

Chapter 15

WHY DO PEOPLE FAIL TO ACT? SITUATIONAL BARRIERS AND CONSTRAINTS ON PRO-ECOLOGICAL BEHAVIOR

Rui Gaspar de Carvalho*, José Manuel Palma-Oliveira

Faculdade de Psicologia e Ciências da Educação, Universidade de Lisboa, Portugal

Victor Corral-Verdugo

Universidad de Sonora, Mexico

ABSTRACT

The lack of success in dealing with the inconsistency between positive attitudes and ecological behaviors, and in explaining why people fail to act pro-environmentally is still widespread in practice and research. In our view, this has to do with three main reasons: 1) A positivity fallacy - the belief shared by many researchers and practitioners that as long as people have the right (or positive) attitudes, intentions, skills, information, etc., the right pro-ecological action should follow; thus, they disregard the importance of *negative* determinants in explaining the attitude-behavior inconsistency. 2) Lack of a psychological level of explanation; even when negative determinants are considered, the psychological explanation is often disregarded or incompletely identified, with most of the factors identified being socio-economical, or urban planning and architectural, etc. However, factors explaining why people fail to act can also be viewed within a psychological level of explanation, with behavior considered to be the result of an interaction between contextual variables and psychological processes. 3) Underestimation of the unconscious processes influence; contextual effects on behavior can be mediated not only by conscious perception but also by cognitive processes of which people are not aware of. Given these reasons, a model of psychological barriers and constraints is proposed (DN-Work model; “Didn’t work”) trying to integrate negative determinants within a psychological explanatory model of pro-ecological behavior. This model aims to represent a process view regarding how a conflict between pro-ecological and anti-ecological behavioral goals can be produced, given the presence of two types of barriers and constraints: a) perceived barriers and constraints, and b) unconscious barriers and constraints. We briefly present two studies based on this model. These studies address habit accessibility as an unconscious behavioral barrier on ecological decisions to buy organic products, mediated by the effect of behavioral-goals activation from the situation.

*CORRESPONDENCE: RUI GASPAR DE CARVALHO, Faculdade de Psicologia e Ciências da Educação, Universidade de Lisboa, Alameda da Universidade, 1649-013 Lisboa, Portugal. E-mail: rui.carvalho@campus.ul.pt

INTRODUCTION

THE POSITIVE FALLACY

Being “positive” in life is not always a good thing, especially if you work in the field of Environmental Education and Behavior Change. Many projects in this area are biased by a “positivity fallacy”, i.e. the belief that as long as people develop the right attitudes, intentions, skills, information, etc., the right pro-ecological behavior should follow. However, as informed by the social sciences literature, an inconsistency exists between attitudes and behaviors, with cross-country studies showing high levels of ecological concern but, at the same time, low levels of ecological action (e.g. Ferreira Marques, Palma-Oliveira, Marques, & Ferreira 1995). In our view, one of the causes of such inconsistency is an underestimation of the factors working as barriers and constraints to ecological behavior change and to the promotion of pro-ecological behavioral goals (i.e. factors which increase the attitude-behavior inconsistency). Hence, the “right” factors do not seem to be enough to promote behaviors consistent with one’s positive attitudes, beliefs, etc.

This “positivity fallacy” is also evident in research on ecological behavior regarding models that intend to identify the “positive determinants” of action (i.e. factors that when present can promote a new behavior or increase the strength of an existing one.) Consequently, the barriers and constraints to pro-ecological behaviors are seen as *lacking factors*, i.e. factors that influence pro-ecological behavior in a negative way, due to absence or weak influence of a positive determinant or “right” factor. One example is provided by Stern, Dietz, Abel, Guagnano, & Kalof’s (1999) Value-Belief-Norm Model, in which it is implicit that, if people lack altruistic personal values or an ecocentric orientation towards nature, for example, pro-ecological behavior should not develop. Other models are more explicit regarding these negative factors, as it is the case of Kollmuss and Agyeman’s (2002) model identifying the lack of internal incentives, environmental consciousness, external possibilities and incentives, and the negative or insufficient feedback about behavior.

One problem with this view is that it fails in acknowledging the fact that people’s behavior is influenced by situations. Even if people have a strong intention to behave in a pro-ecological way, the situation can be perceived as inhibitive (Corraliza & Berenguer, 2000), leading to inaction. In this sense, models and projects based on a “positivity fallacy” only identify “what people are supposed to do” given the right factors – prescriptive view - but not “what people actually do” when they are in a certain situation – descriptive view. Identifying “what people actually do” implies identifying the reasons why people fail to act pro-ecologically, being this the aim of our chapter.

THE NEED FOR A MORE INTEGRAL ANALYSIS OF BEHAVIOR

A number of behavioral models try to explain why people fail to act. However, most of the negative factors analyzed so far are non-psychological in nature (e.g. socio-economic). These factors are seen as having their influence outside the person’s intention or will and are represented as a direct effect of situations on people’s behavior. Thus, no matter how strong the commitment to perform a behavior is, how positive the ecological attitude is, or how responsible a person feels in its performance, the situation can directly inhibit behavior.

One example, presented in the literature as a situational barrier to recycling behavior, is garbage-containers spatial accessibility (Schultz, Oskamp & Mainieri, 1995). The less spatially accessible (i.e. the more distant) the waste disposal facilities are, the lower the probability that people will separate at home and dispose the waste in the right recycling bins. This problem appears to be more related to design and urban planning issues than to people’s

“fault” and can be labeled as a “blame it on the situation” effect, as manifested in the literature regarding ecological behavior. In addition, this approach does not explain why when people’s dispositions and the situation are both facilitative (e.g. spatially accessible containers + positive attitudes and intentions; etc.), people still do not behave in the “right way.” Thus, the approach provides an incomplete account of the interaction between situations and psychological processes.

Additional examples pertaining the negative effect of situations on pro-ecological behavior are the influence of exterior temperature on domestic energy consumption levels (Olsen, 1981); the inadequacy of infra-structures, like ergonomic features and transportation network planning, on different ecological behaviors (Kollmuss & Agyeman, 2002); the influence of place of residence and other demographic variables on driving behavior (e.g. Tanner, 1999); and the absence of income on purchasing energy-efficient devices (Constanzo, Archer, Aronson & Pettigrew, 1986). These factors correspond to levels of explanation from disciplines other than psychology (economy, sociology, architecture, etc.), thus the situation’s effect on behavior is not assessed within a psychological level of explanation. Our criticism is not intended to imply that non-psychological factors and psychological variables should not be assessed together when an attitude-and-behavior-change intervention is designed. What we alert is that by assessing only these non-psychological factors, researchers and practitioners are often prevented from seeing them through a “psychological lens” (as lay people usually do) and implicitly dismiss their importance and explanatory power.

One illustration of this case comes from Gardner and Stern’s (2002; Stern & Oskamp, 1987) causal model of resource-consumption behavior. These authors identify internal and external psychological and non-psychological “limiting factors” which prevent people from acting based on their pro-ecological attitudes. Such factors are classified ranging from the highest level of causality (variables with the strongest influence on behavior) to the lowest, respectively: 1) resource-use or resource-saving behavior; 2) attention, and behavioral commitment; 3) knowledge; 4) attitudes and beliefs; 5) values and worldviews; 6) external incentives and constraints; and 7) household background. External and internal barriers can be found within these levels, with their influence being higher for high-cost or difficult actions (i.e. stronger influence as attitude-behavior inconsistency factors). Thus, for example, an inconsistency between attitudes (level 4) and behavior (level 1) could be due to internal barriers like absence of the necessary behavioral knowledge (level 3) or the absence of either attention or behavioral commitment (level 2). In opposition, the influence of external barriers is higher on household background (7) and external incentives and constraints (6) levels, which can inhibit the development of positive values and worldviews (level 5), and both attitudes and beliefs (level 4). According to Gardner and Stern (2002), these external barriers can be associated with people’s socioeconomic background, available technology, economic forces, inconvenience, etc.

A problem with these models is that, more than identifying all the possible psychological and non-psychological explanatory factors and how they *independently* affect behavior, we researchers should consider their effect in a synergistic way. In other words, we should analyze how situations and psychological processes interact to influence behaviors, in order to increase the models’ explanatory power. One example of this was given by Talarowsky (1982) in a study on water conservation during a drought situation. This study showed that when residents considered that the drought was due to environmental reasons, they tended to conserve water within the limits proposed by the authorities. However, when they thought that individual consumption was the cause of water scarcity, the limits on consumption average were exceeded. The latter allowed the attribution of other’s responsibility implying a belief such as: “(...) if the crisis is due to other people’s behavior,

then my behavior will not alter much the situation and it is better to continue using water because if I don't, others will do it in my place" (Palma-Oliveira & Gaspar de Carvalho, 2004, p.5; Palma-Oliveira & Correia dos Santos, 1998).

Thus, the non-psychological behavioral barriers and constraints can also be seen in a psychological level of explanation, because a perceptual component is involved. Accordingly, one of the main psychological principles regarding how people interact with their environment is that we are the "builders" of our own reality (Smith & Mackie, 1995). People can construct their own reality through social and cognitive processes and thus, some aspect of people's environment can work as a behavioral barrier if people perceive that aspect in such a way. In other words, the limiting non-psychological factors (Gardner & Stern, 2002) which are present in the situation can have their effect on behavior mediated by perception-based processes, translated into an interaction between psychological factors and the situation.

BARRIERS AND CONSTRAINTS ON ECOLOGICAL BEHAVIOR

PERCEPTUAL FACTORS

Situational factors negatively affecting behavior through the mediation of perceptual processes are called *perceived barriers and constraints* (Gaspar de Carvalho, 2004). They can be considered "true" negative determinants of action, since they do not correspond to an absence or weak influence of a positive determinant. Accordingly, in the example regarding garbage containers accessibility, a barrier/constraint could be the perceived cost and difficulty in performing the behavior, in terms of mental effort, time, motivation level, and degree of discomfort in the performance of behavior (Palma-Oliveira & Gaspar de Carvalho, 2004; Kollmuss & Agyeman, 2002). A study by Diekmann and Preisendörfer (1992) supports this idea, showing that small-effort behaviors like recycling are performed more frequently than large-effort behaviors like car use reduction, with this difference being attributed to the perceived costs vs. benefits.

Another example comes from the Theory of Planned Behavior (Ajzen, 1991), which apart from analyzing two positive behavioral determinants (attitude and subjective norm), identifies a process which is similar to the costs/benefits analysis, named "perceived behavioral control" (PBC; Ajzen, 1991). The idea is that since there are many behavioral constraints that may limit volitional control, it is useful to analyze people's perception of these constraints, which serves as a "proxy" for actual control of their behavior, to the extent that these perceptions are close to reality (Ajzen, 2002). Hence, a low PBC functions as a negative determinant because the individual can perceive that behavior is not under her/his control and that there are strong external constraints impeding its performance, decreasing the intention to perform it. Other studies in Environmental Psychology use similar concepts, like for example, perceived behavioral barriers (Mckenzie-Mohr, 2000), perceived behavioral costs (Kollmuss & Agyeman, 2002) or perceived difficulty (De Young, 1988-1989). These perceptions can be seen as a product of expectancy or perceived likelihood of reaching a goal (e.g. "How likely is that I separate residues at home?") and goal value (e.g. "How important is for me to separate residues at home?") (Förster, Liberman & Friedman, 2007).

Apart from the expectancy/value assessments, other types of perceptions of the situation exist as, for instance, biased perceptions due to the influence of beliefs. For example: someone has a belief that water-scarcity problem resolution depends on technology and that someday a successful and non-expensive way to use water from glaciers, atmosphere or another source will be found. Beliefs like this, that according to Thompson and Barton (1994) are based on an anthropocentric orientation, will function as limiting factors to

conserve water because individuals will expect ecological problems to be solved through technological improvements and not through individual and societal behavioral change. If people add to this a belief that, in spite of what is said in the media about environmental problems, water is an abundant resource (Biel & Garling, 1995), the need of water conservation will be minimized and underestimated (see Corral-Verdugo, 2002).

Another type of *perceived barriers and constraints* refers to perceptions about the self and one's own behaviors. In this regard, research has shown that the tendency to break social norms, or antisocial behavior (conceptualized in terms of the perception of how frequently people engage in antisocial actions), can inhibit water conservation. Anti-ecological behavior can be seen as an instance of more general antisocial behavior (Corral-Verdugo, Frias-Armenta, Gonzalez-Lomelí, 2003; Corral-Verdugo & Frías-Armenta, 2006). Also, we can include the perceptions regarding other people, translated into the influence of explicit cognitive representations working as *perceived barriers and constraints*, such as: stereotypes regarding environmentalists (Stoll-Kleemann, 2001), attitudinal ambivalence (Costarelli & Colloca, 2004), anti-environmental subjective norms (Schultz, Oskamp & Mainieri, 1995) or anti-environmental attitudes (Palma-Oliveira & Garcia-Marques, 1988).

As a conclusion, we can see that perception-based factors are important because by analyzing them we can identify the underlying factors characterizing a certain context and behavior (Suárez, 1998). Moreover, there is idiosyncrasy in these factors, since what might be a barrier for one person might not be for another. Consequently, different perceptions might imply different interventions to change attitudes and behaviors and they should be assessed.

These perceptions do not occur in a situational void and even when they are biased in some way, they are still associated with one or more situationally perceived characteristics (e.g. recycling behaviors of relevant people; availability and price of organic products in a supermarket shelf; location of a garbage disposal facility; amount of litter in a public space, etc.). We perceive these situational characteristics in a broad way from the most concrete to the most abstract levels, including not only the context's physical features and tangible aspects but also those characteristics associated with social environments and events happening in there, like other people's behaviors and attitudes, for example. By identifying these perceived barriers and constraints, we try to bring the situation back to the study of barriers and constraints on ecological behavior, yet within a psychological level of explanation.

A SITUATION-BASED APPROACH ON ECOLOGICAL BEHAVIOR

An example of a model that acknowledges the influence of the situation as mentioned, is provided by Tanner (1999) based on the Ipsative Theory of Behavior (e.g. Frey, 1989). Although still including some non-psychological factors (the "objective constraints") it represents an evolution compared to the previous examples, because it goes beyond the "positivity fallacy" and explicitly considers an analysis of pro-ecological behavior negative determinants based on the situation. According to this author, there are three classes of constraints, which are conceived as internal and external conditions inhibiting the performance of an action: 1) *Ipsative constraints* – internal factors that prevent the activation of a particular behavioral alternative from occurring, i.e. the action can only be performed if the individual remembers to perform it, implying the assessment of a limited number of alternatives and without considering the pro-ecological option in them; 2) *Subjective constraints* – perceived factors that inhibit preference for a particular behavioral alternative or willingness to act; these constraints entail beliefs of what is possible or not, desired or not, or allowed or not, so that they can eliminate behavioral options based on that assessment; 3)

Objective constraints – external factors that prevent the performance of a particular behavior alternative from occurring, which are independent from individuals' perception (lack of opportunities, mental and physical disabilities; low income; influence of legal and political institutions; etc.).

Apart from this model, methodological approaches have also been used to assess the situation's effect on behavior (e.g. Kaiser & Keller, 2001). Still, as in the previous example, they are mainly descriptive and do not explain how the situation can affect behavior through the mediation of psychological processes. Nevertheless, they consider some "invisible" factors scarcely identified in research (ipsative constraints; Tanner, 1999; implicit situational factors; Kaiser & Keller, 2001), which should be more profoundly studied. This study should be complemented with a process view, to understand how contexts can inhibit or constrain people's behavior, outside their awareness and conscious control.

THE "INVISIBLE" FACTORS

Situation's effect on behavior can be mediated not only by perception-based processes but also by cognitive processes of which people are not aware of, which can work as *unconscious barriers and constraints*. Accordingly, since the 1960's, research in social psychology has increasingly demonstrated the relative automaticity of social behavior and the influence of cognitive and motivational factors outside people's awareness on behavior (Bargh, 1997). These factors are rarely considered in both Environmental Education and Behavioral Change projects and in models of barriers and constraints on ecological behavior, and when they are, they are not explicitly identified as such.

To be clear on how the automatic processes affect behavior, it is important to understand what we mean by "unconscious" and "conscious" processes and the differences in the way they are initiated to influence social behavior. Conscious processes are mental acts of which we are aware, that are intentional, effortful and controllable (Bargh & Chartrand, 1999). In a different way, for a process to be automatic and unconscious, it has to be effortless and to occur when a set of preconditions are in place (conditional automaticity), without any conscious choice or guidance from that point on (Bargh, 1997). Hence, the category of *unconscious barriers and constraints* can include cognitive representations of the world (e.g. attitudes), which can increase the probability of anti-ecological behaviors to occur in an automatic and unintended way, given the presence of certain environmental cues. These barriers/constraints produce their effect without people being aware of them and can influence across different contexts and behaviors (i.e. they are "universal"), as long as the activating cues are stable across those contexts and behaviors. The same does not happen with *perceived barriers and constraints*, which often are behavior or domain specific and idiosyncratic (e.g. McKenzie-Mohr & Smith, 1999; Black, Stern & Elworth, 1985).

One example of *unconscious barriers and constraints* refers to the influence of implicit anti-ecological attitudes on ecological behaviors, with research showing that they can be more predictive of ecological behavior than explicit attitudes (e.g. Vantomme, Geuens, De Houwer & De Pelsmacker, 2005), which are more prone to social desirability effects. Research shows that a behavior can be associated to various attitudes supporting it, depending on the individual or situation; and yet the attitude that appears to support a behavior (explicit attitude) is not always the one most related to it (Palma-Oliveira & Gaspar de Carvalho, 2004). The attitude with the highest impact on behavior will be the one with highest cognitive accessibility (as demonstrated in the MODE model; Fazio, 1990). Therefore, if an implicit anti-ecological attitude exists and is stronger (i.e. more accessible) than other attitudes influencing a certain behavior, it will affect behavior in accordance with its cognitive accessibility.

Apart from attitudes, other cognitive representations can have an automatic effect on behavior, such as stereotypes, norms and habits. However, there is a gap in ecological-behavioral research regarding these variables, since most studies report the influence of explicit factors (e.g. Stoll-Kleemann, 2001) and only a few communicate the implicit effect (e.g. Vantomme et al., 2005). We will get back to this point and report our own research regarding this implicit effect on ecological behaviors and specifically to what concerns the effect of habit accessibility.

Summarizing, we argue in favor of an explanatory approach considering *unconscious barriers and constraints*, given that these variables can affect behavior without people being aware of, and thus cannot be analyzed through traditional perception-based measures (e.g. questionnaires)⁴ and dealt with in attitude and behavioral change programs. In order for their relevance to be more explicit, we need to show how they relate with perceived barriers/constraints and with behavioral goals, in influencing pro-ecological acting. Moreover, we should demonstrate how these types of barriers and constraints relate to behavioral goals. We will refer to these aspects next.

WHY PEOPLE FAIL TO ACT? - A MODEL PROPOSAL

The research field of negative barriers and constraints is defined as the study of the “I don’t understand why it didn’t work” factors, which are considered among the main causes of unsuccessful Environmental Education and Behavioral Change projects (Palma-Oliveira & Gaspar de Carvalho, 2004). These factors can be included in what we call the *DN-Work model* (“didn’t work”), which we will present here. This model has three main principles: 1) barriers and constraints are not defined in terms of the “lack” of strength or absence of positive factors -what we call the “lack factors”- but as psychological factors independent from these; 2) their influence depends on psychological processes interacting in different levels and ways with situational features, and is mediated by the activation of behavioral goals² (Bargh & Chartrand, 1999); and 3) their influence can occur in different degrees of awareness and conscious mediation.

In the first part of the model (see figure 1) the situation is considered as having an effect on behavior given the presence of *limiting factors*, with this category including either path: 1) the situational characteristics that activate psychological barriers and constraints, through the mediation of conscious/intentional processes or 2) the situational cues that activate psychological barriers and constraints, with reduced consciousness and through unintentional and automatic processes. Consequently, we call the psychological barriers and constraints, which are activated through the first “path”, *perceived barriers and constraints*; while the psychological barriers and constraints which are activated through the second “path” are the *unconscious barriers and constraints*.

Insert figure 1 about here

We make a distinction between the two types of situational limiting factors, for the purpose of making clear our explanation of the different psychological processes involved in each path. However, there is some overlap between “characteristics” and “cues”, given that the same limiting factor can sometimes work as one or another, or both. For example, watching a neighbor watering the front lawn works as a situational characteristic by eliciting the belief that there is water abundance and therefore, conservation is not an urgent matter (thus, constraining the behavioral goal of water conservation). At the same time, this event can work as a situational cue to activate the implicit norm of spending as much water as we

want in watering the lawn, given that it is the behavior that most people engage in at that neighborhood (thus, facilitating the anti-behavioral goal of spending water).

Additionally, there are situations in which different processes are elicited not by the same limiting factor but by different limiting factors. One example regards the behavior of buying non-organic products such as non-organic milk. On one side, the organic milk high price can work as a perceived barrier/constraint to not buy organic, eliciting a high perceived cost and incommmodity in performing that behavior. On the other side, the presence of non-organic milk familiar brands can activate the non-organic milk buying habit, which can inhibit an intentional organic milk buying goal and increase the probability of performing in accordance with a non-organic milk buying goal. We will get back to this example later on.

Regarding the concept of psychological barriers and constraints on pro-ecological behavior, we define them as factors that can: 1) lower the activation strength of pro-ecological goals and/or increase the activation strength of anti-ecological goals – *behavioral constraints*; 2) elicit the activation of an anti-ecological goal and inhibit the activation of pro-ecological goals – *behavioral barriers*. This distinction refers to the magnitude of the effect. If a factor has a weak-to-moderate effect, it works as a *behavioral constraint* by means of a *goal interference effect* - hampering with pro-ecological behavioral goals (i.e. pro-ecological actions can still occur, although with reduced frequency or effectiveness). If this factor has a strong effect, it works as a *behavioral barrier* by means of a *goal inhibition effect* - inhibiting pro-ecological behavioral goals (i.e. facilitating anti-ecological behavioral goals, meaning that pro-ecological actions cannot occur).

We make this distinction between barriers and constraints, and in terms of the effect's magnitude, since most of the times in the real world ecological decisions are associated with a conflict between pro-ecological and anti-ecological behavioral goals (e.g. decision between having a cooperative or competitive behavior; Garcia-Marques & Palma-Oliveira, 1989). Which goal “wins” this conflict³ depends on the situation where behavior is expected to occur, but also on how barriers and constraints interact. Accordingly, anti-ecological goals are expected to be stronger when there is an inhibition effect in addition to an interference effect, i.e. when barriers and constraints “work” together. This is supported by the Goal Systems Theory (Kruglanski, Shah, Fishbach, Friedman, Chun, & Sleeth-Keppler 2002), which claims that accessible goal alternatives or “background” goals (e.g. anti-ecological) can either pull away resources from a focal goal by reducing its activation strength and goal commitment or facilitate its activation, depending on what is activated and the context in which it happens. The negative effect can happen even when the activation of alternative goals is subliminal (priming) by: undermining the commitment to the focal goal, hampering progress toward the goal, hindering the development of effective means for goal pursuit and dampening participant's emotional responses to positive and negative feedback about their goal striving efforts (Kruglanski et al., 2002; Shah & Kruglanski, 2003).

Unrealistic optimism about environmental degradation (Hatfield & Job, 2001) or uncertainty about resource's level of availability and about how many people are cooperating in a pro-ecological way (Biel & Garling, 1995; De Young, 1999) can be considered *behavioral constraints*. This is because they reduce the level of goal commitment (Kruglanski et al., 2002) and the strength of a pro-ecological goal intention like “I intend to save water while taking a shower”, which causes a *goal interference effect*. In a different way, the high accessibility of an anti-ecological habit (Gaspar de Carvalho, 2009) or its perceived benefits in terms of comfort (Kollmuss & Agyeman, 2002) can work as barriers by facilitating the activation of an anti-ecological goal such as “spend much water while taking a shower” and inhibition of a pro-ecological goal (“conserve water while taking a shower”), which causes a *goal inhibition effect*.

Apart from interacting with goals, *unconscious barriers and constraints* might show their effect also indirectly, through their influence on *perceived barriers and constraints*. An example of this is the cognitive inaccessibility of pro-ecological/cooperative behavioral options in a social dilemma situation (with the anti-ecological/competitive options being more accessible; Biel & Garling, 1995; Palma-Oliveira & Gaspar de Carvalho, 2004; Tanner, 1999). Such a cognitive inaccessibility can affect behavior as an unconscious barrier and/or constraint. This can be due to the work of an information-processing heuristic which does not take into account all the behavioral options but only some of them, based, for example, on some criteria habitually used in similar decisions (Palma-Oliveira, 1995). These cognitive options of inaccessibility can promote a perceived lack of opportunities to behave in a pro-ecological way, which work as a perceived barrier/constraint. Some Environmental Education and Behavioral Change projects and psychological models attribute this to the lack of opportunities presented by the situation where the person is in, when in fact this perceived lack of opportunity might result from cognitive processes.

As in any new theoretical model, although the DN-Work model is based on theories and studies supporting its fundamental claims, there is still not enough research on its specific predictions. Given this gap, we will next present research assessing the least studied category of the model and the processes involved in its influence on ecological behavior: *unconscious barriers and constraints*.

HABITS AS UNCONSCIOUS BARRIERS AND CONSTRAINTS

Given the lack of success and efficacy in dealing with factors that can explain the attitude-behavior inconsistency, our research aims to demonstrate the effect of habit as a negative determinant of such inconsistency, trying to overcome the positivity fallacy identified before. Moreover, habit is considered to be an *unconscious barrier* since it is a mental representation having an effect outside people's awareness and conscious control. Thus, habit is a true psychological negative determinant of behavior, resulting from an interaction between situational and psychological processes.

Habits are distinct from other forms of repeated automatic behavior (e.g., body reflexes) because the former are goal-directed automatic behaviors that are mentally represented (as knowledge structures; Higgins 1989) and can be triggered by environmental cues (Aarts, Verplanken & van Knippenberg 1998; Verplanken, Aarts & van Knippenberg 1997). Thus, a pre-condition for them to be performed automatically is the existence of an active goal due to the presence of relevant environmental cues. The situation can activate the behavioral goal and behavior is performed automatically following that activation. This is because there is a goal-action cognitive link and for that reason activating the goal automatically elicits the action (Aarts & Dijkterhuis, 2000).

For example, the development of a habitual domestic behavior of separating garbage for recycling, starts with a goal intention such as "I intend to recycle", which is associated with a behavioral goal like "separate garbage for recycling". The first times this behavior is performed involve effort, time and a set of behavioral steps (e.g., categorize the material; choose to which container it should go; etc.) and consume cognitive resources. However, with frequent co-activation of the behavioral goal and action over time, this effort, time, number of behavioral steps and resources consumption are reduced and behavior is performed automatically upon activating the goal. This automatic behavior can then occur either upon the presence of the relevant cues (e.g. recycling containers at home) without people being aware of it or through a conscious activation of the behavioral goal (i.e. upon thinking on recycling the waste). Accordingly, research shows that regardless of the source of

activation, these two “paths” (Bargh & Chartrand, 1999) can elicit the same automatic behavior (see Aarts & Dijksterhuis, 2000, experiment 2).

Apart from this positive effect, habits can also negatively influence ecological attitude and behavioral change programs, outside of people’s awareness, upon the presence of relevant cues. Moreover, even if people are aware of their habits activation, this might not be sufficient to prevent it from occurring, since once the goal is activated automatic behavior is expected to occur. In this regard, we performed 2 experimental field studies (Gaspar de Carvalho, 2009) to assess how certain characteristics of the decisional context can elicit automatic habitual behavior by activating the relevant mental goal-action link, and how this could influence pro-ecological decisions to buy organic food.

STUDY 1

In the first study, we aimed to test the assumption that by exposing people to the means that allow achieving a behavioral goal, we can increase the probability of goal attainment (Kruglanski et al., 2002; Shah & Kruglanski, 2003), i.e. that people automatically behave or decide according with their goals. For example, if we habitually buy non-organic milk, when we are in the supermarket’s milk section, the presence of the non-organic brand X that we habitually buy (the mean to attain our milk buying goal) can automatically elicit the milk buying goal, and the associated milk buying behavior (buy brand X) can follow. This can occur without people being aware that this process was the cause of their behavior or without a conscious intention to engage in it (Aarts & Custers, in press).

Following from this, we aimed to test if in the presence of two types of means associated with either the goal to buy organic milk or to buy non-organic milk, people would choose significantly more a mean from the first type, in a list with various products (means) of both types. This is because the means of the first category co-occurred more often in the past with the goal of buying non-organic milk, in a stable context (i.e. given their non-organic milk buying habit).

However, given the situational dependence of goal activation (Kruglanski et al., 2002), we predicted that this would only happen in a familiar choice context. This is because in this context the cues that habitually elicit the non-organic milk buying habit are present (e.g. familiar brand). In a different way, if the choice context is new and unknown, there are no familiar cues that could activate the buying non-organic milk habit and therefore the probability of goal activation should be similar for both organic and non-organic milk buying. Thus, regarding the example given before, if the non-organic brand X that we habitually buy (i.e., mean) is not present, then our choice will follow a decision process not directly related to our habit (e.g., product appearance).

METHOD

Participants and procedure

Eighty students from the University of Lisbon and other individuals were either given credits for their participation or volunteered to participate respectively. To participate they had to fulfill the criteria of buying food products for domestic consumption at least once per week. For this reason, the students that participated were requested to bring in their parents or friends that fulfilled these criteria, if they did not.

The sample consisted mainly on young adults, with an overall mean age of 28.16 years old (SD=10.52; Min=19; Max= 54) and the majority having a high school degree (60%) or a university degree (27.50%). A questionnaire (see description below) portrays them as frequent shoppers, shopping for food on an average of twice a week (M=2.10; SD = 1.28).

Also, the sample is characterized by a low percentage of reported organic food products bought in general ($M=12.33\%$; $SD = 19.85$) and medium intention to buy organic food in the future ($M=3.44$; $SD = 1.78$), portraying them as habitual non-organic food buyers.

Participants were asked to take part in a web-based study on “Health and Consumption in Portugal.” After providing their informed consent, they responded to a small questionnaire containing the following items: a) socio-demographic and purchase behavior items; and b) future intention to buy organic products (1-7 Likert type scale; from Ajzen, 2002). Subsequently, they performed one of two online shopping simulations⁴ to choose milk, from a list of 12 organic and non-organic products chosen by means of a pre-test, which included price, brand and a picture of the product. One task - *familiar context* - had national brands known to the participants (representing familiar means to attain their milk buying goal), while the other - *new context* - had foreign brands, unfamiliar to them.

In these we maintained price and organic and non-organic products availability constant among them, in a proportion of .66 non-organic products and .33 organic products. This was because these aspects usually work as post-hoc justifications for not behaving in a pro-environmental way and for non-organic products buying habits maintenance. We aimed to argue against these justifications, by showing means familiarity as a psychological dimension which determines choice, independently from price and availability. A representation of the goal system involved in these two tasks can be seen in figure 2.

Insert figure 2 about here

RESULTS

Fisher’s Exact test results regarding the differences in the choice of non-organic milk between the familiar and new context (see table 4), showed that a higher proportion of non-organic products chosen in the familiar context (.95) compared to the new context (.68) ($p=.002$; Fisher’s exact test).

These results show that the situation’s influence on behavior is not direct but mediated by psychological processes going beyond price and availability of organic food, which usually are considered to be the main reasons underlying the decision to buy organic food (from a pre-test we performed). In fact, differences in results were explained by familiarity (a psychological dimension) rather than those socio-economic factors, with significantly more non-organic milk being chosen than the expected proportion in the familiar context but not in the novel context. Thus, exposing people to the relevant familiar behavioral means (6 non-organic products out of 12) activated the goal associated with the habitual behavior, which in turn biased choices toward a habitual mean (1 out of 6 non-organic products). This shows the situation’s influence on behavior, mediated by a psychological process (familiarity).

STUDY 2

While study 1 aimed to demonstrate the effect of means priming, study 2 aimed to also show the effect of goal accessibility associated with the habitual behavior, i.e. a high goal accessibility before the choice situation is expected to bias the subsequent choice toward a habitually chosen mean (Kruglanski et al., 2002). This was done either by priming the goal in a behavioral simulation or dividing the participants into weak vs. strong habit participants (the latter expected to have a higher chronic accessibility; Higgins, 1996),

The choice situation was again manipulated in terms of familiarity but instead of the categories of non-organic and organic milk, there was non-organic milk - habitual product - and non-organic orange juice - non-habitual product. Our aim was to not only replicate the familiarity effect but also to demonstrate that habitual behavior can still occur in a new context, with more habitual than non-habitual products chosen, as long there is a high goal accessibility (either through priming or habit strength), based on the prediction that *strong accessibility can compensate for weak applicability* (Higgins & Brendl, 1995).

METHOD

Participants and procedure

One hundred and sixty students from the University of Évora, Portugal and other participants were either given credits for their participation or volunteered to participate respectively (same criteria as in study 1). The sample consisted mainly on young adults, with an overall mean age of 25.53 years old (SD=7.56; Min=18; Max= 60) and the majority having a high school degree (56.90%) or a university degree (33.10%). There is an overall moderate milk buying habit strength (M=4.27; SD=1.42), which is significantly higher than the orange juice buying habit strength (M=2.41; SD=1.37) ($t_{(159)}=12.00$; $p<.000$).

Participants were asked to take part in a web-based study on “Health and Consumption in Portugal.” After providing their informed consent, participants were requested to write a brief description of their behavior in a certain situation (goal priming): *“Imagine that you need to go shopping for the week’s breakfasts or lunches in your house and in order to do that you go to the nearest supermarket/local store. Once you get there, you decide to buy bread and milk. Please describe what you would do from the time you arrive at each product section in the supermarket/local store, until the time you choose what you want to take, writing in the space below the options available in there and the way you make your choice for each of the two products.”* The participants in the irrelevant buying goal accessible condition did the same task but with milk being substituted by water. In this, only the milk goal had the opportunity to be attained, given that the subsequent task had a list of milk and orange juice products to choose from. The idea here is that, priming stimulates or activates the stored knowledge (Higgins, 1996) and thus providing people with a behavioral goal (buy milk), should increase its accessibility (and consequently, the mental representation of the associated habit) and therefore, the probability of automatically choosing milk when opportunity arises. After this, participants performed two online shopping tasks (within-participants) with a choice of milk and orange juice with national brands (familiar context) and foreign brands (new context), in a way similar to study 1). A representation of the goal system involved in these two tasks can be seen in figure 3.

Insert figure 3 about here

Finally, they performed a questionnaire in which reported their non-organic products buying habit by responding to the Self Report Habit Index (1-7 Likert type scale; Verplanken & Orbell, 2003), which allowed to create the weak vs. strong habit participants groups. based on the first and last quartile.

RESULTS

McNemar’s test results regarding the differences between decisions in the familiar and new context when the target goal was accessible (see table 1) showed a significantly

higher percentage of participants which revised their choice, by choosing the non-habitual product (orange juice) in the new context and the habitual (milk) in the familiar context (23.75%) comparing to the opposite revision (3.75%) ($p=.001$; McNemar). For the accessible irrelevant goal results showed a significantly higher percentage of participants which revised their choice, by choosing the non-habitual product in the new context and the habitual in the familiar context (32.5%) comparing to the opposite revision (6.25%) ($p=.000$; McNemar). Moreover, there is in this condition a higher choice consistency for the habitual (38.75%) than the non-habitual products (22.5%) between contexts, although this difference is marginally significant.

Insert table 1 about here

As expected, the majority of the strong habit participants chose the habitual product consistently between contexts (58.97%; $p=.000$; McNemar). The weak habit participants chose more the habitual product in the familiar context and the non-habitual product in the new context (45%; $p=.002$; McNemar). Given their weak habit, their mental representation is inferred to be more unstable than for the strong habit participants and thus they are more affected by the context changes. At the same time, they are “aided” by the context, with the weak chronic accessibility being compensated by the context familiarity.

On one side, this shows that habits can have an effect across situations (strong habits effect) and that their power is sometimes underestimated. On the other side, our goal priming seems to have failed and even resulted in an almost opposite pattern, with less consistency in the habitual products chosen when the milk goal was primed (compared to the control condition). One explanation is that the goal priming might have elicited a monitoring process in which some participants compared the options available with their milk buying habit. If a weak match between habit and the available means in the decision task was perceived, they chose more the non-habitual product. Thus a contrast effect might have occurred because the priming was supraliminal and they were aware that their habits were brought to mind (Dijksterhuis, Chartrand & Aarts, 2007).

GENERAL DISCUSSION

Most of the Environmental Education and Behavior Change projects and models regarding ecological behavior are still biased by a “positivity fallacy”, i.e. the belief that as long as people have the right attitudes, intentions, skills, information, etc., the right pro-ecological behavior should follow. However, the social sciences literature shows that there is an inconsistency between attitudes and behaviors in this regard and that the difficulty in changing behaviors is being underestimated. One reason for this to occur is that the factors working as barriers and constraints to ecological behavior are not analyzed and dealt with. In this regard, a behavioral analysis that includes the “negative” determinants should be performed.

Models studying the negative determinants of pro-environmental behavior consider that most barriers and constraints are non-psychological. Even those models acknowledging the importance of psychological barriers and constraints only see a part of the big picture. This is because they do not consider the effect of automatic processes occurring outside people’s awareness and consciousness, which mediate the effect of situations on behavior.

In our studies we aimed to fill these identified gaps through the DN-Work model, concerning the effect of barriers and constraints on pro-ecological behavior. This model specifies some conditions for their influence to take place, presenting psychological processes

as mediators of situational influences on behavior, and transcending the incomplete and sometimes erroneous consideration of a direct influence of the former on the latter. Accordingly, this chapter presented two examples from empirical research showing that habit - defined as a goal-dependent automatic behavior - can work as a negative determinant of ecological behavior, outside people's awareness and control. These studies demonstrated that automatic habitual behavior can be elicited by situational features (the means in the choice context) or by chronic accessibility, which determined the subsequent behavior in the decision making tasks. Additionally, some control over the habitual choice is possible, although habitual behavior awareness (study 2) seems to be necessary. This has evident implications for the development of Environmental Education and Behavior Change projects because habit can work as an *unconscious barrier* by making anti-ecological goals stronger and more accessible, without the mediation of consciousness.

Thus, our model and studies suggest that the investigation of pro-ecological behaviors should be conducted not only by considering the different levels of individuals' analysis (person, group, society, world) but also by considering the different levels of the situation where behavior occurs (Pinheiro, 2009). This means that the situation should be approached from the most concrete level of analysis regarding physical features and tangible aspects, up to the most abstract level considering those characteristics and events associated with social environments, like other people's behaviors, attitudes, etc. One common error in this regard is the assessment of people's habits (at the individual level) as only determined by the social environment (e.g. neighbors; family living in the same house) and/or the city environment (e.g. urban planning). Often, this implies missing the influence of psychological processes in a more concrete level of the situation (the "psychological context"), in terms of the elicitation of automatic behaviors from certain situational cues. Only by matching these different levels of ecological-behavior analysis and considering the different influences associated with them, we can "bring back" the situation to the psychological study of barriers and constraints impinging on ecological behavior.

Although the viewpoint presented in this chapter (i.e., the study of negative determinants) seems like a pessimistic approach to the study of ecological behavior, we think this is actually an optimistic perspective. In fact, by identifying factors increasing the inconsistency between positive attitudes and ecological behaviors, we will be able to design interventions focusing on these factors and increase the success and efficacy of attitude behavior change programs. On the contrary, it is the design of interventions including only positive determinants and involving an incomplete explanatory level of the psychological processes involved that makes us pessimistic regarding the promotion of ecological behaviors and their maintenance in the long run.

As Corral-Verdugo (2001; pg. 149) states: "Given the complexity of ecological problems, it is better to respond in a plastic than in a rigid way". This plasticity can be developed by increasing people's environmental competency (Corral-Verdugo, 2002; see also Fraijo-Sing *et al*, in this book) in a way that individuals are enabled to resist the influence of barriers and constraints on ecological behavior. Whenever they are or are not able to perceive/identify those barriers and constraints by themselves, strategies aimed to increase people's competence in dealing with them should be developed (Gaspar de Carvalho & Coutinho de Faria, 2003).

Other negative determinants still need to be identified and the processes involved should be assessed with various methodologies. Nevertheless, the model here described and its associated research can be a starting point to answer, from a psychological perspective, an unfortunately understudied question in pro-ecological behavior research: why do people fail to act?

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Footnotes

¹ In the last few decades, implicit perception-based measures have been used in ecological behavior research, as is the case of the Implicit Association Test (see Vantomme et al., 2005). Nevertheless, this is still not enough to tap into the processes involved in developing attitude-behavior inconsistency; other methodological tools are still needed to provide a more complete picture.

² Goal can be defined as “an internal representation of a desired state, such as a behavior or outcome (Aarts & Custers, in press).

³ When there are multiple goals competing, only the “winning” goal will be translated into behavior; i.e. it will reach the goal operation phase (Kruglanski et al., 2002).

⁴ HTML pages developed with Comersus Cart Software (*Comersus Open Technologies L.C.* 2004)

Table 1

Differences in frequencies between decisions in the new and familiar context for the goal

priming manipulations with McNemar's test

Target goal					
		New context		McNemar (A/D)	McNemar (B/C)
		Non-hab.	Hab.		
Familiar context	Non-hab.	29	3	<i>n.s.</i>	p=.001
	Hab.	19	29		
Irrelevant goal					
		New context		McNemar (A/D)	McNemar (B/C)
		Non-hab.	Hab.		
Familiar context	Non-hab.	18	5	p=.087*	p=.000
	Hab.	26	31		

Figure caption

Figure 1. DN-Work model of barriers and constraints on ecological behavior

Figure 2. Goal-means structure representation for each type of context manipulation

Figure 3. Goal-means structure representation for each type of context manipulation





