# The Behavioral Change Matrix
# –
# A Tool for Evidence-Based Policy Making

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# Content

Carefully designed public interventions can reshape communities by encouraging people to behave in ways that are beneficial for the society or the organization they belong to. The ultimate effectiveness of such interventions relies on thorough understanding of the forces that shape behaviors. A multitude of measures can be used to change people's behavior: monetary incentives, fines, legal punishment, educational measures, and the recently popularized "nudges". While all of these measures can be effective, their relative effectiveness strongly depends on specific contexts, social norms, and individual characteristics of the targeted population. Drawing on the newest research in behavioral economics, the *BEA™ Behavioral Change Matrix*[1] is a powerful tool for analyzing policy issues and determining the best solutions to the problem at hand.

# 1 Two deciding drivers of behavioral change

Empirical research has shown that contributions to the public good depend on two conditions: *awareness* of a social norm to contribute and the consequences of not following the norm, and the *willingness to contribute* to and thereby follow said norm. These two deciding factors are explained in-depth next.

## 1.1 Awareness

Awareness, or knowledge of the effects one's behavior has on other people, can have a major impact on once's decisions, but empirical evidence indicates that people often have little or no knowledge of how their behavior influences other people and society in positive and negative ways. Until quite recently for example, many smokers severely underestimated the damage they cause to the health of people near them. In addition, it is often not understood that one's behavior also affects the behavior of other people. Individuals might not realize for instance that by littering in a park, they encourage other people to follow their example, or that by not paying taxes they further discourage others from paying theirs.

Even if people are generally aware of the negative consequences of their behavior, they do not always take this awareness into account. A car driver might know that speeding endangers both him and the people around him in traffic for instance, but fail to act accordingly when he is late for an important meeting with a prospective employer. Most people might be aware that protection is vital in spontaneous sexual encounters, but forget this knowledge in the heat of the moment. These mismatches of general awareness and situational remembrance have been labeled *"blind spots"* by Bazerman (2011). The cause for these blind spots can be traced back to the mind's two modes of thinking: the intuitive, fast, and impulsive system 1 and the slow, rational, and deliberate system 2, as defined by Nobel Prize winner Daniel Kahneman (2011). People evaluate actions and their consequences thoroughly only when they are in the system 2, the *"cold state"* – something that doesn't happen very often. In most situations,

[1] The BEA™ Behavioral Change Matrix was developed by Prof. Ernst Fehr of University of Zurich and Gerhard Fehr. It is open for public use under the condition that it is cited as "Behavioral Change Matrix by FehrAdvice."

people are in their system 1 or *"hot state"*, in which they rely on simple heuristics and emotions, which makes them prone to forgetting important facts.

## 1.2 Willingness to contribute

Awareness alone is not sufficient to motivate behavior. Even after the health hazards of second-hand smoking had been demonstrated in a multitude of studies, many smokers nevertheless stuck to their public smoking habits, demonstrating an unwillingness to change their behavior. In addition to awareness of the negative consequences of one's behavior, one must be willing to change this behavior accordingly. Willingness, an intention and ability to contribute to societal or organizational goals, is influenced by five main factors.

## 1.3 Social norms and the costs of not following them

Beliefs shared by a group or society inform *social norms*, expectations of how the majority of a group would behave in a given situation. Social norm expectation is central to the topic of willingness, as research has shown that people's willingness to contribute is dependent on their belief of how relevant a certain norm is for other people (Krupka & Weber, 2013). The more we think other people behave norm-compliantly, the more we are willing to comply ourselves. The inverse is also true. If, for example, we expect many people to dodge paying a parking fee, we feel much less motivated to pay the fees ourselves than if we expected others to pay. The more people rely on the intuitive system 1 to make decisions, the more they tend to comply with what they believe to be the social norm. Norm-compliance can be increased by a large degree if the possibility to punish those who continue to be non-compliant through *"peer punishment"* exists (Fehr & Gächter, 2002).

This tendency to comply with social norms can help explain why issues such as littering are bigger problems in some contexts than others. In situations where littering is perceived as normal (at a music festival for instance), people are more likely to litter than they otherwise would be because they feel little or none of the otherwise-present anti-littering social pressure. It is important to note that the same person might show very different behavior and follow different social norms depending on the situation they are in. Reigning social norms differ strongly when a teenager is with his friends than when he visits his grandparents' (see also: Akerlof & Kranton, 2000).

## 1.4 Burdens and fairness perceptions: Psychological costs

The more burdensome an action is perceived to be, the less people are willing to partake in it. If donating money to a charity includes filling in an annoyingly long form, the form acts to discourage donations and donor behavior. The efforts involved in completing a task are not the only relevant psychological costs, however. Fehr and Schmidt (1999) showed the importance of perceived fairness on behavior. When people feel treated unfairly, they are much more likely to show non-norm-compliant behavior. Fees charged on packaging, meant to reduce litter, can be perceived by consumers as unfair, and serve to spur (not discourage) a tendency to.

## 1.5 Economic costs

Economic costs are monetary incentives or punishments for a certain behavior. While they have the power to strongly motivate behavior, research indicates that economic costs are only properly taken into account when people are in the slow and thorough thinking mode of system 2. Due to the fact that many decisions are made in the fast system 1, where people rely more on past experience, habits and norms than a rational analysis of costs, economic costs do not always result in the expected changes in behavior.

## 1.6 BEA™ Preferences

The BEA™ Preferences explain why and how individual people weigh and integrate the abovementioned social, psychological and economic costs in different ways. The BEA™ Preferences include the classic economic preferences for time, patience and risk. Social preferences for positive and negative reciprocity, trust, and altruism are added to the model to form a comprehensive picture of individual behavioral characteristics. While people develop a foundation of these preferences in their early stages of childhood, BEA preferences have shown to differ and be manipulable within various different situations and contexts.

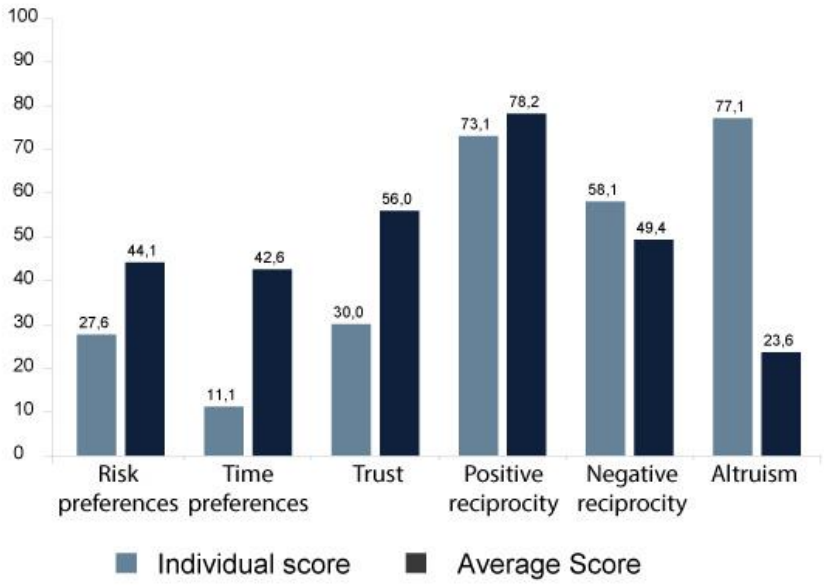


Figure 1: An example comparison between an individual's BEA™ Preferences and those of a population

# 2 BEA™ Behavioral Change Matrix

The BEATM Behavioral Change Matrix developed by FehrAdvice & Partners AG integrates the research insights summarized above in a clear framework (see Figure 2). Taking both awareness and willingness

into account, it allows for the identification of measures most likely effective to achieving behavioral change, while also and predicting the amount of time necessary to achieve the change goal.

A variety of high-level measures can be used to bring about behavioral changes. The following six approaches are typical measures to strengthen the dimensions awareness and willingness. Their suitability in individual cases is dependent on the issue at hand and the location it is placed in the matrix. This will be discussed in more detail below.

- **Communication and education:** Strengthens **awareness** of the issue and its negative effects on society.
- **Negative incentives and control:** Increases **willingness** to show the desired behavior by sanctioning its undesired counterpart.
- **Positive incentives and enabler:** Enables and increases **willingness** to show the desired behavior by rewarding it.
- **Belief Management:** Promotes the forming of a desired norm and thereby increases **willingness**.
- **Preference Management:** Influences the building of preferences to positively affect both **awareness** and **willingness**.
- **Attention Shifting:** Aims to steer behavior in the desired direction - often subliminally - and so influence willingness.

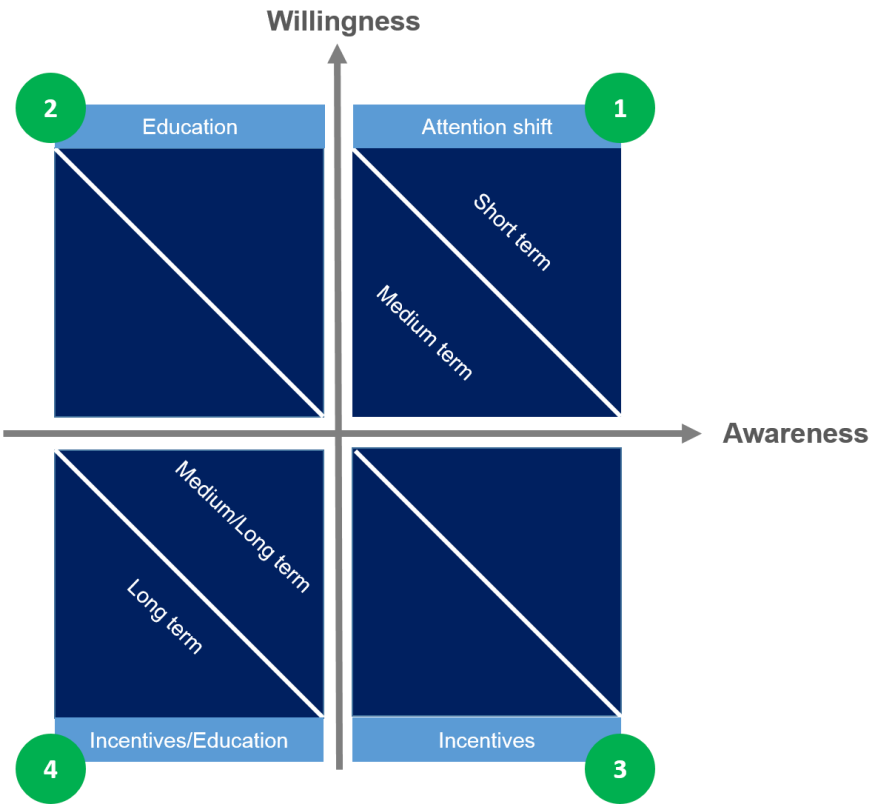


Figure 2: BEA™ Behavioral Change Matrix

### 2.1 Quadrant 1: Shift attention when both awareness and willingness are high

The first quadrant describes contexts in which people are both aware of the consequences of their behavior as well as willing to act responsibly. A lack of norm-compliant behavior in spite of these attitudes is likely to stem from a temporary lack of awareness in certain contexts and situations. The main measure to address issues in this quadrant is *"attention shifting"*, pushing people in a certain direction in the decision moment. Short term nudges include drawing footsteps that lead to trash bins, whereas measures like commitment devices encourage long term adherence to behaviors, especially those that individuals have shown likely to defect from. *"Nudges"* do not transform people; rather they provide cues to affect behavioral change given certain circumstances. They are low cost, generally easy to apply and can achieve results in a short time.

### 2.2 Quadrant 2: Educate and communicate when willingness is high but awareness is low

In comparison to Quadrant 1, situations that fit into Quadrant exist not because of unwillingness, but because of unawareness to actions' negative consequences. Therefore, a problem can best be solved by improving individuals' awareness of actions' consequences. Educational measures and improved communication to increase awareness are therefore the tools of choice. A typical example is the aforementioned education of people on the dangers of second-hand smoking. Depending on the nature of the topic, results for interventions in Quadrant can be expected in the medium or long term.

### 2.3 Quadrant 3: Use incentives and punishment when awareness is high but willingness is low

In contexts of the third quadrant, people show high awareness of the problem, but are unwilling to change their behavior accordingly. Incentives (positive or negative) and belief management are best implemented to resolve these issues. Examples include offering amnesty for tax violators, or a zero tolerance policy against littering (e.g. in Singapore).

### 2.4 Quadrant 4: Educate and create incentives when both awareness and willingness are low

The fourth quadrant consists of contexts in which people are neither aware of the consequences of their actions nor willing to modify their behavior. As this necessitates increasing both awareness as well as willingness, the desired behavioral changes are only achievable in the medium to long term utilizing the full BEA™ Behavioral Change Toolbox.

## 3 Case Studies

### 3.1 A civic responsibility project in the Middle East

In 2011, FehrAdvice & Partners AG and the University of Zurich used the BEA™ Behavioral Change Matrix to analyze civic responsibility topics and formulate recommendations for policy interventions in a

small Middle Eastern country. A multitude of civic responsibility issues, e.g. "Low adherence of traffic rules", and "Queue Jumping" were identified and positioned in the BEA™ Behavioral Change Matrix using an experimental assessment. Policy recommendations were formulated on the basis of the above-mentioned framework. "Queue Jumping" was identified to be a Quadrant 2 issue: people were willing to comply but not sufficiently aware of the consequences of their behavior. A communication campaign highlighting how other people are harmed by queue-jumpers was recommended. In contrast, "Low adherence to traffic rules" was positioned in Quadrant 3, as people expressed that they were unwilling to comply with traffic rules despite being highly aware of the dangers involved in such breaking. Fortifying the punishment system by accelerating the fine-paying process and closing administrative loopholes to avoid paying the fines were identified as the most effective measures to combat the problem.

## 3.2 A study on littering in Switzerland

In a large online experimental study with more than 15'000 participants in 2013, FehrAdvice & Partners AG used the BEA™ Behavioral Change Matrix to analyze littering behavior in Switzerland. Although the results showed a strong general social norm to not litter in Switzerland, the study uncovered significant differences depending on context, age groups and litter object. For example, whereas "littering of a bottle" was located in Quadrant 1 and can be easily addressed via attention shifting, "littering of cigarettes" activates a much smaller willingness to avoid littering. This difference becomes even more accentuated when taking age into account: young people's awareness and willingness to dispose of cigarette butts in an ashtray rather than on the ground is much lower than that of their older counterparts. The conclusion that littering is a problem of youth, however, would be incorrect. Young people might not consider littering when they are in the vicinity of their parents. Only the context of an evening gathering with friends in the park – where littering all of sudden becomes the social norm – changes their behavior for the worse. Based on the study's results, it is clear that policy measures have to specifically address the contexts in which littering is happening and that an all for one approach cannot bring about the desired results. On the contrary, implementing new general punishment measures like littering taxes could further aggravate the existing problem by undermining the strong social norm against littering that is already in place.

## 3.3 A methodology for compliance management

The BEA™ Behavioral Change Matrix is not only useful in the context of public intervention but also in a business context, most notably in the topic of employee compliance. Awareness of company norms and the consequences of following or violating them on the one hand, and the willingness to comply on the other hand, are of vital importance to understanding employee compliance. The BEA™ Behavioral Change Matrix enables a company to assess differences in compliance with a variety of norms between departments, teams, and hierarchy levels to formulate tailored measures.

# 4 The authors

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