

SECTION B

B4

Habits and implementation intentions

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INTRODUCTION

We do not often do things for the first time. Although we forget about most first-time activities, some stick in your memory for life, such as your first day at school, your first kiss or your first driving lesson. However, the vast majority of everyday activities are behaviors we repeat over and over again. These include many behaviors that social scientists find important to study, such as behaviors that have consequences for health, safety and the environment. What most of our first-time experiences have in common is that we act in a deliberate and conscious fashion. We may search out information, plan when, where and how to perform the behavior, be careful when doing it, ask for assistance from other people and perhaps act clumsily or awkwardly. Afterwards we may think back to what we have done, evaluate the outcome, plan to do it again or do it differently next time. This process changes dramatically once we start repeating a behavior. After a while we do not plan, think or evaluate any more. When the time has come to act, we simply act: a *habit* has been born.

Few would dispute the claim that most behaviors are repetitive, yet in spite of a large literature on learning and conditioning, the habit concept has received only minor attention in the social psychological literature. The most widely discussed theme with respect to past behavior is the dictum 'Past behavior is the best predictor of future behavior', which can often be found in writings on attitude-behavior relations. It refers to the frequently reported finding that measures of past behavior significantly contribute to the prediction of future behavior. This effect usually remains significant even when controlling for variables, such as attitudes and intentions, which are considered important antecedents of behavior. In fact, past behavior often appears as the strongest of all predictors. Although there may be other reasons why one would find such a relationship, such as instability of attitudes and intentions (e.g. Ajzen 2002), one reason might be habituation. (See B2.) As behavior is repeated over and over again, the control of behavior

i see B2

shifts from being internally guided (attitudes and intentions) to being controlled by environmental cues. Thus, when I move to a new job, I may initially evaluate the pros and cons of taking the bus or going by car to the new place. However, after some bad bus experiences and finding the car more convenient, I typically do not make such an evaluation any more, no matter whether circumstances remain similar or change (e.g. a new bus route). Rather, at 8 a.m. I simply take the car and get to work. The empirically found stronger effect of past behavior compared with attitudes and intentions in the prediction of repeated behavior may thus be a reflection of habituation (Ouellette & Wood 1998).

In this chapter, I want to make a case for habit, not only as an interesting construct in itself but also as a construct that has an impact on attitude-behavior relations and may influence how we think about behavioral change and design interventions. I will first focus in more detail on the habit construct itself, and the question of how to measure habits. I will then focus on habits as obstacles to behavioral change. Next, I address the bright sides of habits. In particular, I will argue that establishing habits may be an important intervention goal. Finally, I will speculate on using so-called implementation intentions as a promising tool to establish new habits.

WHAT ARE HABITS?

Verplanken & Aarts (1999) defined habits as '... learned sequences of acts that have become automatic responses to specific cues, and are functional in obtaining certain goals or end-states' (p104). Obviously, many behaviors may fall under this definition, varying from being very simple (e.g. saying 'Hi' to your secretary) to being complex (e.g. dieting). Let us take a closer look at some elements of the definition. Habits are *learned sequences of acts*. Thus, a certain degree of practice is required for a habit to develop. It is difficult to give numbers: how many times do we have to repeat a particular behavior before we can call it a habit? Ronis et al (1989) described a habit as behavior that is repeated at least twice a month and has been performed at least 10 times, but this is probably too general a statement. It may well be that some behaviors take a long time to habituate (e.g. changing eating patterns), whereas other habits may be installed after only a few trials (e.g. going to the canteen at your new workplace). In any case, habits have a history of repetition, whether this history is long and painful or short and easy.

Habits are *automatic responses to specific cues*. At 8 a.m. you walk to your car and go to work; a hunger pang in the afternoon makes you grab that candy bar; you hold the door for the lady who accompanies you. Habitual acts are instigated as immediate responses to specific cues. Such cues can be anything, ranging from physical objects to time, geographical features, people, labels or internal cues like hunger or pain. Importantly, these responses occur without purposeful thinking or

reflection and often without any sense of awareness. Bargh (1994) broke down the concept of automaticity into four possible components, i.e. a process or behavior that:

- occurs outside awareness
- is difficult to control
- is mentally efficient (one can do other things in parallel), and
- is unintentional.

Each of these components may or may not be present, which results in a number of qualitatively different types of automaticity. The habit concept fits three of these components, as a habit most often occurs outside awareness, can be difficult to control (but not impossible) and is mentally efficient. As for the fourth component, most habits behavioral scientists are interested in may not so much be intentional in the sense of being consciously planned, but rather in the sense of being goal directed (Aarts & Dijksterhuis 2000). This refers to the last part of our habit definition.

Habits are *functional in obtaining certain goals or end-states*. We develop habits because they serve us and make our lives livable. In terms of the behaviorist tradition, in which the establishment and maintenance of behavior was a central theme, habits are created and maintained under the influence of reinforcement. In other words, behavior that has positive consequences is more likely to be repeated, whereas negative consequences make repetition less likely. Habits thus serve *some* goal. For instance, a habit of exercising serves the goal of health maintenance. Eating snack food gives a physical sensation of satisfaction. The habit of taking the car to work may be the most efficient solution to a particular transportation mode choice problem. Sometimes it is difficult to discover the reinforcer or there may be other reinforcers for different persons. For instance, eating candy bars may serve a purely hedonic goal, but may also subdue feelings of failure or personal dissatisfaction. Thus, analyzing which goal is served, and which reinforcers are in the game, is important for understanding a particular habit.

HOW TO MEASURE HABITS

In order to work with the habit construct, one should have a measurement instrument. The measurement of habit is problematic and this may be a reason why the topic has not advanced as much as one would have expected (Eagly & Chaiken 1993). Most researchers use self-reports of past behavioral frequency as a measure of habit. Although repetition of behavior is certainly part of the habituation process, repeated behavior need not be a habit (Ajzen 2002). Some repeated behaviors may be executed deliberately and consciously every single time, for instance cooking a dinner for friends, a doctor examining a patient or an air traffic controller's decision to clear a plane for

take-off. Although these behaviors involve repetition, they do not match our definition given earlier, in particular concerning the aspect of automaticity. Thus, behavioral frequency is not necessarily a valid measure of habit.

Recently, Verplanken & Orbell (2003) developed an alternative measure of habit strength, a 12-item scale called the Self-Report Habit Index (SRHI). This scale breaks down the habit construct into a number of features, i.e. perceptions of frequency, automaticity and self-identity. Following Bargh's (1994) analysis, automaticity is further broken down into lack of awareness, difficulty to control and mental efficiency. The 12 items are presented in Box B4.1. Note that the content of the items should be scrutinized and, if necessary, adapted according to the behavior under study.

One of the advantages of the SRHI is that the measure is not based on behavioral frequency estimates and may thus be used to monitor habit strength independently of actual behavioral frequency. For instance, a person who is put on medication may take her medicine every day, but may only gradually develop a habit. Assuming that she takes the medication conscientiously, this cannot be measured by behavioral frequency, but might be revealed by the SRHI. Furthermore, the scale is short and easy to fill out (Verplanken et al 2004). To date, the SRHI has been used in a variety of areas, such as health behavior

Box B4.1 The self-report habit index

(Behavior X) is something:

- 1 ... I do frequently.
- 2 ... I do automatically.
- 3 ... I do without having to consciously remember.
- 4 ... that makes me feel weird if I do not do it.
- 5 ... I do without thinking.
- 6 ... would require effort not to do it.
- 7 ... that belongs to my (daily, weekly, monthly) routine.
- 8 ... I start doing before I realize I'm doing it.
- 9 ... I would find hard not to do.
- 10 ... I have no need to think about doing.
- 11 ... that's typically 'me'.
- 12 ... I have been doing for a long time.

Responses can be given on seven-point scales anchored by *agree* – *disagree*.

Some items may be adapted according to the nature of the behavior.

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(e.g. fruit consumption, eating snack food, exercising, teeth brushing), consumer behavior (e.g. impulsive buying, buying candy), leisure behavior (e.g. listening to music, watching television), as well as other behaviors, such as transportation mode choice, chatting at work and negative thinking. In all studies the SRHI relates to other measured constructs in meaningful ways. The scale also has excellent psychometric properties. For instance, internal reliabilities are around and mostly above 0.90 and a test-retest reliability of 0.91 (over a week) was found for transportation mode choice habit (Verplanken & Orbell 2003).

THE DARK SIDE OF HABITS

In everyday language, 'habit' is sometimes equated with 'bad habit'. Indeed, when we focus on undesirable behaviors, habituation is particularly problematic. One only has to think of potentially problematic behaviors such as unhealthy eating, the use of alcohol and drugs or dangerous driving. If we remember our definition of habit, three aspects make bad habits difficult to cope with. First, bad habits imply relatively frequent occurrence of behavior. Eating an occasional candy bar does not hurt anyone, but turning this into a daily habit does. Second, habit is a form of automaticity. Thus, engaging in undesirable habits occurs without thinking or reflection and is difficult to avoid. Thus, the habitual car driver does not weigh pros and cons of taking the car versus public transport, even if conditions may have changed in favor of an alternative to the habitual choice. Third, habits are sustained by reinforcers. Like any other habit, undesirable behaviors may be functional in the sense of providing something good or pleasurable. In some areas, such as unhealthy eating habits, smoking or drug use, physical reinforcers are at work, which can be extremely powerful and addictive.

The three features of habits—frequency, automaticity and functionality—make habits strong and durable structures. If undesirable habits are the target of interventions, one should be aware of these qualities. In an extensive research program on travel mode choices, we showed that habituation has a number of consequences that should be worrying for those who want to change behavior by providing information and changing attitudes (Aarts et al 1998, Verplanken & Aarts 1999). In particular, two findings were relevant. First, we found that those who had developed strong habits were less attentive to information, both when this information concerned travel mode choice options (e.g. costs, efficiency) and features of the choice situation (e.g. distance or weather conditions). In other words, habituation leads to 'tunnel vision'. Second, when we looked at how attitudes and intentions were related to behavior (the use of car versus public transport), we found that these relations were weak among those who had developed strong car use habits. In other words, although the theory of planned behavior attitudes suggests

that intentions predict behavior, our results suggested that these relationships are much weaker under strong habit conditions. This has been confirmed in a metaanalysis of the relations between behavioral intentions, past behavior and future behavior (Ouellette & Wood 1998).

Applying these findings to a behavior change intervention context, the attention findings suggest that strong habit individuals are less likely to attend to new information. These individuals might thus not even be aware of information campaigns in the first place. The attitude–intention–behavior relation results suggest that *if* attitudes and intentions change on the basis of new information, these are less likely to lead to new behavior. Thus, in light of our findings, the prospects for interventions that consist of providing information and aim at changing attitudes are particularly grim when the target behavior is habitual.

HABIT AS AN INTERVENTION GOAL

If there is a dark side of habits, there must be a bright side too. Actually, there are several. One is that not all behavior is habitual. We perform many acts on the basis of at least some considerations. Behavior may not yet be habitual, which provides opportunities to influence it. For example, new car drivers have not yet developed their driving habits, including sloppy or dangerous driving. In particular, people who move from one life phase to another have to adopt new behaviors and routines, such as adolescents, young families or retiring persons. Such phases are important in terms of establishing new, correct or desired behaviors. There are also situations where old habits are explicitly broken, for instance when a person switches jobs or moves to another place. Such events are especially interesting if they occur at a relatively large scale or among a distinct group. For instance, when two companies merge, many procedures and behaviors have to change, many of which were old habits and routines. Another example is the building of new residential areas. In these cases, relatively large groups of people will have to establish new behaviors with respect to transportation, energy use, leisure or shopping within a relatively short time. Situations like these thus provide interesting opportunities for interventions aimed at propagating new and desired behaviors. In designing and planning behavior change programs, it may thus be particularly useful to search for situations where old habits are broken and/or new habits have not (yet) been established.

Perhaps the brightest side of habits is the argument that habit formation itself may become an *intervention goal*. After all, intervention programs designed to establish new behavior aim at behavior that is performed frequently, is stable over time and is resistant to other influences. The very features that make old, unwanted habits obstacles to change can thus be considered as desirable when it comes to new behavior, which a behavior change program aims to establish. Thus, if

individuals adopt the promoted behavior, we would want that behavior to be frequently and automatically executed and be functional and efficient. The planning of new habits may therefore be explicitly adopted as an intervention goal.

PLANNING NEW HABITS

Texts on persuasion and behavioral change programs mostly focus on information processing, attitude change and the implementation of behavior. Much less attention has been given to the stability and maintenance of newly adopted behavior. One perspective on maintenance is to focus on embedding the new behavior in the environment (Bartholomew et al 2001). (See D7.) For instance, health promotion programs flourish better when they are institutionalized and made part of an organization, as institutionalization may help an individual to sustain and routinize behavior (Goodman & Steckler 1989). However, here I would like to argue that focusing on habituation itself is important in creating stable future behaviors and might thus be part of an intervention design.

i see D7

How can new habits be created? First and foremost, individuals who are the target of an intervention should be motivated to change or adopt new behavior. Thus, any intervention program can only expect results if individuals have positive attitudes and strong intentions with respect to the target behavior. This aspect is addressed elsewhere in this volume and is beyond the scope of the present chapter. (See B2 and D3.) However, it is important to note that motivation and good intentions are necessary but not sufficient ingredients. Intentions do not necessarily translate into behavior, let alone into habits (Sheeran 2002). There may be many reasons for such an intention–behavior gap, such as the presence of competing intentions, not knowing how to act, being undecided about when to start or simply forgetting. An intervention aimed at creating new habits should at least focus on the three key elements of habit, i.e. frequency of occurrence, automaticity and functionality. One helpful way of designing and establishing new habits may be the use of *implementation intentions*.

i see B2-D3

IMPLEMENTATION INTENTIONS

Implementation intentions are specific plans of action, which specify exactly when, where and how to act in future situations (Gollwitzer & Schaal 1998). For instance, given that a person has a particular and well-formed intention to start exercising, implementation plans specify:

- *when* this person will exercise (every day after work)
- *what* exactly she will do (running), and
- *where* she will do that (around the lake).

The important thing about an implementation plan is the linkage of specific cues (time cues: when; place cues: where) with specific responses (what), such that these connections become strong and lead to the planned actions once the individual encounters the specified cues.

Implementation plans have been found to be impressively effective, both when it comes to the likelihood of enacting intentions, as well as the speed of action initiation (Sheeran 2002). This is even more remarkable considering the simplicity of most implementation intention instructions that have been used. For instance, Orbell and colleagues (1997) demonstrated in a field experiment that 100% of women who intended to perform breast self-examination *and* had furnished these intentions with implementation intentions actually did perform self-examination, compared with only 53% in a control group who had expressed intentions but had not explicitly formed implementation intentions. Implementation intentions have also been found to be effective in establishing complex behavior such as healthy eating (Verplanken & Faes 1999).

So first of all, an implementation intention seems very useful to bridge the intention-behavior gap discussed in this chapter. More important for the issue of how to create habits, forming implementation intentions may help to establish behavior that has the three key elements of habit, i.e. frequency of occurrence, automaticity and functionality. First, an implementation plan regulates behavioral frequency which means that behavior will be repeated at the specified times. Following up on the running example, running frequency may be scheduled at a desired frequency, such that it is likely to become habitual (e.g. five times a week after work).

Second, one of the reasons why implementation intentions are so powerful may be that control over behavior is at least partly transferred from the person (i.e. reliance on motivation and willpower) to the situation where behavior should take place (i.e. reliance on cues that automatically initiate responses). An implementation plan thus aims at establishing automatic cue-action links. These (planned) automatic responses thus mimic habitual responses and may in fact turn into genuine habits when practiced sufficiently frequently. Thus, running after work is initially the result of a planned implementation intention, but may gradually develop into a habit and the initially planned cue and response now become the habit.

Implementation plans should also take care of the third habit feature, functionality of behavior. The cues and responses should be selected such that these are optimally functional. For example, the running habit should be well scheduled such that it is convenient and does not interfere with other activities. Furthermore, the running itself may give rewards such as fresh air after a long office day, time to think and feeling healthy. Implementation plans may also be used to target and kick old, undesirable habits. Thus, by analyzing existing habits in terms of cue-response links and functionality of the habit, one may attempt

to replace the original responses to cues by new responses (e.g. running instead of watching television after work). In all, in addition to increasing the likelihood of enacting intentions, which has been the main focus of implementation intentions theory so far, implementation intentions may be very effective in creating behavior that is executed frequently and automatically, and is functional. In other words, implementation intentions may form the cognitive framework for the development of future habits.

CONCLUSION

Box B4.2 summarizes the main points concerning habitual behavior. Habitual behavior is markedly different from reasoned action. Although a habit may start as the result of conscious decision making, a habitual act is typically executed without much thinking and deliberation, occurs mostly beyond our awareness and may be difficult to control. Research has demonstrated that attitudes and intentions are less predictive of future behavior when this behavior has become habitual. The presence of strong habits also seems to lead to 'tunnel vision',

Box B4.2 A summary of habitual behavior

- We seldom do new things; most behaviors are repeated, but researchers and practitioners do not pay much attention to this aspect.
- Repeated behaviors may turn into habits, which are automatic responses to specific cues and are functional in obtaining certain goals or end-states.
- Although repetition is part of the habituation process, repeated behavior is not necessarily a habit. Using past behavioral frequency as a measure of habit is thus problematic. The Self-Report Habit Index provides a better alternative.
- The three core features of habit – frequency, automaticity and functionality – make undesirable (bad) habits problematic and difficult to change. Habituation leads to 'tunnel vision', making people inattentive to new information.
- We may want new and desired behaviors to become habits, which makes them stable and difficult to change. Habituation may thus become an explicit intervention goal.
- Because the basic mechanism of implementation intentions and habits seems very similar – automatic responses to specific cues – planning new behavior by means of implementation intentions may well be an efficient tool to create future habits.
- The habit concept should be included in the toolbox of researchers and practitioners of behavioral change.

i see D2

i.e. relatively little attention paid to and interest in new information. All this is bad news for those who hope to change habits through information campaigns. At the same time, it shows that habit strength is an important criterion to include in the segmentation of target groups when planning interventions. (See D2.) The SRHI may be a useful instrument for this purpose.

The other side of the habit coin is that habituation implies behavior being stable and repetitive. If we think of behavioral change programs, these features are exactly what we would like a new behavior to acquire. Thus, habituation may be an important intervention goal. The use of implementation intentions may then be a powerful tool in order to create new habits. The core mechanism by which implementation plans work seems very similar to habits. The initially planned cue–response associations, included in an implementation plan, may gradually become the habitual cues and responses that we call a habit. In addition to bridging the intention–behavior gap, implementation intentions may therefore be an important self-regulation instrument in order to kick old habits and create new ones. In conclusion, the habit concept should definitely be included in the toolbox of those who work on social engineering and behavioral change.

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