



Habitually green: integrating the concept of habit into the design of pro-environmental interventions at the workplace

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Published online: 8 July 2019
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Abstract

In the course of sustainability strategies many enterprises and organisations have implemented measures to promote pro-environmental behaviours at work, including sustainable resource use. This task, however, often represents a challenge because many daily behaviours of the employees are based on habits and routines that are very difficult to change. This article discusses pro-environmental behavioural interventions in the corporate environment with a particular emphasis placed on habit formation. In reference to common behaviour change interventions and habit formation theory, we discuss how to enhance the design of behaviour change programs and support their implementation at the workplace in order to facilitate the process of habit-formation. The identified habit-enabling adjustments can be used to achieve a permanent reduction in the negative environmental impact of companies and thus become an integral part of Corporate Social Responsibility (CSR) and Environmental Management System (EMS) strategies.

Gewohnheitsmäßig grün: Integration des Konzepts der Gewohnheit in die Gestaltung umweltorientierter Maßnahmen am Arbeitsplatz

Zusammenfassung

Im Zuge umfassender Nachhaltigkeitsstrategien beinhalten Maßnahmenpakete von Unternehmen oftmals Schritte, um den schonenden Umgang mit Ressourcen im betrieblichen Alltag der Mitarbeiter und Mitarbeiterinnen zu fördern. Diese Zielsetzung stellt sich jedoch oftmals als Herausforderung dar, da viele Verhaltensweisen auf gefestigten Gewohnheiten basieren, die nur schwer zu ändern sind.

Dieser Beitrag fokussiert das Thema der Gewohnheitsbildung bei betrieblichen Interventionen zur Förderung von umweltfreundlicherem Verhalten am Arbeitsplatz. Ausgehend von gängigen betrieblichen Maßnahmen und der Theorie zur Gewohnheitsbildung wird erörtert, wie betriebliche Maßnahmen so gestaltet und umgesetzt werden können, dass das gewünschte Verhalten sich möglichst zu einer Gewohnheit ausbildet. Die hier identifizierten Maßnahmenkonzepte können somit einen Beitrag leisten, die negativen Umweltwirkungen unternehmerischen Handelns nachhaltig zu reduzieren und als Bestandteil in Corporate Social Responsibility- und Umweltmanagementsystem-Strategien einfließen.

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1 Introduction

The Rio Declaration on Environment and Development (1992) called upon governments to support “sustainably managed enterprises” and encouraged companies to develop environmental practices with the overall goal of greening the business world (UNESCO 1992). Legislation enacted to support this goal spurred “eco-innovations” and environmentally-friendly production (Porter and van der Linde 1995) as well as bottom-up “green entrepreneurship” initiatives (e.g. Andersen 1998). Nowadays, most enterprises and organisations have implemented either Corporate Social Responsibility (CSR) programmes, Environment Management Systems (EMS) or voluntary environmental standards such as ISO 14001 or EU-developed Environmental Management and Audit Scheme (EMAS) to help them reduce their negative impact on the environment, limit their resource use and/or improve their public image (Williamson et al. 2006; Nawrocka and Parker 2009; Daddi et al. 2016; Testa et al. 2018).

Enterprises and organisations affect the environment not only through their core business activities but also through their organisational behaviour (Andrews and Johnson 2016). As an example, the world’s 500 largest businesses (global 500) are directly and indirectly (e.g., through the energy they use) responsible for more than 10% of worldwide GHG emissions (Thomson Reuters 2014).

Depending on the type of organisational behaviour, companies can try to reduce their environmental impact in various ways. They can, for example, adopt voluntary company-wide environmental standards and benchmarks with regard to managerial decision-making, especially procurement incl. supplier choice. Further, they can launch behaviour change programs targeting environmental impact of employees’ (daily) behaviours. Those behaviours often comprise routines and habits connected with performing core tasks as well as with daily “auxiliary” activities, such as turning off lights and computer screens after work, using air conditioning/heating in an environmentally conscious way or stair climbing instead of using an elevator, but also meal choices and work-related travel behaviour. Their impact can be sometimes easily reduced through pre-defined settings or physical arrangements (pre-defined work environment) like in the case of duplex printing, fixed heating hours or provision of cold-water only in sanitary facilities. However, many of such daily repetitive employees’ behaviours cannot or are very difficult to regulate or influence due to ethical reasons, psychological reactance (countervailing action taken to preserve restricted freedom of choice) or simply due to difficulties in enforcing compliance. Furthermore, even if the desired pro-environmental behaviour is performed on a voluntary basis, it may work only in the short run if it is perceived as a significant burden

without appropriate supporting environment and/or appreciation.

Though small, such behaviour changes in individual employees’ behaviour can make a large difference on the organisational level if they are aggregated across business units and over longer time horizons (see e.g. Egebark and Ekström 2016 and Schall and Mohnen 2017). Thus, although we refer to single behaviour at the micro (individual) level, one should keep in mind that if the change in the employees’ behaviour becomes enrooted in the structure and organisational culture (macro level), its effect will become more than the sum of its parts (Ashkanasy and Dorris 2017). Habitualisation of pro-environmental behaviours in an organisation has also another advantage over implementation of “green” defaults: the pro environmental behaviour and not the pre-defined setting (pro-environmental or not) becomes a daily behavioural routine. Although both often have the same final result (cf. duplex printing default vs. choice of duplex printing), defaults can easily backfire if the circumstances like hardware, infrastructure or staff responsible for environmental issues change and the corresponding “green” default suddenly turns into a “grey” one (e.g. simplex printing default). The overall environmental impact of such habitual changes can be further amplified if positive spillovers from pro-environmental behaviours manage to spread from business to the household domain. Although spillovers (in particular those across different contexts like home and workplace) are complex and not yet fully explored phenomena, they are not unlikely to occur either (Truelove et al. 2014), especially in the case of simple behaviours that do not require much time or effort (Abbaszadeh and Alavi 2017) and share similar “defining features” like involved equipment and trigger cues (Littleford et al. 2014), such as turning off lights or computer screen when leaving a room.

Most of the research on behaviour change towards pro-environmental behaviour (PEB) has focused on the household domain. However, the relative stability of the work context, employees’ daily presence, a pre-defined work environment and formal and informal workplace rules and values as well as public exposure create a particularly favourable constellation within which to build new habits. It appears surprising that within the considerable body of literature on behavioural change interventions at the workplace habit formation has—if at all—only been discussed as “a promising aspect”, but hardly ever explicitly addressed in the intervention’s design or evaluation¹. In

¹ A literature review on behavioural change interventions at the workplace revealed 32 publications (indicated in the references by an asterisk). Out of these, 21 studies mentioned habits in the theory or discussion, 4 studies presented interventions aimed at habit formation and only 3 studies measured the effect of such habit-oriented interventions.

the end, these are habits that guide almost half of our daily behaviours², easily overriding our initial motivation, intentions or conscious decisions to behave in a specific way.

The aim of this paper is to introduce the concept of habit formation with regard to the existing frameworks of pro-environmental behavioural interventions at the workplace. In particular, we focus on interventions aimed at reducing organisations' environmental impact from employees' simple, daily, and frequent activities that are often targeted by CSR and EMS programmes. Application of the habit concept in that domain provides a new perspective on the design of pro-environmental interventions at the workplace.

First, we offer a brief overview of popular behavioural interventions aimed at improving sustainable resource use at the workplace. Second, we briefly introduce the habit concept and provide specific recommendations on how to enhance design features to facilitate habit formation process illustrated by three practical examples, before discussing the potential challenges and pitfalls of implementing interventions. Finally, we offer some concluding remarks and an outlook on further research. In short, our study contributes to the current stream of literature on PEB in the workplace by incorporation of the habit formation concept into the established intervention toolkit which provides a new perspective on the design of respective interventions.

2 Pro-environmental behaviour change interventions at the workplace—an overview of existing interventions and their impacts

Both at home and at the workplace, behaviour is influenced by a wide range of individual cognitive and motivational factors (e.g. attitude, awareness, personal norms, social norms, efficacy beliefs, general beliefs and values, perceived responsibility) and external conditions (e.g. opportunities, social appreciation, regulations). Behaviour at the workplace is additionally affected by the organisational culture (official code-of-conduct and informal rules and norms), the physical work environment (pre-defined arrangement of objects and facilities), and the presence or absence of colleagues, which can affect a person's sense of responsibility, and the role of social norms (Tudor et al. 2008; Ones and Dilchert 2012). In addition, our (daily) decisions are affected to a large extent also by the amount of available time, capacity for deliberate thinking, and decision-making contexts (e.g. Kahneman 2003, 2013; Beckenbach 2015).

² Interview with Charles Duhigg, Harvard Business Review (2012). URL: <https://hbr.org/2012/06/habits-why-we-do-what-we-do> [accessed online on 8th of April 2019].

Insights from the behavioural sciences can help in designing effective interventions that go beyond well-established economic and political tools such as mandatory regulation, bans or monetary incentives. Such interventions can be specially designed to complement other instruments in order to achieve an optimal mix of interventions in a given context (Michalek et al. 2016).

Behavioural measures have been widely recognized as effective and have been applied both in the public domain (e.g. Congdon et al. 2011; Byerly et al. 2018) and in organisational environments (e.g. Young et al. 2015). The organisational behaviour literature provides several examples of diverse programmes aimed at reducing employees' environmental footprint at the workplace (see Yuriev et al. 2018 for an overview). These often involve "soft" behavioural interventions applied to influence simple and frequently performed employees' activities of non-strategic importance that are either impossible or difficult³ to regulate. In particular, the literature reports on the use of defaults (e.g. switching the office printer to the "duplex printing" default setting, Egebark and Ekström 2016), strategic positioning (e.g. improved visibility of food with a low carbon footprint in the workplace canteen, Kurz 2018; placement of personal recycling bins on employees' desks, Holland et al. 2006), framing (increasing employees' productivity in a high-tech factory, Hossain and List 2012), and comparative feedback and prompts (energy waste reduction on the production line, Siero et al. 1996, and in the office, Russel et al. 2016). Often, though, such programmes also include other well-established tools such as (environmental) education and personal commitment (reduction of energy use by university staff, ECHO), or monetary and non-monetary incentive structures (e.g. inducing eco-driving in a logistics company, Schall and Mohnen 2017), see Table 1 for a quick overview of possible interventions to influence employees' behaviour. However, regardless of the type of intervention, these programmes give in general very little consideration to the persistence and maintenance of behaviour change or to its measurement once the intervention has been terminated.

The relatively short time horizon of an intervention⁴, a lack of measurement post-implementation, and generally

³ As already noted in the introduction some employee behaviours cannot be regulated in a restrictive way due to ethical reasons or difficulties with compliance monitoring. It is not feasible, for example, to ban using elevator in a multifloor building because some employees/visitors may not be able to use stairs (disabled or in a bad health condition). In a similar manner, it is hardly possible to enforce compliance with regard to turning-off lights or computer screen each time an employee leaves the office—the cost of monitoring and compliance enforcement is likely to exceed the potential gains (incl. monetary savings).

⁴ Very few studies investigating individual behaviour change consider longer time horizons of up to 24 months (e.g. Allcott and Rogers 2014).

too little focus on long-term effects (Byerly et al. 2018) are some of the challenges associated with the aim of persistent behaviour change. Yet, it is only persistent change that is effective in the long term. The additional (monetary and non-monetary) costs incurred in the course of improving the design of interventions may be exceeded in many cases by the (discounted) long-term benefits of persistent behaviour change (Kwasnicka et al. 2016). Accordingly, it is worthwhile considering how to integrate the concept of habit formation in the design of workplace intervention programmes.

3 Forming green habits in an organisational setting

3.1 Theoretical background—the process of habit formation

The concept of habit offers a promising and under-researched perspective on designing interventions aiming at persistent behaviour change (Gardner 2015; Verplanken and Wood 2006; Wood and R unger 2016). According to psychologists, a habit is a “*process by which a stimulus automatically generates an impulse towards action, based on learned stimulus-response associations*” (Gardner 2015, p. 280). This makes it “*a form of automaticity in responding that develops as people repeat actions in stable circumstances*” (Verplanken and Wood 2006, p. 91). Habitual behaviour is therefore (a) highly efficient because it requires no conscious decision-making, (b) relatively stable because it is controlled by specific situational cues, and especially, (c) lasts as long as these cues remain unchanged and the behavioural outcome is sufficiently satisfying (Webb et al. 2009; Wood and Neal 2009; Orbell and Verplanken 2010; Hofmann et al. 2008; Graybiel 2008; Strack and Deutsch 2004; Bargh 1994). Once formed, habits exert a powerful and persistent influence on behaviour (Quinn et al. 2010; Oullette and Wood 1998; Neal et al. 2011; Ji and Wood 2007; Walker et al. 2015).

Forming a habit requires three conditions: a specific context-behaviour link, sufficient behavioural repetition, and a satisfying outcome (Lally and Gardner 2013; Lally et al. 2010; Verplanken and Wood 2006; Gardner 2015; Wood and R unger 2016; Wood et al. 2005; Orbell and Verplanken 2010; Lally et al. 2008, 2010, 2011; Judah et al. 2013; Bouton 2000).

A specific context-behaviour link refers to the constant association of a contextual cue, e.g. leaving a room or wanting a coffee, with a concrete behaviour, i.e. switching off the light or grabbing one’s reusable cup,

respectively. Often, a certain aim is part of the context, e.g. leaving *for work* in the morning.

Sufficient repetition of the target behaviour means that the cue is followed by the behaviour until the association becomes automatic, that is, until the cue automatically triggers the respective behaviour. The number of required repetitions varies considerably and is possibly proportional to the complexity of the context and the behaviour in question. Lally et al. (2010) report an average of more than two months of daily repetition for behaviour to become habituated. In their study, the amount of time required for habituation ranges from around 3 to 37 weeks, even for rather simple behaviours.

A satisfying outcome implies that the act of performing the behaviour or the outcome of doing so is rewarding for the person in a way that is in line with that person’s goals.

While the concept of habit emphasizes a person’s motivation to *repeat* the behaviour, it does not refer to the mechanism by which the behaviour is *initiated* (Lally and Gardner 2013). Thus, the conditions of habit formation have to be integrated into an intervention that will initially motivate employees to engage in a new behaviour. In other words, it is necessary to design and implement not a single intervention *but a set of interconnected elements* aimed at (1) eliciting motivation and initiating the target behaviour and (2) enabling habit formation. The latter is, in turn, achieved by (2a) identifying the context that links the specific behaviour to a specific situation, (2b) promoting sufficient repetition of the behaviour, and (2c) making the satisfying outcome salient (see Table 1). We briefly describe each of these elements in the following.

(1) Eliciting motivation and initiating the target behaviour Research on individuals’ motivations to engage in pro-environmental behaviour at the workplace is still in development and inconclusive. The factors driving a person’s motivation to save resources at work differ between individual employees and also, it seems, between home and work (Pothitou et al. 2017; Rayner and Morgan 2018). Behaviour at home is private and often not recognized by people outside the household. Also, savings in resource use benefit an individual directly. In contrast, behaviour at work is often public or being potentially observed. Achieved savings benefit the organisation as a whole and thus become a collective good. Both aspects were proven to effectively encourage PEB in the workplace context (Siero et al. 1996; Leygue et al. 2017). In an organisational setting they naturally arise from group processes, performance comparisons, social norms, and many more. As an example, an employee’s motivation to engage in a particular type of pro-environmental be-

the train”. A current hypothesis is that complex behaviours such as commuting or regular business trips can readily be initiated habitually, even if they are performed non-automatically (Gardner 2015).

(2b) Promoting repetition of the new behaviour

Behavioural repetition is the most important factor in forming a habit. Accordingly, any successful habit-enabling intervention will promote and monitor the actual performance of the target behaviour. A range of measures, from hard (restrictive) through economics incentives to soft (non-restrictive), can be applied when promoting certain behaviours: from prohibiting, sanctioning, or “blaming and shaming” (e.g. emphasizing the high environmental cost of eating meat) through reminding and facilitating (increasing the convenience of certain behavioural options by adjusting physical arrangements) and increasing the enjoyment factor of performing the target behaviour (e.g. piano stairs that resemble a piano keyboard and play tunes when people step on them⁶) to public self-commitment, social competition, or awards for the best performers. A satisfying behavioural outcome also contributes significantly toward encouraging further repetitions. All these measures are extremely important because, after a time, even a strong will and the motivation to engage in a particular behaviour are likely to fade; further repetitions will ultimately depend on the ease, convenience and pleasure of performing the target behaviour (Gardner et al. 2012).

In terms of monitoring, the quality of the data obtained will depend on the type of behaviour in question. Public behaviours such as commuting, meat consumption, stair use, or opening windows in the wintertime can be measured by observation. Other behaviours, such as printing off documents or heating a room, could be monitored by technical means. At least the frequency of (conscious) behaviours can be measured using questionnaires (self-reporting).

(2c) Making the satisfying outcome salient

Habit formation is clearly supported if the behaviour itself or its outcome is appreciated by the person concerned. Appreciation of the behaviour can result from convenience and facilitation (e.g. easier handling, defaults, a supportive infrastructure) but also from pleasure and delight (e.g. walking through greenery, fun, social interaction). Satisfaction with the behavioural outcome is likely to arise if it achieves the original aim (e.g. a readily legible printout, a delicious meal, safe transportation) and at the same time serves higher-order personal or organisational goals and values (e.g. in terms of nature, health, profit, status). Since these goals are somewhat abstract, feedback on how

far the behavioural outcome contributes to these goals is helpful (e.g. saved energy, improved blood pressure, social recognition). The goals and values of individual employees are heterogeneous and, in most cases, unknown. An organisation, however, can focus on its own goals and collective values when communicating the intervention to its employees. To increase employees’ satisfaction from performing the new behaviour, the intervention designer can address all three aspects: an easy and enjoyable performance, an attractive concrete result (a legible printout, a satisfying meal, compliance with company’s environmental policy etc.), and positive feedback on goals achieved and values maintained.

Please note that many of the described measures can fit multiple stages of the habit enabling intervention. For example, increasing the ease and fun of using stairs (measure: facilitating infrastructure), can (cf. 1) motivate an employee to initially take the stairs instead of the elevator, (cf. 2b) encourage repetitions so that they use the stairs daily or many times a day, (cf. 2c) facilitate experience of a satisfactory outcome (e.g. having fun and feeling fit, compliance with company’ environmental policy) when using the stairs.

The lack of clear attribution to one of the identified categories does not have any negative impact on the effectiveness of the habit-enabling intervention. On the contrary, measures that support different stages can ease intervention setup and increase the probability of a successful outcome. Thus, the aim of this subchapter was not to categorize different measures but rather to emphasize the importance of the elements of a habit-enabling intervention that must be reflected in intervention design process and subsequently facilitated by means of suitable measures.

3.2 Integrating the concept of “green” habit into workplace interventions

Generally speaking, a variety of interventions are used to initiate pro-environmental behaviour at the workplace. By applying a few rules that meet the conditions of habit formation, CSR/EMS officers can enhance the design of PEB interventions so that the new behaviour is more likely to turn into a “green” habit. In Table 2 we illustrate how such adjustments could occur based on three practical examples: an intervention to promote the use of stairs at the workplace, an intervention to reduce employees’ paper consumption (duplex printing), and an intervention to reduce office energy consumption by turning computers off when not in use. We selected these behaviours because they entail significant environmental impacts (see e.g. The Guardian 2009; Egebark and Ekström 2016 and Nguyen and Aiello 2013 for environmental assessments of elevator use, paper consumption and energy use at the workplace respectively). They are also common in organisational contexts, non-complex and fairly simple to monitor and thus particularly suitable for

⁶ Famous piano steps were implemented, for example, at the Odenplan subway station in Stockholm by Volkswagen as a part of the “Theory of Fun” campaign. URL: <https://adage.com/creativity/work/fun-theory-piano-staircase/17522> [accessed on 15th April 2019].

Table 2 Illustration of pro-environmental habit-enabling adjustments to workplace interventions on examples of stair climbing, duplex printing and turning computers off (no stand-by mode)

Behaviour example	(I) Initiating target behaviour	(II) Enabling habit formation		(2c) Satisfaction with behaviour or outcome
	(1) Eliciting motivation and initiating the target behaviour	(2a) Specific and stable context-behaviour link	(2b) Sufficient repetition	
Staircase use	Prompt <i>“Be fit—be good!”</i> close to elevator pointing at the staircase. Reference to organisational values <i>“We aim high, we climb!”</i> Information in monetary / environmental impact <i>“Using stairs instead of elevator saves xy kW/h”</i> . Role model: CEO takes stairs.	Always when arriving at the elevator with the aim to change floors. Always when there is a need to change floors (might be in different constellations, but the need to change floors would work as stable, inner cue).	Performance feedback on energy saved/calories burned from using stairs (gains achieved over time) emphasizing achieved results. Comparisons with other buildings/ teams. Prompt: <i>“Be a climber!”</i>	Motive of piano stairs. Clean, attractive stair house (colours, view ...). Markings at each step: 7 calories burned! Making elevator extremely slow (taking stairs is faster).
Duplex printing	Reference to organisational vision <i>“We behave responsibly!”</i> Information on monetary/ environmental impact attached to computer/printer <i>“20 pages costs one tree”</i> . Role model: CEO prints duplex. Group comparison/ competitions with regard to printing behaviour.	Always when being at the computer and clicking through the print-menu.	Feedback on paper use (emphasizing gains achieved over time). Comparisons with other teams/groups. Reference to social norm <i>“Thanks for duplex printing!”</i> above printer.	Well-printed documents. Information on monetary/ environmental impact <i>“Your duplex print saved 20 pages as compared to single print—Thank you!”</i> Easy-to-use printers and good maintenance. Requirement for manual confirmation of simplex printing (each page!) (duplex printing is less cumbersome).
No stand-by mode	Reference to organisational environmental goals <i>“We say NO to energy waste”</i> . Information on each computer <i>“stand-by requires xy kW/h—each night, each computer!”</i>	Always when shutting down the computer to finish the working day integrate in the finish-working-day routine (closing windows, watering plants, cleaning up desk—and switch of stand-by modes).	Performance feedback on energy use of the computer. Comparisons between team/groups over time. Prompt <i>“End of work day—shut me off, I need some rest too”</i> .	Visible, easy-to-use shut-off button. Pop-up window <i>“Your computer saved xy kW/h over night as compared to stand-by mode—Thank you!”</i> Requirement for written explanation why the stand-by mode overnight was necessary (shutting-off computer saves time and shame in case of unjustified stand-by use).

habit formation. Finally, they require only minor modifications of the organisational environment.

Using the three examples and the habit-enabling framework discussed in Sect. 3, we show how intervention designers can elicit an initial motivation and meet the conditions for habit formation by implementing minor adjustments. Please note that suggested measures are generic examples created for illustrative purpose. They are not exclusive which means that a similar result could be possibly achieved by using other measures. They can be also incorporated into different types of soft interventions presented in Table 1.

4 Practical implementation: challenges and possible pitfalls

The previous section used three illustrative examples to highlight the conditions required to enable habit forma-

tion as a consequence of workplace interventions. Although the habit-enabling enhancements presented above represent rather minor changes, their practical implementation may not always be straightforward. Thus, CSR and EMS officers tasked with designing environmental intervention programmes should pay particular attention to the following challenges and possible pitfalls.

First and foremost, some behaviours should never become a matter of habit. These encompass (strategic) decisions that require careful reflection. In certain cases habituation can also turn out to be simply unfeasible. Lally et al. (2010) point out that complex behaviour might never become habitual. The intervention designer can aim, at most, at habitual initiation of the complex behaviour, i.e.

some kind of goal-directed automaticity⁷. Furthermore, individuals with very strong preferences towards a particular (environmentally unfriendly) behaviour are likely to be resistant to form new (environmentally friendly) habit despite habit-enabling circumstances⁸.

Considerable challenges are related to the appropriate intervention design. In order to elicit initial motivation to engage in a particular behaviour (e.g. the use of stairs) it is necessary to find appropriate arguments that match an employee's priorities and values. In the organisational environment, social norms and the reference to a collective goal have been proven to be a particularly effective motivator (Siero et al. 1996; Leygue et al. 2017; Gilovich et al. 2015). However, in some cases a successful intervention may require also an individualized approach. Employees may be (additionally) motivated to climb the stairs for many different reasons, e.g. the health benefits of exercise, environmental protection, self-image as a sporty person, "image management" among work colleagues, or the fun factor related to physical arrangement/modifications (e.g. piano steps). Furthermore, inducing motivation to engage in a pro-environmental behaviour at the workplace can be very challenging if an employee has already established an environmentally damaging habit. This is an extremely challenging issue that has been mainly tackled by addiction psychologists and therapists. A common recommendation is to implement a "habit substitution" process that aims to replace a bad habit with a good (or at least not damaging) one. One way to adjust that approach to the organisational setting might be to use environment engineering. In such a case EMS/CSR manager (intervention designer) can temporarily modify the environment in which a choice is made by removing the accustomed/habituated option or making it inconvenient so that an employee *must* (or is very likely to) change his/her behaviour. An example of this might be restricting the number of elevators in an office building⁹ or making them extremely slow so that climbing the stairs becomes a faster option. This "motivational trigger" may, strictly speaking, appear restrictive. However, it does preserve freedom of choice in the long run: the need to restrict

choice is given only during the habit formation stage. Once the habit has been formed, an employee could be confronted again with an unrestricted number of options, including the "wasteful" ones, but the person's actions should be guided by the newly formed habit, provided that he/she does not have strong preferences towards "wasteful behaviour" (see the first paragraph of this section on conditions excluding habit formation). To the best of our knowledge, this undoubtedly interesting approach has not been empirically tested in the organisational setting, thus it remains a topic for future (organisational) studies and subject to empirical verification.

The identification of a specific cue that creates a context-behaviour link is not a trivial task either. It requires knowledge of the exact moment in which a conscious or unconscious decision is taken; this is often not obvious and may be an individual characteristic. Which cue triggers the automatic choice of a meat meal in the canteen instead of a vegetarian dish? Is it the colleagues with whom an employee eats lunch every day or is it the arrangement of the food counter which displays meat dishes more attractively than vegetarian ones (external cues)? Perhaps it has to do with the person's emotional state, such as feeling hungry or just tired after completing a phase of work around that time (internal cue)? Isolating the habit cues is not at all easy, especially as there are thousands of different cues around us and a specific habit can be activated by several cues. Also, cues are idiosyncratic; i.e. they develop in dependence of what is salient to the person. Out of the things that are salient, some might become a trigger if they occur in association with the behaviour. Different processes can influence what is salient to a person, e.g. her normative beliefs (Schwartz 1977) or her dominant goal frame (Lindenberg and Steg 2007). Altogether, there are no universal cues. A cue always depends on the person, her goal, the situation, and the behaviour in question. The research on the nature and required quality of cues is at its beginning (Schüz et al. 2015; Grenard et al. 2013; Adriaanse et al. 2009; Quinn et al. 2010; Wood and Rüniger 2016; Wood and Neal 2016). Howsoever, the habitual behaviour is triggered by the cue no matter why the cue became a trigger. As a rule of thumb, one can expect more cues to be involved in the activation of more complex behaviours (Adriaanse et al. 2009; Duhigg 2014). Of course, contextual cues might change due to changes in the work environment that are beyond the control of an employee. At the same time, such disruptions offer a window of opportunity to establish a new "green" habit (Verplanken and Wood 2006). However, in general, a working environment, even in highly dynamic fields, does not change on a daily basis at the level that is relevant for simple habitual behaviour like switching off laptop after working day (no stand-by mode) or turning off lights when leaving a room.

⁷ Goal-directed automaticity means that a certain goal, e.g. a business trip, automatically triggers the decision to look for a train connection. While the process of checking and booking a suitable train connection for changing destinations is a very thoughtful and conscious process, the decision to consider taking the train for the trip can be habitually linked to the goal "business trip".

⁸ This is mainly due to the lack of satisfaction with the behaviour itself or its outcome (ad 2c).

⁹ Total elimination of elevators is not possible due, e.g., to the accessibility requirements of people with impaired mobility. Further, it remains unclear if total elimination of an option (in this case, elevators) might have negative spillover effects in terms of employees' work morale and performance (e.g. employees working on the upper floors may become frustrated and angry).

Although it is important to find an appropriate motivation to prompt behaviour change, the failure of our plans and intentions is generally due not to a lack of motivation but rather to a lack of continuity or repetition in performing the behaviour. As previously mentioned, a satisfying outcome strongly encourages repetition and may even induce positive spillovers (e.g. when it helps to create an image of a certain type of person, cf. Gardner et al. 2012). Unfortunately, most studies and intervention reports do not measure or discuss the degree of individual satisfaction with the behavioural outcome, most probably due to its abstract and intangible nature. Voluntary participation in the study could serve as an approximation of intrinsic motivation that continues after an experimental intervention has ended. Finally, if the intervention is meant to form a habit, habits should be measured as an outcome variable before, during and after the intervention (e.g. with the self-report habit index (SRHI), Verplanken and Orbell 2003).

With regard to the duration of an intervention, one cannot say in advance how long an intervention should be conducted in order to form a habit among most employees. While some empirical assessments do exist, they can serve only as a rough approximation, as every intervention and target behaviour is different. In addition, some employees are more amenable to habit formation than others, which significantly influences the time it takes for individuals to form a habit. In order to maximize the chance of habit formation at the company level, it is advisable to consider a longer intervention period, at least 2–3 months.

Last but not least, CSR/EMS officers should also pay attention to the post-intervention environment, as this can help people to sustain newly formed habits and prevent them from forming another bad habit or relying on unconscious automaticity (in the case of defaults). For example, upon completion of an intervention aimed at forming the habit of double-sided printing (see Table 2), the users should be presented with an active choice option and not with another (single-sided) default. This will be particularly helpful for users who have not (yet) developed strong preferences towards duplex printing (e.g. as a consequence of performing a highly efficient habit, one that saves time and cognitive resources).

5 Conclusion

The aim of this article has been to develop a conceptual framework for the design of “green” workplace interventions that integrates the process of habit formation as a means of achieving persistent behaviour change. Specifically, we have identified and briefly described habit-enabling factors with reference to popular practical examples

and have discussed the potential challenges entailed by their implementation from an organisation’s perspective.

Workplace habits are increasingly being recognized as an issue for behaviour change. This is not surprising given that habit-enabling interventions explicitly address the long-term aspect of behaviour change (a persistent behavioural pattern that continues after the initial intervention has ceased) and thus increase the overall efficiency of intervention programmes. In addition, as explained in the paper, the organisational setting is especially suitable for intervening in the habit formation process.

Although our paper provides important design guidelines at the conceptual level, companies and non-profit organisations seeking to implement habit-enabling interventions for pro-environmental behaviour still need further information and support. In particular, empirical and experimental testing of a given design as well as the effects of habit-enabling interventions need to be verified in practice and the results scaled up for broader use across organisations in various domains and regions. Organisations need to keep in mind, however, that the exact design of the interconnected intervention elements will to some extent always remain case-specific, depending as they do on aspects such as the target behaviour and the organisational culture. Hence, while empirical and experimental research will not be able to deliver standard recommendations, they can and do generate design-relevant insights and lessons that help to avoid potential pitfalls.

In addition to the options discussed above, organisations can also consider strategies to combine habit-enabling interventions with further measures aimed at prompting pro-environmental behaviour. A combination of interventions together with information campaigns and education regarding sustainable behaviour seems particularly promising here, as these measures may induce positive spillovers when it comes to maintaining motivations that trigger behaviour change and fostering satisfaction in the outcome of an adapted behavioural pattern.

Acknowledgements We would like to thank Dr. Jens Rommel (Swedish University of Agricultural Sciences (SLU), Uppsala) for many insightful comments and suggestions. We also thank Sarah Schüürmann (University of Chemnitz, Germany) for the literature review on intervention studies, and two anonymous reviewers for their very helpful remarks.

Conflict of interest G. Michalek, I. Thronicker, Ö. Yildiz and R. Schwarze declare that they have no competing interests.

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