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To cite this article: J. S. Blumenthal-Barby & Hadley Burroughs (2012) Seeking Better Health Care Outcomes: The Ethics of Using the “Nudge”, The American Journal of Bioethics, 12:2, 1-10, DOI: [10.1080/15265161.2011.634481](https://doi.org/10.1080/15265161.2011.634481)

To link to this article: <http://dx.doi.org/10.1080/15265161.2011.634481>



Published online: 03 Feb 2012.



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Target Article

Seeking Better Health Care Outcomes: The Ethics of Using the “Nudge”

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Policy makers, employers, insurance companies, researchers, and health care providers have developed an increasing interest in using principles from behavioral economics and psychology to persuade people to change their health-related behaviors, lifestyles, and habits. In this article, we examine how principles from behavioral economics and psychology are being used to nudge people (the public, patients, or health care providers) toward particular decisions or behaviors related to health or health care, and we identify the ethically relevant dimensions that should be considered for the utilization of each principle.

Keywords: decision making, health care delivery, health economics, health policy, social science research

Behavioral economics differs from traditional economics in the model of the decision maker that is assumed. Traditional economists are committed to the idea of “homo economicus,” a decision maker who chooses rationally and in a way that maximizes utility at least the majority of the time. As leaders in the field of behavioral economics, Richard Thaler and Cass Sunstein write, “If you look at economics textbooks, you will learn that homo economicus can think like Albert Einstein, store as much memory as IBM’s Big Blue, and exercise the willpower of Mahatma Gandhi” (Thaler and Sunstein 2008, 6). Behavioral economists, on the other hand, know that real people’s judgment and decision making are flawed and biased in predictable ways. Behavioral economists and psychologists have generated a set of principles about how real people engage in judgment and decision making. For example, we are heavily influenced by who communicates information, we are motivated by incentives but we have a stronger aversion to losses than we do affinity for gains, we are strongly influenced by comparisons and what others do, we go with the flow of preset options (i.e., defaults), we are influenced by things that seem relevant and vivid to us, our acts are influenced by subconscious cues such as the arrangement or smell of a room, our emotional associations can powerfully shape our actions, we seek to be consistent with our public promises and commitments, and we act in ways that make us feel better about ourselves (Institute for Government and the Cabinet Office 2010).

Recently policy makers, employers, insurance companies, researchers, and health care providers have developed an increasing interest in using these principles from behavioral economics and psychology to persuade people to

change their health-related behaviors, lifestyles, and habits. In the United States, the National Institutes of Health has designated the “science of behavior change” as a priority by making it a new Roadmap Initiative, and a report has been published detailing the proposed research and implementation agenda (NIH SOBC Workgroup 2009). In the United Kingdom, the Institute for Government and the Cabinet Office published a 96-page report, “MINDSPACE: Influencing Behaviour Through Public Policy,” exploring how behavior change theory can meet policy challenges. In addition, the Department of Health issued “guidance on the most effective behaviour change techniques” in December 2010 in its Draft Structural Reform Plan, and the House of Lords Science and Technology Committee has launched an inquiry into the effectiveness of behavior change interventions.

In this article, we examine how principles from behavioral economics and psychology are being used to nudge people (the public, patients, or health care providers) toward particular decisions or behaviors related to health or health care, and we identify the ethically relevant dimensions that should be considered for the utilization of each principle.

INCENTIVES

Applications

Incentives are primarily used to motivate people to lose weight, take medications, exercise, and stop smoking, but there are novel uses as well. In Malawi, people were offered an incentive worth approximately one-tenth of a day’s wage if they picked up their HIV test results. As a result, pickup doubled (Institute for Government and the Cabinet Office

Dr. Blumenthal-Barby would like to acknowledge support from the Greenwall Foundation Faculty Scholars in Bioethics Program (2011–2014) and the Pfizer Foundation Fellowship in Bioethics Program (2011–2013). Her work on integrating ethics into the science of behavior change is supported by these awards.

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2010, 20). In the United States, teens who already had a baby were paid one dollar a day for each day that they were not pregnant and teenage pregnancies were reduced (Thaler and Sunstein 2008, 234). Incentives have also been used to nudge patients who were subject to medical errors to avoid responding with retaliatory legal action (Kachalia et al. 2010). Incentives have been directed not only to patients and the public but to health care providers as well. To induce physicians to reduce high-risk health factors in their patients, physicians were given a monetary incentive for each risk factor improvement achieved. After 6 months, risk factor management improved 10-fold when compared to a previous 6-month study for the same patients (Springrose et al. 2010). In another example, to combat high hospital costs and increase quality of care, physicians were paid based on the comparison between their past performance and current performance on certain items such as chart completion. After 3 years, hospital costs were reduced by \$25.1 million, and delinquent medical records decreased by 42% (Leitman et al. 2010).

An important caveat about the use of incentives is that people are much more sensitive to avoiding losses than they are to attaining gains of equal magnitude. Thus, incentives are more effective if they are framed in terms of loss. A study that took advantage of this sought to combat obesity by returning original deposit money plus a supplement only if the participant lost the targeted weight. After 7 months the incentive group showed significant weight loss compared to their entry weight and to the control group (Volpp, John et al. 2008).

Ethically Relevant Considerations

The use of incentives to influence behavior is not without ethical concern.¹ Several factors should be considered before using incentives: the amount of incentive offered, whether the incentive will disadvantage the people most in need (Schmidt, Voight, and Wikler 2009), whether the incentive will result in the group that fails to meet the criteria for receipt being treated unfairly (Schmidt, Voight, and Wikler 2009), whether the incentive will harm the patient-physician relationship (Schmidt, Voight, and Wikler 2009), and whether the incentive is fairly directed.

The amount of incentive offered is ethically relevant for two reasons. If the amount is too high then the offer could be considered to be coercive and interfere with the patient's ability to make an autonomous decision. In other words, if the amount is too high then the incentive becomes a shove rather than a nudge. Some have recommended that instead of incentives being merely monetary, they be "in-kind incentives," for example, exercise equipment or vouchers for health goods (Schmidt, Voight, and Wikler 2009, e3(3)).

1. Nor is it without legal concern. For an excellent commentary on the legal landscape see Hand, L. 2009. Employee wellness programs prod workers to adopt healthy lifestyles. *Harvard Public Health Review*, February 3. Available at: <http://www.hsph.harvard.edu/news/hphr/winter-2009/winter09healthincentives.html>

This may combat concerns about the coerciveness of large amounts of money. The other reason that the amount offered is ethically relevant is because if the amount is unnecessarily high, meaning that a lesser amount could have achieved the same effect, then resources are not being used effectively. For example, in the case of incentives for picking up HIV results, researchers found that pickup increased only slightly when the amount of incentive was increased. In addition, the incentive must not disadvantage the people most in need. As Schmidt, Voight, and Wikler note, in Germany, where incentive programs have been widely used since 2004, the participation rates among people in the top socioeconomic quintile are close to double the rates among those in the poorest quintile (e3(2)). It is important to ensure that those who are not motivated by incentives do not fall by the wayside.

Similarly, it must be considered whether the incentive will treat unfairly groups unable to meet criteria. Many incentive programs are targeted toward obesity and smoking. Both of those conditions are at least arguably not entirely under a person's control and have great variability among individuals regarding how easily results are achieved. It would be unfair then to engage in any sort of cost shifting where the groups that fail to attain the incentive have to pay more for their care in part to subsidize the cost of incentive programs. It may be advisable to set different standards for the attainment of the incentive offered relative to how difficult it is for an individual or group to achieve it.

The fourth ethically relevant dimension that must be considered when incentives are used is the impact on the patient-physician relationship. Physicians must ensure that their patients do not perceive them as "police" and as a result withhold important medical information. Consider a study that reduced the proportion of incorrect pills taken from 22% to 2.3% by enrolling patients in a lottery if they adhered to their medication regimen (Volpp, Loewenstein et al. 2008). To measure adherence, the group was monitored by a system that recorded the opening of their pill containers. It is imaginable that patients in this situation might feel like they are under surveillance, and this could damage their relationship with their physician.

Finally, incentives should be fairly directed. An example of unfair direction of incentives is the study that offered money to physicians for their patients' improved risk factors. While the physicians' dedication and vigilance certainly contributed to the reduction in risk factors, so did the patients' own actions, and it is only fair that the patients receive at least part of the incentive offered.

DEFAULTS

Applications

A second way in which behavioral economics and behavioral psychology principles are being used to change health behaviors and decisions is through the use of defaults. By following the insight that people tend to go with the flow of preset options (i.e., defaults), we can preset options that promote health and well-being and save money, requiring

those who want to go against the grain to "opt out." The National Collegiate Athletic Association (NCAA) recently made use of this strategy, making sickle cell trait testing a default. Student athletes can opt out if they show proof of prior testing or if they waive their rights to sue, since sickle cell trait can change the shape of red blood cells during athletic performance, causing blockage in blood vessels (NCAA 2010). In a similar move, the Centers for Disease Control and Prevention (CDC) developed guidelines recommending that opt-out HIV screening with no separate written consent be routine in all health care settings (Hanssens 2007). A much more controversial use of defaults is presumed consent for organ donation unless someone has opted out by indicating that he or she is not willing to donate his or her organs upon death. Austria, France, Poland, and Portugal have such a system and as a result 90–100% of their citizens are registered donors, compared to only 5–30% in countries that do not use the donor default strategy (Johnson and Goldstein 2003). Another controversial use of defaults is to make "do not resuscitate" (DNR) the default code status for certain patients, such as those with end-stage dementia. The current default for patients tends to be life-prolonging care, and either the patient or his surrogate can opt out. However, often surrogates overestimate the amount of treatment their loved one would want at the end of life or feel too guilty to actively choose to make their loved one DNR. And in the case of advanced dementia, data show that the majority of patients state that they would not want CPR for a life-threatening illness (Vollandes and Abbo 2007). Thus, changing the default to favor DNR respects most patients' wishes. Those who would want cardiopulmonary resuscitation (CPR) would then have to opt out of the DNR default (Vollandes and Abbo 2007). Another area where the idea of using defaults has been suggested is the area of preventative care. Physicians can nudge their patients toward regular cancer screenings by giving them a default appointment date and time (<http://nudges.org/2008/06/04/behavioral-economics-lessons-for-health-policy>, accessed December 1, 2010). The patient must opt out of the appointment by calling and canceling within a given time or be charged a fee.

Defaults nudge not only the actions of patients but also those of physicians. For example, in some states the default for written prescriptions is that the pharmacist can fill them with generics unless the physician opts out by placing "dispense as written" on the prescription. Another example is found in the operation of medical equipment. One study found that physicians were using too high an air volume on ventilators. A lower pressure setting was set as a default on the ventilators, and as a result, the mortality rate decreased by 25% (The Acute Respiratory Distress Syndrome Network 2000).

Ethically Relevant Considerations

Examples like these illustrate the powerful potential of the use of defaults in health care. Yet the use of defaults to

nudge patients, physicians, or the public is not without ethical concern. We have identified three main ethically relevant dimensions that need to be considered when using defaults to influence health related decisions or behaviors. First, it must be fairly easy for people to opt out of the default option. This is necessary for freedom of choice to be preserved and respected. This requires that people have knowledge of the existence of the default, knowledge about how to opt out, and can opt out without significant burden. Thaler and Sunstein emphasize this point when they stress that nudges should not block or significantly burden choices (Thaler and Sunstein 2008, 5). While it is impossible and somewhat arbitrary to formulate an all-encompassing point at which it becomes too difficult or burdensome for a person to avoid the default nudge and go his or her own way, it is nonetheless important that the issue be raised and considered for each case. The presumed consent model of organ donation and the NCAA sickle cell trait testing policy are controversial in part because of concerns about the difficulty that people may have in opting out. In the NCAA case, to opt out of testing, students have to pay the high price of waiving their legal rights. In the case of presumed consent, there are concerns about whether people are even aware of the opt-out policy and also about how to ensure that opting out is easily available to everyone. Going to an office or filling out paperwork to opt out is a burden, and while going to a website and clicking a button or dialing a phone number is easy, not everyone has easy access to a phone or the Internet. Consider the suggestion of defaulting patients into appointments for their cancer screening and charging them money if they do not call and opt out within a certain amount of time. While at first it seems not much to ask of people to make a phone call, it is also the case that people will likely feel inconvenienced, not to mention potentially upset, when they receive a notice that an appointment has been made on their behalf without their consent, which they must take action to undo or else be charged a fee.

The second ethically relevant dimension that must be considered has to do with the expected harms and benefits of the default nudge. It is important that what we default people toward will benefit more than harm them. While this point may seem obvious, that is not always the case. Consider the opt-out HIV testing policy. It is of course good for people to know their status so that they can manage their condition properly, but there can be significant psychological harms involved in finding out and knowing that one is HIV positive (Hanssens 2007, S237). There are other drawbacks to default HIV testing as well. False negatives and false positives are both psychologically traumatic, and lawsuits filed against physicians for those false results and for inadequate pre- or post-counseling could increase. When defaulting people into something, we need to think broadly about the consequences and provide adequate support for what we are nudging them into. As some have argued, default options that promote the interests of individual patients or society are more morally acceptable than those that promote the interests of the people who set them (Halpern,

Ubel, and Asch 2007, 1342). For example, defaults could be set to improve patients' health outcomes, but they could also be set to cut health care costs. Insofar as the two are in conflict, this is ethically problematic.

The third ethically relevant dimension that must be considered is no doubt related to the first, and it concerns vulnerable populations. Arguably, the question of injustices to marginal persons brought about by defaults is an important one. Regarding presumed consent for organ donation, Marie-Andree Jacob writes, "In jurisdictions where the opt-out must be indicated on a driving license or an identity card, one wonders how a homeless person would express her dissent. Similarly, where a patient's opposition to organ removal must be made in writing, less-educated and illiterate individuals will face a serious obstacle. People with language vulnerabilities—linguistic minorities, as deaf-world activists call them—would also face a struggle to have their choice understood" (Jacob 2006, 296). Similarly, in the case of presumed consent for HIV testing, "The risk of legal liability or ethical conflicts following the negative consequences of a positive HIV test is heightened in vulnerable patients for whom a positive HIV test poses an increased social risk. Typical fallout of a positive test result can include domestic violence, loss of housing, loss of employment or job opportunities, and psychological trauma" (Hanssens 2007, S237). Thus, in using defaults to nudge, we should pay special attention to and try to ameliorate the effects of the default on vulnerable populations

SALIENCE AND AFFECT

Applications

Behavioral economics and behavioral psychology principles are also being used to change health behaviors and decisions by making use of the principle that people are influenced by novel, personally relevant, or vivid examples and explanations. The emotional associations elicited by these items remain readily available in memory and as a result powerfully shape decisions and behaviors. One way to make things salient is to use narratives, images, and film. In one example, to increase smoking cessation, smokers watched a video that showed either them or a loved one suffering from a heart attack. More than 50% of study participants reported having quit smoking after a 3-month period (May et al. 2010). Similarly, a randomized controlled trial was conducted where one group of elderly adults was shown a 2-minute video about what life with advanced dementia was like along with a written description, while the other group was just given the written description. The group that saw the video had 86% of its members indicate that they would want "comfort care only" in such a state, whereas in the control group that number was only 64% (Vollandes et al. 2009). Other examples of influence on health behaviors through salience include a StairMaster with a pictorial display that represents calories burned with pictures of food (Thaler and Sunstein 2008, 99), the requirement in New York that restaurants put caloric amounts on menus (which has

resulted in people ordering meals containing fewer calories and therefore restaurants lowering the caloric count on meals) (Rabin 2008), the posting of prices including taxes beside alcohol in stores (Chetty, Looney, and Kroft 2009), and the suggestion that mirrors be placed near desserts and junk foods (<http://nudges.org/2009/03/25/want-people-to-lose-weight-put-a-mirror-in-front-of-the-donuts>, accessed December 1, 2010).

Salience has also been used to nudge physicians toward better health outcomes. Attachment of patient photographs to x-rays resulted in radiologists providing longer, more detailed reports and feeling more connected to their patients (Turner and Hadas-Halpern 2008). Key to the effectiveness of salience is that the things that are made salient motivate people emotionally (e.g., fear of death or disability) or are things that the person cares about (e.g., money, avoiding losses generally). Exploiting salience effects and exploiting affect effects are inextricably intertwined. A poignant example is a campaign in Ghana to get people to wash their hands with soap. The campaign evoked the emotion of disgust by using TV commercials showing the germs around toilets etc. Soap use increased by 13% after toilet use and by 41% before eating (Curtis, Gabra-Aidoo, and Scott 2007). Similarly, the recent Tobacco Control Act in the United States requires that cigarette packages and advertisements have larger, vivid, color graphic health warnings depicting the negative consequences of smoking. A slew of proposals for that graphic have been made, many of which portray real photographs of corpses in a morgue, babies inhaling their mothers' smoke, blackened lungs, etc. (available at <http://www.fda.gov/TobaccoProducts/Labeling/CigaretteProductWarningLabels/default.htm>, accessed December 1, 2010). The Food and Drug Administration (FDA) was scheduled to issue the final requirements for cigarette packages by June 22, 2011.

Ethically Relevant Considerations

What are we to make of the ethics of exploiting these features of human psychology to influence health behaviors and decisions in the ways just described? We have identified four ethically relevant dimensions that need to be considered when using salience and affect effects to influence health related decisions or behaviors. First, one should consider whether the use would count as an instance of manipulation, as manipulation always involves some infringement on a person's autonomy. Second, if the use of salience and affect does constitute an instance of manipulation, then one must consider whether it is ethically justifiable. As we explain later, manipulation can be ethically justified under certain circumstances. Third, one must consider whether the use of these techniques will be perceived negatively. This point is especially important in the clinician-patient context, in which trust and a good therapeutic alliance are essential. Finally, one should consider whether what is being represented saliently is true and accurate, as opposed to exaggerated or misrepresented.

By the very nature of the definition of manipulation, most, if not all, instances of the use of salience and affect will count as manipulation. Manipulation occurs when one influences another by *bypassing their capacity for reason*, either by exploiting nonrational elements of psychological makeup or by influencing choices in a way that is not obvious to the subject (Mele 2001, 145; Tomlinson 1986, 115; Baron 2003, 50; Noggle 1996, 52; Greenspan 2003). By virtue of it bypassing a person's capacity for reason, manipulation bypasses the exercise of autonomy as well. It blocks the consideration of all options and threatens the agent's ability to act in accordance with her or his own preferences (as opposed to someone else's). Manipulation falls somewhere in between coercion, which involves obvious attempts to influence that are impossible to refuse (e.g., force or severe and credible threats), and rational argument, or rational persuasion, which uses overt reason and argument to influence the subject (Faden and Beauchamp 1986, 337–373; Powers 2007, 126).

Manipulation is not always unjustified or morally bad, however (Greenspan 2003; Baron 2003, 48; Cave 2007, 141). One can bypass a person's reasoning capabilities for good reasons (e.g., the person's reasoning powers are impaired) and for good ends (e.g., to prevent the person from harming themselves). One must carefully weigh the risks and benefits of manipulating someone to change that person's health behaviors and be able to explain the reasons for using these techniques as opposed to rational argument. For example, in the case of using videos showing loved ones suffering heart attacks in order to get people to stop smoking, such manipulation is defensible on the grounds that it is not practical or effective to engage smokers in rational argument. In addition, the risks of manipulating someone to stop smoking using videos are nonexistent to minimal, whereas the health benefits are enormous. Thus, the use of these videos to prevent smoking is done for both good reasons and good ends. It is, however, worth noting that one of the most important risks when using these techniques is that they may be perceived by patients as scare tactics and alienate the patient from the physician, which will then have a negative impact on the therapeutic alliance. This risk should be taken seriously and attempts should be made to minimize it before any implementation of salience and affect techniques. Finally, as noted, the fourth important consideration is whether what is being represented saliently is true and accurate, as opposed to exaggerated or misrepresented. Take, for example, the proposed images for cigarette packages. The things that are made salient (e.g., death, tracheotomy) are all true representations of the consequences of smoking. If, on the other hand, there were images of obese people then there would be a problem, since obesity is not a consequence of smoking.

NORMS AND MESSENGER

Applications

A fourth way in which behavioral economics and behavioral psychology principles are being used to change health

behaviors and decisions is by making use of the principle that we are strongly influenced by what others do and by who communicates information. We are social creatures, and as a result we rely on other people for our behavioral and decisional cues. Making use of the norms principle, Montana ran an intensive "Most of Us Wear Seatbelts" media campaign from 2000 to 2003 in which the Department of Transportation let the public know that most people (85%) wear seatbelts. As a result, the reported use of seatbelts increased significantly (Linkenbach and Perkins 2003). In the United Kingdom, a project is underway labeled the "Charm Project," which involves giving people information about their exercise and lifestyle choices relative to others in their peer group in order to nudge them to be healthier (<http://nudges.org/2009/05/26/huge-new-feedback-study-underway-soon-in-the-u-k/>, accessed December 27, 2010). Another example of how the norms principle is used is giving people their risk information not in absolute terms (e.g., your risk for breast cancer is 30%) but in relative terms (e.g., your risk for breast cancer is 30% and most other people's is 10%). The latter frame is much more motivating (Lipkus et al. 2005).

Making use of the power of the messenger, young adults were nudged to wear sunscreen in part by receiving a message from a personal exemplar. Youth were more affected if they had high similarity to the exemplar (Hoffner 2009). In a similar example, attempts were made to reduce the smoking onset rate of Romanian adolescents in part by having students watch an antismoking video, presented by three adolescents, that emphasized how to "say no" and practicing with peer leaders from their class. Nine months after the start of the study, weekly smoking onset was 4.5% in the experimental classes versus 9.5% in the control classes. A previous Dutch program also found similar results (Lotrean et al. 2010). Not only are peers powerful messengers, but physicians are too. In one example, when physicians suggested to patients that they get screened for colon cancer, they were 24 times more likely to have a flexible sigmoidoscopy and nine times more likely to have a fecal occult blood test than the control (CA: A Cancer Journal for Clinicians 2000).

Ethically Relevant Considerations

We have identified three ethically relevant dimensions that need to be considered when using norms, comparisons, and messenger effects to influence health-related decisions or behaviors. First, one of the dangers of using norms is that we end up nudging people toward things that are bad for them since often herd mentality and behavior are not particularly wise—for example, most Americans are overweight and underexercised. Thus, in using comparative and normative information we must take care to ensure that we are not doing people more harm than good. Second, naturally there is a temptation, especially in cases where what most people are doing or deciding is unwise, to construct a narrative about what the majority of people are doing that is untrue or a misrepresentation. For example, in

communicating to patients about cancer screening, we could tell them that five out of seven people get screened—but this would be a lie. Or, we could tell someone that her risk of breast cancer is 32%, whereas the normal risk is 2%—but this would also be a lie. Although these claims would perhaps motivate someone to get screened for cancer, lies and misrepresentations are not ethically permissible. The third ethically relevant consideration, particularly for the use of messenger effects, is the power differentials that may be involved between the messenger and the person nudged. If the messenger is, for example, an authority figure such as a physician, then the person nudged may accept the messenger's recommendations unquestioningly. Unquestioning acceptance does not promote autonomy or well-being—at least as a matter of general habit. Care should be taken to be aware of and manage these effects.

PRIMING

Applications

A fifth way in which behavioral economics and behavioral psychology principles are being used to change health behaviors and decisions is by making use of the principle that our acts are influenced by subconscious cues. These cues can be strategically used as primers for healthy behaviors. One successful way in which this technique has been used has been in the arrangement of food in school cafeterias. By cafeteria staff placing fruits and vegetables in prominent places such as at cafeteria bottlenecks and displaying them attractively, fruit consumption rose 54% (<http://nudges.org/2010/06/09/nudging-in-new-york-lunchroom-cafeterias>, accessed December 9, 2010). In another example, placement of stairs in front of doors, with the elevators 50 feet away, caused more people to take the stairs (Mengisen 2008). The same effect was achieved when study participants formed sentences out of scrambled words like “fit,” “lean,” “active,” and “athletic” (Wryobeck and Chen 2003). Giving students a lecture on the risks of tetanus combined with handing out maps locating the student health center made them nine times more likely to go get a tetanus shot (Thaler and Sunstein 2008, 71). Exposing people to the smell of cleaner made them more likely to keep their eating environment sanitary (Thaler and Sunstein 2008, 71). Even simple inquiries about a person's health habits may increase healthy behaviors. Asking people whether they intended to floss and how often increased flossing; asking whether they planned to consume fatty foods in the next week made them less likely to do so (Thaler and Sunstein 2008, 70). Telling people that they liked asparagus when they were children made them more likely to pick and consume asparagus (<http://nudges.org/2009/05/12/what-if-you-told-your-kids-how-much-they-like-eating-vegetables>, accessed December 27, 2010). On a similar note, people can be primed to eat less by altering the size of food containers. In one experiment researchers gave half of restaurant diners self-refilling soup bowls and the other half as much soup as they wanted (but

they had to ask). The latter group consumed 6.1 ounces of soup and the former 14.7 ounces (Wansink, Painter, and North 2005). In another study people were given bowls to scoop ice cream into: some large, some small. The bowl size determined how much ice cream was eaten, with the former consuming 225 calories and the latter consuming 144 calories (Wansink, van Ittersum, and Painter 2006). By the way, the participants were all nutritionists. A similar experiment was done with popcorn containers at the movie theater, finding a difference of 12 versus 24 ounces (Wansink and Kim 2006). Another tactic is to reduce the number of holes in saltshakers, reducing the amount of salt consumption (<http://nudges.org/2008/08/05/take-it-with-a-few-less-grains-of-salt>, accessed December 27, 2010).

One other way in which people can be primed to make healthier choices is through reminders. An iPhone application, Nudgersize, reminds its users to get their daily exercise (<http://nudges.org/2010/09/09/assorted-links-40>, accessed December 27, 2010). Reminders have also been used to nudge people to schedule their screening appointments. In one case phone reminders targeted at low-income, minority, and uninsured Americans and their physicians tripled that group's rate of cancer screening (Fiscella et al. 2010). At Johns Hopkins a checklist was developed to remind clinicians of proper steps for caring for patients in the Intensive Care Unit, which reduced the line infection rate from 11% to zero, prevented 43 infections and 18 deaths, and saved \$2 million (Pronovost et al. 2010; Pronovost et al. 2006). However, priming also occurs through actual carvings into the environment. In Chicago, architects have painted white lines on the dangerous Lake Shore Drive curve to give drivers the illusion of speeding up. Accidents have since decreased by 36% (Thaler and Sunstein 2008, 38). In the United Kingdom “look right” signs posted at popular tourists spots have resulted in fewer accidents (Thaler and Sunstein 2008, 90). Perhaps the most unusual environmental carving to nudge behavior is the fly that has been etched into the urinals in the Amsterdam Airport, which subtly primes men to aim and has reduced spillage by 80% (Thaler and Sunstein 2008, 4).

Ethically Relevant Considerations

Subconscious priming with the intent to improve a person's health decisions and behaviors, whether through environmental arrangement or carving, cognitive activities, or reminders, is done with good intentions in mind. However, these good intentions should be supplemented with considerations of other ethically relevant dimensions as well. We have identified three such considerations. First, as with all uses of principles from behavioral economics and behavioral psychology to change health related behaviors, the decision should be evidence based. There should be good evidence that, for example, fruit benefits kids or tetanus shots benefit students, and that those things are compatible with the values of those involved. Second, similar to the case of using defaults, one should consider whether it is fairly easy for people to go their own way and to choose a different

direction than the one that they are being primed toward. For example, walking to desserts that are placed in a far-away area of the room, asking for a larger bowl, or going for seconds does not take much effort. However, if the desserts were locked in a room up 15 flights of stairs, then this would interfere with the ease and ability with which someone can exercise freedom of choice. Similarly, if reminders to get cancer screening were incessant and difficult to stop, then this would also obstruct freedom of choice. Third, similar to the case of using salience and affect effects, one should consider whether the priming counts as an instance of justified manipulation. Priming to influence behavior will by its very nature likely be an instance of manipulation, given that the use of subconscious cues to motivate behavior inherently involves a side-stepping of a person's reasoning capabilities. In many cases the person will have no awareness of being primed. The manipulation can be justified if a careful consideration shows that the benefits outweigh the risks, and if an explanation can be offered for why priming is being used instead of rational argument can be offered. For example, in the case of priming people to use the stairs one might offer the argument that it is impractical to engage in rational argument with everyone in the building about the benefits of taking the stairs; moreover, positioning the stairs one place or another is unavoidable and where they are placed will either prime people to take them or not take them, so we might as well prime people to take them since it is healthier.

COMMITMENTS AND EGO

Applications

A sixth way in which behavioral economics and behavioral psychology principles are being used to change health behaviors and decisions is by making use of the principle that we seek to be consistent with our public promises and commitments, and we act in ways to make us feel better about ourselves. Websites have been developed that allow users to commit themselves to achieving certain goals, such as losing weight, exercising, quitting smoking, eating an apple a day, or even learning a new hobby. One such example is stickk.com. On stickk.com users enter into binding commitment contracts by choosing a goal, the stakes, and who they want to be their referee to confirm the truth or falsity of their reports. Stickk users who attach stakes to their goal must enter their credit card information, and if they fail to achieve their goal, then their card is charged for the amount upon which they agreed. Users bear all risk of any inability to achieve commitment. The contract can only be canceled with a medical excuse from a physician. The statistics from stickk.com are impressive, with 56,410 contracts, \$5,402,767 dollars on the line, 141,003 workouts that might not have otherwise happened, and 1,073,255 cigarettes not smoked that otherwise would have been (stickk.com, accessed December 27, 2010). Stickk.com was developed based on studies that show the effectiveness of commitments on behavior. One study demonstrated the power of commitment strategies even without any stakes attached. People who wanted

to exercise more signed a contract for their exercise program. Eighty-one percent of exercisers who signed a contract met their goal, compared to only 31% in the control group who did not sign a commitment contract (Williams, Bezner, Chesbro, and Leavitt 2005). These examples illustrate that part of the effectiveness of commitment strategies comes from ego and our desire to be perceived by ourselves and others as strong of will and consistent. Ego plays a role in the effectiveness of many nudges. For example, the nudges of putting mirrors in front of donuts and putting calorie counts on menus make use of salience and affect, but make use of ego as well. The salience has an impact not because people are particularly concerned with being healthy, but because they are particularly concerned with looking good.

Ethically Relevant Considerations

Exploiting people's desires to be consistent with public promises and commitments and act in ways that make them feel better about themselves in order to nudge them toward healthier behaviors has many ethically relevant dimensions that should be considered. Some of the dimensions are similar to ones mentioned in relation to the other nudging techniques. For example, considerations surrounding manipulation are especially relevant in the use of ego techniques. Other considerations arise by virtue of the fact that commitments, especially self-binding commitments, bring along their own set of complex philosophical and ethical issues. These types of self commitments via, for example, stickk.com, constitute a sort of Ulysses Contract—a situation where one agrees to have present requests overridden in favor of past requests, just as Ulysses anticipated the results of his self-destructive request to steer his ship toward the Sirens and so agreed to have his men tie him to the mast. The philosophical difficulty lies in explaining why certain requests or desires (e.g., I want to lose weight) have more normative weight and deserve more respect than others (e.g., I want to have this piece of cake right now). Is it just by nature of the fact that those desires came earlier in time? This would seem arbitrary. Is it by nature of the fact that those desires are healthier? This too cannot be it since one could imagine that I self-commit myself to things that are bad for me but that I value dearly—for example, the Jehovah's Witness who commits to not receiving blood even though it is needed to save her life. Ryan Spelley has persuasively argued that rationality involves more than just beliefs and desires (that exist at one moment and not at the next) but also intentions and plans. When one forms an intention, the person deliberates, weighs the options, considers other desires and intentions, and then comes to a settlement about what to do. Commitments based on intentions are “reason-centered commitments” and deserve more weight than desires (Spelley 2003). Thus, it is justified to hold someone to her promise to exercise every day, by, for example, charging her the money that she agreed to be charged, even though she now has a desire to skip the exercise and eat a piece of cake.

Still, one must use caution in setting up a program where people can commit themselves to certain things. As stickk.com wisely advises in its terms and conditions, users should consult a health professional before beginning any health or fitness contract. Stickk.com is also aware that users could use the self-commitment program for self-destructive ends, such as reducing caloric intake to dangerous levels in the case of anorexia. To combat this, stickk.com states that by agreeing to the terms and conditions, users represent themselves as not having any condition that would make

their goal dangerous to their health (stickk.com, accessed December 30, 2010). Ethically responsible management of these programs involves overseeing users as much as possible to ensure that they are not committing themselves to harmful goals.

CONCLUSION

Policymakers, employers, insurance companies, researchers, and health care providers have recently begun

Table 1. Summary of recommendations

Nudge mechanism	Ethically relevant considerations
Incentives	<ul style="list-style-type: none"> • The amount and kind of incentives used. • Whether the incentive plan will disadvantage those most in need or result in the group that fails to meet criteria for receipt being treated unfairly (e.g., cost-shifting to those who fail, leaving those who fail by the wayside). • Whether the incentive plan will harm the patient–physician relationship (e.g., through actual or perceived monitoring). • Whether the incentive is fairly directed (e.g., at patients as opposed to or in addition to their physicians if the patients themselves are the ones who improved their health).
Defaults	<ul style="list-style-type: none"> • Whether people are aware of the existence of the default and whether it is fairly easy for people to opt out. • Whether the expected benefits of the default outweigh any anticipated harms, where harm is construed not just physically but also psychologically, socially, and financially. • Whether there are injustices or harms brought about to vulnerable or marginalized populations by the default (e.g., presumed consent for organ donation exploits the homeless who do not have easy opportunities to opt out/dissent) and whether attempts have been made to mitigate those effects.
Salience and affect	<ul style="list-style-type: none"> • Whether what is being represented saliently is true and accurate, as opposed to exaggerated or misrepresented. • Whether the use of salience and affect techniques will be perceived negatively by those it is directed toward. • Whether bypassing people’s capacity for reason is done for good ends (e.g., not selfish ones) and for good reasons (e.g., people are harming themselves). • Whether there is a justification for using salience and affect instead of rational argument.
Norms and messenger	<ul style="list-style-type: none"> • Whether the information about what “most people are doing” is true and accurate. • Whether the use of comparisons and norms will do more good than harm in light of the fact that “what most people do” is often unwise. • Whether the power differentials between messenger and recipient have been considered.
Subconscious priming	<ul style="list-style-type: none"> • Whether it is fairly easy for people to go in a direction other than the one in which they are primed. • Whether subconscious priming is done for good and evidence-based ends. • Whether there is a justification for using subconscious priming instead of rational argument.
Commitments and ego preservation	<ul style="list-style-type: none"> • Whether ego is used for good ends and good reasons and whether there is a justification for using ego instead of rational argument. • Whether the person is making a commitment to self-destructive ends. • Whether the commitment is to long-term preferences or fleeting ones.

to increasingly use principles from behavioral economics and behavioral psychology to persuade people to change their health-related behaviors, lifestyles, and habits. These principles provide potentially powerful and far-reaching tools to influence health decisions and behaviors in a systematic, covert, and predictable way. It is for this reason that an ethical framework is needed for the responsible deployment of these techniques. We have identified both the various ways in which principles are being used and the ethically relevant dimensions that should be considered for the utilization of each principle. We encourage policymakers, health care providers, and others to consult and consider these dimensions (summarized in Table 1) before they employ techniques from behavioral economics and behavioral psychology. ■

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