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# Closing the wellness gap

## Fusing mobile technologies with behavioral science to improve health outcomes

**A Deloitte series on behavioral economics and management**

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# Introduction

## mHealth and the health and wellness gap

FEW would argue that health care remains one of the most vexing issues facing the United States today. While health care spending continues to increase year over year,[1] the United States ranks only 68th in health and wellness outcomes worldwide.[2] This gap between costs and outcomes is problematic, of course, for the many individuals who grapple with physical and/or psychological conditions, either chronically or acutely. But it's also a financial juggernaut for many organizations. Insurance companies, hospitals, government agencies, and corporate human resource (HR) departments are all scrambling to find ways to improve results while reining in costs.

Meanwhile, more and more consumers are taking their health and wellness into their own hands—literally. Mobile health, or mHealth—the use of mobile communication devices (phones, tablet computers, and PDAs) for health services and information—has become enormously popular.[3] Consumers today have more mHealth options available to them than ever before: From wearable fitness devices to mobile applications (apps), smart devices to cyber networks, text messaging campaigns to other incarnations, the mHealth market has doubled in just four years. In fact, there are more than 100,000 mHealth apps currently available.[4]

The potential for mHealth to improve participants' overall health and well-being is vast. While these devices and services encourage consumers to be engaged participants in managing their own health, fitness, and general wellness, broader benefits can be reaped as well. For matters of public health, where 75 percent of all health costs derive from preventable conditions,[5] feedback devices like these can be enormously helpful in facilitating healthy behavior change. The benefits of mHealth tracking are more fully realized when these tools: 1) create tailored messages and interim goals to match the individual's mental and physical starting place, and 2) bring in coaching to bolster motivation. And while many organizations now recognize the opportunity that mHealth technologies can offer by helping individuals make healthier choices in their daily lives, they should also understand the inherent limitations. A strategy of simply embedding mHealth solutions into an organization would likely not be enough to reap sustained behavior change.

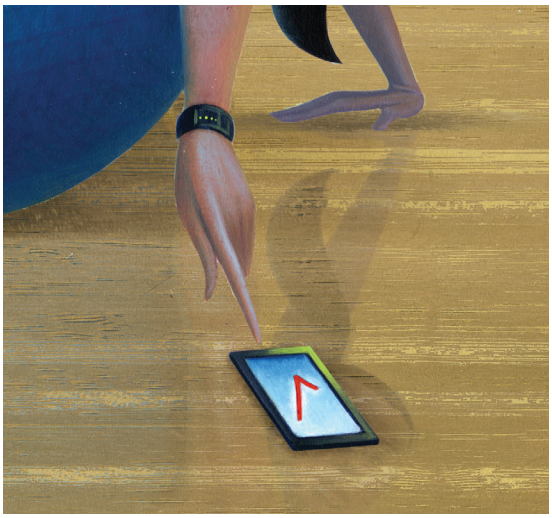
Take wearable technologies, for instance. They provide consumers with ample data to assess aspects of health, but few are designed to go the next step: applying this information to improve health outcomes or to identify opportunities for behavior change.[6] Device users also report a disconnect between recording data using a wearable device and behavior

change. Consumers have suggested that the data can be overwhelming and ineffective because there is often no direct instruction or correlated advice to provide clarity for how improvements should be made.[7] In a 2015 study of more than 6,000 wearable device users, more than 33 percent had stopped using their device within 6 months, and more than 50 percent had discontinued device use by the end of the study.[8]

Given these limitations, should organizations abandon using mHealth technologies altogether? Definitely not. But how, then, can they focus on more skillfully leveraging mHealth technologies to help individuals achieve and *sustain* their health and wellness goals? Here, we believe the key lies in carefully connecting mHealth with lessons from the emerging field of behavioral science. Behavioral science combines research from psychology, economics, and neuroscience to understand how people make decisions. These lessons can help organizations learn how to motivate positive action. By marrying behavioral insights with the expansive reach of mHealth, organizations can develop a new toolset to influence health and wellness. One case concerning elderly diabetic patients illustrates the potential of this partnership.[9] In real time, health providers monitored diabetic patients' glucose levels by means of mHealth technologies. But instead of solely tracking behavior, they augmented this information with behavioral science-based interventions to help individuals adhere to their treatment plans.

Takeaways from the behavioral field suggest that impactful, health improvement-oriented messaging benefits from incorporating the following elements:

- **Anchor on the right goal.** People tend to anchor on particular numbers. If they deviate too far from expectations, interest in the activity may quickly subside. So for anyone taking on a new health endeavor, picking an appropriate goal can be paramount to success.
- **Choose the most appropriate lever.** People are motivated in one of two ways—intrinsically (nonmonetary) or extrinsically (monetary/other types of bonuses). Understanding which lever is most appropriate for specific goals can significantly sway engagement.
- **Intrinsically motivate with coaching.** Though tracking behavior is important, people benefit more long term when also offered the insights of a coach. When provided with a roadmap to success, they are much more likely (and willing) to engage in positive behavior.



By marrying behavioral insights with the expansive reach of mHealth, organizations can develop a new toolset to influence health and wellness.

This article will explore which behavioral levers have positively influenced health and wellness decisions. Using a diverse set of wellness campaigns as real-life examples, we'll uncover how these organizations were able to successfully merge mHealth technologies with behavioral insights to increase healthy behavior.

# Augment the gaps with behavioral-based feedback

THOUGH tracking devices have increased in popularity, there is little evidence to suggest that tracking alone changes behavior. Wearable sensors allow users to track movements and record data, but possessing this information is often ineffective unless the user knows what to do with it and engages in the process. Research from the American Medical Association (AMA) shows that tracking devices are most effective for those already committed to improving their health and wellness.[10] Groups more broadly implementing new wellness programs, such as HR departments, may be designing programs that target a large faction of individuals who are not actively seeking behavior change. In these cases, simply providing a line of sight into health activities may fall short in prompting *new* action.

Rather than viewing mHealth devices as the focal point of the wellness strategy, organizations should consider these devices as a method to facilitate their engagement strategies.

Rather than viewing mHealth devices as the focal point of the wellness strategy, organizations should consider these devices as a method to facilitate their engagement strategies. Adopting this perspective helps leaders expand the reach of their programs to a wider audience. When structuring a program, the question is not only, "Which mHealth device is most appropriate?" but also, more importantly, "What strategies and messaging will engage the most users to actively participate in the program?" To answer the latter question, the AMA research highlights the value of implementing behavioral economics concepts to shape individual health decisions and drive change. The reason: Behavior change is best encouraged through frequent feedback and triggers that capture a person's attention when they are in the process of making health-related decisions.[11] Conveniently, the in-depth tracking that mHealth devices afford often facilitates this process, especially through devices that offer point-in-time feedback. In one promising example, Weight Watchers, a program that already employs behavioral change principles, has recently incorporated a new feature to its mobile platform, Weight Watchers Connect. Now, in addition to tracking food and exercise, Connect provides a social media experience in which members can share experiences and find support along their weight loss journey.[12] At its finest, a creative new generation of applications, like Weight Watchers Connect, is taking this information and converting it into usable advice and real-time feedback to elicit change.

# Enhance the experience with behavioral economics

## Anchor on the right goal

While many apps require initial measurements, such as height and weight, most do not offer an initial assessment or baseline metrics. Having these metrics in place would help users track progress and make informed decisions based on their current state and future goals. Behavioral economics demonstrates the importance of establishing meaningful reference points,[13] because people use them to measure progress and assess value—that is, people use these reference points as *anchors* for decision making. Examples of regularly anchored reference points include the discount off of a new car's list price, or, for exercise, the appropriate amount of steps to strive for each day. For any activity or pursuit, when these reference points deviate too far from expectations, people tend to quickly lose interest. Imagine a new runner, for example. If he sets a goal to run a marathon within the first month, reality might quickly make it clear that these expectations are highly improbable and he will lose interest.

In matters of health and wellness, people may need assistance in goal-setting since many may lack the knowledge to properly establish these relevant anchors themselves. Many fitness tools request initial health measurements, but then the users decide how intense their initial goals or workouts should be. In order to make effective behavioral change, a readiness self-assessment helps determine a baseline or starting point. However, few apps collect initial health and fitness data and incorporate a user's unique risk factors to generate an individual readiness assessment. This is a shortcoming organizations should strive to overcome, because assessing a user's readiness to change is a simple, but integral, process in matching the correct behavior change goal with the physical baselines and motivations of the individual. If negative feelings toward change are avoided when participants begin using a behavior-changing tool, then they are less likely to be deterred from engaging.[14]

Even incremental steps, such as pairing relevantly anchored and realistically attainable goals with the real-time feedback of mHealth devices, have demonstrated positive results. Consider one study of overweight and obese women, which concluded that the women who used a combination of step goals and the immediate feedback of a pedometer had increased physical activity levels compared to those who did not use a device to track their steps.[15] Specifically, the study highlighted that paying attention to movements and receiving feedback can be keys to improving lifestyles and health outcomes when tracked against predetermined, relevant goals.

Well-informed, personally tailored goals establish benchmarks that better speak to each individual participating in your wellness program. In short, if the goal is properly constructed, you increase the likelihood of resonating with each individual, regardless of where they are on their personal-health journey (see sidebar, "Matching goals to motivations: Behavior as a *process*" for more information).

Behavioral economics uncovers the importance of anchoring on a relevant goal. Concepts from the field can also be woven in throughout the entire program to enhance the user's experience and, in turn, increase participant engagement.

### MATCHING GOALS TO MOTIVATIONS: BEHAVIOR AS A *PROCESS*

The Transtheoretical (or Stages of Change) Model of behavior change (TTM) contends that behavior change is a *process*, not an event, and that individuals are at varying levels of motivation, or *readiness*, to change.[16] Participants at different points in the process of change can benefit from different interventions or information, matched to their stage at that time. The TTM model specifies these five distinct stages of behavior change:

- **Pre-contemplation:** Individuals who have never considered making a change. An example would be a smoker who never considered, or possibly was not even aware of, the dangers of smoking.
- **Contemplation:** People who are aware of the benefits of making a change, but are also deeply entrenched with the negatives. For instance, a potential dieter may understand the health benefits of losing weight, but also grapples with the reality that she will not be able to eat her favorite foods as often.
- **Decision/determination:** At this stage, individuals have already decided they need to make a change and may have already taken some actions to do so (such as downloading a fitness app).
- **Action:** People who have already taken real action to facilitate change in their lives. One example would be someone who has already started running regularly to prepare for a race.
- **Maintenance:** Individuals who are already committed to a new path and are actively working to prevent a relapse into old habits. This could be a smoker who quit six months ago or a runner who wants to continue her routine after she completes a race.

By knowing an individual's current stage, organizations can tailor effective and strategic program goals to the appropriate need for each stage. When it comes to encouraging someone to seek change, organizations should also be sure to tailor messages, strategies, and programs to the appropriate stage. Developing targeted messages and materials can lead to greater results and better strategies for effecting change. Whole populations who never considered looking into making a change become potential recipients for behavior-change interventions. Gamification and mobile apps can be leveraged to send targeted messages specific to the stages of change as coaching features, thereby delivering motivation and information messages at precisely the right time to meet each individual's need.

## Picking the right motivational lever

One of the biggest factors involved in creating and sustaining behavior change is motivation. For our purposes, motivation refers to the factors that prompt people to attend to and act upon information—or, put more simply, it is why we do the things we do, and what drives those behaviors. There are two types of motivation: extrinsic (outside) or intrinsic (inside). Extrinsic motivation occurs when we are motivated to perform a behavior or engage in an activity to earn a reward or avoid punishment. Competing in a contest to win a scholarship or toeing the line to avoid getting in trouble are examples of extrinsic motivations.

Intrinsic motivation involves engaging in behavior because it is personally rewarding; essentially, performing an activity for its own sake rather than the desire for some external reward. For example, if you play an instrument purely for enjoyment, rather than hoping one day you'll become famous, you would be *intrinsically motivated*.[17] So, the primary difference between the two types of motivation is that extrinsic motivation arises from outside of the individual while intrinsic motivation arises from within. Research has demonstrated that the two types of motivation can differ in how effective they are at driving behavior. Some studies have demonstrated that offering excessive external rewards for an already internally rewarding behavior can lead to a reduction in intrinsic motivation, a

phenomenon known as *crowding out* (or the *over-justification effect*).[18]

Still, extrinsic motivations frequently help people acquire new skills or knowledge.[19] Once these early skills have been learned, people may then become more intrinsically motivated to pursue the activity. External rewards can also be a source of feedback, allowing people to know when their performance has achieved a standard deserving of reinforcement.

UnitedHealthcare, for example, is experimenting with mHealth to improve the well-being of its customers. In 2015, UnitedHealthcare partnered with Walgreens to offer the health plan's fully insured members in Arizona and Illinois the opportunity to earn Walgreens Balance Rewards points. Members accessed the program through UnitedHealthcare's mobile app, Health4Me, and earned points for engaging in healthy behaviors like walking, eating meals with fruits and vegetables, or getting a sufficient amount of sleep. The accrued points could then be used for discounts on Walgreens products.[20] In this successful pilot, intrinsic motivations of improving health were augmented with extrinsic motivations of getting points and saving money.

Understanding which motivational levers are appropriate and effective for a given population can have a lasting impact on the success of an organization's health program. For those already motivated to pursue the desired behavior, introducing an extrinsic reward can complicate things quickly. If participants are looking for ways to "get off the couch" and exercise more, providing an extrinsic reward for walking 12,000 steps a day may be enough of an incentive to strive for that goal in the short term, but if they don't eventually gain an intrinsic appreciation for the activity, these participants will likely stop at the end of the initiative.[21] Conversely, even if walking becomes habit forming, the extrinsic reward may crowd out other healthy behavior. In other words, a participant may come to expect an external reward and may choose to forego a smoking cessation program unless such a reward is offered. So when weighing the merits of offering extrinsic rewards, either consider the possibility that many future programs will also have to include extrinsic motivators, or if the program is a short-term initiative, be aware that old habits tend to quickly return in the absence of any long-term carrots (which may be instrumental in maintaining behavior change).

## Intrinsically motivate with coaching

Tapping into people's intrinsic motivations may lead to engaging more program participants, for a longer period of time, and hopefully, more cost-effectively than extrinsically motivated methods. For matters of health, there is a demonstrated track record of increasing long-term behavior change by effectively integrating coaching and making the initiative a socially immersive experience.[22]

Outside of the realm of health, quality coaching has shown to be an effective method for engagement. Within the workforce, people perform at higher levels when they believe they are contributing to a greater good, have well-defined goals, and are offered a coach who provides feedback for improvement.[23] In fact, a culture that incorporates coaching is highly correlated with business performance and employee engagement.[24] Many of these attributes can also be applied to wellness initiatives.

A good coach offers participants a roadmap on how to thrive in the activity of interest.

As mentioned earlier, with any activity, if a participant does not know how to perform, she may quickly disengage. Whether in-person or through some electronic means, a good coach offers participants a roadmap on how to thrive in the activity of interest. This is partially explained by *social proof*, which states that people naturally take cues from others on how to behave. A study regarding new employee onboarding demonstrates

how new employees paired with an onboarding coach were more likely to unconsciously mirror the behavior and beliefs of those they were matched with when they were placed in situations where they were uncertain about how to act.[25]

Behavioral economics explains that most people, despite their best intentions, easily sway from optimal behavior due to issues such as forgetfulness, low self-control, and the tendency to opt for short-term payoffs vs. long-term benefits (for example, choosing the candy bar instead of an apple).[26] In one study involving financial health, a coach was assigned to a pilot group to address those common behavioral issues.[27] Participants assigned to a coach saved 21 percent more than those not afforded the same coaching. The wellness programs that your organization creates can also benefit in a similar manner by implementing coaching.

## Coaching in action

Currently, a number of health initiatives related to dietary, alcohol, and smoking intervention programs have benefited from coaching,[28] especially when compared to pure tracking.[29] Here are a few examples of effective programs that implemented coaching:

- **Weight Watchers** focuses on community-based behavioral counseling to help overweight people eat healthier and lose weight. A recent study compared Weight Watchers participants with a control group that utilized self-help techniques.[30] The results provide convincing evidence for the effectiveness of coaching through community groups. Weight Watchers participants were more than 8 times more likely to achieve a 5 percent to 10 percent weight reduction than were individuals in the self-help control group. An even more convincing argument for community-based counseling and coaching was found in the meeting attendance results. High attendance at Weight Watchers meetings and subsequent engagement in coaching and accountability networks demonstrated strong health behavior change results. In fact, participants with high attendance records were more than 11 times more likely to achieve a 5 percent to 10 percent weight reduction compared to those with low attendance. For Weight Watchers, peer coaching and accountability networks seem to support weight loss and related health decisions and deliver significantly more convincing results than simple self-help techniques.
- The **Get Healthy Information and Coaching Service** (GHS) program was developed by the New South Wales government in Australia.[31] The service offers six months of coaching telephone calls centered on motivation, support, and information that target healthy lifestyle improvements (moderate weight loss, physical activity, and dietary behaviors) in adults. Service evaluations of GHS have shown weight loss and health behavior improvements at the end of the six-month program and evidence of maintenance six months after completing the program.[32]
- Many people find it difficult to adhere to long-term health treatments, such as medications. While reasons vary, one of the most common obstacles is forgetfulness.[33] A failure to consistently adhere to medical treatments can cost individuals and companies substantial amounts of money and resources. Coaching and point-in-time feedback can help people stay on track with their medication schedules, yielding large downstream health-care savings.[34] Furthermore, a recent Deloitte study shows that over 50 percent of consumers are open to the idea of using mobile devices to provide medication reminders.[35] For example, smart watches can remind wearers to take medication when they are in proximity to their medication bottle, which has been shown to be far more effective than just tracking when medication has been taken. Even SMS text reminder services, which can be considered a form of coaching, are helpful tools that easily and effectively change negative health behaviors.[36]

# Pairing mHealth with behavioral economics

## Case studies

THERE are so many organizations that can integrate mHealth with behavioral economics, from insurance companies to government agencies to HR departments at organizations across industries. At the federal level alone, consider two recent events: In 2012, President Obama's administration directed all federal agencies to begin making at least two apps as part of its digital government plan (both for health-related changes and for other initiatives). This plan called for "a 21st century platform to better serve the American people."[37] Then, in 2015, President Obama created a new executive order for all government agencies to use behavioral sciences principles to effectively engage citizens in government programs.[38]

Despite the 2012 digital government plan and the popularity of mobile devices, 63 percent of federal agencies currently do not use mobile apps to deliver services to their external customers, and 70 percent do not use mobile apps for their internal customers.[39] However, evidence from the field suggests that when organizations combine these mobile apps with elements such as goal setting, extrinsic and intrinsic motivational levers, and coaching, positive results follow.

### Industry and government team up to reduce smoking

In an effort to help expectant parents quit smoking, the Louisiana Department of Health has teamed up with 2Morrow Inc. to offer its smoking cessation app, SmartQuit.[40] This app is both evidence-based and founded on a number of behavioral principles.

To help people quit smoking, SmartQuit employs the following behavioral concepts:

1. **Anchoring.** Before treatment begins, SmartQuit assesses the user's behavior for eight days to determine proper goals and treatments. These include understanding the motivations for those quitting (such as healthier lifestyle, family pressures, or monetary relief) and when urges to smoke are most powerful (work, family conflicts, certain times of the day).
2. **Coaching.** After the assessment, the app intervenes with a number of coaching alerts to help people overcome their urges. These include reminders on why they want to quit and awareness alerts to warn them of times when they are most tempted to smoke.
3. **Motivational tools.** Users can also set extrinsic motivations for quitting as well. These may include purchasing a new car with the savings accrued from no longer buying cigarettes. Users are frequently reminded of how close they are to achieving such extrinsic rewards through compliant behavior.
4. **Social immersion.** Resources are also provided to motivate and inspire users such as stories from others who overcame their temptations in similar situations.

Though it is still early, the initial results have suggested that the behavioral-based strategies of SmartQuit are more effective than alternative smoking cessation apps.[41] In addition to government agencies, SmartQuit also partners with businesses to help facilitate their wellness program initiatives.

## A mobile coach for new and expectant mothers

New and expectant mothers have many concerns regarding their babies' well-being. These may include nutrition, safe sleeping, doctor visits, and car seat safety, to name a few. With so many variables to consider, government and the private sector teamed up to launch the mobile app Text4baby.[42] The Text4baby service includes more than 250 messages with the most critical information that experts want pregnant women and parents with infants to know. Text4baby offers a number of mobile coaching updates such as the following:[43]

1. **Anchoring.** To ensure messages match a mother's needs, at signup, parents enter information such as due dates and zip codes. This way, the coaching is honed to match where each mother is on her parenting journey.
2. **Coaching alerts.** Every month, active users in Text4baby receive at least one "alert" message with breaking news related to maternal and child health, such as safety updates or policy changes. These news updates offer a roadmap for new mothers to follow on subjects such as new car seat guidelines and warnings about crib bumpers. Text4baby also sends timely emergency health messages, for example, during disease outbreaks.
3. **Coaching to mitigate forgetfulness.** To help minimize forgetfulness, participants can set up free reminders for important appointments.
4. **Coaching tips.** Guidance is also provided in the form of questions to ask the doctor at milestone appointments, such as one-month checkups.

These simple, timely alerts have shown encouraging early results. In one study, mothers who used Text4baby were twice as likely to be vaccinated after receiving a text offering information on where to find low-cost or free flu vaccines.[44] Another preliminary study showed a significant improvement in average glucose values within goal among the Text4baby control group vs. the no-text control group.[45]

Outside of the app itself, social proof is reinforcing the validity of the coaching service: 92 percent of Text4baby participants responding to a text-based survey said they would refer Text4baby to a friend and rated the helpfulness of the service highly. These findings are further validated with its growing popularity—in its first five years, more than 900,000 mothers have subscribed to the service.[46]

# Embedding mHealth into your own organization

WITH the overwhelming number of mHealth technologies available at our fingertips, organizations have an exciting opportunity to help positively shape and influence their constituents' health and wellness. However, as we have seen, simply providing people with a fitness tracker will likely fail to motivate a large portion of the intended audience to engage in long-term behavior change. For this reason, organizations should also consider the underlying behavioral motivators that resonate with larger swaths of the population.

If the goal is not properly calibrated, too many will quickly lose interest. In turn, motivating individuals to chase after the goal may require careful consideration of the extrinsic and intrinsic levers available. For the short term, extrinsic motivators might be just enough, but longer-term activities will most likely require intrinsic elements. One of the most successful intrinsic motivators, and where mHealth can be most effective, is coaching; mHealth technologies give organizations and the individuals they serve a coach who is accessible 24/7 via their smart devices.

For program designers looking to establish their own mHealth-based programs, consider these three steps:

1. **Know your audience.** Remember that the behavior change you are attempting to cultivate may not be important to everyone. Before evaluating technology options, focus the program to match each individual's health journey with the right goal. For instance, if smoking cessation is the goal, survey potential participants to determine who is looking to quit vs. who isn't. Those already seeking a change may only require the proper coaching; others may also need a monetary incentive to get the ball rolling.
2. **Set a time frame.** Determining if the program is meant as a short-term initiative (be more active in the winter) or a long-term endeavor (establish healthier eating habits) will guide you toward which motivators are best for the job. In cases of short-term gains, monetary incentives may be just right, but for long-term goals, your program will most likely benefit from more sustainable, intrinsic motivators.
3. **Provide a coach; make it social.** Finally, when determining which mHealth tool to implement, prioritize the ones that offer the greatest opportunity for coaching. Unlike self-help methods, coaching has proven to be generally more effective long term. And remember that coaching can take the form of helpful recommendations and simple alerts to keep people on track toward achieving their wellness goals.

If the goal is not properly calibrated, too many will quickly lose interest.

Wellness programs succeed when they are designed to understand how people think; the technology behind them should just be a means to facilitate this process. For your organization's next wellness initiative, the difference between effecting true behavioral change vs. increasing behavioral tracking may likely come down to how you design it.

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