Learning lessons: how to practice nudging around the world

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ABSTRACT

The aim of this article is to cover three things: (1) to introduce the context behind why a report prepared by the Organisation for Economic Co-operation and Development (OECD) in 2017 would be of such importance to researchers in various academic disciplines and public policy, (2) to present the details of a simple classification system that was applied to all 111 case studies of behavioural interventions (better known as nudges) referred to in the OECD (2017a) report, and (3) to discuss what needs to be done to help advance practitioners' pursuit of effective behavioural interventions. This article aims to highlight the importance of accurately cataloguing the types of behavioural interventions that have been trialled/implemented across the world. By adopting an agreed classification system, researchers and practitioners can benefit from knowing what can work, and where it can work, as well as what does not work, in order to be better armed when considering the use of behavioural interventions to solve social policy issues.

The use of behavioural change interventions (BCI) is a global phenomenon. Why? Because they can, in theory, either singularly or in combination, be used to modify behavioural outcomes in large groups of people, and possibly even to population levels (Michie, Van Stralen, and West, 2011). Typically, a particular problem (e.g. public littering), in a particular context (e.g. parks) is identified by a practitioner (e.g. public policy maker), and a specific behaviour is targeted (increasing the use of litter bins in parks) through a BCI (e.g. paint the litter bins in attractive colours to draw attention to them which should motivate people to use them more often). The aim of this piece is to cover three things: (1) to introduce the context behind why a report prepared by the Organisation for Economic Co-operation and Development (OECD) in 2017 would be of such importance to researchers in various academic disciplines and public policy, (2) to present the details of a simple classification system that was applied to all 111 case studies of behavioural interventions referred to in the OECD (2017a) report, (3) to discuss what needs to be done to help advance practitioners' pursuit in applying behavioural interventions in an effective manner.

Section 1: why is an OECD report on the use of behavioural interventions across the world important?

Before we can address this point, here is a little more context behind BCIs. One of the most well-known examples of a framework of BCIs is nudge (Thaler and Sunstein, 2008). Nudges are a programme of different types of BCIs, all of which are designed to alter people's behaviour by altering the choice context (or choice architecture) in such a way as to make the optimal option most salient/easy to select, but without substantially changing the underlying financial incentive structure (Thaler and Sunstein, 2008). These criteria help to set out the boundary conditions for what constitutes, and what does not constitute, a nudge-type BCI. The use of a default that auto-matically engineers an outcome without much thought, effort and awareness on the part of the individual that is being 'nudged' is a classic example. The poster child being an opt-out default system on organ donation registers. This means that to increase the shortfall in available organs to be donated, everyone is automatically registered to donate their organs, and if they do not wish to do so, they can opt-out. While a good idea in principle there are various concerns about this (for a recent discussion see Lin et al., 2018). Nevertheless, what makes this an example of a nudge-type BCI is that the only critical details that are changed in this decision context are the way in which the information and the options are presented. For instance, there are no financial inducements to persuade choices one way or another, in fact anything along these lines exclude it from being a nudge. So given these details, what about interventions that are designed for the purpose of behavioural change that are not nudge-type BCIs?

Even when the boundary conditions are provided, there appears to be ambiguity with respect to whether or not some interventions are taken to be a nudge-type BCI. For example, introduc-ing a small financial cost (e.g. 5 pence (6 cents)) for using a new plastic shopping bag in a super-market is, by many, an illustration of a nudge-type BCI (Rivers, Shenstone-Harris, and Young, 2017). It is designed to discourage people from using plastic bags, in order to reduce reliance on plastics, and reduce waste that impacts the environment (Ritch, Brennan, and MacLeod, 2009). However, the cost was not designed to deter consumers from using bags because of the sheer expense of buying them; rather it was supposed to disrupt a habit and force people to make an active choice about whether or not to use a new disposable bag (Convery, McDonnell, and Ferreira, 2007).[1] If at this stage the reader is confused, then this is perfectly warranted. A small charge for using plastic bags excludes this an example of a nudge-type BCI, though this depends on how strict one is with the definition of nudges 'any aspect of the choice architecture that alters people's behavior in a predictable way without forbidding any options or *significantly* changing their economic incentives' (Thaler and Sunstein, 2008, 6 – authors emphasis). To put this in context, let us consider another example.

What about introducing a sugar tax in which a levy is placed on manufacturers of soft drinks that contain relatively high proportions of sugar in their products? While the rationale for this method is to target a social policy issue much like other nudge-type BCIs, which in this case is dissuading people from buying sugary drinks that are bad for their health (Mytton, Clarke, and Rayner, 2012), this is not treated as a typical nudge-type BCI. Demand for sugar-sweetened bev-erages is price sensitive (PHE, 2018; Escobar et al., 2013). One rationale for not considering a sugar tax as a nudge-type BCI is that the drinks manufacturers may pass on the cost of the levy to customers, making highly sugary drinks more expensive than less sugary drinks, and that this change in the underlying incentive structure will impact consumer behaviour.[2] Presented in this way, a tax of this sort involves changes to the underlying incentive structure, which might mean that drinks manufacturers pass on the cost of the levy to customers making highly sugary drinks more expensive than less sugary drinks. For instance, this might translate in terms such that a 10% tax to the manufacturer on every can of popular sugary drink would amount to approxi-mately 7p (9 cents) cost to the consumer. Conceptually the imposition of a tax excludes this as a nudge-type BCI because Thaler and Sunstein explicitly say so, but in absolute terms, the financial

penalty imposed on the consumer as a sugar tax is virtually no different to that imposed for using plastic bags. Yet one is more comfortably treated as a nudge-type BCI and the other is not. We revisit this point later with respect to the OECD's broad definitions of BCIs and their exclusion criteria for BCI cases that did not make it into the main report.

Much of the academic community has been focused on answering questions around the theoretical foundations of nudge-type BCIs (Lin, Osman, and Ashcroft, 2017), in particular because of claims that BCIs cause changes in behaviour outside of the awareness of the nudged individual (Osman, Lin, and Ashcroft, 2017). Other matters of academic investigation concern public opinion about nudge-type BCIs (Sunstein, 2016), public opinion about the designers of nudge-type BCIs (Osman et al., 2018), as well as evaluations of their effectiveness (Michie, et al., 2018; Sunstein, 2017) and the ethical concerns they raise (Bovens, 2009; Schmidt, 2017). Of course there has also been considerable work examining nudge-type BCIs and their effectiveness in a variety of specialised domains (e.g. promotion of healthy activities) (e.g. Drescher, Roosen, and Marette, 2014; Glasgow, Vogt, and Boles, 1999; Gorton et al., 2009; Lin et al., 2017).

Work of this kind can only get researchers and practitioners so far. In fact, what seems to be lacking is a comprehensive analysis that allows researchers to evaluate the effectiveness of actual BCI methods that have been used globally by various government departments and policy related institutions. In a discursive piece, this point was made (Osman et al., 2017), with a solution in mind. The solution involved appealing to the OECD to keep a database of BCIs that have been implemented, which could be updated annually. The contents of the database would, by necessity, include basic experimental details (e.g. when it was conducted, how long it was implemented for, number of participants, the sector it was implemented in, outcome measures, and cost of trialling the method). Without these details, the data-base would not serve its function, which is to enable fruitful analyses (and meta-analyses) that could help to answer practical questions that practitioners might ask, such as 'if it could be scaled-up, which BCI would work best to improve *x* behaviour at a population level?' 'which BCI works best for X public policy issue?' 'how much would I save if I used a BCI compared to a typical regulatory instrument (e.g., mandate, tax, ban)?'

At the same time that this solution was proposed, the OECD published a report (OECD, 2017a) titled 'Behavioural insights and public policy: lessons from around the world'. It had collated a total of 111 case studies of BCIs trialled and/or implemented from central and local governments, administrative and regulatory agencies, and legislators from across the world.[3] The BCIs that were included are based on the application of behavioural insights to policy. The OECD set out their particular definitions of behavioural insights, and behavioural experiments, which is worth drawing attention to.

'Behavioural insights aim at improving the welfare of citizens and consumers through policies and regulations that are formed based on empirically tested results, derived using sound experimental methods. Behavioural insights is one discipline in a family of three, the others being behavioural sciences and behavioural economics, which mix traditional economic strategies with insights from psychology, cognitive science and other social sciences to discover the many "irrational" factors that influence decision making' (Lunn, 2014, OECD, 2016). The domain of behavioural insights is unclear here, since, for instance, there is no mutual exclusivity between psychology, cognitive science and social sciences. Psychology by definition falls under the social sciences, and cognitive science, by definition, includes psychology under its umbrella of disciplines. That aside, what is worth highlighting in this definition is that BCIs based on behavioural insights, as the OECD sees them, are an essentially inductive approach to policy making that uses psychology (however it is referred to by the OECD) to empirically determine how people make decisions (rationally or otherwise): the OECD treats behavioural interventions as 'policy initiatives which are designed explicitly on previously existing behavioural evidence and/or based on a new experiment' (OECD, 2017b). This definition appears to be unhelpful in that its only

exclusion criterion for methods that are not BCIs is that they are not behavioural, but this is rather vague given the very broad details of what is behavioural.

Focusing on these details with such specificity is more than just an exercise in pedantry. The reason for scrutinising the OECD's definitions of behavioural insights/interventions is that they provide some indication of the types of cases on which analysis can potentially be conducted in order to be able to answer the aforementioned practical questions. Similarly then, it is also worth examining the details regarding the inclusion/exclusion criteria for the 111 cases of behavioural interventions in the report. The OECD contacted central and local governments, administrative and regulatory agencies, and legislators, who provided reports containing details about the interventions that they have used. This process was intended to capture ' … institutions and processes aimed at supporting the application of behavioural insights with a view to understanding the extent to which applications are embedded in policy making' and 'types and practices of behavioural insight-oriented practices'. (OECD, 2017a, 26). Outside of these details, there are none regarding the total response to this call, other than the report indicating that a total 159 cases were collated. There are also no details on the exclusion criteria which were applied to reduce this number to the final 111 which made it into the main report. Needless to say, this is problematic when trying to determine where the OECD drew the line at 48 cases, and why out of those 111 cases were also included economic modelling methods, and desk top literature reviews. Still, the report then presents the 111 cases along the following criteria: (1) the country the BCI took place in, (2) policy domain, (3) start and end date of BCI, (4) objective of the BCI, (5) the type of BCI used and (6) the application of the BCI. Looking at Hoffmann et al.'s (2014) widely cited recommendations for a checklist to improve the description of BCIs to facilitate their future replication, the details provided by the OECD (2017a) fall rather short of what is necessary to achieve this goal. Nevertheless, the next section provides some insights around what was presented by expanding on the categories included in the OECD (2017a) report.

Section 2: classification system applied to all 111 case studies of BCIs referred to in the OECD (2017a) report

So, while the OECD report lists in some detail the 111 BCI cases, it does not provide an overall summary of them that easily allows for the kind of comparison that would serve the purpose of addressing the kinds of questions that practitioners and researchers might ask[4]. Therefore, to help with this, this section presents a summary of the core details extracted from the 111 cases included in the OECD report. A link to the full summary table is provided[5] which classifies the 111 cases along 19 criteria which were developed by the authors of this article. The purpose of this section is to draw attention to some of the key criteria that may be of interest to the reader, and what seems to be missing, which the last section of this article discusses in more detail.

The details of the report (see Table 1) extracted against the 19 criteria were coded as follows: (1) *Date recorded*= (actual date of initiated BCI), (2) *Length in weeks* = (number of weeks the BCI was implemented), (3) *Sector* = (Business, Charity, Consumer protection, Education, Energy, Environment, Financial products, Health and safety, Labour market, Public service delivery, Tax, Telecommunications), (4) *Purpose* (1 = targeting behavioural change, 2 = increasing understanding of behaviour in the sector), (5) *Country*= (Australia, Canada, Columbia, Costa Rica, Denmark, EU, Germany, Ghana, Hungary, Ireland, Israel, Italy, Kenya, Moldova, Netherlands, New Zealand, Qatar, Singapore, South Africa, Spain, Sweden, Uganda, UK, US, Zambia), (6) *Organisation*= (full list included in the Full Summary table), (7). *Collaboration with University*= (yes, no), (8) *Presence of a baseline/control condition*= (yes, no), 9. *Presence of an experimental manipulation*= (yes, no), (10) *Type of research approach*= (Field experiment, Laboratory experiment, Literature review, Survey, Interviews, Workshop, Modelling), (11) *Output of the application of Behavioural insights*= (Computation model, Educational/Training provision, Mobile application, Reframing

Table 1. Criteia on which the 111 cases were classified along with the % of the 111 cases that provided information for each of the 19 criteria.

		% of cases in which details were provided
1	Details of the start date of the BCI	85%
2	Details of the Length of study	65%
3	Sector targeted by the BCI	100%
4	Purpose of the BCI	100%
5	Country in which the BCI took place	100%
6	Details of Organisation commissioning the BCI	100%
7	Was it run by or with a university	98%
8	Was a control condition/baseline condition included?	85%
9	Does this involve an experimental manipulation?	99%
10	What type of experiment was it	99%
11	What as the output of the application of Behavioural insights?	86%
12	What type of behaviour was targeted?	86%
13	How many experiments were included?	68%
14	How many conditions were included?	60%
15	What was the sample size?	67%
16	Was the outcome supportive/inconclu-sive/failed?	100%
17	Were statistics included?	68%
18	Were effect sizes included?	0%
19	Was the BIC implemented beyond testing?	75%

choice alternatives, Reframing feedback, Reframing official communication, Reframing pricing of options, Survey), (12) *Type of behaviour targeted*= (choice, judgment), (13) *Total number of experiments*= (No. of experiments), (14) *Total number of conditions*= (No. of conditions), (15) *Sample size*= (No. of participants), (16) *Reported outcome of BCI*= (supportive, informative, failed), (17) *Type of presentation of statistics* = (% of responses, *p* values, means and standard deviations, none), (18) *Presence of effect sizes*= (yes, no), (19) *Implementation of the BCI*= (yes, no). For each of these criteria where information was underspecified or no information was provided, the details in the full summary table specify this.

Basic details around the length of the intervention, the sector in which the BCI was implemented, and the purpose of the BCI. Of the 65 out of 111 cases that included the length of the intervention, the mean length is $M = 51.66$ ($SD = 57.49$) ranging from 3 weeks to 260 weeks, there are 7 cases in which the intervention is still ongoing. The sectors in which BCIs were most often used were Financial products (23%) and Health and Safety (15%), and the sectors in which BCI were least applied were Education (3%) and Charitable giving (1%). Looking at the purpose of the BCI, 80% of cases were designed for a specific purpose in targeting and changing a particular behaviour, the rest of the cases were designed with an exploratory purpose in mind to increase understanding of public behaviour in a given sector.

Details of experimental methods (inclusion of a baseline/control, experimental manipulations, type of experiment, number of experiments, conditions and sample size) and focus of the BCI. Of the 93 cases that included a form of experimental manipulation in the study that would constitute an actual experiment (i.e. not a survey, desk top literature review, workshop, interview, economic modelling) 65% included a control or baseline condition from which to compare the interventions that were implemented. The rationale for focusing only on cases in which some form of experimentation was used is that this would be the most informative basis on which to decide something about the effectiveness of the interventions trialled and/or implemented. Without some form of manipulation in which an intervention was compared against another or a baseline/control, all other cases that have been included in the report cannot be used to reliably assess or infer their impact.

Of the 93 cases that were experimental in nature, 12% were laboratory based studies, and the rest included a field study, with an average of $M = 1.23$ ($SD = 0.65$) experiments included in the case (ranging from 1 to 3), and an average of $M = 3.90$ ($SD = 2.14$) conditions, ranging from 2 to 12 conditions. It was possible to determine the precise sample size of 56 of the 93 cases, with an average sample size of $M = 62975.27$ ($SD = 156030.5$) with a range from 35 to 75,000 participants; it is worth nothing that of the 56 cases reporting actual sample sizes, the variance in sample size is considerable and is likely distorted by the 10 or so cases that include more than 10,000 as a sample size. For the 93 cases, the most common output of the application of behavioural insights was reframing of choice alternatives (42%) and the second most popular was reframing official documentation (24%), with reframing pricing of options (11%) and web/text prompts (9%) as third and fourth most popular, respectively. Looking at efficacy, reframing of choice alternatives (e.g. presentation of food in a canteen, designated areas to smoke, choosing to donate on an organ donation register) generated outcomes that were reported as supportive of a general hypothesis of behavioural change (41%) compared to reframing of official documentation (e.g. letters, fuel bills, information about tax returns) (20%).

Statistics reported, outcome of the BCI, and implementation of the BCI. Focusing only on the 93 cases that would fall under the category of experimental, because they included a form manipulation in the study (independent of whether they included a baseline/control condition or not), 75% reported some form of summary statistic (i.e. %, mean and standard deviation). Only two cases reported an outcome of the application using some form of inferential statistics (though the full details of the inferential statistics used were not presented) by referring to p values, and none of the 93 cases reported any effect sizes. Of these 93 cases, despite the lack of inclusion of specific details around the actual hypotheses tested, based on the assumption that the hypotheses that were tested were designed to see a positive effect of a BCI on behavioural change, 50% reported that findings from the implementation of the BCI was supportive. Looking at whether or not the BCIs that were trialled were implemented beyond the trialled study, 22% of the 93 cases were implemented. Of the 22%, 60% of the cases were based on BCIs that were found to be supportive of the general hypothesis, and the remaining 40% of the BCIs tested were of studies which found the BCI to be informative of the tested hypothesis.

Section 3: what can be done to help practitioners more effectively apply behavioural interventions?

First, it is important to recognise that the OECD (2017a) report is a laudable attempt to provide basic details about the use of BCIs worldwide. By doing so, it sets a precedent for other organisations to do the same, which in the long run will help advance practitioners' and scientists' understanding of BCIs and their effectiveness. However, the report is substantially limited because efficacy cannot be determined in any meaningful way from the details included in the report. We lay out the main reasons for why effectiveness cannot be determined and why this is a serious problem.

It is important to have the actual data in order to be able to conduct any comprehensive analysis of the BCIs. Without being able to look at the data we cannot determine ways of making fair comparisons in order to know what type of BCI works and what does not work, independently of whether or not the BCIs presented in the OECD report were implemented beyond the trial. This is vital because knowing what works and what does not work are both crucial sources of information for practitioners. Just as with any scientific approach, being fully transparent about the evidence gathered enables researchers to develop explanations about the causal relationship between experimental manipulations and their effects. Furthermore, the under reporting of the statistics in the OECD document, along with the absence of precise details of the hypotheses tested does not help matters either. The only details that the reader has to go on are based

on a summary in the 'results and impact' section of each case, from which we extracted information on whether or not the findings were supportive of the aims of the study, generally informative, or failed to show any impact on behaviour. We were not able to do this with much precision, and much had to be inferred using expert judgment, which is not ideal, because this lends itself to subjective assessment, rather than objective analysis. Again, there is little that can be made of the precise outcomes of BCIs presented in the OECD (2017a) report because without knowing what was predicted, how is possible to know whether or not the findings that were presented were actually supportive or not? The reader can only go on faith.

Moreover, in the present article, a major limitation that we faced, is that only broad level categories could be used to classify what type of behaviour was being targeted by the BCI, given that there was no standardisation of the level of detail regarding this or any other details in the OECD (2017a) report. The point being that there was insufficient information on which to extract further details on which to carry out any kind of statisical comparison about the effects on specific behaviours targeted by the BCI.

There were also inconsistent levels of detail regarding the actual BCI itself, and here we need to return to a point made in Section 1 regarding the inclusion criteria for the cases, and the definition of BCI. The cursory analyses included in this article, which focused mainly on the 93 out of the 111 cases that constituted an experiment of sorts, was based on excluding all cases that didn't have a manipulation designed to change behaviour. This means that 18 cases did not even meet this very simple and inclusive criterion. These cases referred to a combination of desktop literature reviews, surveys, computational models, workshops, interviews, and for one case there was no information available. These cases may have been submitted to the OECD because 20% of the 111 cases were designed for the purposes of gathering information about behaviour associated with a particular policy issue, not for investigating how to change behaviour. If the purpose of a BCI is simply information gathering about behaviour in a policy domain then it suggests that, for the OECD, introducing an experimental manipulation to look at behavioural change is not a necessary inclusion criteria for collating BCIs used by government bodies across the world. At any rate, future attempts to gather cases from various governmental bodies on the use of BCIs ought to be more careful about including BCIs that use methods designed to elicit behavioural change, or else the OECD needs to adapt its defintion of BCIs.

The most common details that appear in the OECD report regarding statistics are percentage changes in behaviour after the implementation of the BCI. Here too is a rather substantive problem. Simply reporting the percentage change of the implementation of a BCI on behaviour means next to nothing without knowing the inferential statistics that were used to compare against the baseline/control condition (if it was even included) or another intervention, and the effect size of the change. Enhanced reporting would move us away from merely answering 'did it work (at all)?', to answering more practically useful questions such as 'is the behavioural change seen to have resulted from the BCI a little or a lot?'. Without answers of this kind, practitioners are still going to be at a loss if they were hoping to use the OECD report to get an idea of what BCI to use in a given sector in tackling a particular social policy problem. More to the point the paucity of the details in the OECD report means that the authors of this article were unable to carry out any detailed statistical analysis, which would have preferable because this would be a basis on which other researchers and practioner would benefit from understanding the efficacy of BCIs.

One other major omission is that there are no details about the cost of trialling the 111 cases presented. A few cases do refer to the fact that despite the positive outcomes of a BCI, it would be difficult, for reasons of cost, to implement it on a wider scale, though no precise details regarding this point were provided. It is worth highlighting here that one of the major appeals of using BCIs in the policy world is that they are much cheaper and easier to implement than typical regulatory instruments (e.g. bans, levys, mandates, subsidies, taxes) (Thaler and Sunstein, 2008). One can appreciate that it would be difficult to make fair and direct comparisons of these

types of methods against BCIs on the basis of cost, though some have attempted to do so (Benartzi et al., 2017). However, if the details of the cost of trialling/implementing a BCI were included (obviously taking account length of intervention, sample size, date of implementation and currency) as well as sample size, and the particular target population were identified, then it would be possible to generate some general estimates of the cost of the intervention in order to determine how cost effective it is. Otherwise, if we really have no idea of the reliability of the BCI, the size of the effect, and the cost of implementation, then on what basis should we continue to use them?

Researchers and practitioners would benefit from adopting an agreed classification system. For instance, clinical medicine has the Template for Intervention Description and Replication (TIDieR), for better reporting of interventions (Hoffmann et al., 2014). This check list and guide is supposed to standardise reporting and aid replicability. We advocate going further than this, by also standardising the reporting of results, in order to be able to assess BCIs and their effectiveness, and details about cost should also be included for the sake of complete transparency.

In conclusions, the OECD (2017a) report is a starting point for trying to address challenges that the policy world faces; how to introduce behavioural change in a way that is ethical (which is mostly taken on faith in the report), reliable, and cost effective relative to typical regulatory instruments. As yet, we do not have a way to answer these questions based on what the OECD report has provided, or any current academic study for that matter. If we continue to gather evidence in less than structured and systematic ways, then these questions will remain unanswered. Nevertheless, lssons can be learnt from what the OECD has attempted to do, so that we can find ways of collating information on the use of BCIs that moves us closer to knowing the extent to which practitioners are justified in using them.

Notes

1. For instance the Irish bag tax though only €0.15 was more than six times the average consumer's willingness to pay for a plastic bag (Convery, McDonnell, and Ferreira, 2007)
2. Another rationale for a sugar tax is the expectation that manufacturers will reformulate their products in order to reduce the financial impact of the tax (Briggs, 2016).
3. In actual fact, the OECD set up an online tool in 2013 based on their project titled on 'Behavioural Economics and Environmental Policy Design'. With the aim of 'organising behavioural studies (economic or otherwise) in a way that facilitates the search and identification of studies most relevant for a given policy questions, such as by context, policy domain and type of intervention analysed (OECD, 2017a)'. This of course would be highly informative and useful but for the fact that it is isn't possible to access the database Access the Behavioural Economics and Environmental Policy database.
4. There is an annex (Annex A) to the OECD (2017a) report which present a table of 100 of the 111 cases according to title, area, institution, objective, problem behaviours, insight, intervention, results and impact though the details are presented in a way that makes for an easy comparison (see http://www.magdaosman.co.uk/research-projects/4556122182).
5. http://www.magdaosman.co.uk/research-projects/4556122182.

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