]	0.976** [0.960, 0.992]
<i>Political preference</i>									
Conservative	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Left-wing	0.908 [0.732, 1.126]	0.912 [0.786, 1.060]	0.962 [0.795, 1.165]	0.852 [0.702, 1.034]	1.048 [0.881, 1.247]	1.061 [0.906, 1.242]	0.977 [0.832, 1.148]	1.148 [0.994, 1.326]	0.744*** [0.645, 0.857]
Liberal	1.176 [0.830, 1.667]	0.705** [0.554, 0.898]	0.662** [0.506, 0.868]	0.481*** [0.367, 0.629]	0.803 [0.618, 1.043]	0.581*** [0.457, 0.739]	0.773* [0.601, 0.993]	0.712** [0.557, 0.911]	0.548*** [0.428, 0.702]
Green	1.477* [1.026, 2.126]	0.839 [0.669, 1.053]	0.790 [0.602, 1.037]	0.945 [0.715, 1.249]	0.894 [0.696, 1.148]	0.967 [0.765, 1.223]	1.036 [0.815, 1.317]	1.653*** [1.316, 2.076]	0.412*** [0.324, 0.523]
Populist & others	0.681** [0.538, 0.861]	0.722*** [0.609, 0.857]	0.682*** [0.552, 0.843]	0.644** [0.520, 0.799]	0.727** [0.600, 0.880]	0.929 [0.775, 1.113]	0.801* [0.669, 0.959]	0.795** [0.675, 0.938]	0.734*** [0.625, 0.863]
Don't know/ Didn't vote	0.709* [0.571, 0.880]	0.690*** [0.591, 0.804]	0.616*** [0.509, 0.746]	0.669** [0.553, 0.809]	0.690** [0.581, 0.819]	0.894 [0.760, 1.052]	0.805** [0.685, 0.946]	0.836* [0.720, 0.971]	0.715*** [0.617, 0.829]
Country effects (ICC)	0.032 (0.019)	0.114 (0.059)	0.062 (0.035)	0.083 (0.025)	0.088 (0.047)	0.091 (0.049)	0.086 (0.046)	0.091 (0.048)	0.036 (0.021)
Obs.	7079	7079	7079	7079	7079	7079	7079	7079	7079
Wald χ^2	48.01	33.71	53.53	70.73	53.55	126.86	97.39	157.79	87.93
(p-value)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(.000)

Notes: The dependent variables are the approval rates for the nine nudges (0–1) sorted by intrusiveness level. Age is measured in 12 categories from 1 “14–19 years” to 12 “≥70 years.” Gender is a dummy variable for which 1 = male. For political preference, conservative is the reference group. Country effects are the intracorrelation coefficients (ICCs). Interpretation of the odds ratios: <1 = negative effect, >1 positive effect (e.g., a score of OR = 1.477* for Green Party voters on the childhood obesity nudge means that the odds of a Green approving the nudge are 1.477 higher than the odds of a conservative approving the nudge). Standard errors are in parentheses.

* $p \leq 0.05$.
** $p \leq 0.01$.
*** $p \leq 0.001$.

already testing sweet-free cashier zones, meaning that shoppers have prior experience of this nudge.

The greatest intercountry differences are for the meat-free day in public institution cafeterias, with approval rates ranging from 72% of Italians to only 30% of Danes. Given that Denmark has one of the highest meat consumption rates (kg per capita) worldwide, this finding is hardly surprising. Italy, on the other hand, is in the same consumption category as Germany and the UK: still high but markedly lower than Denmark.⁷ A major difference is also observable for “placing most healthy foods in a prominent location in supermarkets,” with an 84% approval rate in France compared to only 47% in Denmark. For this finding, we can only speculate that the traditionally food quality-oriented French consumers welcome the promotion of vegetables, fruits, and other healthier options. Nevertheless, the traditionally price sensitive Danes are also health-conscious today, and even most discounters have begun focusing on quality and freshness, not simply price.⁸

We caution that our methodology is subject to certain limitations. Although the online populations in the selected countries

are close to the real populations, the omnibus survey sample is not fully representative, and online population effects may be possible in countries whose Internet access is markedly lower; for example, Italy at 59% and Hungary at 76% versus Denmark at 95% and the UK at 90% (Nielsen, 2015). In addition, omnibus surveys are subject to framing effects because of the questions asked before the target items. Although we did check for possible framing effects ex post and found no obvious confounding influences, we could not prevent them ex ante. As noted, the assignment of political preference and clustering of political parties are admittedly rough measures, precluding strong conclusions. Finally, we acknowledge measurement issues with the sociodemographic variables other than gender and age that do limit result comparability across nations. For this reason, they are reported only in upcoming country studies and not in this paper.

6. Implications for policy and research

With respect to health and food consumption, one of the most dramatic developments in the last decade has been the increasing use, in many nations, of behaviourally informed tools – for example, defaults, framing, warnings, reminders, and choice architecture in general (Wansink, 2013). Public officials have been adding to the traditional policy toolbox of hard regulation and financial incentives.⁹ In these circumstances, both private and public organi-

⁷ Food and Agriculture Organization of the United Nations (FAO), FAOSTAT on-line statistical service (FAO, Rome, 2004). Available online at: <http://apps.fao.org>; <http://chartsbin.com/view/12730> (accessed 30.12.2016).

⁸ <http://www.euromonitor.com/health-and-wellness-in-denmark/report>; <http://www.euromonitor.com/health-and-wellness-in-france/report> (accessed 30.12.2016). It might also be noteworthy that Denmark has the highest food prices in the EU and therewith in our country sample, see <http://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20170127-1?inheritRedirect=true&redirect=2Feurostat%2F> (accessed 29.01.2017).

⁹ See Chapter 8 of *World Bank Report 2015*, available at <http://www.worldbank.org/en/publication/wdr2015> (accessed 30.12.2016).

zations have been keenly interested in hard evidence about public acceptability – of whether and when behaviourally informed tools will be approval.

In this study, we explored national differences and conditions for consumer approval of nudging healthy eating behaviour. The largest lesson is that strong majorities generally approve of nudging for health. As a result, they might view soft nudges as benign assistance rather than as malicious tricks.

Our findings confirm and extend results from prior studies on approval rates for nudges. They also suggest an assortment of research opportunities for the future. First, it would be valuable to follow approval ratings over time, comparing public acceptance against political and cultural changes. Second, it would be useful to obtain a better understanding of similarities and especially differences across Europe; we do not have a clear explanation for the lower approval ratings in Hungary and Denmark. Third, and relatedly, similar studies might be conducted in other parts of the world, including nations in Asia, Africa, Australia, and South America. Fourth, there is only weak evidence about a possible association between public support and the stage of implementation of nudge policies (and hence familiarity with and trust in its effects), a factor that seems to be of relevance judging health policies of all kinds (Diepeveen et al., 2013). Fifth, it would be useful to have more clarity on the relationship between attitudinal factors and support levels for nudges. As Mazzocchi et al. (2015) have shown for a range of health policies, attribution of obesity to external factors, specifically “the excessive market availability of nutritionally inadequate foods” (p. 286), seems to be a main determinant of support, regardless of the type of the measure. Sixth, and finally, understanding of public acceptability might be advanced by examining such cultural characteristics as collectivism and individualism in different societies (Hofstede, 2001) or investigating whether and how identifiable ideologies or values (Schwartz, 2012) systematically affect (dis)approval.

For now, however, the main lesson is both clear and intriguing: In diverse nations in Europe, there is broad support for health nudges, and the similarities across nations dwarf the differences.

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