

SPECIAL ISSUE ARTICLE

Individualizing Proenvironmental Behavior in the Context of
Structural Impediments

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Proenvironmental behaviors are plentiful, and, in their entirety, they may overwhelm people, as they cannot act on all of them. Plagued by feelings of helplessness, people may give up trying to protect the environment altogether. We argue that investigating the sources and consequences of choice overload in the context of proenvironmental behavior will help to understand how people can find direction and energy to act toward protecting the environment despite structural challenges. We first propose that more public information regarding what kind of proenvironmental behavior benefits which environmental outcomes should improve people's understanding of action effectiveness; when provided in a veridical and interactive way, such information should give people direction. Second, rules set by contextual sources that respect people's need for autonomy and freedom should provide further direction. When institutions lack guidelines through providing clear information and set rules, people need to find direction within themselves. Thus, third, we posit that applying the self-regulation strategy of mental contrasting will allow people to find direction by themselves, and it will provide the energy needed to walk the cumbersome path of reaching proenvironmental outcomes. Using mental contrasting will also enable people to drop proenvironmental actions for which they do not have the required resources. We discuss how social engineering (s-frame) combined with applying self-regulation tools (i-frame) will allow people to individualize their proenvironmental behavior, escaping potentially paralyzing choice overload and working around structural barriers.

Keywords: proenvironmental behavior, choice overload, mental contrasting, social engineering, self-regulation

When we think about the need for proenvironmental behavior, hosts of different reasons for acting on the environment come to mind. We might want to prevent further climate change, reduce environmental pollution, and increase biodiversity. To make our contributions to these overarching goals and satisfy our proenvironment identity, we face a myriad of different behavioral possibilities. We might feel we have to stop eating meat, buy an electric car, avoid taking flights, shun cruises, eat up the food we buy, replace regular light bulbs with compact fluorescent lamps or light emitting diodes, stop using our dryer, avoid road trips, separate landfills from recycling, reduce paper consumption, avoid plastic bags, cups, and straws, support tree planting, plant biodiversity in our gardens and balconies, shun environmentally unsafe companies, support carbon tax policy, join climate change demonstrations, and so forth. To silence any criticism that in the end we might not be the proenvironmental person we aspire to be, we feel that we should better act on all the above.

But how can we act on all these behavioral options? Many of them call for being enacted even at the same time. At first sight, being

blessed with all these possibilities seems like a great chance to get engaged in a wide variety of straightforward proenvironmental behaviors. However, having all these possibilities at hand may be a trap! Indeed, participants being provided with 20 opportunities to engage in climate activism felt less efficacious, and after 1 week reported engaging in fewer mitigation behaviors than those being offered fewer opportunities to mitigate (Andrews et al., 2022). Apparently, less choice can be more when it comes to supporting actions in the service of preventing climate change.

To serve their proenvironmental identity (D. Schwartz et al., 2020), people might feel obliged to act on the many possibilities of proenvironmental behavior. Thus, they might feel overwhelmed. Such feelings of being overwhelmed should be particularly strong for people who try to avoid criticism from peers and who fear violating societal norms. Failing to act on all the different options might stir up feelings of regret and shame, and it might result in low expectations of successfully attaining one's proenvironmental identity (Andrews et al., 2022). Such low expectations in turn should lead to low proenvironmental engagement, and eventually to losing the incentive of acting in a proenvironmental way (Bandura, 1977). People may even develop helplessness expectations that their behavior will make no difference. Whatever they do, act or not act, the outcome seems random (Hiroto & Seligman, 1975). People may feel that their proenvironmental behavior does not matter.

The present article argues that experiencing continued failure to accommodate the wide variety of proenvironmental actions will rob

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people their efficacy of acting in a proenvironmental way and will put them at risk of feeling helpless and of losing their proenvironmental identity. They might even start rationalizing that whatever they do will not make a difference anyway. This rationalization might especially emerge when people dream and fantasize about themselves successfully acting in a proenvironmental way but then go through repeated experiences of failure (see H. B. Kappes et al., 2012; Oettingen et al., 2016).

We propose a potential solution to prevent the erosion of a proenvironmental identity: Individuals may identify a small number of proenvironmental behaviors that are both personally meaningful (desirable) and implementable within their current context (feasible). By focusing on these idiosyncratically desirable and feasible actions, people may come to realize that they can maintain a proenvironmental identity without needing to engage with the full spectrum of possible proenvironmental behaviors.

We will introduce three paths that can provide direction to act. Two of them are related to social engineering (e.g., institutions provide guidance; s-frame, Chater & Loewenstein, 2023); the third one pertains to applying self-regulation (i.e., the individuals themselves provide guidance, i-frame). The first path, which is an s-frame path, focuses on institutions, the government, or companies providing information about the effectiveness of specific proenvironmental behaviors. The second path, which is also an s-frame path, focuses on rules specified by these institutions for acting in a proenvironmental way. The third path, which is an i-frame path, pertains to self-regulation tools that people can apply independently by themselves, thereby fitting their proenvironmental behaviors to their needs and contexts.

These three paths, separately and in combination, will enable people to select a few proenvironmental behaviors that are desirable and feasible for them to act on, and to let go from trying to perform behaviors that are either less attractive or not feasible for them. Consequently, people will not try to engage in all the proenvironmental behaviors that come to mind but on a selection of those behaviors that they wholeheartedly want and are able to carry out. We propose that mental contrasting of the desired future with the critical obstacle of reality (Oettingen, 2000, 2012; Oettingen et al., 2001) is a mental tool that supports people in finding their idiosyncratic direction and the necessary energy to act in the service of the environment.

Self-Regulation of Proenvironmental Behavior: A Brief Research Overview

A recent meta-analysis provides evidence that successfully self-regulating as well as possessing executive functions supports people in acting on their goals in a wide variety of different life domains, including the environmental domain (Colombo et al., 2023). Investigating self-regulation (which the authors define as goal setting, goal monitoring, and goal striving) and executive function (defined as working memory, inhibitory control, and cognitive flexibility) as traits as well as situationally induced, the analyses encompass 41 studies. The findings show that more effective top-down self-regulation is associated with more successful proenvironmental behavior. However, the named three phases of self-regulation and the three executive functions were found to differ in their predictive power of proenvironmental behavior. Thus, the authors argue for more research investigating how the specificities of self-regulation

and the various aspects of executive function affect engagement in the wide heterogeneity of proenvironmental behaviors.

Whereas Colombo et al. (2023) focus on person attributes (as traits or situationally induced), Wyss et al. (2022) investigate the attributes of the tasks to be solved. In an experimental study, they observed that proenvironmental attitudes are more predictive of proenvironmental behavior when tasks were construed as having low personal costs or strong environmental benefits. They also find that established self-control skills help people to act in line with their environmental attitudes. In short, when the proenvironmental task is designed to be easy or of utmost value, people will more readily engage in proenvironmental action (for a similar argument, see Nielsen, 2017).

Supporting the findings that proenvironmental tasks of utmost value predict respective behavior, proenvironmental behavior seems to be closely linked to the morality people attach to it. In the context of clothing consumption, Nielsen and Hofmann (2021) in a 2-week diary study find that people who feel moral reasons to act in a proenvironmental way reported more inner conflict to buy clothes and made fewer actual clothing purchases. The findings suggest that future research on how people act on their proenvironmental concerns should consider the reasons why people want to act that way as well as the temptations they feel they need to overcome. In other words, do people act for environmental reasons (e.g., reducing carbon footprint) or for other reasons such as saving money or time (e.g., taking the train is cheaper and faster than taking the plane). And do they feel it is hard or easy to resist the temptations (e.g., not flying means I need to relinquish seeing family and friends vs. I have no objections to staying home anyway).

In the present article, we focus on how to establish effective self-regulation for individuals in their contexts. The focus on the behavior of individuals is what Chater and Loewenstein (2023) call the i-frame, which they distinguish from the systemic frame or s-frame in which the individual is situated. Pointing to many light-touch nudging interventions, Chater and Loewenstein argue that such interventions have been less effective than originally thought, and that the i-frame approach even fostered policy decisions that load the responsibility to make a difference for the environment on the individual rather than on the system. They exemplify their ideas among other life domains (e.g., retirement savings, health care, and obesity), also for environmental behaviors (i.e., preventing climate change and pollution from plastic waste).

We agree with Chater and Loewenstein that s-frame interventions can be very effective (e.g., the car safety belt campaign), and often more effective in bringing about a particular behavior change in society than the i-frame mental strategies that we will discuss below. However, when suggesting that individuals should engage in bringing about systemic or s-frame changes rather than engaging in i-frame efforts—for doing their share in protecting the environment—we should not forget that individuals often are powerless to bring about decisive systemic changes. Thus, people might be forced to find their individual paths towards protecting the environment by changing their own behavior within the constraints of their structural contexts, be it in terms of reducing their individual carbon footprint, reducing their individual plastic waste, or other proenvironmental behaviors. Thus, teaching self-regulation strategies that consider both the individual and the contextual variations of proenvironmental behaviors is an important task for future research (Nielsen et al., 2024).

When aiming for effective behavior change at the different levels noted above, it is pivotal to consider the feasibility of proenvironmental action. For instance, we may expect governments to facilitate systemic changes, institutions such as businesses to offer sustainable contextual options, and individuals to autonomously engage in self-regulation strategies that enable them to act proenvironmentally within their own contexts. Moving beyond the dichotomy of i-frame versus s-frame approaches, coordinated interdisciplinary research may help develop innovative interventions that empower individuals to act proenvironmentally using their unique resources within both personal and systemic contexts. Such interventions can support individuals in applying self-regulation strategies across a wide range of proenvironmental behaviors, including efforts to influence systemic change (see [Nielsen et al., 2024](#)). In this article, we will describe how individuals can autonomously identify meaningful and feasible wishes and goals for improving their proenvironmental behavior in ways that align with their specific needs, skills, and circumstances.

Choice Overload

Individuals, in whatever specific systemic context they find themselves, most likely have many possibilities to choose from when it comes to acting on their proenvironmental concerns. A host of possibilities to choose from is often thought of as a pure blessing, because the higher the number of possibilities, the higher the probabilities of finding a good fit to what a person is looking for in each situation ([Baumol & Ide, 1956](#); [Hotelling, 1929](#)). A large choice set additionally offers flexibility when people are unsure about future possibilities ([Kahn & Lehmann, 1991](#); [Kahneman & Snell, 1992](#)), guarantees future opportunities ([Inman, 2001](#); [Levav & Zhu, 2009](#)), as well as establishes feelings of autonomy and free choice ([Kahn et al., 1987](#)). In addition, choosers feel more satisfied than nonchoosers when selecting from various preferred alternatives ([Botti & Iyengar, 2004](#)).

However, [B. Schwartz's \(2000, 2004\)](#) paradox of choice theory holds that being confronted with a wide variety of behavioral possibilities may elicit painful indecisiveness. Having a large set of possibilities to choose from may lead to cognitive costs and sap mental resources ([Choi & Fishbach, 2011](#)). Plentiful choices may seduce people to let other people choose for them ([Steffel & Williams, 2018](#)), thereby preventing uncertainty and responsibility implicated in free choice ([Veenhoven, 2000](#)). In their classic studies, [Iyengar and Lepper \(2000\)](#) showed that decreasing the number of possibilities may increase the readiness to choose from the given possibilities. For instance, people more readily bought a product when given the choice among few (vs. plenty of) options such as flavors of jam. Similar findings emerged, for example, for fewer types of chocolate or fewer versions of electronic products ([Berger et al., 2007](#)).

Looking for a better understanding of the contradictory findings that choice overload helps versus hurts decision making, [Chernev et al. \(2015\)](#) have run a meta-analysis with 99 observations ($N = 7,202$) identifying four moderator variables of the effects of the number of choice possibilities on choice overload: The complexity of the choice options, the difficulty of the decision task, the uncertainty in setting preferences, and attributes of the goal behind the decision. Specifically, greater complexity of choice options, more difficult decision tasks, higher uncertainty in setting preferences, and being committed to minimize effort foster choice overload.

The authors also defined and validated four measures of choice overload to show these effects: low satisfaction/confidence, high regret, high choice deferral, and high switching likelihood. Apparently, choice overload implies low confidence in making the decision and low commitment to sticking to the decision.

The findings of this meta-analysis elucidate why people may fail to act proenvironmentally despite possessing many possibilities of doing so. Acting in a proenvironmental way often involves complex choices, difficult decision-making, and uncertainty about which option is best. Because people may also want to minimize the effort involved, one reason they may hesitate to act proenvironmentally is choice overload. Thus, the question arises how we can support people to cope with choice overload on their way to proenvironmental behavior. We propose that people will benefit by finding direction to act on one or a few proenvironmental possibilities.

Finding Direction

Direction From Outside: Public Information

We define finding direction to act as the subjective experience of a clearly specified desired future that can be acted on (e.g., acting in a desired proenvironmental way). We speculate that providing clear information on the effectiveness of a relatively small number of specified proenvironmental behaviors ([Dietz et al., 2009](#); [Nielsen et al., 2021](#); [Stern, 2011](#)) will guide people out of feeling choice overload by providing direction to act. Finding the direction to act should be further facilitated when the message contains persuasive language ([Cialdini, 2001](#); [Eberhardt, 2022](#)) and when people initially hold proenvironmental values ([Bolderdijk et al., 2013](#)). Thus, it should be helpful to increase the quantity and quality of public information specifying which behavioral approaches that can be applied by individuals themselves have the most impact on which proenvironmental outcomes. For example, how many trees do I need to plant to make up for my flights when it comes to my aspired carbon footprint? Providing clear information to individuals might additionally help as there is a growing literature on (mis)perceptions of various behaviors' carbon footprints (e.g., [Attari et al., 2010](#); [Johnson et al., 2024](#); [Wynes et al., 2020](#)). This literature shows that many people underestimate the carbon footprints of high-impact behaviors, such as red meat consumption and air travel.

In other areas of life such as physical health there is a host of information leading to common knowledge about which behaviors (e.g., alcohol consumption, sun exposure) hurt a wide variety of health outcomes by risking coronary artery disease, cancer, accidents, and so forth. At the same time, there is plenty of knowledge about which behaviors (e.g., eating vegetables, physical exercise, or putting on safety belts) protect against problematic health outcomes. However, around environmental protection, there seems to be less accepted and less publicized knowledge of which specific behaviors hurt which aspects of the environment, and what we can do to prevent climate change and other unfortunate environmental developments.

Expectations that certain (proenvironmental) behaviors will have the desired outcomes should be important to get people into action (i.e., outcome expectations, [Bandura, 1977](#)). Unless people expect their behaviors to make a difference for the environment, they will not act, even if their efficacy expectations to be able to carry out these behaviors are high. Thus, if we want to support people in their proenvironmental actions, we need to ensure that they receive

information about which specific behaviors make a difference. Having this information will ease finding the direction to act in a proenvironmental way. Being informed that, for example, exchanging beef with a different protein, even only for one meal, decreases emissions footprint of a person's diet that day by almost half (Rose et al., 2022), should guide people to refrain from regularly eating meat more than when they are told that generally eating meat should be cut out for environmental reasons, or when they receive no information at all about the environmental consequences of eating meat.

Direction From Outside: Rules

We propose that rules can further enhance one's sense of direction by limiting the scope of possibilities. Thus, rules may ease the path forward. For example, it should be relatively easy for an employee of a company to act proenvironmentally if the company establishes rules for its employees to, for example, separate recycling from landfills or take the train instead of flying. Proclaiming a general motto to be a proenvironmental institution should have a minor effect in comparison.

Trying to act toward a vague, ill-defined outcome, such as trying to act toward a motto of "protecting the environment," spurs a host of possible proenvironmental actions that people may feel they should act on. Choosing among these many options without the help of rules that provide constraints may be difficult (Kruglanski et al., 2002; B. Schwartz, 2004). With constraints, people gain a greater sense of direction, increasing the readiness to act. This assumption follows from a definition of motivation as a function of both direction and energy (e.g., Hebb, 1955; Oettingen et al., 2009). In fact, when task rules enhance a sense of direction for an activity, they facilitate the clarity of the outcome and the enjoyment of the task (Mutter et al., 2023). Thereby they may even enhance the state of flow, of being in the zone (Nakamura & Csikszentmihalyi, 2014). Goal clarity is part of flow: It has been defined as a precondition, antecedent, or an indicator of flow (Jackson & Marsh, 1996). Goal clarity is more likely to emerge when the task is well defined by rules.

Speaking of the benefits of rules in finding direction, Kukowski et al. (2023) find that people who fail in their self-regulatory success of lower meat consumption support rules set from outside that prescribe such lower meat consumption, whether in the form of institutional or governmental policies. Mutter et al. (2023) examined how task rules set from outside (i.e., by the experimenter) for an open-ended writing task influences enjoyment, with one's sense of direction as a potential mechanism. Three experiments with over 1,000 participants suggest that task rules may indirectly increase enjoyment by specifying direction. The authors also found that clarity from the rules predicted greater flow experience, measured by challenge-skill balance and enjoyment. Relatedly, tasks in sports are inherently rule-based (Cowley et al., 2008). In sum, providing rules from outside seems to benefit enjoyment of the task and flow experience during the task. Thus, providing rules from outside regarding proenvironmental behaviors may support people in experiencing flow and enjoyment when acting in the service of environmental protection.

Accepting rules from outside, whether from governments, public sector institutions, companies, or nongovernmental organizations, is not an easy task. This should be especially true in our times of misleading information on social media (Pennycook et al., 2021), little

trust in science (Kennedy et al., 2022), and little trust in information provided by institutions, governments, and policies (Whetten et al., 2006). The lack of trust in information and rules should be intensified by companies' efforts of greenwashing (Santos et al., 2024). Finally, choice overload leads people to be less accurate in their sustainability judgments and find it harder to pick the sustainable option even if they have a good intention to do so (Buratto & Lotti, 2023). These considerations imply that we not only need self-regulation tools giving people the direction to act toward proenvironmental behaviors but also self-regulation tools that foster scrutiny when people receive information and rules by their governments, institutions, and companies.

Direction From Inside: Self-Regulation

Integrating rules from outside, if accepted as based on veridical information, will ease the challenge of acting in a proenvironmental way. Rules will give people direction to act and clarity about how to act. Direction and clarity in turn will spur enjoyment and finding one's continued challenge-skill balance potentially even resulting in experiencing flow. However, rules may be assigned in very different ways. To provide purpose (i.e., direction) without limiting freedom, rules should be given in a noncoercive, autonomy-supportive, and nonthreatening way rather than in a controlling way (Deci et al., 2017; Mutter et al., 2023). But even if rules or other constraints can provide direction and subsequent enjoyment, rules from outside (externally induced) might be less effective than when the direction to act is found by people themselves. Finding personal direction on one's own may guarantee a more powerful and long-lasting source of motivation than task rules received from outside (Koestner et al., 2008).

Mental contrasting (Oettingen, 1999, 2000, 2012) leads to effective self-regulation by helping people to autonomously find direction. It guides them to contemplate their most important wishes and to anticipate what critical obstacles stand in the way of attaining them. Mental contrasting is especially needed when the context does not provide rules to give action direction; people need to find the direction to act just by themselves. Taking the example from before, the employees being confronted with the company's motto of generally acting in a proenvironmental way still need to find out by themselves which proenvironmental objective they want and can achieve. They also need to decide by which means they want to pursue the chosen objective. What criteria should the employees use to find their direction to act and their means to act? In other words, what rules should people give themselves to find clarity on which proenvironmental behavior they should focus on? How can they find out how to balance their challenge-skill level to heighten the possibility of finding purpose, enjoyment, and flow while acting on protecting the environment?

The psychology of motivation clarifies that people, in order to act, need to find behavioral outcomes that are both attractive and feasible for them (Bandura, 1977; Mischel, 1973). Only then can a strong commitment to act toward the specified outcome be expected. Still, finding attractive and feasible behavioral outcomes might lead to forming an intention to act but still does not guarantee that people will actively pursue the future outcome (Oettingen & Gollwitzer, 2010). People readily say that they strongly intend to act, for example, in a proenvironmental way, but the literature convincingly shows that many of our good intentions are not implemented (Sheeran & Webb, 2016). This intention-behavior gap needs to be closed so that we can

actively follow through on our goals. But why do we fail to follow through? The future outcome is attractive, and the chances of us reaching the outcome are high. What stops us from acting on our intentions to protect the environment?

One answer may come from research on positive thinking about the future. Positive thinking about the future brightens our momentary mood (Oettingen et al., 2016) and allows us to mentally explore the many possibilities of our future (Fredrickson, 2004; Oettingen, 2000). However, merely depicting the desired future in our mind is likely to impede acting on our wishes and intentions. Across life domains, whether academic achievement, professional success, health promotion, or interpersonal relations, the literature shows that the more positively we imagine our future, the less effort we put into making our dreams come true (H. B. Kappes et al., 2012; Oettingen & Mayer, 2002). For example, the more positively university graduates dreamt about success in work life, the fewer job applications they sent out, the fewer job offers they received, and the lower their salary was 2 years later. The more positively students fantasized about a good grade in an upcoming exam, the worse they did. The more positively hip replacement surgery patients before surgery dreamt about fast recovery, the less well they could move their joints, the fewer steps they could walk, and the less well their general recovery was, as estimated by the physical therapists (Oettingen & Mayer, 2002). Though positive daydreams and fantasies soothe momentary mood, they predict more depressive symptoms over time (over 7 months; Oettingen et al., 2016), partly due to low effort and success in the interim. In short, positive future thought might give action the direction, but at the same time, it saps people's energy. This pattern of results emerged in experimental work, where inducing positive future fantasies and daydreams lowered systolic blood pressure as well as self-reported energy levels. These energization measures in turn predicted subsequent low effort and little success (H. B. Kappes & Oettingen, 2011).

The trouble is that following through on most proenvironmental behaviors is either complex (e.g., learning how to handle an electric car) or demands relinquishing long-cherished habits and conveniences (e.g., reducing flights). Imagining oneself mastering these complexities in a stride and easily forgoing the comforts saps energy and leads to complacency. How, then, would people ever exert the effort to act in a proenvironmental way? In other words, positive fantasies and daydreams about following through on one's proenvironmental wishes, though revealing in which direction we want to go, will sap the energy needed to act on them!

Indeed, H. B. Kappes et al. (2013) induced positive future daydreams (vs. factual thoughts) about spending for a charity organization. Positive future thinking (vs. factual thought) led to spending when spending was easy (few resources were demanded). On the contrary, people who depicted themselves in a positive light as generous donors were holding back their time and money when spending was difficult (more resources were asked for). Note that when spending was difficult, participants in the positive imagery condition reported that they felt too many of their resources were demanded, justifying their own behavior of not being generous. No such responses were observed when giving was easy or when people had to come up with factual thoughts.

These findings raise the question of whether there is a mental tool that can provide both: Give proenvironmental behavior the direction and at the same time equip people with enough energy to go the cumbersome way of implementing the often complex and demanding proenvironmental behaviors. In the following, we introduce mental

contrasting of the positive future with the negative reality, which provides both direction and energy to act (Oettingen, 2000, 2012).

Finding Direction and Energy: Mental Contrasting of Future and Reality

In the framework of fantasy realization theory, mental contrasting (e.g., Oettingen, 1999, 2012, *in press*) is a behavior change tool that provides both direction and energy to act. Specifically, mental contrasting is a conscious mental exercise in which people identify and imagine a desired future—to give action the direction—and identify and imagine the critical obstacle of reality standing in the way of reaching the desired future—to give action the energy. Identifying and imagining the main obstacle in the context of the desired future will also reveal how to overcome the obstacle. In mental contrasting the *a priori* unrelated entities of future and reality connect in terms of negative reality being an obstacle to, or “standing in the way” of, the desired future. The relational construct of obstacle standing in the way of the desired future evokes a need to overcome the obstacle toward reaching the desired future followed by the respective energy to act (Oettingen, *in press*; Oettingen et al., 2001).

Mental contrasting closes the intention–behavior gap when the obstacle is surmountable and guides people to actively let go from acting on their desired future when the obstacle is not surmountable (Oettingen et al., 2001; summary by Oettingen & Sevincer, 2018). That is, mental contrasting spurs setting preferences of either actively engaging in reaching a desired future outcome or actively disengaging from pursuing the outcome. It helps people find clarity to pursue those futures that are worth going for and to refrain from pursuing those that are futile. People will not waste time and energy.

Importantly, when using mental contrasting, people are instructed to find their critical intrapersonal or internal obstacles, as those are more likely to be surmountable than structural or external barriers. A person can overcome their own feelings, beliefs, or habits rather than barriers that are posed by other people or their structural context. For example, a worker in a very big company can overcome her resentment about her company's greenwashing messages, or she can give in to the resentment and switch jobs. However, she can hardly change the company's greenwashing marketing strategy. Mental contrasting, by asking people to find the obstacle in themselves on the way to fulfill their wishes, allows them to understand when they should adapt to the unchangeable outside barriers (accommodate) and when they are skillful enough to focus on changing removable barriers (assimilate) in a given situation (for accommodation vs. assimilation to one's context, see Brandtstädter & Greve, 1994; Rothbaum et al., 1982).

Fantasy realization theory describes three other modes of thought which fail to produce behavior change: indulging in the future, dwelling on obstacles of reality, and reverse contrasting in which the present reality is mentally elaborated before the desired future. These three modes of thought do not produce behavior change as the relational construct of reality as an obstacle standing in the way of the desired future is not activated. People's actions will be stagnant independently of whether the obstacle can be surmounted or not.

Let us consider reverse contrasting in more detail: When individuals first elaborate on the reality and then imagine the desired future (i.e., reverse contrasting), the reality is not elaborated against the future and thus is not interpreted as an obstacle impeding the desired future (A. Kappes & Oettingen, 2014; Oettingen et al., 2001). Take someone who first thinks about taking the car to work and then

reflects on her desire to act in a more environmentally friendly way. She is unlikely to recognize the conflict that taking the car is an impediment to fulfilling her desires of successfully acting toward protecting the environment. However, if she mentally contrasts—first imagines the desired future of acting environmentally responsible and then considers the reality of driving to work—she is more likely to identify driving to work as a valid obstacle to achieving her wish to be an environmentally friendly person.

In sum, mental contrasting, and not the other three modes of thought, effectively activates goal pursuit. It helps individuals clearly identify the reality that obstructs their desired future, enabling them to either move forward with pursuing their wish, attenuating the wish, or letting it go. Letting it go will save the resources for alternative, more feasible, environmentally friendly endeavors.

Evidence

Mental contrasting has been tested in highly controlled lab settings. The experimental studies show that it guides people to carefully select their outcomes and behaviors according to what they find important and feasible (summaries by Oettingen, 2012, *in press*). People pursue future outcomes that they feel passionate about and that they estimate as reachable and they let go of those that they find not so attractive after all or deem futile to pursue (Oettingen et al., 2001, 2005). These findings were observed in different life domains, including health (fighting smoking, Oettingen, Mayer, & Thorpe, 2010; eating healthily, Wittleder et al., 2020), academic achievement (exam preparation, H. B. Kappes et al., 2013; studying abroad and improving mathematics, Oettingen et al., 2001; attending grad school, Sevincer & Oettingen, 2013), professional achievement (combining work and family life, Oettingen, 2000; enrolling in a vocational training, Oettingen et al., 2005), and task performance (successfully giving a talk, A. Kappes & Oettingen, 2014; excelling at creativity tasks, Oettingen et al., 2012; excelling on a hand grip and writing task, Sevincer et al., 2014). Similarly, mental contrasting helped resolve interpersonal conflicts (Oettingen et al., 2001; Schrage et al., 2020), facilitated seeking and giving help (Oettingen, Stephens, et al., 2010), eased approaching an attractive stranger (Oettingen, 2000), and supported adolescents in surmounting their fear of immigrants (Oettingen et al., 2005).

Processes

Mental contrasting is an easy-to-apply self-regulation tool affecting behavior without changing attitudes and beliefs. It works via nonconscious cognitive, motivational, and feedback-related processes. Though the exercise of mental contrasting itself is conscious, the tool builds strong nonconscious associative links between a desired and feasible future and the obstacle of reality (A. Kappes & Oettingen, 2014), as well as between the obstacle of reality and the behavior to overcome the obstacle (A. Kappes, Singmann, & Oettingen, 2012). It fosters the interpretation of reality as an obstacle (A. Kappes et al., 2013) and facilitates the effective processing of information that is entailed in setbacks and critical feedback, without damaging people's subjective sense of competence (A. Kappes, Oettingen, & Pak, 2012). It heightens systolic blood pressure, and people feel energized to act on their wishes. All these processes occur outside of people's awareness but still guide subsequent behavior change (Oettingen, 2012, *in press*).

Effortful Thinking

Mental contrasting leads people to find clarity and fulfil their wishes, but still only a few people (in various studies around 10%–15% of participants) spontaneously engage in mentally elaborating both the desired future and the respective obstacle of reality. Sevincer and Oettingen (2013) observed in U.S. and European samples that during their everyday life most people indulge in positive images about the future, or they dwell on the negative reality. Tamim et al. (2022, 2024) found similar results in Chinese university students. That is, people are drawn to engage in cognitively less effortful modes of thought rather than in the more cognitively effortful mental contrasting mode of thought. Neuropsychological experiments (Achtziger et al., 2009) and experiments showing that depletion of energy and cognitive resources reduce spontaneous mental contrasting indicate that mental contrasting is an effortful mental exercise (Sevincer et al., 2015, 2024). A slightly higher percentage of people (about 20% of participants) are found to spontaneously mentally contrast when people see themselves confronted with due dates, unique opportunities, or when they are asked to take on responsibilities (Sevincer et al., 2018, 2020; Tamim et al., 2024). Finally, looking at personality attributes, mental contrasting is linked to high need of achievement, to high academic and sports performance, and to self-reported strong self-regulatory skills (Sevincer et al., 2017; Tay et al., 2019).

These findings imply that confronting people with an urgency or a specific task to act proenvironmentally, as well as giving them responsibilities to act in a proenvironmental way, should elicit moderately more spontaneous mental contrasting. Mental contrasting in turn will give people more direction to act. Still, based on the just described findings, such urgency or taking responsibility in the proenvironmental domain may only modestly increase the spontaneous generation of mental contrasting. Consequently, teaching mental contrasting to people as a meta-cognitive strategy to be applied in the environmental domain may be more effective in helping them find direction and energy to act toward protecting the environment than relying on spontaneous mental contrasting. Through teaching mental contrasting, we may empower people to follow their unique, individualized path of acting toward protecting the environment.

Interventions

There are a host of studies showing that mental contrasting can be taught as a meta-cognitive strategy and that it can be readily applied in everyday life. For example, teaching mental contrasting (vs. indulging) as a meta-cognitive tool to middle managers in the health care domain facilitated effective decision making and time management as well as completing some tasks, but suspending others (Oettingen, Mayer, & Brinkmann, 2010). Teaching mental contrasting (vs. indulging, dwelling, or no instructions) to negotiation partners enabled the two parties to find win–win solutions and fair treatment of their counterpart (Kirk et al., 2011), it spurred physical exercise and healthy eating as well as better coping with chronic physical conditions (e.g., Adrianse et al., 2013; Sheeran et al., 2013). Finally, it benefitted students as well as school children in their academic achievement (A. Gollwitzer et al., 2011; summaries by Oettingen, 2012; Oettingen & Sevincer, 2018).

Mental contrasting allows people to find direction and clarity about which future to pursue and which future to let go of. There are contexts, however, when letting go of a desired future is not

possible or not advisable, that is, when there are no alternatives. An example would be when students must learn to read at school. In such situations, teaching mental contrasting needs to ascertain that the desired future is reachable, and the obstacle is surmountable (i.e., expectations of success are high) to foster pursuing the desired future and to prevent disengagement. Thus, mental contrasting instructions ask people to find wishes that are highly important and at the same time feasible for them to fulfil. The instructions aim to make sure that people reach out for wish fulfilment rather than to select between wishes of unknown feasibility or to disengage from desired futures with low probabilities of success.

There are desired futures that might be feasible to attain, but still the obstacle of reality might be very hard to overcome. Examples of such obstacles are ingrained habits, impulsive behaviors, or strong affective responses. In such cases, when the obstacles are highly automatic responses themselves (e.g., anger, regret, or urges), a strategy explicitly connecting the obstacle to the behavior to overcome the obstacle, in addition to the already established implicit obstacle-behavior association created by mental contrasting, might be even more effective in conquering such obstacles than mental contrasting alone. Therefore, we integrated forming implementation intentions or creating if-then plans (P. M. Gollwitzer, 1999) into the mental contrasting exercise.

Mental Contrasting With Implementation Intentions (MCII)

Implementation intentions are “If situation X, then I will perform goal-directed behavior Y!” plans (P. M. Gollwitzer, 1999, 2014; P. M. Gollwitzer & Sheeran, 2025). They foster associative links between the situation specified in the if-part and the behavior specified in the then-part. People now act fast and effortlessly toward their desired future or goal when the specified situation occurs. Implementation intentions reliably heighten the attainment of already set goals ($d = 0.65$; meta-analysis by P. M. Gollwitzer & Sheeran, 2006). For implementation intentions to show their effects, people need to be strongly committed to attaining their desired future, the situation needs to be conducive for goal attainment, and the specified behavior needs to be instrumental for goal attainment (Sheeran et al., 2025). All three prerequisites are fulfilled by mental contrasting.

Researchers usually investigate implementation intentions by providing content that optimizes these prerequisites (see Armitage, 2004; P. M. Gollwitzer & Sheeran, 2025). However, to arrive at effective self-regulation in everyday life, people need to fill in their individual content just on their own. Mental contrasting allows people to generate just by themselves the relevant content and specificity for implementation intentions to work. It also creates strong goal commitment, asks people to specify the obstacle as the situation for the if-part, and it asks people to specify the behavior to overcome the obstacle for the then-part of the plan. Thus, mental contrasting and implementation intentions seem to be a fitting combination to equip people to overcome difficult, highly automatic obstacles and to adjust the content of implementation intentions to their own life experiences (MCII; Oettingen, 2012, 2014; Oettingen & Gollwitzer, 2010).

MCII: Interventions

Mental contrasting and MCII provide the structure for people to find direction and energy, and they reveal how one can act toward

the desired future—however, the content is up to the person engaged in the mental exercise. People can use mental contrasting and MCII on their own to tackle any wish they might have. Applied to the pro-environmental context, by being instructed to find and select one wish at a time, people will find clarity to counteract the choice overload that we described before. MCII implies four steps: Identifying a wish, identifying and imagining the best outcome, identifying and imagining the most critical inner obstacle, and generating a plan in the form of “if ... obstacle, then I will ... behavior to overcome obstacle.” Like mental contrasting, MCII can be applied as a meta-cognitive strategy. People can learn MCII and become MCII experts. It has been disseminated under the acronym of WOOP (wish, outcome, obstacle, plan), and people can readily learn it by using the website woopmylife.org and the WOOP App. People do not have to rely on educators, trainers, or instructors. Importantly, no advice is needed regarding what content is to be filled into the WOOP structure; people using the tool will discover the relevant content by themselves.

MCII or WOOP interventions have shown that they can spur behavior change in a host of different life domains. Women interested in life change, increased vigorous and regular physical exercise over 4 months (Stadler et al., 2009), and ate more fruits and vegetables over 2 years (Stadler et al., 2010). Patients who suffered from a stroke heightened their sport activities and reduced their weight (Marquardt et al., 2017), chronic back pain patients increased their physical capacity (Christiansen et al., 2010). MCII reduced heavy smoking and hazardous drinking (Mutter et al., 2023; Wittleder et al., 2020). Working mothers from low-income backgrounds better managed their time and more readily completed the vocational program they were enrolled in (Oettingen et al., 2015). Children at risk for attention deficit hyperactivity disorder improved homework quality and quantity (Gawrilow et al., 2013), and over the period of 2 months, students practiced 60% more tasks in preparation for a standardized test (Duckworth et al., 2011). Middle school children from low-income homes came to school more often and improved their course grades (Duckworth et al., 2013). In a recent intervention study with over 500 first graders, Schunk et al. (2022) showed that first graders being taught WOOP (vs. control) improved their reading skills, discovered more careless mistakes, and excelled in executive function tests over 1 year. After 3 years, they were able to enroll in schools leading to more aspirational careers. In the relationship domain, romantic partners reduced their insecurity-related behaviors (Houssais et al., 2013), and in the domain of proenvironmental behavior college students who were not vegetarians reduced their red meat consumption (Loy et al., 2016).

So far, there is little research on the effects of mental contrasting in the proenvironmental domain. However, mental contrasting has been shown to effectively change behavior in many other life areas, and thus, future research on the topic seems promising. Mental contrasting and WOOP provide the structure, the users need to fill in the content as they are the experts of their lives. Thus, WOOP should foster a wide variety of heterogeneous proenvironmental behaviors (e.g., fostering recycling, reducing air traffic, installing a heat pump, buying an electric car, joining a climate protest, and becoming vegan).

Mental Contrasting: Proenvironmental Context

The arguments and findings spelled out above suggest that mental contrasting will guide people toward proenvironmental behaviors and opportunities that are attractive and feasible for them personally.

They will feel energized to go their individual path toward contributing to the environment. By understanding their heartfelt wishes and critical obstacles standing in their way, they will find creative means to overcome their hindrances and master the bumpy road of acting toward fulfilling their idiosyncratic wishes of protecting the environment. Importantly, mental contrasting will allow people to let go of engaging in proenvironmental behaviors that they deem not feasible and that might have drained their energy in the past. By letting go, they will save resources that can be used for more promising environmental projects.

Mental contrasting and MCII are self-regulation tools that may be especially helpful if information and rules fail to provide direction from outside. By using the technique of mental contrasting, people can free themselves from their choice overload even in the absence of guidance or help from outside. They may now act in an autonomous and automatic way. Before they know it, they may have acted proenvironmentally, and in retrospect, discover that they can make a difference.

Mental Contrasting Versus Other Behavior Change Techniques

Mental contrasting differs from other behavior-change techniques commonly studied in the proenvironmental behavior domain in several important ways. First, while many approaches focus on the consequences of already-established self-regulation techniques (e.g., monitoring the pursuit of set goals to save water; Tiefenbeck et al., 2018), mental contrasting specifies the processes that turn wishes that carry no commitment into goals that people feel committed to, thereby enabling effective goal pursuit. For example, it can transform a vague wish to reduce one's CO₂ footprint into a binding commitment to reduce flying.

Second, unlike behavior-change models that focus on the content (e.g., CO₂ footprint reduction), structure (e.g., specific or vague), or quality (low or high incentive) of preexisting goals as predictors of behavior change, mental contrasting is content-independent. It can be applied to wishes across a wide range of life domains, levels of abstraction, degrees of difficulty, and goal framing (e.g., learning vs. performance goals, Dweck & Leggett, 1988). Take, for instance, someone who wishes to ride her bike to work to decrease her CO₂ footprint (and benefit health wise). Whether she frames her wish in terms of learning how to ride long distances or in terms of successfully performing long-distance rides, mental contrasting can turn either type of wish into a binding goal she then feels committed to.

Third, mental contrasting instructions empower individuals to learn and apply the technique autonomously, without requiring external support from trainers, coaches, or instructors. It is a self-guided strategy that can be learned and implemented independently across a wide array of life domains. For example, someone who wishes to eat more healthily generates the wish of reducing meat consumption, thereby discovering additional benefits: reducing her CO₂ footprint. Future interventions might use such indirect approaches to increase proenvironmental behavior.

Fourth, mental contrasting helps not only to strive for viable goals but also to relinquish unattainable or maladaptive ones. For example, a person who is strongly committed to recycling may live in a cultural context where recycling is not feasible. Mental contrasting can help her decide to pursue a more realistic and impactful proenvironmental goal—such as reducing her overall CO₂ footprint.

Fifth, mental contrasting fosters insight and clarity by prompting individuals to focus on their most heartfelt desires and the main internal obstacles standing in their way. This process can help people identify meaningful wishes and goals as well as effective strategies, particularly in situations marked by stress or by having procrastinated tackling long-standing unresolved concerns. In the context of proenvironmental behavior, this heightened capacity for insight can relieve the psychological burden of feeling inadequate in pursuing proenvironmental commitments.

Sixth, although mental contrasting is a conscious imagery technique, it exerts its effects through nonconscious cognitive, motivational, as well as feedback-related mechanisms. Its influence on behavior does not depend on changing efficacy beliefs or attitudes. As a result, individuals do not need to feel more confident or adopt more positive attitudes toward environmentally friendly behaviors to achieve respective meaningful behavior changes. Take someone who has generally weak proenvironmental attitudes. If she has a few proenvironmental behaviors, she feels attuned to (even if it is for other reasons such as health benefits or conformity), mental contrasting can help her perform these behaviors without changing her general proenvironmental attitude.

Seventh, mental contrasting differs from the compendium of self-enactable techniques that Knittle et al. (2020) postulated to be a valid basis for creating new and effective interventions for behavior change. Examples of these techniques are maximizing effort, supporting others, reminders of future outcomes or goal content, identifying ways of dealing with pressure, and prayer. On the contrary, mental contrasting is a distinctive and powerful tool for fostering autonomous self-regulated behavior change based on nonconscious processes. It unfolds its behavior change effects in many domains, including in the domain of proenvironmental behavior (Loy et al., 2016).

Mental Contrasting in the i-Frame Versus the s-Frame

So far, we have discussed mental contrasting primarily as a behavior change technique that supports individuals in autonomously regulating their own proenvironmental behavior within their personal context, which Chater and Loewenstein (2023) referred to as the individual frame or i-frame. In this sense, mental contrasting facilitates bottom-up change, enabling individuals to alter their own behavior that only then—potentially—influences institutional or societal processes, thus influencing the s-frame. For example, when more and more clients self-regulate reducing their use of plastic, then shops and companies will replace plastic with more environmentally friendly materials.

Individuals such as employees, community members, or any citizen can use mental contrasting in an individualized way to overcome personal obstacles that prevent them from engaging in actions geared toward changing policies, regulations, and laws provided by administrative units as part of the s-frame. Examples are using mental contrasting to overcome obstacles to vote, to organize and attend effective proenvironmental movements, or to participate in civic activities that support environmental policies.

Mental Contrasting in the i-Frame Combined With the s-Frame

However, a top-down application of mental contrasting can be employed by combining activities in the i-frame with those in the

s-frame. First, institutional actors who possess the authority to influence others' behavior, such as chief executive officers and politicians, might use mental contrasting to resist personal temptations of introducing unsustainable measures, for example, green-washing. Similarly, they can use mental contrasting to overcome personal obstacles to introduce or lobby for structural reforms toward proenvironmental measures.

Second, people in leadership positions can apply mental contrasting to design and communicate data-driven and clearly formulated proenvironmental information, rules, and policies to employees or citizens. Before, we argued that providing clear and precise information and rules would enhance people's sense of direction to act in an environmentally friendly way and thus reduce potential choice overload.

Third, actors in leadership positions may use mental contrasting or WOOP to frame data-driven proenvironmental messages in ways that follow the four steps of the WOOP exercise. That way, people should more readily discover which proenvironmental direction they wish to implement and what personal obstacles are in their way. Consequently, the audience reading the WOOP-framed messages should more effectively perform the respective proenvironmental behaviors.

Fourth, the mental contrasting or WOOP framework could be used to nudge people into proenvironmental behavior. Thaler and Sunstein (2008) defined nudging as

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 easy and cheap to avoid. Nudges are not mandates. Putting fruit at eye level counts as a nudge. Banning junk food does not. (Thaler & Sunstein, 2008, p. 6)

In a meta-analysis of 37 studies, Wee et al. (2021) reviewed different nudging techniques in the proenvironmental behavior domain such as prompting, sizing, proximity, presentation, priming, labeling, functional design, and more. They find that most nudging studies show positive effects in nudging the targeted behavior. Future studies may test whether prompting a mental contrasting framework integrated in nudges (e.g., in labeling, functional design, prompting) might foster people to behave in a more environmentally friendly way. Note, however, regarding nudging ethical concerns remain, especially related to a possible lack of autonomy in terms of freedom of choice, agency, and individuality (Kuyser & Gordijn, 2023). Altogether, the most effective promotion of proenvironmental behavior may arise when i-frame and s-frame approaches are combined, enabling both individual agency and institutional guidance.

Conclusion

We reviewed three ways of how people might find direction to act and reduce their choice overload when considering the many proenvironmental possibilities to act. Two of these ways relate to social engineering (s-frame), the third gives the responsibility to the individual (i-frame) and specifies mental contrasting as a tool to establish effective self-regulation. First, clear, easy-to-understand, and persuasive information about which proenvironmental behavior benefits which proenvironmental outcomes should provide direction to act. Institutions such as governments, nongovernmental organizations, nonprofit and educational organizations, companies, and even local communities and families may provide such information. Second,

rules set by such institutions that guide people to focus on few rather than many proenvironmental behaviors will give further direction to act. Importantly, rules need to be conveyed in a way that does not constrain people's sense of freedom (Mutter et al., 2023). Otherwise, people may show reactance and consequently dismiss proenvironmental behavior altogether.

We discussed a third way of finding direction to act in a proenvironmental way. This way relates to the individuals themselves finding direction and energy to act (i-frame) by engaging in mental contrasting. People can find, just on their own, the direction to act toward protecting the environment, gain the energy to do so, and find the means to implement their desired behavior. Mental contrasting is an effective tool as it directly influences behavior change without having to change beliefs or attitudes. By describing how mental contrasting affects behavior change and how it can be taught to people of different backgrounds, ages, and attitudes, we end with a hopeful note: Teaching mental contrasting should spur proenvironmental action across age, cohort, background, culture as well as values and beliefs; so that all can find their own individualized proenvironmental behaviors that they have a good chance to enact.

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