

Nudge Theory:

Literature, Effectiveness, Applications, Implications and Recommendations

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Introduction

Nudge theory is a concept that proposes adaptive designs in order to shape the environment—also known as choice architecture—as a way to influence the behaviour and decision-making of groups or individuals. This leads to increase in the intended behaviour. In recent years, a viable alternative to the traditional “legislate-and-sanction” approach has been sustained: an approach of libertarian-paternalism through behaviour incentives/disincentives defined as nudges. This was first given by Richard Thaler and Cass Sunstein in their book called ‘Nudge : Improving decisions about health, wealth, and happiness’ (2008). Over the years, this concept has received great attention from both researchers and policy makers. Built on data from the behavioural sciences, nudges fall in the class of behavioural interventions that focus on the designing of choice environments that facilitate personally and socially desirable decisions. Freedom of choice of people is not restricted at all here. Mertens et al. (2021) recently conducted a meta-analysis of choice architecture interventions across behavioural domains to check draw upon the effectiveness of nudges. The authors drew on more than 200 studies reporting 440 effect sizes. The results of this study showed that the nudging interventions overall promote change in behaviour with a small to medium effect size. Also, it was seen that the effectiveness greatly depends on the technique and domain where it is used.

Nudging in Public Policies

Nudging in public domains is increasing. Nudging in public policy faces concerns related to manipulation, paternalism, and the removal of choice. However, Sunstein and other proponents pressed on the use of choice architecture and nudge-based interventions in the government programs. Use of behavioural insights for nudge techniques etc. in policy programs first started when the US government recruited Cass Sunstein to head The Office of Information and Regulatory Affairs (OIRA) to streamline regulations. In 2010, the UK established the first Behavioural Insights Unit (BIT) on a trial basis, under the Cabinet Office. This was followed by other countries including the US, Australia, Canada, Netherlands, Germany, India, Indonesia, Peru, Singapore, and many other countries too. Government of England has also set up a 'nudge unit'. Nudges have been further employed in several behavioural domains.

Domain Specific Cases

Reducing Screen Time

Zimmermann and Sobolev (2020) tried to investigate the effect of two digital nudges. The two nudges were: passive nudge and active nudge. Passive nudge included changing the color of the screen (i.e., grayscale mode) to be less engaging; while the active nudge included self-committing to restrictive time limits on phone and app usage. These were compared across the control conditions. The results showed that nudges can be effective tools to support people who wish to change habits; mobile overuse reduction in this case. The passive nudge that was employed showed an immediate and consistent effect on screen time. Participants who were encouraged to activate grayscale mode reduced their screen time by 17.6% compared to the control condition. While, the active nudge with helped people to gradually reduce their screen time. It indicated habit formation. These results were against the participants' expectations that self-monitoring is the most effective and the passive nudge to be the least effective method of reducing screen time. These results were completely in line with the literature—educative (system 2) nudges are preferred over non-educative (system 1) nudges as they are believed to enhance powers of agency (Sunstein, 2016). Jurczyk et al. (2021) developed a web-based application in the form of Google Chrome extension called Romodoro that incorporated the Pomodoro technique. In the conducted study, the authors used two versions of it: one that provided the users with one of the four nudges each day and the other one that provided users with no nudge at all. The four nudges used were: facilitate, confront, social influence,

reinforce. The nudge of facilitate was designed in a way that it reduces mental or physical efforts from the users and works on the individual's tendency to choose the path of least resistance—status quo bias. The specific nudge here was hiding and positioning to ensure that undesired options are harder to reach. It works just like positioning unhealthy snacks toward the final pages of search results in people buying healthy behaviour (Lee et al., 2011). The second nudge of confront worked by leveraging people's tendency to make careful decisions after being made aware of the consequences—regret aversion bias. The specific nudge here was reminding the consequences as it causes people to consider the possible consequences of an action. This was seen in the use of the plugin by Minkus et al. (2015). It detects if there are children in the photos to be posted by a user and asks the user to reconsider posting it or changing the privacy settings for the post. The third nudge of leveraging social influence worked by leveraging the human tendency to conform to what people believe is expected of them because they overestimate the extent to which their actions are noticed by others—commitment bias and spotlight effect. The specific nudge is to leverage public commitment and raise the visibility of user's actions or decisions more visible to others. Prompting the individuals to meet the commitments they believe are expected of them. Anja et al. (2012) developed a system called BinCam—a social persuasion system in which a camera above the kitchen trash takes pictures of waste produced by the household and posts the pictures on social media for other people to see. This improves people's awareness and mindfulness when creating waste. The last nudge of reinforce was based on increasing the presence in an individual's thinking and reinforces specific behaviours—affective heuristic. The specific nudge was focused on instigating empathy. It goes by impacting an object of the user's affections in order to nudge their decision making. This was seen in the study by Dillahunty et al. (2017) that how different visualizations can motivate children's eco-friendly behaviours. All the nudges were incorporated in the user interface. The results of the study by Jurczyk et al. (2021) showed that nudges are an effective way to promote break taking from long screen hours, thus reducing screen time. While no specific nudge out of the four came out to be more effective in comparison to the other three, nudges as a whole proved to be a good persuasion tool compared to no nudge in the control condition.

Healthy Food Consumption

Since nudges focus on altering people's behaviour without forbidding any options, putting fruit at the eye level counts as a nudge while banning junk food does not (Thaler and Sunstein,

2008). Thus, like other nudges, healthy eating nudges also rejects both: the libertarian laissez faire attitudes and even the paternalistic interventions (Capacci et al., 2012). Cadario and Chandon (2019) presented a tripartite model of classifications of nudges: cognitive, affective and behavioural. Cadario and Chandon (2019) surveyed American citizens about their acceptance of different kinds of healthy eating nudges. They focused on the aspect of nudge approval and effectiveness. The results showed that the most effective eating nudges receive significantly lower acceptance than the others. This shows that when asked to choose between the healthy eating nudges, there comes a trade-off between approval and effectiveness. Thus, there is an inverse correlation. Thus, the nudges like size and pack reduction rather than the descriptive nudges, work most effectively. A promising change has been seen in the food consumption behaviour as a result of the nudges. An increase of 15.3% was found in the healthy nutritional choices in the review of 42 general nudge studies (Arno and Thomas, 2016). With the interventions that involve combined effect of alternative placements and nudges, the largest effect is seen (Broers VJV et al., 2017). Most empirical studies to date have been conducted in food laboratory or in short duration pilot food venues (Bucher et al., 2016). Also, a few have been conducted in the restaurant settings (Velema, Vyth and Steenhuis, 2017; Fitzgerald et al., 2018). Menu redesign has also shown to make a difference in the consumer choice (Filimonau and Krivcova, 2017). Kiran et al. (2021) conducted an exploratory research to examine current knowledge, practice, facilitators and barriers to uptake of nudge strategies promoting fruits and vegetables in a sample of post-secondary food service managers. They came across different nudges that are already in use. However, some interesting and effective nudges in the public settings were also found, such as moving target healthy items from bins in the centre of the salad bar to bins at the edge. Kroese, Marchiori and Ridder (2015) conducted a field experiment at the train station to see the effects of nudges on healthy food choices. The nudge involved a repositioning of food products—the healthy products were displayed near the cashier's desk while the unhealthy products were kept elsewhere in the shop. The results showed an increase in the sales of the healthy products.

WHO in its policy brief discusses the effectiveness of nudges in influencing healthy food consumption among the children in schools. This was based on the four case studies conducted: (1) presentation of fruit, elementary school, USA (Swanson, Branscum A and Nakayima, 2009). Selection and consumption of apples and oranges at lunchtime in a cafeteria of an elementary school was examined here. It was seen that the fruits that were sliced and kept rather than the whole, were chosen more. (2) multiple nudges for plant-based foods, secondary

school, UK (Ensaaff et al., 2015). Impact of multiple nudges on the selection by adolescents for plant-based foods in a secondary school canteen was studied here. The nudges included placing fruit on a stand near the till, presenting vegetarian daily specials in grab-and-go pots. Also, emoticon stickers (smiley faces) with sandwiches containing salad along with written prompts for the target foods. Were used. These prompts were “Today’s SPECIAL – Make a fresh choice” for vegetarian specials, “GOOD for YOU” for fruit, and “Sandwiches with a little bit extra – Get more in your sandwich” for sandwiches with salad. In addition to these, availability (visibility) was increased for all target foods. Results showed that selection of target food increased significantly. (3) Multiple nudges for healthier foods and beverages, 10 primary schools, Australia (Delaney et al., 2017). This was in context of online food ordering system. The nudge involved placement. The target foods were listed first within a category. Also, prompts were given to the users for adding target foods with round traffic light labels indicating “best choice”, “select carefully” and “select occasionally”, and other appealing descriptions to target foods had also been used. The results indicated that unlike the control group, these students had quite lower energy, saturated fat and sodium content consumption in their lunch. (4) Photographs of carrots and green beans, elementary school, USA (Reicks et al., 2012). The nudge here involved displaying photographs of carrots and green beans in the school lunch tray compartments. The results showed a significant increase in the consumption of the target foods owing to this nudge.

Increasing the Use of Staircase over Elevators

Stair climbing has various health benefits. Along with that, it helps in conservation of energy too. Avitsland, Solbraa and Amund (2017) conducted a quasi-experimental time-series design. Stair and elevator use were monitored simultaneously in two office buildings, from early September to mid-December. In the experimental condition, stairs and elevators were located next to each other while in the control condition, they were apart, separated by a foyer. Two weeks of baseline monitoring preceded a five-week intervention with stair leading footprints stair-riser banners were added to reinforce the intervention along with the combined intervention. The banners displayed a light blue background, smiley faces on each side and the text, “Thanks for taking the stairs. Have a nice day”. This was followed by monitoring and then intervention was removed and monitored again for some time. Then, a questionnaire was circulated to get data of the staircase using behaviour before and after the intervention. The results were not as expected. The staircase using behaviour decreased as a result of the

intervention. The responses to the questionnaire suggested that the decrease is due to irritation among some employees. It was because they did not like being subjected to influence. Thus, non-verbal and non-informative tactics in influencing stair climbing turn out to be ineffective or even cause a negative reaction. This can be the result when nudges are applied to the settings where there is pre-existing intended behavioural tendency in high frequency. Shirodkhar (2019) also conducted a study to check the influence of nudges in the staircase using behaviour in the university settings. Here, a non-verbal pictorial cue—down and up arrows with a heart—were used to encourage individuals to use the staircase instead of the lift. These signs were placed at the choice area. more change was seen while descending, however, again, not a significant change was observed. However, in another study by Meiden (2018) which was conducted at a Dutch organization. The nudges used were posters next to elevators and again, footprints were used. The results here, unlike the other study, showed an increase in the staircase using behaviour. Also, footprints proved to be more effective than the poster. Hence, the pre-existing behaviour plays an important role in the effectiveness of the nudges.

Pros and Cons of Using Nudges

Despite the benefits of using the nudges, there has been a lot of criticism. It is believed that nudging manipulates our freedom of choice. Pelle Guldborg Hansen and Andreas Maaløe Jespersen, two of the leading experts of Denmark do agree with the criticism but also provide a point of view that other methods like prohibition, injunction, raising prices and taxes also manipulate choices. Infact, these other choices attack on the free will. In the nudges, the choices are manipulated, but free will is not taken away. Moreover, nudges have many cons. One can be that getting the right effect of nudge is always not possible. The nudging intervention can backfire if the nudge is not structurally designed keeping its long-term effects in mind. The outcomes of nudges are also not definite and becomes difficult to predict. For one instance, one campaign aimed at reducing the average household's energy consumption by sending out letters informing people of how much they were using compared to others in their neighbourhood. While these letters prompted some high consumers to limit their energy use, it also had unexpected effects. The people who got to know that they consumed less energy than others in their area, increased their usage. The concept of nudging was brought forward to make wiser, healthier, and overall better choices that benefit them and others around them. However, corporates and marketing agencies use the nudges for their own benefit and as a profit-making mechanism. Moreover, no legislation with the use of nudging techniques has been put forward by the

government to keep a check on its usage. Plus, since they are just manipulating the choices and not forcing, the designer of the choice architecture won't also be culpable.

Conclusion, Discussion and Personal Views

Thus, it can be said that nudging techniques are very useful and can be developed by policy makers, government organisations and other institutions as long as there are serving good for the individual's and the society. As seen, they have proven to be effective across behavioural domains. They have been most effective with the largest effect size in food domains and least effective in the financial domains (Mertens et al., 2021). Setting up defaults and program designs more deliberately shaping choices can improve their deliver in a way leading to betterment of the population. But, the critics too cannot be disregarded. Nudges and other behavioural interventions need to be publicly disclosed and debated. Moreover, research by George Loewenstein and colleagues and several other studies shows that disclosing information about nudges does not make them less effective. In the studies that employed hidden nudges, disclosed nudges and control group. The first two groups with not much significant difference have shown better results contrasting the control group. Thus, nudging techniques should be continued to use widely. However, it should not be compared with the importance of rules and regulations. It is true that since laws are meant for coercion, people get insinuated to break them or go against them. While nudges are generally not known, people do not purposefully attempt to go against them. But, rules and regulations are equally necessary as they help maintain a form and structure in the society. They provide culpability and wrongdoings can be reprimanded, nudges on the other hand, do not provide this option.

Recommendation to Increase the Effectiveness of Nudges

One significant recommendation to increase the effectiveness of the nudges can be the use of subliminal perception in it. Psychologists at the end of nineteenth century also noted that stimuli below the threshold of conscious perception can also trigger sensory processes (Sidis, 1908). These stimuli are of very low intensity or occur very briefly and so they stay below the level of conscious awareness. Such stimuli are called 'subliminal stimuli' (Loftus & Klinger, 1992). It is the combination of two Latin words—'sub' meaning below and 'limen' meaning threshold—the content below the threshold. Since these messages are below the boundary of consciousness, the receptors cannot catch them and the respondents are not aware of the

presence of the stimulus (Cheesman & Merikle, 1984). Gherasim & Gherasim (2020) had stated that the content of the concept of subliminal perception must be approached in close connection with that of sensation and more broadly with that of perception. Marketing and advertising industries have laid off their hand on this psychological phenomenon to their benefit. The concept of subliminal advertising came to light in 1957 when a private market researcher and a psychologist, James Vicary claimed to have increased the sales of Coco Cola by 18.1% and of Popcorn by 57.1% in a six-week study in a movie theatre. The messages “Drink Coca Cola” and “Eat Popcorn” were subliminally flashed on the screen for 1/3,000 of a second while showing the movies (Vicary, 1955). Priming basically refers to an increased sensitivity to a certain stimulus. This increased sensitivity results from the prior exposure to a related stimulus in the form of a visual or audio or message in any other form (Barutchu et al., 2017). Subliminal priming occurs when the stimuli to which the individual is exposed to is below the threshold of conscious awareness (Kawakami et al., 2018). Subliminal priming has been studied extensively by psychologists accompanied by market researchers. In the studies of cognitive psychology, sensation and perception, the subliminal priming studies involve methodologies that have very brief experimental observation periods (milliseconds). The aim here is to understand the influence of that brief exposure on an individual’s decision making after being exposed to a related subsequent stimulus (Greenwald et al., 1996). Thus, nudges should be designed in a way that they provide the sensory stimulus below the conscious level of awareness. This area hence, becomes worth exploring for the choice architects. It might increase the effectiveness of nudges drastically.

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