The future of nudging

Using Behavioral Economics to Reduce the Value-Action Gap

Research and practice have long been concerned with the questions of how to reduce climate-damaging emissions and promote sustainable behavior. Although many people have good intentions to reduce their carbon footprint, this rarely affects their actual behavior. By combining findings from value-action-gap research and approaches from behavioral economics, we show how new instruments can foster sustainable actions.

By Erich Renz and Kim Leonardo Böhm

1 The Value-Action Gap: A Discrepancy Between Attitudes and Commitment

The Paris Agreement – which was negotiated by roughly 190 parties – developed a common global goal to prevent harmful climate change by keeping global warming below 2 °C and making efforts to limit it to 1.5 °C since this would notably lower risks and the effects of climate change. In the meantime, countries have been working on national climate action plans to contribute to the agreement (European Commission 2020). However, these rolled out or planned actions do not appear to be sufficient for reaching the agreed-upon temperature goals (Taylor/Watts 2020; The World Bank 2019).

The intentions and commitments of consumers and businesses are also a decisive factor when it comes to contributing to more sustainable, environmentally conscious behavior and can start at basic levels, such as small behavioral changes in offices or in private households, or through using circular products (Dietz et al. 2009; Nußholz et al. 2019). Yet, while most consumers have positive attitudes towards sustainable products and behavior, this mindset is hardly reflected in their actual consumption behavior (Flynn et al. 2009). The distance between often verbally expressed attitudes and actual commitment to a cause is reflected in the concept of the *value-action gap*. The Sustainable Development Commission defined the term early on as an "observed disparity between people's reported concerns about key environmental, social, economic or ethical concerns and the lifestyle or purchasing decisions that they make in practice" (Sustainable Development Commission 2006, 63).

Various concepts have been used to explain why value-action gaps exist, including cost-benefit comparisons (Sammer/Wüstenhagen 2006; Young et al. 2010), techniques of neutralization ('Once won't hurt'; Chatzidakis et al. 2007), or self-interest before altruism (e. g., better taste or safety reasons; McEachern/McClean 2002). Blake (1999) detects a conflict between environmental concern and action. He states that "there are still *practical* social or institutional constraints that may prevent people from adopting pro-environmental action, *regardless of their attitudes or intentions*. These include lack of time, lack of money and lack of physical storage space (in the case of recycling), as well as lack of information, encouragement and pro-environmental facilities such as recycling and adequate public transport provision" (Blake 1999, 268).

Environmental concerns can still be important to a person but be outweighed by other interests that are prioritized at the moment of decision-making (e. g., 'I would like to follow suit on my environmental concerns, but I am lazy right now or the wrong person for this specific campaign'). Even if people stay congruent with their personal attitudes, they face the hurdle of a social dilemma – why should they act if they are just one in a million and „feel powerless as they are such a tiny cog in a big wheel" or think it's "a wasted effort" (interviewees in Blake 1999, 266; for a more theoretical description, see Frank/Cartwright 2016). The question of responsibility plays an important role. The further away a person feels, the less responsible he or she feels for a cause or a responsible action.

Behavioral economics highlights how human shortcomings explain why behavior often does not correspond with intentions. Oftentimes short-term needs conflict with long-term interests (Thaler et al. 1997). If people would always act rationally and thoughtfully, there would presumably be no inconsistencies between their values and actions (Ariely 2008). But contrary to the model assumption of the famous *homo oeconomicus* – the rational and well-informed person provided with the unlimited capacity to process information in perfect quality – real people do not act strictly rationally (Simon 1957). Their behavior is more characterized by systematic, predictable errors, cognitive biases, and mental shortcuts (Dobelli 2011). Causes of this involve, for instance, a lack of self-control (Thaler/Shefrin 1981), status quo bias (Samuelson/Zeckhauser 1988), an orientation to rules of thumb, or, more generally, a surprisingly high reliance on operating in an automatic thinking and behaving mode (Evans 2003; Shah/Oppenheimer 2008).

People often try to keep their cognitive effort to a minimum and thus make the decision with the least resistance (Kahneman 2011). These findings from behavioral experiments lead to the question of how, for example, a state of least resistance

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can be used to change an individual's decision-making towards more sustainable behavior. Another question that we can derive from behavioral economics is: can we learn from the findings of systematic human errors in thinking and thus, for example, align target behavior more specifically with intended attitudes?

2 Nudging: A Tool for Steering Behavior Towards Sustainable Goals

Thaler and Sunstein (2008) introduced the theory of "nudging". Their definition of a "nudge" is "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. To count as a mere nudge, the intervention must be cheap and easy to avoid. Nudges are not mandates" (Thaler/Sunstein 2008, 6). Nudges can increase the likelihood of individuals making certain choices or behaving in a particular way by modifying the environment so that the cognitive processes of automatic thinking or behavior are activated to obtain the desired outcome (Saghai 2013; Parkinson et al. 2014). Furthermore, nudges can be a powerful tool for making people fully aware of their actions and possible future outcomes to increase or avoid certain behavior (Giné et al. 2010; Hershfield et al. 2011). Thus, nudges can be designed to trigger either habitual and intuitive actions that require little attention or deal with more reflective, nonstandard tasks (Sunstein 2016).

Nudges can be implemented to reduce value-action gaps and motivate people to make decisions more in line with their intentions (Momsen/Stoerk 2014; Vigors 2018). An important question for research and practice is: When is it appropriate to nudge someone? Thaler and Sunstein (2008) argue that it is appropriate to use a nudge, for example, for (i) decisions that require self-control; (ii) for decisions that are difficult and rare; (iii) when people do not get immediate feedback; and (iv) when they have difficulty translating the situation into easily understandable terms.

We suggest the following in response to these value-action gap related problems: (i) Nudging can be used when there is an immediate cost for the individual, but the benefits follow later, for example, in a self-binding program of ecological behavior that has a long-term impact on both the community and the individual. (ii) With difficult decisions that are also made only a few times in life and are difficult to practice, nudges can be used to make rare decisions such as the acquisition and use of mobility and energy as easy as possible for citizens by simplifying grant applications for funding programs for electromobility or renewable energy sources to increase acceptance towards sustainable technology. (iii) As people do not always learn from their decisions in practice or do not receive any responses about their actions, it can be useful to get feedback on behavior to evaluate and, if necessary, change behavior accordingly. For example, public and private institutions possess personal data and thus information about past decisions. Disclosing these past decisions can help individuals to learn from them and improve current decisions (e. g. feedback on their energy use). (iv) For such decisions, where it is often difficult to classify all the statements and assess the consequences, such as choosing a contract or agreeing to terms and conditions, using a nudge can also be helpful. Standard settings (defaults) can be preselected here for the benefit of the state and the consumer, for instance green electricity as a default for new citizens in cities (Sunstein 2014; Thorun et al. 2016).

An advantage of nudges over other interventions such as prohibitions and laws or financial (dis)incentives that influence people's behavior is that they do not restrict an individual's freedom of choice and do not make certain behavior more expen-

Area	Value *What people say*	Action *What people do*	Selected Sources
Energy	A majority of consumers in several European countries and the USA support using energy from renewable sources, even at a small extra charge	Users of renewable energy comprise a small proportion of the population: about 1% in Finland, the UK, Ireland, and Germany, about 2% in Switzerland, and about 3% in the USA.	Bird et al. 2002; Pichert/Katsikopoulos 2008; Heeter/Nicholas 2013; Kaenzig et al. 2013; Momsen/Stoerk 2014
Recycling	Almost all Hong Kong citizens surveyed agreed that they share responsibility for protecting the environment	About half of the same respondents reported that they practiced sustainable behavior	Environmental Campaign Committee 1993; Chung/Leung 2007
	Strong verbal commitment over the years, with increased support for household waste separation from 77% to 95% over the same period (1992–1998) in Hong Kong	18% of these respondents stated that they actually recycle waste in some way	Chung/Poon 2000; Chung/Leung 2007
Greenhouse gas emissions	Scientists argue that climate protection is a long-term challenge that requires immediate action	Governments, industry, and the public put self-interest before climate as a public good	Bushell et al. 2017
Sustainable consumption	Half of the consumers worldwide describe themselves as "green" in terms of consumer behavior, effects, knowledge, and awareness/attitude concerning household, mobility, nutrition, and consumer goods; values vary largely between countries (e. g., Mexico with 73%, South Korea with 32%)	One-third of consumers worldwide show actual green consumer behavior (e. g., India with 40%; Russia with 25%)	Greendex 2012; Terlau/Hirsch 2015

Table 1: Examples of Existing Value-Action Gaps

sive or financially advantageous (House of Lords 2011). Moreover, nudges are also associated with no additional significant costs and are therefore in most cases cost-efficient (Benartzi et al. 2017). The appeal of nudges lies in the fact that they can be developed for any possible area of application, behavior, or industry, especially if a value goal is to be pursued (Böhm/Renz 2019). Furthermore, nudges can be matched with classical mental activities to increase the effectiveness of the behavioral intervention. Following this approach, cognitively oriented nudges influence what people know, e. g. with descriptive and evaluative labels. Affectively oriented nudges influence how people feel, for example with hedonic descriptions and pictures or with written and oral hints towards the desired behavior. Behaviorally oriented nudges influence what people do, e. g. with easier selection options (Cadario/Chandon 2020).

3 Can Nudging Help Consumers to Overcome their Value-Action Gap?

We argue that nudges are an appropriate behavioral intervention to bridge the value-action gap since choice architects in charge of designing nudges should pursue an overarching goal that concerns both the individual and society (Halpern 2016). There are, however, plenty of examples in the literature of why nudges *do not work*. Nudges are not universal. Even if they have an effect on one person or one group, they might not have a similar effect on someone else or a different group or in a different context (Kosters/van der Heijden 2015). Moreover, a nudge can also backfire and create unintended adverse effects (Bicchieri/Dimant 2019; Böhm/Renz 2019; Hagmann et al. 2019).

On the other hand, lab and field experiments provide ample evidence from which to learn how the success of a nudge can be increased (Benkert/Netzer 2018; van Kleef/van Trijp 2018). With the value-action gap in mind, we suggest the following procedure when designing and rolling out nudges:

- Behavioral goals determine if a certain behavior should be increased (e. g., choosing eco-friendly products) or avoided (e. g., ecologically undesirable mobility)
- Values on a personal and cultural level should be clearly identified as they shape behavior and influence the decisions of an individual (Rokeach 1973; IfD Allensbach 2019)
- Barriers to carrying out a certain environmental-related behavior by an individual or a group should be considered (Blake 1999; Hauser et al. 2018)
- Mental activities that the nudge should trigger must be clear, i. e. cognitive, affective, behavioral-oriented (Cadario/Chandon 2020)
- Nudge type should be directly related to the cognitive, affective, and/or behavioral-oriented mental activities to increase the likelihood of nudge effectiveness

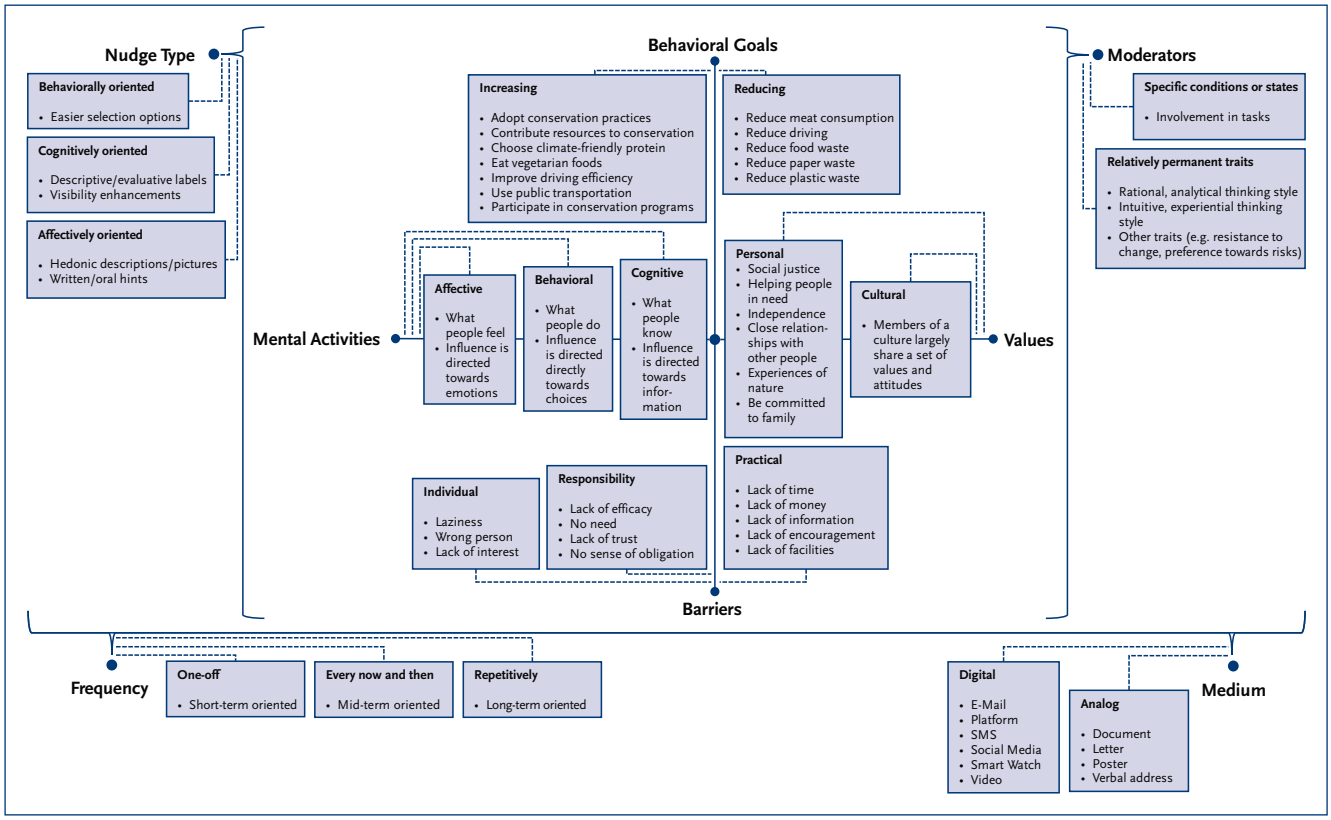

Figure 1: Elements for Matching Nudges with Value-Action Gaps

- Moderators concerning the nudge should be known as they can influence how a nudge works (van Kleef/van Trijp 2018)
- Frequency and duration of the intervention influence the attention towards and awareness of the behavioral goal. Some nudges (e. g. reminders) are more suited for repetition (depending on the dimension of the intended behavioral change), need more time for recognizable effects, or have a diminishing effect over time
- Medium is the intermediary between the choice architects ("nudgers") and the receivers of the intervention ("nudges") – while a verbal address suits some groups, others can be better reached with digital media (Hummel/Maedche 2019)

Figure 1 shows a model that we developed based on the findings of the studies and literature on the value-action gap and nudging as well as on the above-mentioned procedure for creating value-action nudges. In the center of the model are possible factors that contribute to value-action gaps: behavioral goals (applicable to the nudger and the nudgee), values, barriers, and mental activities (see points 1 to 4). These are surrounded by nudge-specific characteristics that are designed to help the choice architect (nudger) to act on the gap: nudge type, moderators, frequency, and medium (see points 5 to 8).

4 Practical Remarks on developing an effective instrument

We argue that nudges are a suitable behavioral intervention to bridge the value-action gap. Choice architects with responsibilities in state-associated or private agencies have at their disposal a strong instrument whose impact can be measured relatively easily – starting with reaching a small intervention group using email or short message services. Van Kleef and van Trijp (2018) suggest a tripartite of validating nudge effectiveness, starting from (1) proof of principle obtained in a lab experiment to study causes of effectiveness at an individual level to (2) proof of concept obtained in a field experiment to study situation-related causes of effectiveness to (3) proof of implementation in further implementation studies to study applicability in specific settings and groups. We follow this approach and propose, depending on the data situation and research, that this is where the nudge intervention should start.

We conclude our remarks with practical implications. Since personal or cultural values are in some ways equivalent to the study of a black box, our main goal is to create a better understanding of how complex constructs, such as personal attitudes, preferences, and human thought processes, can be linked together with tools, such as digital or physical media, to achieve one goal: the promotion of a desirable or avoidance of an undesirable human impact on carbon footprints and other harmful outcomes. Entrepreneurs or companies have recognized this (business) opportunity and are increasingly interested in contributing to a more sustainable way of working and living. More and more products, services, or processes that involve circular business models or the use of sustainable energy are designed to reduce the value-action gap for businesses themselves or their customers.

In addition, customers increasingly appreciate when companies adopt environmentally friendly practices. These customer

Behavioral Goals	Values	Barriers		Mental Activities	Nudge Type	Moderators	Frequency	Medium
Increasing: Improve driving efficiency	"Driving efficiently is good for the environment"	Context-specific: Needs to be analyzed based on the underlying psychological process	Individual barriers: Wrong person	Behavioral	Haptic feedback in response to increased fuel consumption	Preferences towards fast driving	Repetitively: Permanent	Digital: Sensors on steering wheel
Increasing: Improve local food consumption	"Choosing local food products is good for the environment"		Lack of time and attention for routine tasks such as grocery shopping	Cognitive	Descriptive information on the distance traveled by the product in km or CO_2 emissions caused	Distinction between urban and rural population or lifestyle consumers	Repetitively: Permanent	Analog: Price tags on supermarket shelves
Increasing: Improve unpackaged food and grocery consumption	"Choosing unpackaged products is good for the environment"		Lack of information in regard to buying such products	Cognitive	Descriptive information on the buying process	Resistance to change (Product innovation)	Repetitively: Permanent	Analog: Printed information about the buying process
				Behavioral	Providing free packages or packages with a deposit (e. g. DM 2020)		Every now and then to raise awareness Or Repetitively: Permanent	Analog: Providing packages
Reducing: Reduce carbon footprint	"Choosing greener transportation is good for the environment"		Social dilemma: no sense of obligation	Cognitive	Real-time feedback on meters traveled by vehicle	Resistance to change (Data security)	Repetitively: Permanent	Digital: App that connects with car usage, train, and flight bookings
Reducing: Minimize early disposal of electrical products	"Using the full life-cycle of products is good for the environment"		No need/Lack of responsibility in general	Cognitive	Reminder based on individual behavior	Short- or mid-term focus towards devices	Repetitively: Permanent	Digital: current performance of the device is measured

Table 2: A Practical Agenda for Identifying Value-Action Gaps and Targeting them with Nudging (Selected Examples)

groups are also willing to accept higher prices (IfD Allensbach 2019). We complete our article with practical use cases of nudging. Table 2 shows our toolbox. These examples serve as a starting point to study nudges in the laboratory or field with the goal of influencing possible value-action gaps. Our proposed value-action nudging idea is that any existing process towards sustainable behavior can be improved by adjusting one of the components and that completely new methods can be developed and tested.

5 Conclusion

Based on our findings, we developed the following main propositions:

- Value-action gaps occur due to personal or situational preference shifts.
- Human thinking and actions happen to a large extent automatically, with phases of reflective, conscious thinking.
- Nudges have the potential to trigger unconscious or conscious thoughts and actions.
- Effectiveness of nudging depends on whether the right cognitive, affective, or behavioral mental processing is addressed.
- Nudge campaigns can be tested in the lab, online as well as in the field at low cost and effort.
- Behavioral goals should be one-directional and either reinforce or reduce a particular behavior.
- Values and barriers help to identify which obstacles or opportunities can arise when using the nudge.
- Due to moderators, for example specific conditions or personality traits, nudge outcomes can vary in intensity or even backfire.
- Nudge intervention needs to be aligned with cognitive, affective, and/or behavioral mental processes.
- Digital media are scalable and can be used well as a medium for nudges, but care must be taken regarding the rate of intervention.

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