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# Two Kinds of Nudging and the Power of Cues: Shifting Salience of Alternatives and Shifting Salience of Goals

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## ABSTRACT

Nudging has become a major form of intervention in the domains of sustainable behaviour, health behaviour, financial behaviour, and many others. But how does nudging work? Research so far has paid more attention to the effects of nudging than to the underlying mechanisms. The most prominent mechanisms associated in the literature with nudging are human biases and automatic decision-making. However, we argue that the heart of nudging mechanism is a shift in salience. Attention to this mechanism leads to an important distinction between two kinds of nudging: first, there is *goal nudging*, in which the salience of overarching goals is affected, leading to changes in activated preferences and attention to specific *classes* of alternatives. Second, there is *behavioural nudging*, in which the salience of a concrete alternative is being affected. In most cases, the two kinds of nudging work hand in glove, but without paying attention to their separate and joint effects, nudging interventions can be ineffective or even counterproductive.

*Keywords:* Nudging; intervention; goal-framing; shifting salience effects; shifting attention; cues

*JEL Codes:* D01, D02, D03, D10, D60, K0, Z13

## 1 Introduction

In recent years, the concept of nudging (Thaler and Sunstein, 2008) has increasingly gained popularity as a relatively inexpensive means to make choices that are beneficial for the consumer or society more likely. Richard Thaler even won the Nobel Prize in 2017 in great part for this contribution to this research area. Nudging plays an important role in the discussion about how to increase sustainable behaviour (see, for example, Allcott and Mullainathan, 2010; Kasperbauer, 2017; Schubert, 2017). An example is making green electricity the default option, so that people would have to make an effort to switch away from green energy (Ebeling and Lotz, 2015). An often-used example of nudging a healthy food choice is putting this food at eye level in a store, thereby drawing people's attention to it to, increasing the chance that they will buy this food (Bucher *et al.*, 2016; Hollands *et al.*, 2017). This kind of nudge is contrasted with banning junk food, an intervention that directly interferes with the individual's choice alternatives and their relative prices. A heralded key characteristic of nudging interventions is that individuals are more or less subtly encouraged to behave in a particular way while maintaining their liberty of choice, implying that such interventions neither ban "forbidden" options nor force a particular choice or entice with economic incentives. This key characteristic has dominated what has been written about nudging.

The effects of nudging are often not conscious and not the result of one's deliberate choice and therefore, nudging has been criticized as restricting people's freedom of choice. However, the discussion of nudging in the literature is so overpowered by ethical issues and the question whether nudging is or is not paternalistic and manipulative (e.g. Hansen and Jespersen, 2013; Leonard, 2008; Sunstein, 2015), that there is almost no attention to the mechanisms underlying nudging. For example, Hansen (2016b) maintains that "*a nudge is any part of choice architecture that should not affect behaviour in principle, but does so in practice* (where by principle we mean according to standard economic theory). In fact, this simplifying characteristic of what

a nudge is embodies the core insight driving behavioural economics.” Thus, rather than focusing on mechanisms, such a definition focuses on deviations from standard economic theory (the latter being seen as a theory of free choice). Another prominent way to define nudging is in terms of examples. For instance, Sunstein (2014b) presents a short guide concerning nudging, and states: Nudges are “liberty-preserving approaches that steer people in particular directions, but that also allow them to go their own way.” (p. 583). Rather than explicating the mechanisms by which this is supposed to happen, Sunstein presents examples: “Nudges span an exceedingly wide range, and their number and variety are constantly growing. Here is a catalogue of 10 important nudges — very possibly, the most important for purposes of policy — along with a few explanatory comments:” (p. 585). Often, we find hints that the mechanisms are psychological processes that circumvent human rationality. This, however, is more a bow to what inspired Thaler and Sunstein to begin with, namely all sorts of heuristics and biases described by Kahneman and co-authors, rather than an elaboration of the mechanisms behind nudging effects. Sunstein (2014a) himself came close to putting his finger on the core process involved in nudging, namely salience effects. But he did not go much beyond mentioning it. Why bother about mechanisms? We contend that both the interventions with nudging and the discussions about the ethicality of nudge interventions require insight into the psychological mechanisms that underlie nudging effects. As Hauser *et al.* (2018, p. 18) state: “we suggest focusing first on the psychological mechanisms likely to be at play in a given population in a given context — one such method could be to first *understand minds* in order to *budge minds*, and thereby *nudge behavior*.”

In the following we will elaborate of what we take the core mechanism to be, and on this basis we will show that once we pay attention to this basic mechanism, we also discover that it is useful to distinguish between two rather different kinds of nudging and show that these two kinds are often sequentially involved in actual nudging interventions.

## 2 Shifting Salience Effects and Nudging

Environments influence behaviour especially by cues that convey important information or trigger an affective reaction. For example, seeing a

piece of litter on the sidewalk can influence one's behaviour because it is a cue that other people did not keep to the antilitter norm. However, which aspects present in a situation are influential (i.e. are cues that affect behaviour) depends not just on people's preferences, or wishes, or attitudes, but on what is activated in people's mind at the moment (Förster *et al.*, 2005). What they have on their mind governs people's focus of what they attend to, and what specific preferences are activated. In order to get at the effects of this focusing process on behaviour, it is important to realize that there are two related but quite different ways in which the combination of attention and specific preference-activation is influenced. First, overarching goals will determine what kinds of things one pays attention to and what specific preferences are activated at the moment (Lindenberg and Steg, 2007, 2013; Papies, 2016a). These are abstract goals that, when activated (or "salient"), determine what kind of subgoals are being considered and what general aspects we attend to and which we ignore. They thus determine the playing field. For example, when it is activated (salient), the overarching goal "to behave appropriately, to conform to social norms and rules" (see below for more detail) in turn activates social preferences and focuses attention on what is expected and on what the relevant norms and rules in this situation are; and it inhibits attention to aspects that are unrelated to this focus, such as how much fun something is, or how much profit it would generate (Lindenberg and Steg, 2007). Importantly, the salience of overarching goals can change from one situation to another due to changing cues (hence we speak of shifting salience effects). This leads to the central claim that, even though somebody's preferences themselves may not change situationally, the situational activation of preferences does change as does the selective attention to affordances, opportunities, and constraints.

Second, when a particular overarching goal is salient, different subgoals are possible. For example, for the goal to behave appropriately, subgoals could be eating healthy food, keeping the environment clean, saving energy, or helping somebody. Which of these subgoals will be attended to is not determined by the overarching goal itself, but often by the specific choice situation one is in: Is there a choice of different foods? Should or should one not throw the wrapper of one's chewing gum on the street? Is one confronted with possibilities to save energy? Somebody needs help right now, should one help? Often it is not just

the situation, but also another more concrete goal that influences what specific aspects are being attended to. For example, people choosing food from a menu in a restaurant may have a concrete goal to control their calorie intake and may pay specific attention to calorie labelling of menu items (Papies, 2016b). If, however, an overarching hedonic goal is salient, they may instead pay attention to the food they find particularly delicious, more or less ignoring the calorie labels.

Cues in the environment may accidentally influence what people's attention is focused on, but they may be (and often are) also purposefully manipulated to influence people's goals and specific goal-directed behaviours. When they are manipulated this way, we speak of "nudging". Given the two mechanisms by which cues influence goal-directed behaviour outlined above, one can distinguish two kinds of nudging, each of which makes use of a different kind of shifting salience effects: *goal nudging* (influencing the overarching goal that determines the playing field for preferences and attention) and *behavioural nudging* (drawing attention to specific and positively valenced, i.e. acceptable, alternatives or aspects; see Figure 1).

### 3 Theoretical Frameworks for Shifting Salience Effects

#### 3.1 Goal Nudging

For goal nudging, the relevant framework is goal-framing theory (Lindenberg and Steg, 2007, 2013). This theory is particularly useful in this context because it deals with the mechanisms that create shifting salience effects with regard to overarching goals, and most human behaviour is at some level goal-directed. The theory distinguishes three most important overarching goals:

*Normative goal*: to behave appropriately, conform to social norms and rules (subgoals are for example eating healthy food, helping others, keeping the environment clean).

*Gain goal*: to maintain or improve one's resources (subgoals are for example making money, gaining status, saving for later; investment goals, Papies, 2016a).

*Hedonic goal*: to maintain or improve the way one feels right now (subgoals are for example economizing on effort, having fun).

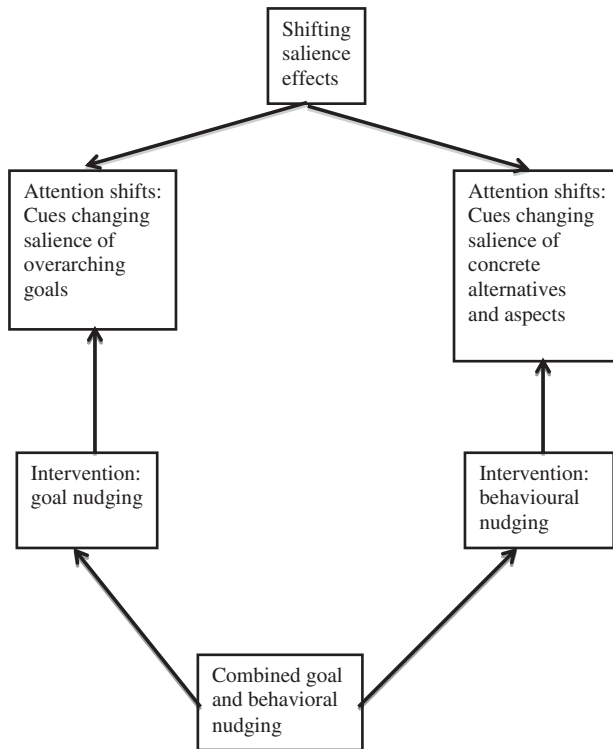


Figure 1: Shifting salience effects concern the shift of attention to certain classes of alternatives or aspects (overarching goals) or of attention to concrete alternatives and aspects. Nudging interventions can thus be distinguished into goal nudging (affecting classes of alternatives) and behavioural nudging (affecting concrete alternatives). In many cases the two kinds of nudging are combined.

Goals can guide behaviour only to the degree they are mentally accessible (i.e. activated) (Kruglanski and Köpetz, 2009), either consciously or unconsciously. At any given time, all three overarching goals are activated to some degree. However, usually one of them is more salient than the other two goals and thus most strongly influences the “framing” of the situation by determining what at a given moment we attend to, what concepts and specific kinds of knowledge are being activated, what we expect other people to do, what kinds of alternatives we consider, what information we are most sensitive about, and how we process information, even what we like or dislike, (Bargh *et al.*, 2001; Förster

*et al.*, 2007; Kay and Ross, 2003; Kruglanski and Köpetz, 2009; Papies and Aarts, 2016). There is an asymmetry in apriori strength: Apriorily, the hedonic goal is the most salient, and the normative goal the least salient.<sup>1</sup> This means that unless the normative goal receives extra support (especially by cues in the environment), behaviour will be dominated by the hedonic or gain goals. For social life, it is essential that the normative goal is supported (Lindenberg, 2015). This is the reason why shifting salience interventions are so important for social life. No other form of intervention can make this happen.

The change in salience of an overarching goal is called a “normative shift”, a “hedonic shift”, or a “gain shift”, depending on which goal has become more salient. These shifts are typically elicited by cues in the environment of the person (e.g. the presence of tasty food). Nudging thus leans on the power of cues to affect the salience of overarching goal or concrete alternatives (Lindenberg, 2012). Salience-shifting cues in the environment can be social (e.g. conveying information about the behaviour of others) or physical (e.g. conveying information on context, say through religious images). There are also signals inside the person that affect the salience of goals, such as a feeling of pain, or peoples’ values. Values and overarching goals are related but different (Steg *et al.*, 2016). Values are general and quite stable preferences concerning the dimensions of the overarching goals. Thus, people can assign a high value to gain, and/or to hedonic aspects, and/or to normative obligations (the latter may be grouped differently under social and biospheric obligations) which affects the salience of overarching goals. People who have, say, strong biospheric values, are more sensitive to cues in the environment that relate to biospheric issues (Bolderdijk *et al.*, 2013a). Still, the influence of environmental cues can be so strong that it temporarily overrules the influence of values on the salience of overarching goals. For example, even people with strong normative values may be provoked by other people’s behaviour in such a way that the salience of their hedonic goal is increased and they violate their own

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<sup>1</sup>This difference in apriori strength has to do with the fact that the hedonic goal serves individual need satisfaction (visceral influence), the gain goal serves resources for need satisfaction, and the normative goal serves functioning in the group. Thus, the gain goal and even more the normative goal are subservient to the visceral influences unless they receive extra support for their activation (see Lindenberg and Steg, 2013; Loewenstein, 1996).



norms (say, they become aggressive and insulting). This power of cues explains why people do not always act upon their values.

### 3.2 Behavioural Nudging

For behavioural nudging, the theoretical basis of our interpretation of its mechanisms is also shifting salience effects. In the literature, all sorts of heuristic and bias effects from the work of Kahneman and co-authors (Kahneman, 2011) are listed as mechanisms for behavioural nudging. For example, Hansen (2016b, p. 158) defines this kind of nudging by referring to all these heuristics and biases: “A nudge is a function of (I) any attempt at influencing people’s judgment, choice or behaviour in a predictable way (1) that is made possible because of cognitive boundaries, biases, routines and habits in individual and social decision-making posing barriers for people to perform rationally in their own declared self-interests and which (2) works by making use of those boundaries, biases, routines, and habits as integral parts of such attempts.” However, for what is relevant for nudging, there is a common factor in these various effects that is not mentioned by Hansen: the fact that attention is directed to a discreet alternative or to discreet aspects makes the alternative more salient, triggering an automatic response (i.e. a response that is reflexive, without deliberation; see also Best and Papies, 2017). Given the alternative is positively valenced, paying attention to it makes it thus likely that it will be chosen without much thought (Kahneman, 2011; van der Laan *et al.*, 2017). Given a particular salient overarching goal (which enables a whole class of behavioural options), attention to particular cues makes one alternative stand out (i.e. be more salient) than other alternatives, triggering automatic behaviour. This could result from something that attracts visual attention; from one alternative being more prominent because it is more proximal or presented first, so that it becomes a cognitive anchor; from reminders that make a particular alternative cognitively available; from the fact that one alternative is easier, for example, because it is the default option and therefore does not require the effort of switching; or from the fact that it is aesthetically pleasing or better for one’s self-image than the others. Thus, what the heuristics and biases research has contributed to the theory of behavioural nudging is to investigate various mechanisms by which one alternative can be

made more salient than another. These mechanisms are varied but they have a common core: shifting salience.

By focusing on the shifting salience component of behavioural nudging, it is easier to see that goal and behavioural nudging often interact to produce a behavioural effect. For example, standing in line at a buffet dinner, people are likely to have a salient hedonic goal and thus are also inclined to go for tasty rather than healthy food. However, with a salient hedonic goal people are also not much inclined to exert effort. This can be an opportunity for behavioural nudging by making the unhealthy alternative costlier in terms of effort. Food placed further away attracts less visual attention than the food closer by (Bucher *et al.*, 2016; Knowles *et al.*, 2019). Increasing the distance of the observer to unhealthy food in the buffet by as little as 25 cm increases the perceptual effort of paying attention to it sufficiently to have a strong negative effect on the consumption of this unhealthy food (Maas *et al.*, 2012).

There may be nudges where visual biases interact with salience effects and goals. For example, there is substantial evidence that the sizes of food and drink portions and food and drink serving containers (e.g., plates, bowls, and glasses) influence the amount we consume (Hollands *et al.*, 2017). Thus, one could nudge people into eating less, for example, by offering smaller portions. However, recent research suggests that such manipulations work because the visual cue of portion sizes makes consumption norms salient (Versluis and Papies, 2016), which then serve as visual or cognitive anchors to guide intake (Marchiori *et al.*, 2014). Furthermore, such manipulations can be overruled by hedonic goals (Zitron-Emanuel and Ganel, 2018). In short, it appears that visual biases effects used in nudging depend themselves, at least in part, on shifting salience effects from overarching goals. Thus, in principle, they too are subject to goal nudging.

In the following we will discuss some examples of goal nudging and behavioural nudging, and also of the interplay between the two.

#### **4 Goal Nudging: Examples**

The importance of goal nudging lies in the fact that by increasing the salience of an overarching goal, a great variety of behaviours are being

targeted at the same time. An important piece of evidence for this is the so-called cross-norm effect: observing other people's (dis)respect for norm A increases (decreases) the salience of the normative goal and therefore increases (decreases) the likelihood that the observer will also conform to a different norm B. For example, seeing somebody sweep the litter off the sidewalk in front of their house (a sign of respecting a public service norm) is likely to increase the willingness in the observer to help somebody else pick up oranges that accidentally fell to the ground. In a field experiment, Keizer *et al.* (2013) indeed found that seeing this cue of respect for norms more than doubled the likelihood of helping somebody else. Conversely, when people are in an environment where there are signs that others transgress a particular norm (such as graffiti on the walls or garbage on the street), they are more likely to violate another norm as well (such as the "don't steal" norm, see Keizer *et al.*, 2008; Keuschnigg and Wolbring, 2015). These effects can occur even in situations when sanctions are no issue (Keizer *et al.*, 2008). Somebody sees graffiti, interprets this as a sign of norm transgression, becomes less inclined to follow social norms, and, as a result, is more likely to litter. Somebody else sees the litter and becomes more likely to steal. A third person seeing this may fail to inhibit his aggression towards his neighbour, etc. Because the normative goal needs considerable support in order not to be pushed into the background (i.e. inhibited) by hedonic or gain goals, normative disorder can spread easily. This implies that people who live in a disorderly environment have more difficulty keeping to norms than people who live in an orderly environment. Goal nudging interventions can make use of such cross-norm effects.

For goal nudging, the salience of the normative goal (and thus cross-norm effects) might be the most important focus because the normative goal needs the strongest support to win the competition with gain and hedonic goals. Goal nudging thus can help people to do what they think is right and appropriate but still don't do. Social and physical cues in the environment can influence the salience of the normative goal directly (for example, by conveying others' respect or disrespect for norms), but also indirectly (by influencing the relative strength of the gain goal or hedonic goal with gain-related or affect-related cues) (Lindenberg, 2012). Figure 2 shows this schematically.

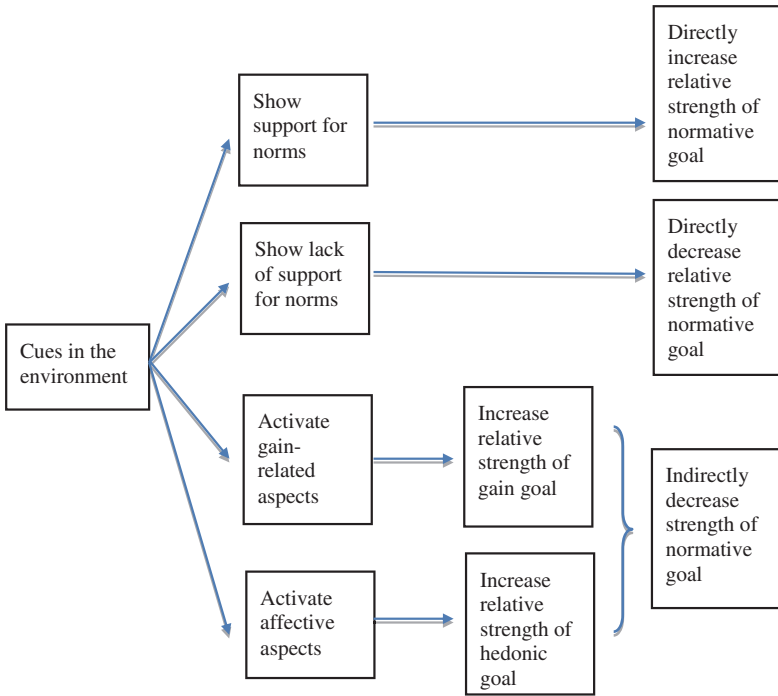


Figure 2: Direct and indirect ways in which cues affect the salience of the normative goal.

*Directly nudging the normative goal.* In everyday life, people use direct and indirect goal nudging spontaneously. For example, decorating a room for a party with balloons and dim, friendly light, can increase the salience of the hedonic goal of the party guests. When the hosts want the party to fade out in an unobtrusive way, they may progressively brighten the light, which is likely to have a negative effect on the salience of the hedonic goal and thus indirectly increase the salience of their guests’ normative goal (“it would be more polite if we left now”). In the domain of eating, food tends to trigger a hedonic goal, and religious people may pause before eating with a short prayer in order to temper the salience of the hedonic goal and increase the salience of the normative goal. Other eaters may activate a gain goal by focusing on weight control before choosing food (Papies, 2016b). An example of direct normative goal nudging is to use children as an escort for soccer

players when they come onto the field. The cue of children, each going hand in hand with a grownup soccer player, supposedly increases the salience of prosocial norms and thus also of fair play. Another example is the study by Goldstein *et al.* (2008) in which the authors encouraged hotel guests to reuse their towels by the normative message in the bathroom saying “JOIN YOUR FELLOW GUESTS IN HELPING TO SAVE THE ENVIRONMENT. Almost 75% of guests who are asked to participate in our new resource savings program do help by using their towels more than once. You can join your fellow guests in this program to help save the environment by reusing your towels during your stay.” This is a powerful normative nudge because it contains a normative appeal and information that many others have heeded this appeal. Notice that this is not simply guests imitating other guests, because the normative message makes information on the behaviour of others increase the salience of the normative goal (Cialdini *et al.*, 2006).

Goal nudging is also used systematically by authorities. For example, the sheer presence of people in the environment will usually strengthen one’s own normative goal (Kroher and Wolbring, 2015), and even the symbolic presence of others, due to symbolized eyes watching you, will increase the strength of the normative goal (Manesi *et al.*, 2016). As Bolton *et al.* (2019, p.6) conclude from their experiments: “in the absence of enforcement mechanisms, the power of social observation rests largely with its ability to nudge decision makers into making the existence and applicability of norms salient.” Anonymity and socially “empty” environments, without social observation, or with the danger of presumed hostile social observation, such as parking garages, office buildings at night, and empty streets, are likely to de-activate the normative goal, making room for the activation of preferences and kinds of attention that belong to gain or hedonic goals. To prevent these shifting salience effects, many city governments try to reduce the likelihood of empty streets at night by zoning laws that allow commercial real estate only when mixed with residential real estate.

The importance of cues that convey the respect or disrespect of others for norms (Keizer *et al.*, 2008, 2013) add cue power to goal nudging with physical cues. For example, abandoned buildings give the impression of social emptiness, of nobody caring, and of disrespect for order. For this reason, city projects that aim at “remediation” of abandoned buildings by forcing owners to keep doors and windows in

repair, have been successful in reducing a variety of crimes (Kondo *et al.*, 2015), presumably by increasing the salience of the normative goal. By contrast, green areas and trees in residential environments are also related to an increased feeling of others' caring, i.e. of social support and a reduced feeling of loneliness (Maas *et al.*, 2009). City programs aimed to increase well-kept greens and tree canopy have thus been shown to have effect on what can be expected from an increased salience of the normative goal: more community cohesion (Holtan *et al.*, 2015) and a decrease of a great variety of crimes (Troy *et al.*, 2012), even after controlling for the effect of income (which correlates positively with greenspace and trees in the residential environment).

A very different example of goal nudging is to have people sign a declaration that all answers are truthful in the beginning rather than at the end of a document. As demonstrated by Shu *et al.* (2012) and Chou (2015), setting one's handwritten signature to signify truthful answers at the beginning of a document, before and literally "above" answering all the questions, can increase the salience of the normative goal and thus increase honesty.

*Indirectly nudging the normative goal.* Goal nudging can also be informed by the indirect shifting salience effects on the normative goal. For example, one may avoid goal nudges that increase the gain or hedonic goal in order to prevent an indirect lowering of the salience of the normative goal (Figure 2). Cues that make one focus on financial aspects (and thereby strengthen the gain goal) have also been shown to reduce the strength of the normative goal. Thus, one may be very careful with using cues that draw attention to monetary advantages of a particular (class of) behaviour because that is likely to increase the salience of the gain goal, and indirectly lower the salience of the normative goal. This has been demonstrated by Schwartz *et al.* (2015) who placed financial and normative appeals in the same message (i.e. on a par) and found that the monetary cues sidelined attention to normative aspects. If one emphasizes monetary benefits ("reduce your energy bill") of taking various energy-saving actions, people are less willing to enrol in a program featuring these actions than if one emphasizes the general normative significance of doing so ("reduce your environmental impact"). Another example is the reduction of positive cross-norm or spillover effects (i.e. not just responding to a specific request, but also responding

with environmentally friendly behaviour in general) when the salience of normative goal is decreased due to messages that draw attention to financial benefits and thereby increase the salience of the gain goal (Evans *et al.*, 2012). It is important to note that it is not attention to financial benefits per se that reduces the salience of the normative goal, because financial benefits can support normative behaviour. Rather, the problem is that in order to be supportive of the normative goal, financial benefits must be in the cognitive background rather than the foreground (Lindenberg and Steg, 2013). By contrast, financial cues in the foreground are likely to sideline attention to normative aspects and focus it on costs and benefit calculations.

A similar point can be made about cues that draw attention to hedonic aspects. Cues that increase the salience of the hedonic goal are likely to indirectly weaken the salience of the normative goal. A stronger hedonic goal makes people focus more on avoiding effort that feels bad (i.e. that requires self-control), thereby reducing the likelihood that they perform effortful actions, even if these actions are “the right thing to do” (Balliet and Joireman, 2010; Lindenberg *et al.*, 2018). Thus, goal nudging interventions that increase the salience of the hedonic goal will thereby reduce the salience of the normative goal. For example, marketing techniques often make use of hedonic goal nudging by enticing advertisements and attractive items in shopping windows. This has been called the “exposure effect” created by cues of consumer goods (Park *et al.*, 1989). This effect of buying situations on the salience of the hedonic goal implies increased materialism (“Having this will make me happy”), an increased preference for avoiding effort (“the next trash bin is not here but over there, why bother to make the effort”), a shortened time horizon (“I want to have it now”), and an increased feeling of entitlement (“I deserve to get what I want and not to worry”). This can have problematic consequences for the salience of the normative goal and thus normative behaviour, such as littering, indiscriminate use of plastic bags, and quite generally a lowered willingness to sacrifice for saving energy or the natural environment. For example, the volume of plastic litter has increased by 165% in the 40 years since 1969 in the United States, and littering is significantly higher in the vicinity of commercial establishments (Schultz and Stein, 2009). Small wonder that, because of the hedonic shift inherent in a consumer society, goal nudging in the opposite direction, i.e. for increasing the salience of the normative goal

is particularly important, and many countries have programs that deal with this problem, often by nudging the normative goal that is inhibited by other salient environmental cues (such as Keep America Beautiful, Keep Britain Tidy, Nederland Schoon). Such programs use logos, posters, awareness campaigns, campaigns encouraging picking up litter, etc. Seemingly, these counter nudgings have effect. For example, for the US (one of the worst polluters), overall litter in public places has gone down considerably from 1969 to 2009 (except plastic and litter around retail areas; Schultz and Stein, 2009). A similar point can be made about cues that indicate the importance of finance and financial markets. They increase the importance of financial motives, financial compensation in general, and acceptance of inequality (Davis and Kim, 2015), creating a demand for counter-goal-nudging in favour of the normative goal.

These examples also show that goal nudging interventions could be about undoing existing goal nudging or accidental salience-shifting effects that are deemed to be against the people's own longer-term interests (and thus against the public interest). For example, because of cross-norm effects, prohibition signs (say, about parking) may have adverse effects: if people see that the prohibition is not enforced, cross-norm effects will make it more likely that people will also not conform to other norms that forbid a certain behaviour (Keizer *et al.*, 2011). Thus, public policy should be concerned about possible adverse shifting salience effects of its own instruments and about negative goal nudging by commercial parties (Lindenberg, 2017). In cases where non-compliance is highly salient, policy subscribing restrictions on behaviour should only be made if there is a willingness to enforce it, otherwise it may have clear adverse effects. Thus, incentive instruments are, in part, also dependent on shifting salience effects. Future research should address such issues further, however, as in this domain, the development of goal nudging designs lags behind the development of goal nudging for healthy food and pro-environmental behaviour.

## 5 Behavioural Nudging: Examples

Behavioural nudging is designed to increase the relative frequency of a particular kind of behaviour, rather than modulate the salience of a particular overarching goal. Again, in daily life, people use behavioural



nudging spontaneously. For example, most people are aware that their behaviour might be a cue for others to imitate (Cialdini *et al.*, 1990). Thus, they might purposefully give a good example (such as giving money to charity and letting others know) or refrain from giving a bad example (such as waiting as a pedestrian in the presence of children for a green light even though no cars are coming).

In most cases, interventions with behavioural nudges attempt to guide a person to choose a normatively desirable alternative even though he or she is not in a normative goal frame. As example, we already mentioned the distance effect: putting unhealthy food at a greater distance than healthy food makes the healthy food cognitively more prominent (Maas *et al.*, 2012) and it makes the unhealthy food more difficult to reach (a default effect, Rozin *et al.*, 2011).

Because the hedonic goal is usually more salient than the normative goal, behavioural nudging can make the normatively desirable but unattractive alternative hedonically more attractive. Take the example of stairs. People want to be healthy but often use the escalator instead of the stairs, although it is the less healthy alternative. In order to encourage taking the stairs, an initiative by Volkswagen has introduced the “piano stairs” in which each tread gives a sound and, walking up or down the stairs, one can make music. Such stairs were first installed in Stockholm after which its success made it spread across the world (to cities such as Milan, Athens, San Francisco, Sao Paulo, and Shangan China). People can stay in a hedonic goal frame and still choose the healthy alternative for hedonic reasons, because that is “extra” fun. One can also make the desirable normative alternative more easily cognitively available and thereby more salient. For example, while patients sit in the waiting room of a doctor’s office, they are asked to fill out a questionnaire. Embedded in that questionnaire (on the back side) is a question concerning the dangers of becoming resistant to antibiotics (“are you aware...”). Patients hand the filled-in questionnaire to the doctor who has to fill in a few questions directly below the reminder of the dangers of antibiotics. In this way, the doctors are behaviourally nudged against the use of antibiotics through the reminder entailed in the question to patients. The result is a significant reduction in the use of antibiotics (Östervall, 2017).

Another way to increase the salience of an alternative is to provide cognitive anchors. For example Choi *et al.* (2017) enticed employees

to make higher contributions to a company savings plan by anchoring saving alternatives on a high level. They did so by suggesting in emails to the employees low or high saving percentages (ranging from 1% to 20%). Similar processes have been suggested to affect food intake from different sizes of food portions. Specifically, the robust phenomenon of the portion size effect, where people overeat from larger compared to smaller food portions, may be the result of consumers taking the presented portion as a normative anchor to determine how much is appropriate to eat (Marchiori *et al.*, 2014). As a result, the initial portion strongly affects intake, even if that “anchor” is an excessively large food portion. Further, in line with the theoretical framework of nudging proposed here, such effects of portion size are stronger if the anchor is normatively more relevant (e.g. is provided by an in-group to which one wants to conform; Versluis and Papies, 2016). Thus, cognitive anchors can serve as strong nudges, especially if they are supported by relevant goals.

May be the most powerful behavioural nudge is the use of default alternatives in situations when people can be expected to be “lazy” decision makers (i.e. in which the salience of the hedonic goal is relatively high). Because the hedonic goal is a priori stronger than the gain or normative goals, nudging with default options is potentially a very effective intervention. By making the normatively more desirable alternative the default option, one also makes it easier to choose (and effort avoidance is hedonically preferred), and thus the default option catches extra attention. To actively reject the default in favour of another alternative is effortful. For example, smart meters are important for working of electricity smart grid systems. If consumers are given a choice to opt for the installation of a smart meter, then making the installation of the meter the default option (you have to opt out in order not to get it) has been shown to increase the adaptation rate from 60% to almost 80% compared to the opt-in version of choice alternatives (Olander and Thøgersen, 2014; see also Pichert and Katsikopoulos, 2008). Similarly, having groceries delivered to one’s home in the UK is done without bags by default, and one has to “opt in” to receive bags (Best and Papies, 2017). A related example is placing visible footsteps on the floor that leads one from the entrance to the stairs. They catch the attention and following them is like the default option, it is easier than having to decide where else to go. Nudging interventions of this kind have shown success

(Van Nieuw-Amerongen *et al.*, 2011; Weghorst, 2016). Default options may be less appropriate in some settings (such as health) and can be replaced by “enhanced active choice” in which the decision maker cannot postpone making a choice (say on organ donation, see Keller *et al.*, 2011).

Default nudging has often been used to get people to save more for their old age (Beshears *et al.*, 2013) by making participation in the pension plan the default option. Unless one actively opts out, one participates in the plan. We suggest that even though pensions are about money, the nudging effect is still driven by avoiding effort (i.e. by a salient hedonic goal) rather than by a salient gain goal. What makes default options particularly important as nudges is that they are self-reinforcing. At any given time, changing from the default takes effort. Empirical studies have shown that default nudges for pensions systems can be very stable over time (Cronqvist *et al.*, 2018).

## 6 Combined Goal and Behavioural Nudging

Cues that create behavioural nudging may also increase the salience of the normative goal, thereby combining the two kinds of nudgings. For example, when a friend points your attention to the sheer opportunity to steal (something you always wanted to have) without being noticed, this may make stealing the attractive alternative at that moment; but then, a moment later it may actually increase the salience of the normative goal as a reaction to the sudden temptation (Fishbach *et al.*, 2003). Yet, in many cases of naive nudging by ordinary people and of deliberative nudging through interventions and government policies, goal nudging precedes behavioural nudging. Thus, in contexts in which the hedonic goal is made more salient, behavioural nudging may steer people to a normatively more desirable alternative. Returning to the example of the buffet dinner above, this may be arranged in such a way that people become more hedonic due to the decorations, lightings, and aesthetic arrangements. At the same time, food may be arranged in such a way that the healthier food catches most of the attention, thereby nudging people with a salient hedonic goal to choose the healthier food options despite the hedonic goal being salient.

There are clear policy implications: for best results, behavioural nudges should generally be preceded or at least accompanied by goal

nudges. Take the often-cited example that the behavioural nudge of a “peer comparison” intervention reduces electricity use. Giving people information about the electricity use of their neighbours makes them more likely to save energy if they see that they use more than their neighbours (Allcott and Rogers, 2014). However, it turns out that this behavioural nudge works especially for people who are already concerned about the environment through their political identification and who have environmentally conscious social networks (Costa and Kahn, 2013). People who self-identify in the United States as Democrats are more open to environmental concerns than Republicans (Nawrotzki, 2012) and are in fact normatively nudged by their fellow Democrats, which could make them more sensitive to behavioural nudges about environmentally friendly behaviour. Thus making people more concerned about the environment first (i.e. increase the salience of their normative goal with regard to the environment) is necessary to make the behavioural nudge work.

The same may be said about interventions that propose a *change* from an open choice system to a default systems. The change can induce a feeling of loss because if the default system is introduced one loses the option of open choice. To make this loss acceptable, the alternative must be made attractive by first nudging the relevant overarching goal. For example, recent suggestions by the German government to introduce a default policy about organ donation (unless you opt out, you are a donor) created much debate and controversy (Frankfurter Allgemeine, 2018). Supporters of the organ donor default policy in Germany point to other countries and to experiments in which default options have been shown to work. But this is not persuasive as it neglects the effects of goals. What if people do not see donating their organs after their death as a normative issue even though they support the norm of helping others in need? The default option then lacks legitimacy because it is not linked to a normative goal. For the behavioural default options to be widely accepted, leaving one’s own organs after death (so others can live) should first be perceived in the light of a normative goal (“helping somebody else live is the right thing to do if you possibly can”), rather than in the light of a hedonic goal (“it doesn’t feel good to be a donor without having given explicit consent”) or in the light of a gain goal (“what compensation can my family expect if I am willing to donate my organs?”). In other words, unless an issue is already

widely seen in the light of a normative goal, the government should first work on goal nudging before it introduces behavioural default nudges concerning this issue. More generally, this suggests that introducing potentially controversial default nudges should be preceded by goal nudging. Making a policy appear in the light of a normative goal can often be achieved by establishing a link with a well-established normative context, and in the case of organ donation, this could be “helping somebody in need”.<sup>2</sup>

An important aspect in linking an issue to a normative context is to pay closer attention to people’s beliefs about the “new” default or behaviour (Hauser *et al.*, 2018). For example, people might believe that a default system would be first and foremost a matter of lowering the price of organs, or that such a system would encourage doctors to declare somebody dead when in fact they are not yet dead, simply to get the organ. Such beliefs stand in the way of linking organ donation to helping behaviour. Linking an issue to the normative goal can rarely be achieved by one single nudge (say, the information that “many people wait for an organ and die if they don’t get one. Please help”). The letters sent by German health insurers to their clients about donating organs use such minimal goal nudges and have been criticized publicly as being badly designed and badly framed (Frankfurter Allgemeine, 2018). Changing “wrong” beliefs is important but it is often not enough. For example, what can be done in addition is to prepare goal nudges about organ donation to create a positive normative association about “being a donor”, an identity with the connotations of being active, being a helper, being a good person also when it comes to donating organs. Once this association exists, activating it can have direct behavioural effects. The effect of this kind of goal nudging that appeals to social norms and personal identity was demonstrated by Bryan *et al.* (2011) about voter turnouts: being asked before election day “How important is it to you to be a voter in the upcoming election?” was associated with a significantly higher voter turnout than being asked “How important is

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<sup>2</sup>Because goal nudging has been largely neglected by the nudging community, the techniques for goal nudging have not been worked out much and is even seen by some as something that needs to be done in addition to nudging (Mols *et al.* 2014; Hauser *et al.*, 2018). But giving it a different name (such as “budge”) makes it more difficult to detect the common core (shifting salience effects) and the interaction between the two kinds of nudging.

it to you to vote in the upcoming election?” Gino and Mogilner (2014) also found in their experiments that nudging people into thinking about who they are significantly reduced cheating.

Another combination of the two kinds of nudging for policy purposes is to increase the salience of the normative goal and then provide behavioural nudges for guiding people towards a particular behaviour that is in line with pursuit of a specific subgoal. For example, having good tyre pressure decreases toxic exhaust fumes (a subgoal of the biospheric normative goal) but also saves expenses for petrol (subgoal of the gain goal). How can one encourage good tyre pressure? Bolderdijk *et al.* (2013b) showed that an appeal to care for the environment (nudging the normative goal) can be successfully combined with directing attention to a specific kind behaviour that would show care for the environment (behavioural nudging). They placed signs next to pumps in a filling station with a message that combined goal and behavioural nudging: “Do you care about the environment? Get a free tyre check”. They varied the sign with the combination of enhancing the salience of the gain goal with behavioural nudging: “Do you care about your finances? Get a free tyre check”. Results showed that the combination with the normative appeal worked significantly better than the combination with the appeal to financial self-interest, and better than no goal nudging at all.

Interestingly, it is also possible to create subtle hedonic nudges to increase the salience of the normative goal. For example, for people with a salient normative goal and strong biospheric values, acting pro-environmentally also feels good (“a warm glow”, see Rezvani *et al.*, 2018). Thus, emphasising environmental values and placing cues that put feeling good by reducing electricity consumption at the centre of attention can be a more successful combined nudge strategy than making people believe that they will save money by reducing electricity consumption. Recent research corroborated such a conclusion (Taufik *et al.*, 2016).

There seems to be a systematic reason why the appeal to personal gain often does not work well for stimulating healthy or sustainable choices. Goal and behavioural nudgings can interact in the sense that behavioural nudging can increase the salience of an overarching goal. This is particularly relevant for behavioural nudging with financial cues: they are likely to increase the salience of the gain goal, making

people calculate costs and benefits. This works best when the gain is made specific and it is large (Heyman and Ariely, 2004). But in many gain-related interventions it is neither. For this reason, it is likely that unspecified normative appeals (“save the environment”) work better than appeals to unspecified or low financial gains (“care about your finances”, “you will save \$33 per year”). This combined effect of goal and behavioural nudging is also evident from a recent study in India to reduce energy consumption by giving people information on the electricity use of their peers (Sudarshan, 2017). This information indeed reduced the consumption, as in the study by Allcott and Rogers (2014). However, when the information on peers’ consumption was accompanied by monetary incentives for reducing electricity use, the effect was reversed and consumption increased. Very likely, offering the incentive increased the salience of the gain goal, reducing the salience of the normative goal and, as a consequence, also reducing the sensitivity to the behavioural nudges based on peer comparison. The author concludes: “the potentially negative effect of conditional financial incentives on existing behavioural cues, also raises important design questions for the application of these instruments more generally.” In other words, for the use of nudging in the design of policy, it is always advisable to consider the possible combined effect of goal and behavioural nudgings. Since environmental cues affect goal salience, it is thus also important to always consider the environment within which behavioural nudging is applied (Hauser *et al.*, 2018; Meder *et al.*, 2018).

## 7 Conclusion

Nudging is an intervention based on shifting salience effects. This contrasts with interventions based on changing relative prices or availability (rather than salience) of alternatives, or on therapy and training, or on persuasion, or on coercion, even though the latter kinds of interventions often depend on the former for their effectiveness. Interventions that rely on shifting salience are effective because human cognition and motivation strongly depend on what goals are activated at the moment, and on the salience of concrete alternatives. Each environment contains cues that affect the salience of goals and attention to particular alternatives. These cues can be accidental, or deliberately used via

the strategy of “nudging” (i.e. the manipulation of cues in order to influence the salience of goals and preferences or the salience of concrete alternatives). Thereby cues can have a strong impact on normative behaviour, which, in turn, is crucial for social order. The working of shifting salience effects leads to two kinds of nudging that have not been properly distinguished in the literature so far: Goal nudging and behavioural nudging.

*Goal nudging* focuses on the shifting salience of one of three overarching goals: the normative goal (to behave appropriately, conform to legitimate rules); the gain goal (to maintain or improve one’s resources); and the hedonic goal (to maintain or improve the way one feels right now). All three goals are chronically activated to some degree, but, owing to environmental cues, their degree of activation (i.e. their relative salience) varies, as does the extent to which they influence behaviour. Apriorily, the hedonic goal is the most salient, and the normative goal the least salient. Goal nudging is thus especially focused on increasing the salience of the normative goal. Cues that are particularly important in this respect concern the presence or absence of people in the environment; other people’s (dis)respect for norms (Keizer *et al.*, 2013; Nolan *et al.*, 2008); and appeals from normatively significant others and authorities (Karakostas and Zizzo, 2016). Cues that can directly increase the relative salience of the hedonic or gain goal and thereby indirectly weaken the normative goal are very important targets of counteractive goal nudging.

Second, there is *behavioural nudging* mostly focused on using cues to draw people’s attention to a discreet normatively desirable alternative even if their normative goal is not salient. This can be done in many different ways, but the basic mechanism is the same: Cues that are especially important in this respect are cues that make one alternative catch most of our attention, and to bring this about, one can make use of insights from heuristics and biases research (Kahneman, 2011).

In many cases in the social world and in interventions, goal and behavioural nudging are combined by first nudging the goal and then nudging a discreet alternative. These relatively simple but fundamental insights on the power of environmental cues provide potentially new and powerful tools for interventions in favour of normative behaviour. For this to take hold on how policymakers apply nudging, it has to be clear that because successful nudging mostly involves also goal nudging,



it is not just the quick fix intervention we see in the examples in the literature on “pure” behavioural nudging. Thaler and Sunstein (2008, p. 6) say that “to count as a mere nudge, the intervention must be easy”. However, this seems more a matter of selling the concept than of considering what may be involved. Their own definition of a nudge (“*any aspect of the choice architecture that alters people’s behavior in a predictable way without forbidding any options or significantly changing their economic incentives*”, Thaler and Sunstein, 2008) does not imply that nudging must be easy. Especially when goal nudging is involved, interventions can be simple but also potentially complex and time consuming, involving what Bicchieri and Dimant (2019) call “nudging with care”, specifically when dealing with norms. Complex goal nudging possibly involves campaigns that affect beliefs, not just in terms of information but also considering the fact that beliefs are often distorted because they are self-serving (Bicchieri and Dimant, 2019; Hauser *et al.*, 2018); campaigns that affect identities (Mols *et al.*, 2015); campaigns that establish trust; campaigns that link issues explicitly to norms. In addition, complex nudging also requires careful consideration of the goal nudging powers of institutional arrangements (Lindenberg, 2017).

A recent very promising (but as of yet ethically unexplored) development of tools for more complex nudging (in combination with persuasion) is technology that deals with computers and smart phones as persuasive social actors (in games, social media, control systems, etc.). It seems that artificial social actors are able to bring about goal and behavioural nudging effects the power of which only begins to become apparent (Fogg, 2002; Hamari *et al.*, 2014; Harris *et al.*, 2017).

Attention to overarching goals and shifting salience effects with regard to nudging has yet another advantage: it throws a different light on the contentious paternalism issue. First, the important message from goal-framing theory about preferences is that each overarching goal has its own set of preferences and that thus people necessarily have conflicting preferences. It is the shifting salience effects that situationally activate certain parts of this preference space. Nudging thus does not change preferences but changes the situational selection of which preferences are activated at the moment. Second, self-regulation is not just “will power” but it is related to the shifting salience of

overarching goals (Lindenberg, 2013). Apriorily, the hedonic goal needs least support in order to be salient (see also Stroebe *et al.*, 2013), and the normative goal needs most support to be stronger than the other overarching goals. Without support from the social environment, people's normative goal would be pushed into the cognitive background and so would the preferences that belong to the normative goal (such as eating healthy food, getting up in time, helping somebody in need), lowering self-regulatory ability. In fact, most of the support for the normative goal comes from people's formal and informal institutional environments. For example, in many countries, much political effort goes into achieving legitimacy for formal rules (in terms of the procedure under which the rules are being decided upon, in terms of the explanation why the rules are necessary, in terms of the way the rules are being enforced, etc.) and for authority. Legitimacy of formal rules and of authority means that the rules are interpreted as norms and therefore covered by people's normative goal (i.e. they inspire a feeling of obligation) and that cues relating to their applicability trigger the normative goal in specific situations. This is goal nudging writ large (see Lindenberg, 2017 for many examples). It helps peacefully and constructively living together in society and it helps the individual to self-regulate by pushing the hedonic and/or gain goal into the background in situations in which the individual would otherwise have had preferences activated that it would later regret.

Thus, goal nudging directed at increasing self-regulation does not only not undermine (Sunstein, 2015) but also even increase human agency (in the sense of the ability to translate one's intentions into action). Indeed, many people agree with this perspective and are positive about nudging (Sunstein, 2016). For example, more than 83% of customer interviewed in a supermarket study (Kroese *et al.*, 2016) were positive about being helped by the supermarket in making healthier food choices (for example, by placing the healthy food near the cash register). When goal nudging increases the salience of the normative goal, it at the same time increases one's self-regulatory ability and may thereby even reduce the need for behavioural nudging (Lindenberg, 2013). Still, there may be interventions that are directly focused on increasing people's self-regulatory ability (Hertwig and Grüne-Yanoff, 2017; Steverink,

2014) and such interventions are preferable to nudging interventions if there is marked heterogeneity of goals across the population and also if the nudging would require that people are unaware of it (Hertwig, 2017).

If nudging aids neither self-regulation nor the public good but serves extrinsic private goals (such as using the power of legitimation cues for exercising illegitimate authority, or using hedonic cues, such as sexy models, to make people buy a specific product), it is paternalistic and manipulative. Thaler (2015) stated himself that “many companies are nudging purely for their own profit and not in customers’ best interests.” Of course, it will not always be easy to judge the degree to which nudging contributes to self-regulation but, as a guiding principle, it will be a big help to look for the link with self-regulation, given the insight that people do have conflicting preferences and that the normative goal needs much support from the environment. In short, paying attention not only just to behavioural nudging but also explicitly to shifting salience effects and to the working of overarching goals gives us not only more insight into the workings of nudging, guiding policy and interventions, but also helps resolve some of the issues that have plagued the discussion about the ethicality of nudging as a toolkit for interventions.

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