Changing Behavior for Good

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Abstract

Life outcomes are powerfully determined by seemingly trivial, repeated acts—whether we show up for class, how we spend our money, and even what we eat for breakfast. In recent years, behavioral scientists have gained a great deal of knowledge about the situational and psychological factors that hold sway over what we repeatedly do, leading to many successful and scalable interventions to change short-term behavior. Unfortunately, behavior change rarely endures. In this article, we review a small but growing body of research suggesting the most promising approaches to changing behavior for good and call for more work on this important topic.
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Introduction

Life outcomes are powerfully determined by seemingly trivial, repeated acts. Health, for example, depends on thousands of daily choices—to eat well and exercise regularly, to avoid smoking, and to take medications as prescribed. Forty percent of the 1.16 million premature deaths in the U.S. each year result from suboptimal behavior (Schroeder 2007); tobacco is responsible for 435,000 of those deaths, while poor diet and physical inactivity account for 400,000 (Mokdad, Marks, Stroup, & Gerberding 2004). Cardiovascular disease, the leading cause of mortality in the United States, is largely treatable with antihypertensive medicines, but just one year after a heart receiving a prescription, only about half of patients are still taking their pills as directed (Vrijens, Vincze, Kristanto, Urquhart, & Burnier 2008). For many, financial security results from repeated decisions to spend judiciously. One in three American families has no savings (The Pew Charitable Trusts 2015), and 52% are under-saving, though most need to save just 15% of earnings to prepare for retirement (Munnell, Webb, & Hou 2014). Finally, academic success requires attending class, studying, and engaging with challenge on countless occasions. Tellingly, 23% of high schoolers and 49% of college students drop out before earning diplomas (Heckman & LaFontaine 2007; Camara 2013), and research suggests that academic success can be dramatically increased without changing intelligence or family income (Heckman & Rubinstein 2001; Kuh, Kinzie, Buckley, Bridges, & Hayek 2006; Bowen, Chingos, & McPherson 2009). All of the aforementioned challenges to health, savings, and educational outcomes disproportionately harm disadvantaged members of society.

In recent years, behavioral scientists have learned a great deal about the underlying situational and psychological factors that determine daily decisions, leading to many successful and scalable interventions to change short-term behavior (for example, see Thaler & Benartzi 2004; Nickerson & Rogers 2010; Bryan, Walton, Rogers, & Dweck 2011; Grant & Hofmann 2011; Milkman, Beshears, Choi, Laibson, & Madrian 2011; Duckworth, Kirby, Gollwitzer, & Oettingen 2013; Allcott & Rogers 2014; Coffman, Featherstone, & Kessler 2014; Milkman, Minson, & Volpp 2014; Loewenstein, Price, & Volpp 2016; Patel, Asch, Rosin, & et al. 2016). Unfortunately, behavior change rarely endures (Wood & Neal 2016). In this article, we review a small but growing body of research suggesting the most promising approaches to changing behavior for good.
Theory and Supporting Evidence

Perhaps the most promising avenue for making behavior change stick is by changing habits. Habits are automatic, effortless, and repeated actions. They develop when the following cycle is repeated often: a situational cue triggers a behavior, and that behavior triggers a reward (Wood 2000; Chua & Camerer 2011; Rogers & Frey 2014; Smith, Bernheim, Camerer, & Rangel 2014; Galla & Duckworth 2015). Exactly how many repetitions of this cycle are required to generate a habit remains an open question, and it is likely context-dependent (Wood 2015).

Past research suggests that intervening to creating sustained behavior change in the form of new habits requires the deployment of two kinds of intervention strategies, as illustrated in Figure 1. The first type of strategy targets the situation. Strategies targeting the situation (1) insert behavior-triggering cues that are both interesting and obvious (e.g., enabling students to text each other personalized messages encouraging studying), (2) make beneficial behaviors easier (e.g., automating medication refills), or (3) make beneficial behaviors more rewarding (e.g., offering raffle tickets for each dollar deposited into a savings account; Beshears, Choi, Laibson, and Madrian 2013; (Sen et al. 2014); Loewenstein et al. 2016; Patel et al. 2016; Sen et al., 2014). The second type of strategy shifts people’s cognitions – equipping them, for example, with beneficial beliefs. This allows them to forecast the consequences of their behaviors more accurately (e.g., understanding that failure is a normal part of learning; Yeager et al. 2016) and act more adeptly (e.g., prompts to plan when to work out linked with calendar reminders).

There should be tremendous synergy in applying these approaches in combination. Changing cognitions without changing the situation puts an inordinate burden on individual willpower. Likewise, permanently changing a person’s situation is often impractical.

Figure 1. The Key to Durably Changing Behavior

Leading behavioral scientists have pioneered the development of interventions for short-term behavior change by building on insights from basic research (e.g., Nickerson and Rogers 2010; Bryan et al. 2011; Grant and Hofmann 2011; Milkman et al. 2011; Coffman et al. 2014). A
solution for *durable* change will also need to build on basic research and take inspiration from previous interventions showing sustained results. Below we review some of the most promising research-based strategies for changing behavior for good, building on the model in Figure 1.

1. **Teach People to Cue Themselves.** Ensuring cues are established to reliably trigger desired behaviors is key to creating habits (Wood 2000; Chua & Camerer 2011; Rogers & Frey 2014; Smith et al. 2014; Galla & Duckworth 2015). One way to ensure cues are present regularly when they are needed is by teaching people to cue themselves. When people form if-then plans about the behaviors they intend to engage in following a given cue, this robustly increases follow-through (Gollwitzer 1999; Milkman et al. 2011; Rogers, Milkman, John, & Norton 2015). An example of an if-then plan is: “If it is a weekday and I’m about to leave the house for work, then I will make my own coffee instead of going to Starbucks!” If-then plans reliably promote follow-through on one-time behaviors, but they can also promote sustained behavior change. One study found that teaching students goal setting and planning skills improves attendance and grades the following marking period (Duckworth et al. 2013). Together, this research suggests that to facilitate durable behavior change, it is helpful to coach people to make if-then plans that put cues in place to trigger desirable behaviors.

2. **Piggyback Cues.** Another way to ensure cues to trigger desired behaviors are reliably present is by piggybacking desired behaviors onto existing routines (Wood & Neal 2016). For instance, adding a desired behavior (e.g., flossing, eating an apple a day) onto the end of a routine that is already habitual (e.g., brushing your teeth, having a cup of coffee) can be an effective way to create lasting new habits. In one study, flossing habits were more effectively generated by encouraging people to floss after brushing their teeth rather than vice versa (Judah, Gardner, & Aunger 2013).

3. **Change Beliefs about Beneficial Behaviors.** People do things that they think will be valuable. Accordingly, one of the most powerful cognitive interventions available is to change beliefs about the likelihood of success. For example, teaching students that their abilities, including their intelligence, can improve with effort and experience increases report card grades and course completion among at-risk groups (Paunesku et al. 2015; Yeager et al. 2016). Showing students that deliberate practice is difficult, doable, and effective changes how they interpret the necessary frustration of attempting skills they have not yet mastered, and particularly among low-achieving students, raises report card grades (Eskreis-Winkler et al. 2016).
norms—the attitudes and behaviors of other people—also powerfully influence behavior. For example, learning that many other Americans are reducing their consumption of meat prompted more cafeteria patrons to order meatless meals (Sparkman & Walton 2017).

4. Make Behavior Change Easy. Making it as easy as possible to sign up for valuable programs that facilitate behavior change dramatically improves outcomes. For example, letting people enroll in a retirement savings program (so a portion of every future paycheck is automatically sent to a retirement account) via stamped postcard increases participation by 20 percentage points (Benartzi & Thaler 2013), and allowing sign-ups after a future pay raise produces a 78% sign-up rate and boosts enrollees’ savings by 388% over 40 months (Thaler & Benartzi 2004). Providing high school seniors’ parents with help completing the Free Application for Federal Student Aid (FAFSA) while they receive assistance with tax preparation increases the rate at which those parents’ children complete two years of college by eight percentage points over a three-year follow-up period (Bettinger, Long, Oreopoulos, & Sanbonmatsu 2012). Providing community college freshmen with reminders and encouragement to renew their FAFSA increased sophomore persistence by 14 percentage points (Castleman & Page 2016). Together these findings highlight that making it easier to engage in desirable behaviors can have a dramatic, positive impact on behavior change for good.

5. Make Good Behavior More Enjoyable. Another literature suggests that finding ways to make beneficial - but often unpleasant - behaviors (e.g., exercise, studying) more immediately enjoyable may have the potential to promote sustained behavior change. For instance, one study found that when people were only allowed to enjoy tempting audio novels when exercising at the gym, they visited the gym more frequently than a control group for seven weeks (Milkman et al. 2014). This so-called “temptation bundling” strategy helped make the act of exercising more fun by pairing it with an engaging audiobook. More generally, combining good behaviors that can be unpleasant with enjoyable activities (e.g., scheduling get-togethers with a challenging relative at a favorite restaurant, doing household chores while listening to an engaging podcast) may be a strategy with the potential to promote behavior change for good. Complementary research has shown that persistence is increased on challenging but important goals (e.g., studying, exercising) by encouraging people to pursue those goals in fun ways. For instance, encouraging gym goers to choose a workout that’s fun (e.g., a dance class) rather than pursuing the workout that’s most effective or useful promotes more persistent exercise (Woolley & Fishbach 2016b).
Similarly, playing music in a high school classroom to make studying more fun increases persistence on schoolwork (Woolley & Fishbach 2016a). Overall, making good behavior more enjoyable facilitates the association of a “reward” with the behavior, and such repeated rewards are key to habit formation.

6. **Repeatedly Reward Good Behavior.** Perhaps the most promising stream of research designed to promote habit formation has shown that repeatedly paying people to engage in a valuable behavior or otherwise encouraging it (e.g., by conveying its popularity) for as little as a month can increase the target activity for many months post-intervention (Allcott & Rogers 2014; Beshears, Lee, Milkman, & Mislavsky 2018). For instance, in one study, paying students to visit the gyms eight times over the course of a month rather than just once or not at all produced behavior change that lasted long after that month (and the intervention period) ended. The students who had been rewarded for repeatedly visiting the gym worked out nine times, on average, in the following seven weeks, while other students went roughly half as often (Charness & Gneezy 2009). Several follow-up studies have since replicated the finding that rewarding repeated exercise over a period as short as one month can lead to sustained exercise habits detectable up to a year later (Acland & Levy 2015; Royer, Stehr, & Sydnor 2015; Beshears et al. 2018). And incentives aren’t the only reward that has yielded this result: repeatedly alerting people to how their energy usage compares to that of their neighbors in comparable homes (this is a strategy called “social norms marketing”) also has sustained benefits after messaging is discontinued (Allcott & Rogers 2014). Monthly energy reports with social norms information sent to residential homes for two years continue to reduce energy consumption for years after discontinuation, with only a 10–20% attenuation of their benefits per year. Finally, similar results have been generated by offering “regret lotteries”—lotteries requiring measurable behavior change by a given date to win. Regret lotteries have been effective at encouraging sustained weight loss and smoking cessation (Volpp et al. 2008; Volpp et al. 2009; John et al. 2011; Milkman et al. 2014). Together, these findings suggest that there are significant benefits across domains associated with repeatedly rewarding valuable behaviors; repeated rewards create sustained change that lasts well after rewards are removed.

7. **Intervene at Opportune Times.** Finally, intervention timing matters. Research on the fresh start effect has shown that people are more prone to engage in beneficial behaviors like exercising, searching for information about dieting on Google, and creating a commitment
contract on the website Stickk.com at the start of cycles like the beginning of a new week, month, year, following birthdays, and following holidays (Dai, Milkman, & Riis 2014; Dai, Milkman, & Riis 2015). This research suggests that offering behavior change interventions on so-called “fresh start” dates may increase take-up and therefore success rates.

**Discussion and Conclusion**

When daily, “routine” choices are suboptimal, they undermine every conceivable life outcome. Thus, a solution to enduring behavior change carries universal benefits. However, when poor choices accumulate, they particularly harm populations with fewer resources and less “slack,” for whom seemingly trivial mistakes can spiral with remarkable speed (e.g., a small ailment goes untreated and becomes debilitating; the interest on small, unpaid debts accumulates to produce financial insolvency; a failing grade makes it difficult to justify studying for a degree over working full-time; Shah, Mullainathan, and Shafir 2012; Mani, Mullainathan, Shafir, and Zhao 2013; Mullainathan and Shafir 2013). Tragically, adversity itself exacts a hefty physiological and psychological toll: when individuals perceive that the future is uncertain and threatening, they become biased toward meeting short-term needs (versus working toward long-term goals; Blair and Raver 2012; McEwen et al. 2015).

At present, organizations and academics are incentivized to work on behavior change in isolation, focusing on a single setting, measuring success over the short-term. There is an enormous untapped opportunity for large-scale, interdisciplinary work combining practical and theoretical insights to enable sustained improvements in daily decisions.

“We are what we repeatedly do,” Aristotle is often quoted as observing. “Excellence, then, is not an act but a habit.” Likewise, a lifetime of observing human nature led William James to conclude, “Life ... is but a mass of habits—practical, emotional, and intellectual—systematically organized for our weal or woe, and bearing us irresistibly toward our destiny, whatever the latter may be.” If our ultimate destinies derive from our daily habits, then the 21st century may be the first in which humanity learns to change behavior for good.
References


