



Nudge to Health: Harnessing Decision Research to Promote Health Behavior

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Abstract

We review selected literature that examines how biases in decision making can be utilized to encourage individual health behavior, such as vaccination, and promote policy decisions, such as resource allocation. These studies use simple interventions to nudge people towards more optimal health decisions without restricting decision-makers' freedom of choice. Examples include framing effects, defaults, implementation intentions, position effects, social norm, incentives, and emotions. We suggest that nudges are an effective way to promote healthy behavior.

Research on health behavior indicates that, too often, individuals fail to do what is good for them – by engaging in risky behavior and neglecting to take preventive measures. Meanwhile, research on decision making indicates that decision makers are often irrational, or biased, in the sense that their behavior deviates systematically from normative principles that would maximize their goal satisfaction, or utility (Baron, 2000; Baron, 2004). It may seem that humanity is fated to be both unhealthy and irrational. However, in the current paper we explore whether decision biases can be exploited to make us healthier. That is, we investigate whether psychological research about decision making can be harnessed to improve health behavior and health outcomes. We review selected recent research that addresses this question.

Human beings are not perfect decision makers. Too often, they use mental short cuts or rules of thumb instead of making a comprehensive cost/benefits analysis to arrive at a decision. Our tendency to conserve cognitive effort means that a majority of our daily decisions are made using System 1 thinking (fast, automatic, based on intuition, gut feelings, rules and heuristics), from which route to drive to work, what we put in our morning coffee, to what to order for lunch/dinner. In contrast, some complicated decisions usually elicit System 2 thinking (slow, systematic, deliberative, based on reason and calculation), such as which stock performs better, and what kind of mortgage loans offers the best financial outcome (Kahneman, 2003).

The field of judgment and decision making has traditionally examined biases and errors, which are common by-product of our reliance on System 1 thinking. A well-known example of such biases and errors is the framing effect: two normatively equivalent descriptions of the same decision often lead to systematically different choices. In Tversky and Kahneman's (1981) classic demonstration, participants were presented with a description of the outbreak of a new Asian disease that was expected to kill 600 people. Two strategies for combating the disease were described. For participants in the gain frame condition, the strategies were framed in terms of lives saved (save 200 for sure versus save 600 with a 1/3 probability and none with a 2/3 probability). For participants in the loss frame condition, the strategies were framed in terms of lives lost (400 die for

sure versus none die with a 1/3 probability and 600 die with a 2/3 probability). Participants tended to choose the riskless option in the gain frame but the risky option in the loss frame. Of course, the two frames described exactly the same options, so the fact that participants' responses were influenced by the framing condition represents an irrational bias, because it violates the rule of consistency as prescribed by normative decision theories. Prospect Theory (Kahneman & Tversky, 1979) explains this bias as a result of our different gut reactions to risk for gains and for losses.

In the domain of health, decision biases may lead to suboptimal health behavior and outcome (see Chapman, 2004, for a review). One approach to improving health behavior would be to devise methods to help decision makers avoid biases and inconsistencies as demonstrated above. According to this approach, helping people make more rational decisions means that they will make better choices, or at least choices more in line with their own preferences (based on what they value). However, despite our best intentions, biases and errors are hard to eliminate, because after all, when making one of the thousands of daily decisions, we do not have unlimited resources (time, energy, mental capacity) to investigate every option we face and to compute the exact cost and benefit of all the options (Gigerenzer & Goldstein, 1996; Gigerenzer & Selten, 2001). An alternative approach, therefore, is to exploit decision biases and harness them in the name of encouraging healthy behavior (Loewenstein, Brennan, & Volpp, 2007). The 2009 publication of *Nudge* (Thaler & Sunstein, 2008) highlighted this approach whereby the decision architecture is designed so choice of the healthy option or prosocial behavior is facilitated. With this approach, the decision architect tries to nudge the decision maker toward a particular option. A highly cited example of such nudges is the default effect, or the tendency for decision makers to stick with the default (the option that takes effect if one does not make an explicit choice) regardless of which option is designated as the default. For example, in some European countries, everyone is presumed to be an organ donor unless they explicitly opt out. In comparison, in other European countries, everyone is presumed not to be an organ donor unless they explicitly opt in. Individuals in both systems have the choice to be an organ donor or not, but the default status is different. As a consequence, organ donation rates are much higher in countries where being an organ donor is a default (Johnson & Goldstein, 2003).

In this paper we review a selection of the many studies that use nudge-like interventions to affect health decisions, that is, small, simple changes in the decision environment that nudge people towards more optimal health behavior without restricting their freedom of choice. Many such nudges derive from well-known decision biases, such as the default effects framing effects, and position effects. Other nudges take advantage of social psychological principles known to alter behavior without extensive interventions, such as social norms and implementation intentions. Two classes of health decisions are included in this review: One concerns personal decisions made by individual decision makers, such as whether to get a flu shot, eat vegetables, or use sunscreen. The second type concerns policy decisions that will affect groups of people, such as how to allocate limited resources or whether to mandate a health behavior.

Individual Behavior

Many health outcomes are profoundly influenced by the behavior of individuals. Heart disease and cancer are the two leading causes of death in the United States, and the risk of both of these diseases is influenced by individual behaviors such as diet, exercise, vaccination, and using suncreening. Even public health outcomes, such as infectious disease

epidemics, are influenced by the behavior of individuals. Consequently, it is extremely valuable to identify decision architecture that encourages individuals to adopt healthy behavior. Below, we review 6 nudges that could be used to improve individual health.

Framing effects

Different descriptions of the same problem/options can lead to different responses/choices. Such framing effects are among the most frequently studied decision biases. The original demonstration by Tversky and Kahneman (1981) described above illustrates that decision makers are risk averse for gains (when options are framed as number of lives being saved) and risk seeking for losses (when options are framed as number of lives dying). This pattern is predicted by Prospect Theory (Kahneman & Tversky, 1979), which postulates that decision makers evaluate outcomes as gains or losses relative to a reference point. In the gain domain, the outcomes (lives saved) are compared to the reference point of no one saved (all lost), while in the loss domain, the outcomes (lives lost) are compared to the reference point of no one lost (all saved). Prospect Theory postulates that sensitivity to outcome magnitude is greatest near the reference point, leading to differing risk preferences for gains and losses.

Rothman and Salovey (1997) conducted a number of landmark studies demonstrating the power of framing effects to moderate the effectiveness of health messages. They reasoned that gain-framed messages could be used to encourage risk-averse choice and loss-framed messages could be used to encourage risk-seeking choice. Prevention behaviors can be considered risk-averse because they incur a small certain cost in order to avoid an uncertain larger cost (e.g., eating a healthy diet so as to reduce the risk of heart attack). In contrast, detection behaviors can be considered risk-seeking because they carry the risk of a large negative outcome (e.g., mammography entails a risk that one will learn one has cancer). In a particularly elegant study, Rothman, Martino, Bedell, Detweiler, and Salovey (1999) gave participants a mouth rinse and described it either as preventing plaque or as detecting plaque. Participants were also given a gain- or loss-framed pamphlet about oral hygiene, forming a 2 (rinse type) \times 2 (message frame) design. The percentage of participants requesting a free sample of the mouth rinse showed an interaction pattern, such that for the prevention mouth rinse, the gain frame was more effective in triggering behavior, whereas for the detection rinse, the loss frame was more effective.

Another feature of Prospect Theory also predicts framing effects. Prospect Theory's decision weight function postulates that decision makers treat probability in a non-linear fashion and specifically that they overweight certainty. Consequently, frames that imply certainty make choice options particularly appealing. For example, a vaccine sounds more appealing if it is described as reducing the risk of one disease from 10% to 0% while leaving the risk of another disease unchanged at 10%, compared to reducing the risk of a single disease from 20% to 10% (Slovic, Fischhoff, & Lichtenstein, 1982). Both of these vaccine descriptions entail the same net reduction in risk of disease, but the former entails the certainty of no risk at all from one disease. Li and Chapman (2009) found a similar 100% effect in descriptions of the *human papillomavirus* (HPV) vaccine. This vaccine is completely effective at preventing infection from the two strains of HPV that are responsible for 70% of cervical cancer cases. Consequently, the vaccine can be described as "100% effective in preventing virus infections that cause 70% of known cases of a specific type of cancer" or as "70% effective in preventing virus infections that cause all known cases of a specific type of cancer." Li and Chapman's (2009) study found that intentions to get vaccinated were higher with the former description that boasts 100% efficacy. Both descriptions, however,

were more appealing than one with partial effectiveness against a subset of disease agent (e.g., 82% effective against 85% of virus strains that cause the cancer). Thus, decision makers overweight 100% for both the efficacy and scope of the vaccine. These findings indicate that the way in which health options are framed can influence their adoption.

Defaults

As reviewed above, the default effect is the tendency for decision makers to stick with the default, or the option that takes effect if one does not make an explicit choice. The choice of defaults affects organ donation decisions (Johnson & Goldstein, 2003). Default effects have also been harnessed to encourage retirement savings (Choi, Laibson, Madrian, & Metrick, 2004; Madrian & Shea, 2001; Thaler & Benartzi, 2004): if the default contribution to the retirement account is nothing and one must opt-in to contribute, few people contribute. If, alternatively, the default contribution is a modest percentage of income and one must opt out if one wishes not to contribute, then many people contribute.

Although default effects hold great potential for promoting healthy behavior, one challenge in designing healthy defaults is to make the default “enforceable”. Retirement account decisions are fairly easy to enforce. If an employee sticks with the default to have a certain percentage of income designated to a retirement fund, the default is automatically carried out – the payroll office will proceed to deduct that amount from take-home pay and no further action is needed from the employee. Rather, opting out of the default requires a trip to the payroll office or a form to fill out requesting a change in the amount deducted. Many health behaviors do not have this easy enforcement. For example, if the default at a school or workplace is to get a flu shot, and an employee sticks with that default, she still needs to show up at the health center during vaccination hours, or at least roll up her sleeve when the vaccination cart rolls by, and also sign a medical consent. In contrast, someone who wishes to opt out of the default can do so simply by taking no action at all, and thus not getting vaccinated (e.g., by being out of the office the day vaccines are given).

A study by Chapman, Li, Colby, and Yoon (2010) addressed this challenge by manipulating the default of whether or not individuals had an appointment for a flu shot. University employees were randomized to receive one of two versions of an email message. One group received a message informing them that free flu shots were available, with a link for making an appointment. The other group was informed that they had been scheduled for a flu shot appointment at a specified time, with a link provided for cancelling or changing the appointment. Vaccination records indicated that 45% of participants in the opt-out group received a flu shot at the campus health center, while only 33% did in the opt-in group. This effect of default appointment on vaccination rates was mediated by whether or not one had an appointment: few participants in the opt-in group scheduled appointments, while most participants in the opt-out group kept their appointments, and having an appointment was a strong predictor of getting a flu shot (although not a perfect predictor as individuals could also get vaccinated as walk-ins). Thus, default effects can be a viable tool for promoting healthy behavior (Halpern, Ubel, & Asch, 2007).

Implementation intentions

Implementation intentions (Gollwitzer, 1999) are strategies for goal achievement that specify the conditions under which certain behaviors will be triggered (e.g., when I walk to the campus center for lunch tomorrow, I will stop by the health office for a flu shot). Milkman, Beshears, Choi, Laibson, and Madrian (2011) examined the effect of prompts

to form an implementation intention on vaccination behavior. Workplace employees received a postcard that listed the times and locations of on-site influenza vaccination clinics. A randomly selected subset of recipients also received postcards that prompted them to write down either the date or the date and time they planned to get vaccinated. Thus, these participants were prompted to form an implementation intention for when and how to get vaccinated. Actual vaccination rates (from medical records) were higher among employees in the implementation intention group. This effect was especially pronounced among employees at worksites that offered only a single day of influenza vaccinations (thus there was no choice of the day to be vaccinated, only the time). Within this subset, vaccination rates were 38% among employees prompted to make a plan about what time they would get vaccinated compared to only 30% among employees who were not prompted.

Position effects

A very large literature has examined decision architecture that influences dietary decisions (see Wansink, 2004; for a review). We review only a small selection here. Because food options are often arrayed in a menu at restaurants or in a physical layout at a cafeteria or grocery store, they afford an examination of the effect of position or presentation of options on choice. Rozin et al. (2011) found that placement location of salad bar ingredients and changes in serving utensils influenced what cafeteria customers served themselves. Diners served themselves fewer calories when broccoli, cucumbers, and tomatoes were in easy-to-reach locations while cheese, chicken, and hard-boiled eggs were in harder-to-reach locations, compared to the reverse. Ingredients were also consumed less when served with a pair of tongs (hard to use) rather than a spoon (easy to use). Dayan and Bar-Hillel (2011) found that menu options at the top or bottom of their category were more popular than those in the middle. Thus, diners made healthier choices when the healthy options were placed in these more prominent positions. In addition, restaurant customers were more likely to order a healthy sandwich if such sandwiches were listed on a prominently featured location, as shown in a study by Downs, Loewenstein, and Wisdom (2009; see also Wisdom, Downs, & Loewenstein, 2010). In another study (Thorndike, Sonnenberg, Riis, Barraclough, & Levy, 2012), cafeteria shoppers purchased more zero-calorie beverages after cafeteria items were labeled with green, yellow, and red symbols indicating nutritional recommendations, and after the recommended “green” items were placed in the most visible locations.

Social norms

A number of recent experiments have examined the force of social norms to encourage desired behavior. In a landmark study, Goldstein, Cialdini, and Griskevicius (2008) found that hotel guests were more likely to reuse their towels if presented with a message about local social norms (e.g., “the majority of guests in this room reuse their towels”) rather than a standard environmental message. Some similar techniques have also been used with health behavior. Reicks, Redden, Mann, Mykerezzi, and Vickers (2012) conducted a field study in a school cafeteria. For some children, photographs of vegetables were placed in wells in the lunch tray, presumably conveying a social norm that one was expected to place vegetables in that portion of the tray. These children were more likely to take and eat vegetable than children who did not receive the photographs on their trays.

A number of studies have examined the effect of calorie labeling on dietary choices. The results are somewhat mixed. Wisdom et al. (2010) found effects of both calorie labeling and information about recommended caloric intake on selection of drinks and side dishes at a sandwich restaurant. However, Downs et al. (2009) found no consistent effect of either calorie labeling or information about recommended calorie intake in studies at several restaurants. Roberto, Larsen, Agnew, Baik, and Brownell (2010) demonstrated that calorie labeling is particularly effective at encouraging lower-calorie selections when combined with social norm information about the recommended calorie intake. Thus, more studies are needed on how calorie labeling affects dietary choices.

Incentives

Providing incentives for healthy behavior is an old idea, but some research studies have harnessed decision research to use incentives in new ways. Volpp and colleagues found effects of incentives on weight loss (Volpp et al., 2008) and smoking cessation (Volpp et al., 2009). These incentive manipulations used psychological constructs such as regret (letting participants know what prize they would have won if they had met their health behavior goal) and decision biases such as overweighting of small probabilities (daily lotteries for prizes rather than certain payoffs).

Policy Decisions

Psychology has a long-standing goal of informing policy. And health policy has a large impact on health outcomes. Health insurers decide what types of prevention measures and screening tests to cover; cafeterias and grocery stores decide what foods to sell and how to display them and price them; workplaces decide whether to offer wellness programs; and schools decide whether to require certain vaccinations prior to enrollment. If lessons from psychology can be used to nudge policy makers toward wise decisions, the health outcomes of a plethora of individuals could be affected for the better.

Scarce resources

One specific type of policy that affects the lives of many people is that of allocating limited life-saving resources among the population. In the domain of scarce medical resources, allocation decisions could mean the difference between life and death. Considering such decisions can be difficult, especially with taboos associated with trading off lives. Yet prioritizing lives is unavoidable in certain circumstances, such as a vaccine shortage during a pandemic, or very realistically, shortage of transplant organs.

There has been much research demonstrating that when allocating scarce life-saving resources, people's preferences for whom to save vary considerably based on the framing of the situation. The classic Asian Disease problem in Tversky and Kahneman (1981) as mentioned in the beginning of this article demonstrates a change of preference in certain versus risky intervention options when they are framed as gain versus loss. This effect has been replicated in many domains, and in a series of studies, Levin and Chapman (1990, 1993) found that this framing effect is moderated by how much the lives at stake are valued: The general pattern of risk-averse in the gain frame and risk-seeking in the loss frame was more pronounced for in-group members (suggesting higher value placed on the lives involved) than for out-group members, and more pronounced for less stigmatized individuals (e.g., hemophiliac AIDS patients) than for more stigmatized individuals

(e.g., intravenous drug user who contracted AIDS). Therefore, framing effect may interact with other factors to affect how people evaluate intervention programs.

Another line of research looked at how framing affects the metric people use to value lives. Potential metrics include treating all lives equally (“all lives equal” metric), prioritizing people who will gain the most benefit (i.e., additional life years) from an intervention (number of “years-left” metric), and prioritizing young people regardless of the additional life years they have left (number of “years-lived” metric). In Li, Vietri, Galvani, and Chapman (2010), when vaccine allocation policies were described in terms of lives saved, people evaluated the lives involved based on the number of life years gained, that is, using the “years-left” metric. However, when such policies were described in terms of lives lost, people evaluated them based on the age of the lives involved, prioritizing young targets even if they had very few years left to live, that is, using a “years-lived” metric. Li (2012) conducted another set of studies that used two types of measures to elicit participants’ life-evaluating metrics: The direct measure explicitly described the “years-left”, “years-lived” or “all lives equal” metrics, while the indirect measure presented a vaccine allocation scenario with specific groups as potential recipients. The results indicate that people prefer the “all lives equal” metric in the direct measure, but favor the “years-left” metric in the indirect measure. Further, people showed the same differential pattern of responses when they were primed with a moral goal versus an efficiency goal, suggesting that the different responses in the direct and indirect measure are due to different goals activated in participants’ mind, which in turn led to preference for the metric that was considered most consistent with the goal.

Related to this line of research, Ubel, Baron, and Asch (2001) also demonstrated that the public’s preference for equity versus efficiency is influenced by the framing of scope. In their study, participants preferred to implement a less efficient medical test that can save 1000 total lives over a more efficient one that can save 1100 total lives, as long as the former test covers a wider range of the population. However, this preference for equity over efficiency was sharply reduced when the coverage of the more widely distributed test was half of the population rather than the entire population, or when the population was framed narrowly, in terms of the percentage of patients in one state who could receive testing rather than the percentage of patients across two states who could receive it.

These results indicate that preference for equity versus efficiency is affected by the way in which the options are framed. This type of framing effect could influence policy makers who decide on how to allocate scarce resources, and advisors to policy makers have the opportunity to nudge the policy makers toward a particular option by framing their input differently. In addition, savvy policy makers can use framing effects and other nudges to make their resource allocation decisions more acceptable to the constituents. For example, a policy maker wishing to defend an efficiency-based allocation decision should use indirect (rather than direct) presentation of the options and a narrow frame that makes clear that even the more equitable option would not have benefitted everyone.

Allocation decisions are also subject to the influence of emotions. When making donation decisions in response to humanitarian disasters, people tend to react strongly when emotions are aroused by affect-rich images or stories (Fetherstonhaugh, Slovic, Johnson, & Friedrich, 1997; Slovic, 2007), and by identifiable victims (Small & Loewenstein, 2003), but remain more nonchalant about statistical victims and donate similar amounts regardless of the number of lives at stake. In addition, Hsee and Rottenstreich (2004) demonstrated that when allocating humanitarian aids or punitive awards, decision makers

are largely insensitive to the magnitude of the stimuli (e.g., number of pandas to be saved) when they rely on emotion instead of calculation to make their decisions.

Aside from framing and emotion, another factor plays a critical role in how people view resource allocation policies. Studies in the management literature have demonstrated that individuals hold different standards of fairness in resource allocation within groups, depending on the type of resources under consideration (Tornblom & Foa, 1983; Martin & Harder, 1994; Conlon, Porter, & Parks, 2004). Particularly, recent research (DeVoe & Iyengar, 2010a; DeVoe & Iyengar, 2010b) illustrates that in an organizational setting, people prefer equality principles when the resource being allocated is in-kind goods (e.g., cookies), but such principles are considered less fair when the resource being allocated is a medium of exchange (e.g., money). While these findings were generated outside of the health domain, they may have far-reaching implications for health policies. Particularly, the healthcare system is facing a critical challenge to allocate limited funds among the population. Would the public have a different reaction when they read about policies directly addressing the allocation of healthcare funds (money) versus policies addressing allocation of services and benefits such as disease coverage and access to wellness programs? Is money in the healthcare context viewed the same way as it is in the organizational context? These are questions open to future research.

Policy in the real world

Given the myriads of research findings on framing, nudges, and decision architecture, one wonders why there are still so many public health problems in the real world. Have policy makers used findings from psychology to benefit the public? A health policy that has received much recent attention is the New York City Board of Health September 2012 decision to approve Mayor Michael Bloomberg's proposal to ban the sale of sugary soft drinks in sizes larger than 16 ounces at restaurants, movie theaters, and similar venues (Grynbaum, 2012). The proposal highlights tradeoffs between public health and freedom of choice, but it also encapsulates a number of sound principles of decision architecture. Research indicates that consumers eat less from small containers than from large ones, even when all sizes of container represent more than one could eat in a single sitting (Wansink & Kim, 2005). Under Bloomberg's new policy, although customers would not be able to buy any single soda that was larger than 16 ounces, nothing would prevent them from purchasing two 16-ounce beverages. Such a purchasing strategy would likely incur additional costs over buying one 32-ounce beverage, but the policy does not prohibit a store from offering a two-for-the-cost-of-one sale or offering free refills on a 16-ounce cup. Thus, although the policy won't prevent the determined consumer from consuming large quantities of soda, it does alter the default. Under the policy, a 16-ounce beverage would likely be viewed as the default serving size. Thirsty consumers wishing to drink more would need to opt away from the default by getting a refill or a second bottle. Research on default effects suggests that few consumers would do that. In addition, research on partitioning and serving size indicates that individuals eat less when given multiple small servings rather than one large serving, even if the total amount is the same. Geier, Wansink, and Rozin (2012) offered undergraduates a tube of potato chips while watching a movie. Participants ate less when every seventh chip in the tube was a distinctive red color, thereby partitioning the package. We might expect a similar pattern when comparing one 32-ounce soda with two 16-ounce sodas – although the total volume is the same, consumers would likely drink less in the latter case.

Conclusions

How can we help people become healthier? The best answer may not be to educate them on rationality and preach on the benefit of healthy behavior. The work we reviewed above (see summary in Table 1) provides nice examples on how weaknesses in our rationality can be harnessed to do good to our health. The beauty in these studies lies in the fact that it does not create a burden to the decision maker or change the options they face – it simply alters the decision environment slightly to make it easier to choose the optimal option, and most times, the changes are hardly noticeable. For example, the default effects only alter which option serves as the default while still providing people with the same options, giving them the freedom to choose from any of them; the position effect in menu choices does not eliminate menu items, but modifies the position of which they are displayed, so no one is deprived of a particular choice if they wish to choose it; framing effects work by providing different formats of the same choices, and a reasonable person would agree the actual content of the choices are equivalent across different frames.

Another benefit of nudges in health behavior and policy is the low cost of the intervention. Educational programs on healthy behavior may require a large cost and take a long time, with little guaranteed effect (Lytle, 2005; Thomas, 2006). In contrast, nudges, especially defaults and framing, take little effort beyond constructing a different default option or different wording of a health message or policy.

Critiques of our approach to “nudge” in health behavior and policy may state: “You’ve got to give people what they want, and if they want a large-sized sugary soda, it’s their choice”. Our response to such concerns would be: People can still have whatever their preference may be with or without our nudges – prospective vaccine receivers can still cancel their vaccination appointments, eaters can still choose the high-calorie

Table 1 Summary of studies using principles/effects in decision making to promote health

Principles/Effects	Applications in promoting health	Studies
Framing effects		
Risk preference	Encourage mouthwash use	Rothman et al. (1999)
Preference for 100%	Influence preference for vaccine	Li and Chapman (2009)
Scope	Influence allocation policy	Ubel et al. (2001), Li et al. (2010), Li (2012), Fetherstonhaugh et al. (1997), Slovic (2007), Small and Loewenstein (2003)
Valence, directness	Influence evaluation of lives	
Emotions	Influence humanitarian aid	
Default effects	Promote influenza vaccination	Chapman et al. (2010)
Implementation intention	Promote influenza vaccination	Milkman, Beshears, Choi, Laibson, and Madrian (2011)
Position effects	Promote healthy dietary choices	Wansink (2004), Rozin et al. (2011), Downs et al. (2009), Thorndike et al. (2012)
Social norm		
Vegetable norm	Increase vegetable intake in school	Reicks et al. (2012)
Calorie norm	Decrease calorie intake (mixed results)	Wisdom et al. (2010), Downs et al. (2009), Roberto et al. (2010)
Incentives	Smoke cessation & weight loss	Volpp et al. (2008), Volpp et al. (2009)
Partition	Decrease food intake	Wansink and Kim (2005), Geier et al. (2012)

items hidden in the middle of the menu, patients can still figure out the actual efficacy of a vaccine even if there is “100%” in the description, and the public is still presented with the same information on outcomes of allocation policies regardless of whether it is in a gain or loss frame. Essentially, we are not depriving people of choices; we are just “nudging” them towards the ones that are best for their own health, and for the health of the public.

Short Biographies

Meng Li is an Assistant Professor in the Department of Health and Behavioral Sciences at the University of Colorado Denver. Her research utilizes theories and findings from psychology and behavioral economics to promote public health. One theme of her research examines public opinions about how to allocate scarce health resources, such as vaccines and organ transplants, and how we can influence such opinions with small changes in the description of allocation policies. Another theme of her research explores how people’s decision biases can be used to encourage healthy behavior, such as vaccination and healthy diet. She received her PhD in Social Psychology from Rutgers University while working with Dr. Gretchen Chapman. Before that, she obtained a MS in Cell Biology from the University of Alabama at Birmingham, and a MD from Beijing University.

Gretchen Chapman is a Professor of Psychology in the School of Arts & Sciences, Rutgers University and a former Department Chair. Her research combines judgment and decision making with health psychology to examine the decision processes underlying preventive health behaviors such as vaccination. She is the recipient of an APA early career award and a NJ Psychological Association Distinguished Research Award and a fellow of APA and APS. She is the author of more than 80 journal articles, the recipient of 17-years of continuous external funding. Before coming to Rutgers, she was an Assistant Professor of Clinical Decision Making at the Department of Medical Education, University of Illinois at Chicago. She held a post-doctoral fellowship at the Wharton School at the University of Pennsylvania after earning her PhD in experimental psychology from U Penn and BA from Bryn Mawr College.

Endnote

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