

**SPECIAL ISSUE:*****Behavioral Economics and Health Annual Symposium***

Editor's note: The application of behavioral economics to health and health care has captured the imagination of policymakers across the political spectrum. The idea is that many people are irrational in predictable ways, and that this both contributes to unhealthy behaviors like smoking and holds one of the keys to changing those behaviors. Because health care costs continue to increase, and a substantial portion of costs are incurred because of unhealthy behaviors, employers and insurers have great interest in using financial incentives to change behaviors. However, it is in the details that complexity and controversies emerge. Who should the targets be, and what outcomes should be rewarded? How should incentives be structured, to maximize their effectiveness and minimize unintended consequences? In what situations should we be intervening to affect decisions by people who may prefer to be obese or to smoke, and in what situations should we accept their preferences?

To begin to answer these questions, the Penn-CMU Roybal P30 Center on Behavioral Economics and Health held its first annual Behavioral Economics and Health Symposium on March 24-25, 2011 with support from the Robert Wood Johnson Foundation. The symposium drew more than 50 researchers, scholars, and health professionals from a variety of disciplines, including medicine, public health, economics, law, management, marketing, and psychology. They heard perspectives on behavioral economics from public and private funders, the CEO of the University of Pennsylvania Health System, and the CEO of stickK.com, a start-up company that uses online, voluntary commitment contracts to help people achieve their goals. Participants formed eight working groups to review the current state-of-the-art in a variety of clinical contexts and to consider how behavioral economics could inform a research agenda to improve health. This Issue Brief summarizes the findings of these working groups and the symposium.

***Setting the stage: introductory remarks by George Lowenstein, PhD, Co-Director of the Penn-CMU Roybal Center***

Dr. Lowenstein balanced enthusiasm for the potential of behavioral economics to improve health with concerns about how incentive programs might actually be used. More than 50% of all large employers are now incorporating incentives in 2011 health plans.

The 2010 Affordable Care Act will likely spur further interest, because as of 2014 it allows employers to use up to 50% of health insurance premiums as incentives for employees to achieve outcome-based wellness goals (Section 2705, also known as "The Safeway

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Amendment”). How can behavioral economic solutions augment, rather than supplant, other effective strategies to improve health, such as new laws or price changes?

He noted that unhealthy behaviors are ubiquitous, leading to rising obesity rates, deaths from tobacco and alcohol use, and poor adherence to medications. These behaviors persist, he said, because they reflect “internalities,” costs for the individual that are not recognized in the present and that reflect self-control problems and inconsistency in preferences over time.

For example, the same individual who wants to lose weight in the future will often continue to eat too much and not exercise enough in the present because the costs of changing those behaviors loom very large in the present and the benefits are somewhat intangible and far away in the future. Behavioral economics recognizes that such inconsistencies are common and that interventions to be successful must address these issues. One approach is by substituting immediate, tangible costs and benefits for internalities.

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### ***Behavioral economics: applying what we know***

Incentive programs have been effective in changing certain health behaviors, such as substance abuse. The ongoing challenge is to apply behavioral economic

principles to “supercharge” incentives using common errors in our decisionmaking processes, as shown below:

<b>Decision Error</b>	<b>Potential Response</b>
Present-biased preferences (myopia)	Make rewards for beneficial behavior frequent and immediate
Framing and segregating rewards	Reward more likely to be effective than discount on premium
Overweighting small probabilities	Provide probabilistic rewards, such as a lottery
Regret aversion	Tell people they would have won had they sustained beneficial behavior
Optimism bias	Encourage pre-commitment and goal setting
Loss aversion	Put rewards at risk if behavior doesn't change

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### ***Funders looking for answers***

A panel of private and public funders laid out the pressing problems they were grappling with in their efforts to improve health and health care. Collectively, they stressed that they were looking for innovative

and implementable solutions to some of the most vexing problems in health, such as obesity, diabetes, drug abuse, and medication adherence. They urged behavioral economists to focus on these priorities and suggested mechanisms for securing funding.

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### ***Group presentation on health insurance benefit design: simplifying choices***

Employers, employees, and payers are considering how behavioral economics can inform decisions about health plan benefits. Decision points occur around which health plan to choose (through cafeteria plans or individual health exchanges), which plan features to

choose (coverage, copays, deductibles, premiums), and how and when to utilize coverage.

Research in fields other than health provides a basis for understanding the factors that influence choices at the health benefit level. From the financial field, for

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example, we know that complexity can cause delay and confusion, and default options can have a dramatic effect on choices. Thus, completion of college financial aid applications improved with the introduction of a standardized form and structured options; participation in 401(k) retirement plans increased greatly by simplifying the enrollment process and through changing defaults to make enrollment an opt-out as opposed to an opt-in.

The group suggested a research agenda that focuses on the following questions pertaining to health insurance benefit design:

- Prices: How do people think about prices in the context of health? When do people respond to price levers? Do people use price as a signal for quality?
- Psychological aspects of cost-sharing: how do people respond to low deductibles vs. low copays? Do people prefer all-inclusive plans to avoid having to pay at multiple times?
- Complexity: When and how should choices be made simpler? Is there a role for purposeful complexity?
- Targeting: Where and when do we want to target interventions (patients, providers, employers, insurers)? Is payment structure too crude a tool?

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### ***Group presentation on provider incentives: targets and teams***

Financial incentives targeted to providers (pay-for-performance, or P4P) have been touted as a way for clinicians, hospitals, and health care systems to improve the quality of care they deliver. Providers are rewarded for reaching pre-defined benchmarks and quality measures. Large health plans, employers and state Medicaid agencies are now implementing various kinds of P4P programs.

The group noted that provider incentives have great potential to affect outcomes, but we lack sufficient evidence about effective approaches to structuring the incentives. Rigorous studies of P4P in health care are few, and overall findings are mixed, even for large dollar amounts.

Research should focus on:

- Broader outcomes: clinical outcomes beyond the target outcome; costs; static outcomes versus dynamic changes in outcomes; process outcomes; patient satisfaction; trust in provider
- Targets of incentives: individuals vs. teams; how to define the team, and how to structure team incentives. Team incentives often turn into risk-sharing arrangements that may not improve outcomes.
- Interaction of incentives and social factors, as incentives are likely to be responsive to context
- Interaction of patient and provider incentives

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### ***Group presentation on screening: what do people really want?***

The group focused on three types of screening: health risk assessments (HRAs), HIV screening, and cancer screening. Financial incentives have been used to increase rates of HRA completion, although the evidence for whether HRA completion leads to subsequent changes in behavior is limited. Financial

incentives have also been effective in increasing HIV screening rates, although the effects are not linear. However, HIV screening has not been shown to be a cost-effective way to reduce transmission of HIV. Most strategies to increase cancer screening have been educational (providing information to groups

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or individuals), and reducing barriers to care by eliminating copays. Financial incentives to physicians have had limited success.

The group noted that important gaps remain in our basic understanding of people's motivations around screening. Knowing people's reasons for not being screened may affect whether and how we intervene. Behavioral economic interventions might best be targeted, at least initially, to people who want to be screened but have failed to do so.

The group suggested a research agenda that would help us more broadly to understand when to intervene,

and whether to use pre-commitment strategies, default options, and/or financial incentives to change behavior. A fruitful avenue for research lies in systematic assessment of:

- knowledge and intentions about screening;
- expectations and beliefs about health;
- how expectations and beliefs would change by screening;
- the comparative effectiveness of pre-commitment strategies, default options, and/or financial incentives in changing behavior.

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### ***Group presentation on obesity and physical activity: hard to maintain***

In the face of rising rates of obesity, and despite the knowledge of the benefits of weight loss, the vast majority of people fail in attempts to lose weight and keep it off.

In terms of exercise, studies show that people overestimate how much they will go to the gym, and underestimate the value of forming exercise habits. Behavioral economics may help us design more effective interventions to increase exercise, improve diet, and achieve and sustain weight loss. Lotteries and deposit contracts have been effective in achieving initial weight loss, but the effects were not sustained. Ongoing studies are evaluating the effects of combining financial incentives, group rewards, and peer networks.

The group defined the following areas for future research:

- What are the right things to reward: weight, body fat, exercise? How do we measure them accurately in scalable ways?
- How do we avoid perverse effects, such as purging or discouraging muscle gain?
- What is the cost effectiveness of a) incentives vs. other approaches; b) various incentive designs?
- How do we help people form durable habits?
- How much should we worry about extrinsic rewards crowding out intrinsic motivation?
- How do we tailor interventions to the enrollee? To what extent should people choose their own goal? Can people accurately predict what will work for them?
- What are the health consequences of (e.g.) exercising for six months, but then relapsing?
- Should financial incentives be paired with other weight loss/maintenance interventions?

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## ***Group presentation on food labeling: changes needed***

In response to rising rates of obesity, policymakers have looked to food labeling to enable and encourage people to make better food choices. In theory, food labeling can affect consumer behavior by providing information to individuals, thereby fostering learning and salience about nutrition. It might also affect supplier behavior by having a shaming effect on restaurants, which might offer more nutritious selections. The 2010 Affordable Care Act mandates calorie listings on the menu boards of chain restaurants with 20 or more locations.

But studies show that present labels have not had much effect on people's food choices. Behavioral economics suggests that information alone will not lead to dietary changes, especially if the information is complex or consumers lack background knowledge, such as how many calories they "should" eat.

The group outlined a research agenda that addresses challenges in making food labels effective, such as:

- Understandability: simplifying food labels; testing numerical scales; altering the visual presentation
- Personalization: how to make labels more specific to individual dietary needs
- Balancing single choices and overall diet
- Behavioral factors: Positive vs. negative framing; self-control issues
- Tradeoffs between improvements in health and incremental cost
- Sources of information: differential responses to government (mandated labels, required calorie postings); private firms (Hannaford's guiding stars, Whole Foods' aggregate nutrient density index, Subway's low fat), or third parties (Weight Watchers, mobile apps)

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## ***Group presentation on medication adherence: not just about copays***

Policymakers and employers are looking to Value-based Insurance Design (VBID) as a way to improve medication adherence. VBID looks to reduce barriers to, and promote use of, high-value health care. Because medication adherence worsens when patients face increasing copayments, it seems reasonable to assume that reducing copayments would lead to improved adherence. However, studies have shown that reducing copays is relatively ineffective at improving adherence, possibly because the change in amounts is small, or the feedback too infrequent. Behavioral economics can be used to refine VBID programs and improve medication adherence.

The group noted that investment in information technology is critical for behavioral economic

interventions to be able to provide frequent, ongoing feedback at low cost and at scale. They recommended a research agenda for applying behavioral economic methods to medication adherence, including:

- How can we incentivize sustainable behavior change: what are the optimal dollar amounts for incentives, and do they vary by socioeconomic status? What are the spillover effects to other non-incentivized medications?
- How can we combine incentives for providers and patients?
- Can we target non-adherents? Can we target people based on risk for non-adherence?
- Can we use social psychological nudges to sustain adherence?

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## ***Group presentation on substance abuse: strategies to abstain, quit and stay quit***

The field of drug abuse treatment has had the longest experience with behavioral economic interventions and continues to experiment with ways to reinforce positive behaviors and combat relapse.

Work to date has discovered the importance of excessive discounting of delayed rewards among substance abusers, and the effectiveness of supplying alternative reinforcers (such as vouchers) in retaining people in treatment and encouraging abstinence.

The group focused on three behavioral economic methods that hold the most promise for substance abuse treatment. These are:

- Pre-commitment: self-imposed internet and casino bans are an example of pre-commitment applied to the treatment of problem gambling. Can this

strategy be applied to alcohol or illicit drugs? One idea for monitoring pre-commitments is to enable smartphone GPS tracking to alert a third party that an addict has entered a high-risk zone.

- Incentives: Could pre-commitment and incentives be combined to prevent smoking initiation among teenagers? One idea is to create abstinence pledge at schools with a monthly lottery prize for testing negative for tobacco use. Can monthly lotteries be used to prevent delayed relapse among addicts after the drug treatment phase?
- Substitution: Since drug treatment involves taking away something pleasurable, can we replace it with a new pleasurable activity? How can behavioral economics inform the selection of an effective substitute?

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## ***Group presentation on ethics: are we nannyng or nurturing?***

The ethics group provided a framework for understanding the rationale for intervening with behavioral economics. Interventions might be justified because the externalities imposed (healthy subsidizing the unhealthy) seem unjust or inefficient; they could also be justified because the internalities imposed seem unduly burdensome and prompt a sense of beneficence toward individuals who can't help themselves. The substantive question is: which internalities merit attention, and who decides?

Even if we can agree on the focus of interventions, significant ethical issues have arisen, and continue to arise, as we develop, test, and implement the interventions. Even a simple strategy of changing default options can unduly burden the person who might want to choose otherwise.

The group highlighted the following ethical issues warranting attention as behavioral economics is applied to health:

- Level of the intervention: Are we implicitly burdening individuals with problems that should be

tackled at the societal level? For example, should we pay people to lose weight or rather, subsidize food producers/farmers to produce healthier food?

- Autonomy vs. effectiveness: In designing interventions, how do we balance maximizing effectiveness with preserving individual choice? For example, in the United States, organ donation is a matter of simple consent. Some European nations have implemented presumed consent, in which someone must opt out of organ donation. Opt-out strategies increase the rate of consent, at the cost of some level of autonomy.
- Fairness: When are behavioral economics policy levers discriminatory? Are incentives equally effective across targeted individuals? People of low socioeconomic status may be subject to more incentives or "nudges." However, they may also experience larger health benefits so the net impact may be favorable. The potential for discrimination is greater as the targeted behavior is less modifiable.

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## *Cross-cutting themes and wrap-up*

The symposium ended with three presentations summarizing the discussions and offering perspectives on themes that cut across the topics.

Maxine Stitzer, PhD, Professor of Psychiatry and Behavioral Sciences at Johns Hopkins University, noted the tendency to look at behaviors individually. She urged participants to think about the larger box and consider multiple domains or problems concurrently. Doing so brings up questions about which bundles of behaviors can be addressed together, and in what order. In the realm of substance abuse, targeting one drug often has a beneficial effect on other drug use. She also stressed the importance of social reinforcement and the development of interventions that transform external tangible incentives to external social incentives. Lastly, she questioned where the money for financial incentives would come from, which is a large issue when working with community treatment providers.

Brigitte Madrian, PhD, Professor of Public Policy and Corporate Management at Harvard, discussed the success of changing the default on retirement savings plans in changing behavior. Automatic enrollment worked so well, she said, for two reasons, first, most people want to save for retirement and second, automatic enrollment simplifies doing what most people already want to do. Intervention becomes more difficult, she noted, when what is easy and what people want is not the same. There are unsettled questions about what people want when it comes to health, and whether we can change what people want, through information, incentives, psychological interventions, or social interventions. Simplifying what people want to do can involve changing the product or the process. Throughout the symposium, groups discussed simplifying products, such as nutrition labels, prescription bottle caps

and reminders, or prescription drugs. They also discussed changing processes through mandates, defaults, feedback, reminders, commitment devices, substitution, and aligning incentives.

She concluded that further research should focus on which methods work best in what situations. How and when should we use the tools of behavioral economics to build the “house” – good health – and given constraints, which tools or set of tools are best to use?

David Asch, MD, MBA, Executive Director of the Leonard Davis Institute of Health Economics at Penn, noted the interest in behavioral economics from diverse stakeholders. The symposium, he said, highlighted the considerable number of “known unknowns” in the field and laid the groundwork for a persuasive agenda for research and research funding. Some of the cross-cutting issues in applying behavioral economics to health are:

- The underuse of recommended care, and how to address the deficiencies of providers, patients, and the health care system
- The right structure for incentives, considering aspects such as size, frame, frequency, duration, form, and how these aspects interact with their context
- The right triggers for incentives (whether process or outcome-based, single items or multifactorial indices, static thresholds or improvements from baseline)
- The right ways to evaluate incentives, including outcomes such as clinical effectiveness, cost effectiveness, acceptability, spillover, crowd-out effects, endurance of effect, and changes over time
- The effects on the culture of personal behavior, social relationships, intrinsic motivation, and personal responsibility

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The Penn-CMU Roybal Center on Behavioral Economics and Health began in 2009 with a grant from the National Institute on Aging. It specializes in research and dissemination strategies that foster the translation of behavioral economic theory to improve health-promoting behaviors and health care delivery in older adults. It is led by Kevin Volpp, MD, PhD (University of Pennsylvania) and George Loewenstein, PhD (Carnegie Mellon University). For more information, go to [www.med.upenn.edu/ldichi/](http://www.med.upenn.edu/ldichi/)

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