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# Applying behavioural insights to drug policy and practice: opportunities and challenges

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## **Applying behavioural insights to drug policy and practice: opportunities and challenges**

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The EMCDDA is grateful to the authors for this valuable contribution. The paper has been cited within *Health and social responses to drug problems* and is also being made available online for those who would like further information on the topic. However, the views, interpretations and conclusions set out in this publication are those of the authors and are not necessarily those of the EMCDDA or its partners, any EU Member State or any agency or institution of the European Union.

## 1. Introduction

Over the past two decades behavioural insights have grown in prominence both in academic circles and in public policy institutions. Both the behavioural scientific literature and the number of relevant policy reports have increased exponentially.

This should not come as a surprise, as behavioural insights (which rely on contributions from various disciplines, including behavioural economics, social and cognitive psychology, neuroscience, and sociology) provide a better understanding of actual human behaviour and, consequently, socioeconomic phenomena. Instead of relying on assumptions about human behaviour, behavioural insights reverse the approach and aim to generate — through observation and experimentation — a more realistic description of the real world. In so doing, they fill a gap that neoclassical economic theory does not account for. Such understanding of human behaviour is already informing policymaking, either by complementing traditional policy tools such as price instruments (e.g. price, taxes and subsidies), information provision and regulation, or by putting forward innovative approaches to solving policy issues (Madrian, 2014).

The relevance of this approach in the field of addictions is illustrated by (Goldstein, 1994) who, in his book *Addiction: From biology to drug policy*, observed that:

If you know that a certain addictive drug may give you temporary pleasure but will, in the long run, kill you, damage your health seriously, cause harm to others, and bring you into conflict with the law, the rational response would be to avoid that drug. Why then, do we have a drug addiction problem at all?

This paper reviews insights from behavioural sciences that are relevant for drug policy, encompassing both interventions specific to the field of drug addiction and more general insights that also have direct relevance to the field. It is worth noting, however, that a full systematic review was beyond the scope of this paper.

## 2. Behavioural insights and their relevance for policy and health policy

If our behaviour fully mirrored that of *Homo economicus* — that is featuring perfect information, perfect rationality, selfishness and intertemporal consistency — the role of public policy would be much more limited and simpler. But behavioural evidence shows that our behaviour diverges from these assumptions, although often it does so in a predictable way. The converging evidence on the power of defaults — and our consequent tendency to ‘go with the flow’ — is an illustrative example (Amir et al., 2005). Such predictability is a relevant feature, as it should ideally allow policymakers to anticipate and test behavioural response, and adopt policy interventions that work on the ground.

The behavioural approach was also popularised by *Nudge: improving decisions about health, wealth and happiness* (Sunstein and Thaler, 2008). However, *nudging* and behavioural insights are not one and the same thing. A nudge is an easy and often low-cost intervention (i.e. an output of the policy process) that modifies the choice architecture, altering people’s behaviour in a predictable way, while preserving the same range of choice options. In contrast, behavioural insights represent an input to the policy process that can be fully integrated with and inform other traditional forms of intervention (i.e. regulations, incentives and information requirements). ‘Being rather an input to the policy process, behavioural insights, contrarily to nudges, do not warrant a specific type of output, and indeed sometimes suggest that no intervention, or a conventional one, is the best solution’ (Lourenço et al., 2016, 10).

Behavioural sciences offer three specific contributions (Chetty, 2015):

- 1) They can generate new policy tools that can be used to influence behaviour. Indeed, behavioural insights complement the traditional three-pronged policy approach, which is based on regulation, use of incentives and information provision.
- 2) They can yield better predictions about the effects of existing policies, because they allow the development of more truthful descriptions of reality.
- 3) They can generate new welfare implications. This is particularly but not exclusively relevant for drug policy. Since the impact of behavioural biases (such as myopia or overconfidence) is widely acknowledged, it follows that an agent's experienced utility (his or her actual wellbeing) differs from his or her decision utility (the objective the agent maximises when making choices). Policymakers need to take into account differences between decision and experienced utilities, to improve predictions about the welfare consequences of specific policies, and to design them accordingly.

An illustration of this last point is given by the recent literature on the motivational forces behind drug use, and the underappreciation of deprivation, whether it is related to food or drugs. In particular, with reference to drug use, there is increasing evidence that the decision to use drugs is not based on an unbiased appraisal of current and future options (Badger et al., 2007).

Certainly, besides rational motives, research has long posited the existence of number of causal factors accounting for the initial decision to take psychoactive substances. These include peer influences, genetics and short-sightedness, to mention but a few. New models — including economic models of addicts' behaviour — incorporate the systematic misprediction of craving for understanding behaviour. This applies to illicit drugs but also to tobacco, as young cigarette smokers also significantly underestimate their own risk of becoming addicted (Slovic, 2001). In a convincing experimental setting, Badger et al. (2007) showed that addicts cannot properly evaluate the intensity of craving even when they are not currently experiencing it. If experienced users miscalculate the motivational force of craving, it is even more likely that non-addicts will do likewise.

The welfare implications of behavioural sciences have led the European Commission to recommend a specific policy intervention to address online gambling. In this area, public intervention was advocated to counterbalance the impact of aggressive advertising strategies, misleading information and consumers' lack of self-control. The European Commission collected evidence through an ad hoc behavioural study and, as a result, issued a series of Recommendations for EU Member States (European Commission, 2014). Among the various remedies tested, it was found that pre-gamble interventions (e.g. more and better information about the game and/or about the provider) were not effective. In contrast, in-gamble interventions (e.g. self-commitment to a maximum volume of time and/or money to be spent) helped consumers make decisions that were more consistent with their initial preferences.

Recent relevant and influential reports confirm that behavioural sciences are undeniably of some relevance for health policy. In 2010, the UK Behavioural Insights Team published 'Applying behavioural insights to health' (Behaviour Insight Team, 2010), describing applications related to issues such as tobacco and alcohol consumption, organ donation, and physical activity, among others. More recently, the UK Health Foundation published *Behavioural insights in health care* (Perry et al., 2015), tackling traditional forms of intervention — such as education and coercion — with more innovative approaches based on environmental restructuring and incentives. Recently, the *New England Journal of Medicine* promoted a series of web events to promote *Behavioural*

*strategies for better health* (University of Pennsylvania, 2016). Such reports and events provide concrete evidence of an attitude-behaviour gap when it comes to health-related decisions, and also show the impact of peer influence and context.

There is also increasing evidence proving the failure of the information provision paradigm, implicitly encouraging policymakers to explore innovative and behaviourally based interventions. For example, a recent *Lancet* article (Hallsworth et al., 2016b) shows how awareness campaigns can fail to reach the expected outcome when it comes to discouraging excessive use of antibiotics. Instead, a social norm-based intervention among general practitioners proved to be much more effective.

As is currently the case in consumer policy where a number of initiatives already rely on behavioural evidence (e.g. Heather and Vuchinich, 2003; Bickel et al., 2016), in the future behavioural sciences may also provide additional insights for drug policy. This may start with a thorough understanding of specific groups within the target population and subsequently take into account the specific steps taken by members of each group in their decision-making journey — from access to information, through the understanding of current and future consequences, to the actual decision and the post-consumption experience — and the motivational forces acting in each of these steps.

### **3. Using behavioural insights to design more effective interventions**

In this section we describe how behavioural insights — focusing on how people really behave — can be applied to design more targeted and effective interventions in the field of drug addiction and other related areas (e.g. cigarette or alcohol use). Firstly, we highlight the relevance of clearly identifying the target group(s), behavioural element(s) (i.e. pre-existing motives and a set of barriers to overcome) and target behaviour(s) that an initiative aims to promote. Secondly, we analyse a set of behavioural biases (e.g. present bias, overconfidence, framing effects) and propose specific behavioural levers (e.g. use of defaults, feedback mechanisms and reminders) to design contexts favouring better and healthier choices. Thirdly, and finally, we propose a number of principles for an effective evaluation of the impact of an intervention. Our analysis was informed by a broad range of evidence in the field of health, as behavioural evidence in the field of illicit drugs proved to be limited.

#### **3.1 Structuring interventions according to specific target group(s)**

One of the key lessons from behavioural sciences is that one-size-fits-all solutions do not work. In other words, behavioural interventions should be as targeted and as tailored as possible: they should be purposely designed to encourage or discourage a specific behaviour among a specific target group (Damschroder et al., 2009; Rafael Almeida et al., 2016).

Based on the available literature (e.g. Burkhart et al., 2013; Michie and West, 2013; Drug Policy Futures, 2015), Table 1 provides examples of target groups, their subgroups and possible target behaviours — that is the end goal pursued by interventions aimed at behavioural change — in the context of drug use. It is worth stressing that, to encourage or discourage a specific behaviour (e.g. to reduce ‘binge’ drinking among adolescents), interventions need to tackle the underlying behavioural cause(s) (e.g. the perceived social norm that the rate of alcohol consumption is high among peers). Any given intervention should determine, at an early stage, the behavioural cause(s) of the target behaviour. Doing so will enable the design of tailored approaches that are adapted to the reality of the situation (e.g. an intervention focused on increasing knowledge about how alcohol abuse can lead to liver damage is unlikely to work in the previous example).

**Table 1: Potential groups, subgroups and behaviours to be targeted by interventions**

<b>Target groups</b>	<b>Target subgroups</b>	<b>Examples of target behaviours</b>
General public	Adults	Participate in prevention initiatives Refrain from automatically devaluing, rejecting or stigmatising drug users
	Children and teenagers	Reduce the use of, and/or intention to use, drugs Identify and resist pro-drug pressures Resist persuasive pro-drug communications
Vulnerable groups	Children in deprived or dysfunctional families; young offenders; marginalised ethnicities; migrants	Enhance personal and social skills for effectively coping with challenging life situations
Drug users	Experimental users	Reduce risk behaviours (e.g. 'binge' drinking) Change perceptions about consumption (e.g. non-harming; sign of 'coolness')
	Recreational users	Form a specific plan and set goals to reduce or stop substance use. Reduce frequency of substance use.
	Dependent users	Seek help through healthcare and treatment systems for substance use
	Abstainers	Change physical or social contexts to reduce impulses or cues associated with drug consumption
Social environment	Relatives, friends	Provide positive reinforcement, such as praise or other types of rewards, for remaining drug free Support the user in taking action by seeking counselling and/or other relevant services
	Employees	Get workers involved in prevention and/or awareness activities Promote a non-punitive and supporting environment
School environment	Teachers	Support the development of personal and social skills for effectively coping with challenging life situations Decrease aggressive and disruptive behaviour in the classroom Detect signs of parental substance abuse
	Parents	Be a role model for the child Get actively involved in the child's learning and education
	Parents with substance abuse	Participate in activities that reduce risk of relapsing

Table 1 (continued)

Target groups	Target subgroups	Examples of target behaviours
Professionals	Medical professionals	Detect signs of drug misuse or abuse Provide immediate basic counselling and/or referral to relevant services Support the user in making decisions and setting goals to reduce substance abuse
	Social workers	Detect signs of drug misuse or abuse Provide safe environments where drug users can seek support Provide advice on changing physical or social contexts to reduce impulses or cues associated with drug consumption
	Police officers	Cooperate with social care and/or health professionals when responding to situations involving drug users Recognise signs of substance abuse and make referrals to health and/or social services
	Journalists and bloggers	Refrain from portraying substance abuse as 'a matter of private concern' only
	Judges	Consider alternatives to primarily punitive sentences, such as sentences encompassing drug treatment. Take clinical assessments, documenting the nature of the addiction and potential for treatment, into consideration

It is worth noting that the target groups and subgroups listed above are general ones and that there is, therefore, scope to further define and characterise each of them. For example, a study in Sweden (Storbjörk and Room, 2008) looked at alcohol problems in the general population and in a clinical population (i.e. those in alcohol treatment), and found that the latter were older and more marginalised (i.e. more likely to be unemployed, to be in an unstable living situation, etc.). This information regarding a particular target group (i.e. individuals in alcohol treatment) is valuable for setting up a more targeted intervention.

Additionally, regarding vulnerable groups in particular, it is worth mentioning behavioural research examining how scarcity affects the way individuals look at problems and make decisions (e.g. Shah et al., 2012; Shafir and Mullainathan, 2013; Mullainathan and Shafir, 2014). For instance, scarcity negatively affects attention, and interventions that reduce 'hassle factors' and/or simplify procedures can lead to positive effects (e.g. providing help completing application forms for college financial aid — a cognitively taxing task — increases the take-up rates of this government aid (Bertrand et al., 2006; Bettinger et al., 2009). Furthermore, low-income individuals can suffer from the stigma of poverty (e.g. being perceived as incompetent, a social burden, etc.), which can lead to poor cognitive performance and disengagement. It is worth noting that a similar stigma can apply to drug users as well. Interestingly, self-affirmation interventions (e.g. asking individuals to describe a personal experience that made them feel successful and proud) can improve performance of low-

income individuals on cognitive measures associated with a number of skills (e.g. solving problems, focusing attention, controlling impulses).

Stigmatisation may impose a burden on individuals and put them at risk of confirming prevalent stereotypes about 'their group', which can lead to distortions to their behaviour (referred to as 'stereotype threat': Steele and Aronson, 1995; Bertrand et al., 2006). For instance, in a study conducted by Croizet and Claire (1998), students with low socioeconomic status (stereotypically perceived as having lower intellectual ability) performed worse in a test than those of high socioeconomic status when the test was presented as a measure of intellectual ability, but not when it was presented as non-diagnostic of intellectual ability. Similarly, it is possible that the salience of a 'poor, incapable, untrustworthy' identity among individuals in vulnerable groups leads to substantially negative effects and self-confirmation behaviour (Bertrand et al., 2006).

### **3.2 Behaviourally informed interventions**

There are several ways in which individuals experience limited or bounded rationality and are influenced by biases and factors such as impulsiveness, limited willpower and social norms. In this subsection, we explore how behavioural biases (at odds with the concept of *Homo economicus*) can be displayed, and we suggest behavioural levers to design contexts favouring better and healthier choices.

#### ***Changing the choice architecture***

Behaviourally informed interventions can involve altering the way options are presented or a message is framed, to nudge people towards better choices without limiting options or using economic incentives (Sunstein and Thaler, 2008). The ultimate goal of this type of intervention is to help individuals carry out the intentions they themselves have but have failed to adopt. Nudges might involve establishing an opt-out default to encourage organ donation and reduce status quo bias (Johnson and Goldstein, 2003), keeping cigarettes out of sight to reduce cues for smoking (Wikipedia, 2015), reducing alcohol outlet density to lessen alcohol consumption (Huckle et al., 2008) and presenting general practitioners with on-screen prompts for asking the patient about smoking behaviour (Michie and West, 2013). It is interesting to note, for example, that a National Epidemiologic Survey on alcohol abuse in the US found that only one in seven individuals with alcohol use disorder reported ever having received treatment (with participation in Alcoholics Anonymous being the most common option) (Cohen et al. 2007). This points to the potential added value of small nudge intervention (e.g. on-screens prompts).

In the field of health prevention, changes in the choice architecture have been implemented to deter paracetamol overdose, a common method of suicide and non-fatal self-harm that is often impulsive. In 1998, the UK changed the laws on paracetamol packaging, making it illegal for drugs to be sold loose in large containers. Packs were restricted to a maximum of 32 tablets in pharmacies and 16 tablets elsewhere, and multiple packs could not be bought at the same shop. This change in legislation presented only a small barrier, as people could still buy packs in other outlets. Nonetheless, these small barriers ('friction costs') led to an estimated 43 % reduction in suicides in the 11 years following the introduction of the legislation (Hallsworth et al., 2016a). Furthermore, when decision-making is complex, decision aids can guide individuals into making choices that have better outcomes. For example, an easy-to use and informative e-health psychoeducational tool has been designed for patients and clinicians to prevent the risk of overdose (Baldacchino et al., 2016).



### ***Commitment devices***

People often set goals (such as smoking less, exercising more, saving more) but fail to put them into practice. In this context, evidence shows that people are more likely to achieve self-consciously determined behaviours if they commit to very specific rules, rather than make general plans (Gollwitzer, 1999). Commitment devices (also referred as implementation intentions) consist of arrangements that help individuals fulfil a plan for future behaviour that would otherwise be difficult to attain because of intrapersonal conflict (Bryan et al., 2010). Such devices have been effective in reducing overconfidence, boosting self-control and achieving self-regulation. Studies find that encouraging individuals to make a plan increases the frequency of health behaviours such as cancer screening (Sheeran and Orbell, 2000), healthy eating (Gollwitzer and Sheeran, 2006) and quitting smoking (Giné et al., 2014).

### ***Feedback mechanisms and reminders***

The provision of feedback is quite common in psychosocial and health behaviour interventions. It can take many forms (e.g. verbal or written communication), have various target groups (e.g. an individual, a group of people), cover diverse sorts of content (e.g. generic, personalised) and occur in multiple health contexts (e.g. prevention, health monitoring) (DiClemente et al., 2001). Personalised feedback, being the most individualised type of feedback, can be used, for instance, in the case of cannabis users, to encourage them to overcome the barriers that prevent them from seeking treatment, to address lack of awareness of treatment options and to reduce the stigma associated with accessing treatment. Risk and normative comparisons are usually used to tackle addiction issues. In this context, a two-arm randomised trial targeted at cannabis users tested the short-term effectiveness of a brief and extended personalised feedback version of an online screening programme providing tailored, individual and real-time feedback on the use, motives and harms of cannabis consumption. The study showed that brief online self-completion interventions reduced cannabis use in the short term (Copeland et al., 2017).

Reminders to follow through on a desired course of action (such as automated text messaging and letters) are a low-cost and scalable lever that addresses the procrastination caused by limited attention. Evidence shows that reminders can effectively increase adherence to treatment (Pop-Eleches et al., 2011) and medication (Thakkar et al., 2016), and encourage immunisation (Szilagyi et al., 2000) <sup>(1)</sup>.

### ***Framing***

One of the findings of Tversky and Kahneman's (1985) prospect theory was the standard risky-choice framing effect, whereby people react differently to the same trade-off, depending on whether it is framed as a loss or a gain. For example, in a study conducted in 1987, more subjects opted for surgery when they were told the probability of surviving rather than the probability of dying (Wilson et al., 1987). The relative influence of gain- and loss-framed messages depends on the perception of the risk or uncertainty associated with the recommended behaviour (Rothman et al., 1999). Specifically, gain-framed messages are more effective in promoting health-affirming (prevention) behaviours, such as blood transfusions (Farrell et al., 2001) and healthy eating (Levin et al., 1998), while loss-framed messages are more effective in promoting illness-detecting (screening) behaviours (Consedine et al., 2007).

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<sup>(1)</sup> Nevertheless, evidence also shows that feedback mechanisms and reminders are not always effective (Yuma-Guerrero et al., 2012; Tanner-Smith and Lipsey, 2015).

### ***(Hot-cold) empathy gap***

People have a tendency to underestimate the influence of visceral states (e.g. hunger, thirst, anger) on their own behaviour or preferences (Nordgren et al., 2009; Samson, 2017). For instance, when smokers were asked to make predictions about the value of cigarette access in a future session when they would be craving, those in a cold state (i.e. low-craving state) underpredicted the value they would place on smoking, while those in a hot state did not (Sayette et al., 2008). Underestimation of craving has also been observed in heroin users (Badger et al., 2007). Interestingly, research has shown that recovering smokers with higher impulse-control beliefs (i.e. inflated beliefs about their capacity to control cigarette cravings) also report greater exposure to more smoking temptation, and are more likely to relapse four months later. This suggests that inflated beliefs about capacity to overcome addiction/handle cravings can lead to overexposure to temptation, and promote impulsive behaviour and drug relapse. Interventions aimed at shifting these beliefs may thus hold promise in the context of cessation treatment (Nordgren et al., 2009). Also, while motivational aspects play a role in the tendency for individuals to set unrealistic health goals, research suggests that these unrealistic goals are also the result of biased judgements about ability to control visceral impulses, and are affected by current state (hot/cold) (Nordgren et al., 2008). Additionally, people are prone to stigmatise impulsive behaviour, and research suggests that this may be partly due to their underestimation of the motivational force of cravings. For instance, individuals in a cold state (e.g. not hungry) evaluated a related impulse behaviour (impulsive eating) less favourably than those in a hot state (Nordgren et al., 2007).

### ***Incentives and rewards***

When immediate costs and benefits exert disproportionate influence on people's choices relative to those that will be experienced some time in the future, individuals exhibit present bias. Present bias (short-sightedness or myopia) refers to the tendency to choose a small reward today over a larger reward later. In the case of drug consumption, 'costs' are experienced in the present and benefits (e.g. long-term health) are delayed. In this context, evidence shows that (financial and non-financial) incentives and disincentives (e.g. increasing price, limiting choice) can be effective in altering addictive behaviours (Lussier et al., 2006). For example, increasing immediately rewarding aspects of ending smoking by offering financial incentives had a positive effect on long-term rates of smoking cessation among employees of a large, multinational company in the US (Volpp et al., 2009), and providing a high-return savings opportunity encouraged sobriety among rickshaw pullers in India (Schilbach, 2015). Similarly, evidence shows that contingency management (i.e. a behavioural intervention technique used in the treatment of drug dependence that systematically sets consequences to weaken drug use and strengthen abstinence) is effective in reducing cocaine use and in keeping opioid-dependent patients in treatment (EMCDDA, 2016).

### ***Incentives and rewards — the role of time (temporal) discounting***

People have a tendency to seek immediate gratification, such that they overvalue present rewards relative to future ones, as discussed above. Additionally, research shows that the value of a reward decreases with its distance in time (referred to as time discounting), and does so in a non-linear and non-constant manner (i.e. very rapid decrease for small delay periods and slow decrease for longer delays) (Badger et al., 2007; MacKillop et al., 2011; Samson, 2017). The more precipitous this rapid decrease in a reward value is, the more impulsive the individual is considered to be (MacKillop et al., 2011). In this context, a study with heroin addicts showed that they underestimated the force of their own future drug craving when not deprived, such that they valued an extra dose 5 days later at USD 60 when opioid deprived, but at only USD 35 when satiated. It is possible that such underestimation of future cravings could lead to overconfidence in an ability to quit, or an increase

of willingness to quit in moments of satiation (Badger et al., 2007). Interestingly, a study with cocaine-dependent individuals has also shown that future drug losses are weighted more heavily than gains (i.e. individuals showed a relative preference for receiving a smaller amount of cocaine now rather than a larger amount after a delay, but for losing a smaller amount now rather than a larger amount after a delay). This overweighting of drug losses by addicts could play a role in decisions to quit, seek treatment or remain abstinent (Johnson et al., 2015).

Additionally, research has found a positive relationship between an individual's discount rate and length of heroin use (Cheng et al., 2012) or severity of alcohol use disorders (Badger et al. 2007; MacKillop et al., 2010). Likewise, in a four-year longitudinal study with high-school students (15 to 21 years old), Audrain-McGovern et al. (2009) found that delay discounting was higher among those who subsequently initiated or increased cigarette use than among non-smokers. Discount rates could potentially be explored as a way to screen for smoking vulnerability and identify subgroups to target using intensive prevention actions that encompass elements directed at impulsivity (Audrain-McGovern et al., 2009). Furthermore, it has also been suggested that delay discounting may function as a behavioural marker for addiction, based on evidence that discount rates are, on average, higher for individuals who are drug users, are positively correlated with quantity of a drug used, and are systematically associated with measures of abstinence, cessation or relapse, among others. If confirmed, this could lead to promising avenues in terms of screening for new treatments and personalisation of prevention and/or treatments (Bickel et al., 2014). Indeed, a number of studies have found that delay discounting predicts treatment outcomes for alcohol and other drugs (MacKillop et al., 2010; Johnson et al., 2015).

### ***Reducing attentional bias***

Attentional bias is the tendency of our perception to be affected by our recurring thoughts. For example, individuals dependent on alcohol tend to pay closer attention to stimuli in their environment that are linked to alcohol. Such stimuli have greater prominence and can trigger cravings in a way that would not be the case for non-addicts (Field and Cox, 2008). Evidence shows that training techniques help substance users overcome their attentional bias for substance-related stimuli (Fadardi and Cox, 2009). Furthermore, computerised and mobile attentional training offers new possibilities for support that are highly engaging, tailored to individual needs, easy to administer, and allow progress to be monitored over time (Cox et al., 2014).

### ***Social norms***

Human health is a social matter, not just an individual one. As such, it is influenced by the rules signalling appropriate behaviour. Social norms interventions communicate the (positive or negative) truth about what the majority thinks and does (i.e. peer norms), on the basis of credible data drawn from the target population (Perkins, 2003). Such interventions have yielded positive results, such as reducing alcohol and other drug use among adolescents (Stock et al., 2016), and increasing the use of HIV prevention strategies among injecting drug users (Latkin et al., 2013). Nevertheless, two aspects are worth mentioning. Firstly, even though we have a tendency to conform to social norms, we often misperceive the norms/behaviours of others. For example, a study found that a consistently large percentage of students overestimated the quantity of alcohol consumed by their peers, regardless of the actual campus drinking norm. Thus, failing to reduce such misperceptions will lead to neglecting a relevant component of prevention (Perkins et al., 2005). Secondly, the use of social norms is unwarranted when the behaviour one is trying to discourage, rather than the appropriate behaviour, is relatively common. In such cases, communicating that the 'inappropriate'

behaviour is the 'norm' (referred to as Cialdini's 'big mistake') can have counterproductive effects (Lourenço et al., 2016).

### 3.3 Evaluating the impact of the intervention

A recent systematic review of reviews evaluating the effectiveness of policies and interventions in Europe, focusing on substance use (alcohol, tobacco, illegal drugs) and gambling in young people, yielded interesting findings. The focus was on policies and interventions in the areas of prevention, treatment and harm reduction, and the analysis revealed that 'there was little high-quality evidence [...] to conclude "what works" ' (Conrod et al., 2015, 124-125). Although this study focused on young people's addictive behaviours, the issue of lack of evidence of the effectiveness of interventions addressing drug problems may be more widespread (Anderson and Gual, 2015). In a field such as drug policy, where negative effects can pose severe consequences, one must be particularly wary of deploying initiatives that have not been explicitly demonstrated to have any benefit.

There are several ways to determine the efficacy and effectiveness of an intervention. To this end, randomised controlled trials (RCTs) constitute the most robust method as they allow any cause-effect relationship between treatment and outcome to be identified (Lourenço et al., 2016). This is achieved by two key features of this type of trial: (1) the use of a control group, which acts as a baseline against which the treatment (or experimental) group can be compared; and (2) the fact that participants are randomly assigned to the control and the treatment group(s) (J-Pal Europe, 2011; Rafael Almeida et al., 2016). It is worth noting, however, that qualitative research can be particularly valuable to guide or fine-tune experimental research such as RCTs. For example, qualitative research (e.g. focus groups, interviews, journey maps) can be carried out to gain a better understanding of drivers and barriers of the investigated behaviour, especially in cases where evidence from available research is limited. Qualitative research can also be valuable after carrying out an RCT to help understand patterns in the data that are unexpected or ambiguous. Quantitative and qualitative methodologies are thus complementary (Van Bavel, 2016). However, while RCTs constitute the most robust type of evaluation method, the use of this experimental approach is not always feasible <sup>(2)</sup>.

Notwithstanding the power of RCTs as an evaluation tool, it is essential to stress that there is no one-size-fits all approach. Rather, the choice of the evaluation method must take into account a number of factors, including the goals of the evaluation, the outcome measures, the context of the intervention, the cost of the intervention and the degree of uncertainty about its effectiveness. The choice of the evaluation method will to a certain extent determine the conclusions that can be drawn from the data. For example, while RCTs allow a cause-effect relationship to be identified, other types of evaluation designs will warrant more caution in the interpretation of findings, because of their inherent limitations. Additional evaluation methods — such as after-only designs, before-after or pre-post designs, or field experiments — are described in Rafael Almeida et al. (2016).

There are a number of important steps to take when setting up an evaluation, namely:

- Following the identification of the target group and of the target behaviour, clearly determine the behavioural elements (i.e. causes) of the target behaviour and select which one(s) the intervention will tackle (Rafael Almeida et al., 2016).

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<sup>(2)</sup> Some research has looked at ways to address potential ethical or practical issues linked with the use of RCTs for health promotion research (see, for example, Rosen et al., 2006).

- Consider using qualitative methodologies, such as focus groups or case studies, at an early phase of development of an intervention for identifying the drivers and/or barriers to the target behaviour. This information is essential for designing interventions that are aligned with the reality of the situation. For example, if lack of time or resources is the main barrier to behavioural change among health professionals, an intervention focused on increasing knowledge is unlikely to work (Campbell et al., 2000).
- Set specific, measurable, attainable, realistic and timely objectives, together with the corresponding outcome measures, to properly evaluate the impact of the intervention (i.e. effectiveness evaluation) (Hornik, 2002; Rafael Almeida et al., 2016).
- Set measures for evaluating whether or not the intervention is being implemented as intended (i.e. process evaluation), and whether or not it is having any adverse effects (Craig et al., 2008).
- (Qualitatively or quantitatively) pretest the intervention to ensure that it has the intended effects on the target group. Pretesting can be also useful to identify possible implementation problems (e.g. if the intervention entails weekly hour-long sessions and the participants are unable to meet this requirement, intensity and duration of the intervention would need to be reassessed). Participants in the pretesting should be as similar as possible to the target group to obtain workable insights (Rafael Almeida et al., 2016).
- Define appropriate inclusion and exclusion criteria for the intervention, and avoid selection bias (i.e. selecting a set of participants for the initiative who are not representative of the target population). The decision about who to include is key, as are the sample methods used (White, 2009; Rafael Almeida et al., 2016).

For a more detailed overview of factors that underlying the design of robust evaluation designs, see earlier work (Campbell et al., 2000; Hornik 2002; Craig et al., 2008; J-Pal Europe, 2011; Rafael Almeida et al., 2016) <sup>(3)</sup>. It is also worth stressing that it essential to plan an evaluation from the start and to use an evaluation design that establishes robust and feasible outcomes for assessing the actual impact of the intervention. Furthermore, as noted by Campbell et al. (2000), ‘the use of an iterative phased approach that harnesses qualitative and quantitative methods should lead to improved study design, execution, and generalizability of results’. Finally, in the field of health, it is worth mentioning work by Sackett and colleagues (Sackett, 2000) that sees evidence-based medicine as underpinned by ‘the integration of the best research evidence with clinical expertise and patient values’. Such evidence-based medicine process involves five steps: (1) assess the patient and determine the pertinent issues; (2) ask a clinical question; (3) acquire the best evidence; (4) appraise the evidence; (5) apply the evidence to the patient (Sackett, 2000; Medical College of Wisconsin Libraries, 2017).

### **3. Recommendations for drug policy and practice**

As demonstrated in the previous sections, behavioural insights are one of the sources of evidence informing policies across a wide range of domains, including the field of illicit drugs. In this concluding section, we put forward five recommendations that we consider key in the application of behavioural insights to policy.

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<sup>(3)</sup> Additional factors include conducting a thorough literature search to identify the evidence base and avoid pitfalls; using appropriate control groups and, where possible, RCTs; using large enough samples to detect the expected effects; measuring the effects at several points in time (both pre- and post-initiative); triangulating evidence (i.e. using more than one approach to show the effects of the initiative); assessing attrition rates (i.e. drop-out rate from the initiative); and limiting the potential for bias due to unblinded trials.

First, it is important to emphasise that information provision alone does not always work and can even increase inequity, as seen in recent trends in obesity and smoking. For behavioural change to occur, fundamental aspects — such as motivation, ability, simplicity, elimination of friction and provision of incentives and support — ought to be considered.

Second, one cost-effective way to create decision-making contexts that promote increases in welfare is to change the choice architecture. The examples provided in the previous sections, deterring paracetamol overdose, reducing cues for smoking and increasing organ donations, though they are not panaceas for every behavioural issue, show how changes to the choice architecture can lead to effective outcomes in an often quick and inexpensive way.

Third, being mindful that one-size-fits-all solutions do not work and of the power of context in decision-making, the application of behavioural insights is also an opportunity to be more effective at the local level. Particularly in the field of illicit drugs, where aspects such as market size and safety of the products sold are difficult to grasp, it is sensible to design and deploy interventions that address specific contextual and population needs without necessarily requiring massive human and financial resources. Moreover, interventions carried out at the local level take advantage of proximity to citizens, which can facilitate the monitoring and measuring of results. Such results can also be used to understand what works or does not work, and possibly inform future interventions to be deployed at the regional and (inter)national level.

Fourth, there is still a need to increase knowledge about the consumption of illicit drugs, including the complexities associated with its country-specific features. In this respect, creating value from available data<sup>(4)</sup> and collecting data more systematically can certainly bring value added. Furthermore, just as linking patient data is crucial for improving quality across pathways of care, merging various datasets (e.g. health and socioeconomic indicators of drug users) might generate evidence in the illicit drugs field that is currently being overlooked. Such evidence can inform better-targeted interventions and more effective prevention activities, for instance.

Fifth, and finally, we recommend always evaluating the impact of interventions, making sure that the most appropriate evaluation design is used and setting up robust and feasible metrics that allow the real outcome(s) to be determined and measured.

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<sup>(4)</sup> A study using data on actual prescriptions for real patients showed that physicians' belief formation is strongly influenced by salience effects. Feedback from switching patients — the ones the physician decided to switch to a clinically equivalent treatment — received considerably more weight than feedback from other patients. Furthermore, salience effects slowed physicians' speed of learning and the adoption of a new treatment, which raises welfare concerns (Camacho et al., 2011).

### **Box 1. What to avoid when applying behavioural insights**

#### **Deploying interventions without gathering evidence on potential effects**

The evaluation of a media campaign aiming to reduce cannabis use found that the adolescents exposed to the campaign were slightly more likely than adolescents not exposed to the campaign to think that smoking cannabis with friends would be enjoyable (Wammes et al., 2007).

#### **Hawthorne effect/observation bias**

This is the phenomenon whereby subjects in behavioural studies change their performance because they are aware that they are being observed. This can be of particular concern in interventions involving self-reported data. For example, answering questions on drinking in brief intervention trials appears to alter subsequent self-reported behaviour. This potentially generates a bias by exposing non-intervention control groups to an integral component of the intervention. The effects of brief alcohol interventions may thus have been consistently underestimated (McCambridge and Kypri, 2011).

#### **Choosing the wrong messenger**

A study using motivational interviewing to reduce problem drug use in safety-net primary care patients and to increase admission to specialist substance abuse treatment failed to involve participants' primary care physician in the delivery of the intervention (Roy-Byrne et al., 2014).

#### **Selecting inadequate outcome measures**

A study using motivational interviewing to reduce problem drug use in safety-net primary care patients and to increase admission to specialist substance abuse treatment measured the frequency but not the quantity of drug use (Roy-Byrne et al., 2014).

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