

ii
Editors' note
Craig R. Fox & Sim B Sitkin

Features

1
Finding
Incivility awareness could save lives
Xilin Li, Christopher K. Hsee, & Li Wang

11
Field Review
Using behavioral economic interventions with remote-monitoring technologies to increase physical activity
Sujatha Changolkar, Kevin G. Volpp, & Mitesh S. Patel

27
Finding
Combining a lottery incentive with protection against losing the lottery improves exercise adherence
Daniella Meeker, Tara Knight, Patra Childress, Elmar R. Aliyev, & Jason N. Doctor

41
Field Review
Unlocking human potential through leadership training & development initiatives
David Day, Nicolas Bastardo, Tiffany Bisbey, Denise Reyes, & Eduardo Salas

57
Field Review
Creating a culture of voice
Ethan R. Burris & Wonbin Sohn

71
Field Review
Behavioral insights into cash transfers to families with children
Lisa A. Gennetian, Eldar Shafir, J. Lawrence Aber, & Jacobus de Hoop

95
Review
How cities can apply behavioral science to promote public transportation use
Christine Kormos, Reuven Sussman, & Bracha Rosenberg

116
Editorial policy

editors' note

In this issue, we are pleased to feature articles on a wide range of topics, including nudges that can improve health and safety, factors fostering more effective organizational leadership and workplace voice, and policies that promote the use of public transportation and family financial security. Field reviews and original research studies provide actionable insights for government and business organizations as well as individuals.

Three articles focus on how behavioral interventions can promote health and safety. In one, Xilin Li, Christopher K. Hsee, and Li Wang report on studies they conducted in China that were aimed at reducing how often pedestrians cross busy intersections when the light is red—behavior that not only violates social norms but also poses a serious safety problem. They posted signs that featured either imperatives (“Don’t cross at the red light”), safety awareness, danger awareness, civility awareness (“Waiting for the green light is civil”), or incivility awareness (“Crossing at the red light is uncivil”). In three field experiments with over 12,000 observations, these authors found that posting signs warning against “uncivil” norm violations was most effective at reducing crossing against red lights at intersections.

In a second article in this group, Sujatha Changolkar, Kevin G. Volpp, and Mitesh S. Patel present a field review taking stock of how physical activity can be successfully encouraged using a combination of remote-monitoring technologies and behaviorally informed programs. They observe that making such technology easier to use is especially important for sustained engagement. They also describe several behavioral approaches that successfully promoted exercise, including precommitment contracts, goal setting by participants, social incentives, gamification, and financial incentives that were delivered in the form of lotteries or that framed rewards as something that could be lost.

Daniella Meeker, Tara Knight, Pantra Childress, Elmar R. Aliyev, and Jason N. Doctor examined

a clever way to simultaneously use lottery rewards to motivate exercise class enrollment and loss avoidance to motivate persistence. In each week of a 12-week field experiment, all participants received a 90% chance of winning \$20 if they attended the first exercise class of the week. Participants in the experimental condition could guarantee against losing the lottery prize by attending the second class each week, turning the 90% chance into a certainty. Meanwhile, participants in the control condition would simply receive a flat \$2 reward if they attended the second class each week (the same expected value as would be gained by participants in the experimental condition who attended the second class and thus guaranteed a full lottery payout). In the end, the experimental intervention proved to be quite effective: participants in the loss-protection condition attended classes 16% more often than did participants in the control condition.

A second set of articles points to organizational practices that can improve leadership training and development or foster a culture of voice in the workplace. David Day, Nicolas Bastardoz, Tiffany Bisbey, Denise Reyes, and Eduardo Salas offer a field review to explain how the effectiveness of leadership training and development programs hinges on specific design and implementation characteristics. They differentiated between leader *training* programs (that target knowledge, skills, and attitudes) and leader *development* programs (that focus on more general adaptive capacity) and found that effectiveness resulted from seemingly obvious but often neglected prerequisites: clear definition of needs and specific expectations and use of evidence-based program designs.

Ethan R. Burris and Wonbin Sohn review studies on the critical features of organizations that are able to effectively encourage employees to voice their concerns, criticisms, and different perspectives. They specify three key strategies these organizations use to foster a culture of voice: creating a safe environment for employee voice by protecting employees from retaliation, providing employees with illustrations of

instances in which voicing concerns led the organization to implement responsive action, and providing managers with resources that enable them to take action to address the concerns raised through employee voice. Overall, the evidence suggests that achieving the goal of increasing employee voice depends on specific actions to reduce the risk of speaking up and to increase the odds that employee input will have an impact. Further, managers must be empowered to actually respond to voiced concerns if the effective use of voice is to persist.

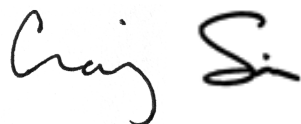
The final two articles in this issue inform policies to enhance the well-being of families and communities. First, Lisa Gennetian, Eldar Shafir, Lawrence Aber, and Jacobus de Hoop examine the behavioral science rationale for providing cash transfers to families with children and review implications for optimal program design. They also review field research, including randomized controlled studies, of programs in which cash transfers were either unconditional or conditional on particular behaviors, such as minimal school attendance by the children. The authors conclude from their theoretical and empirical analyses that unconditional transfers are generally superior to conditional cash transfers in promoting positive life outcomes,

although conditional transfers can support the same goals under the right conditions.

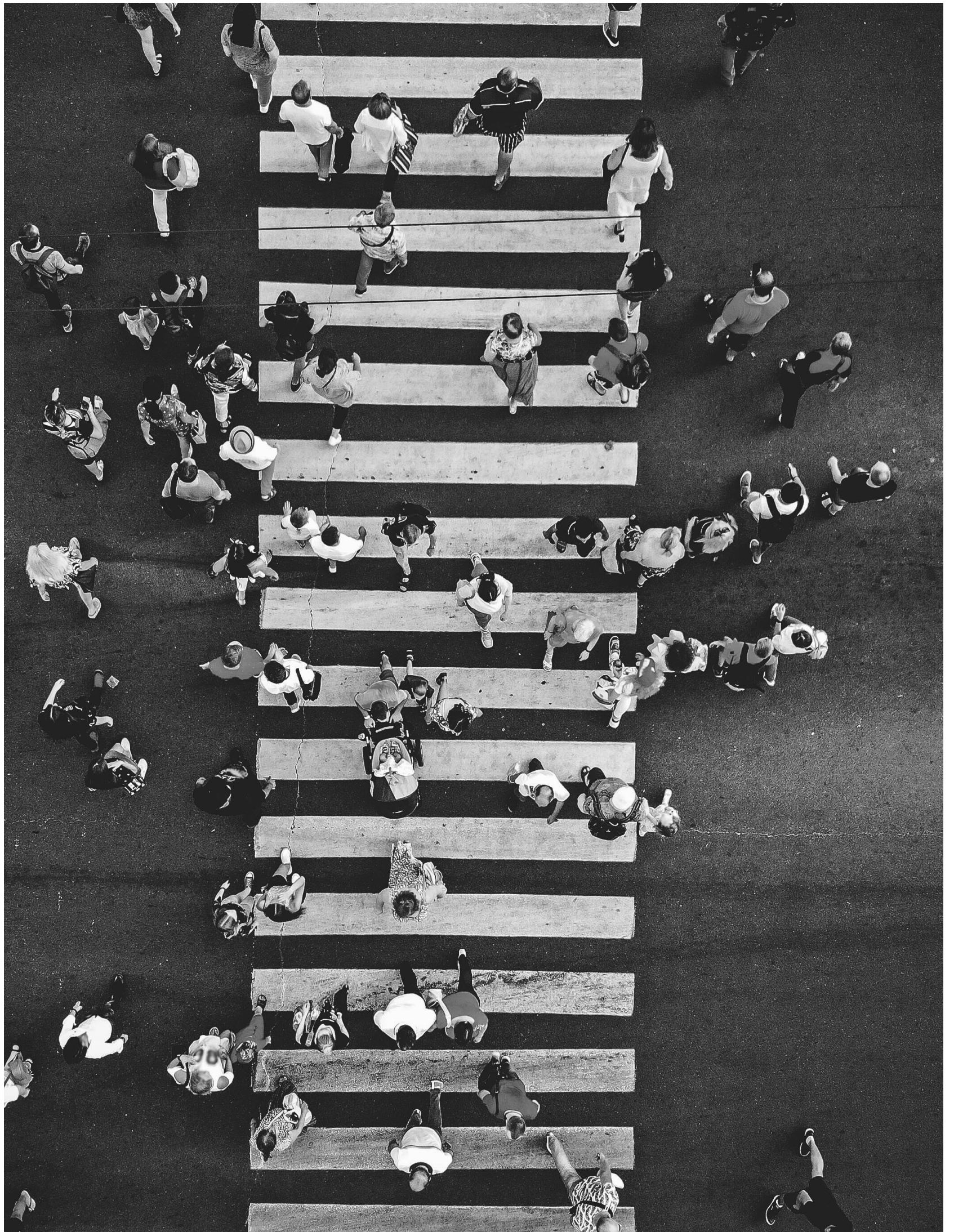
Finally, Christine Kormos, Reuven Sussman, and Bracha Rosenberg take stock of recent field studies to provide guidance for cities on promoting the use of public transportation. They find that three kinds of tactics have proved effective when tailored to specific target populations: goal setting and planning approaches, “bias-busting” approaches that challenge negative perceptions and habits related to public transportation, and gamification approaches that provide technology-enabled incentives and feedback.

Taken together, the articles in this issue deliver a wide range of approaches to leveraging behavioral science insights to enhance the interests of organizations, communities, families, and individuals.

In coming issues, we look forward to featuring exciting new spotlight topics and field reviews, along with the usual mix of essays, reports, empirical studies, and conventional reviews. As always, we welcome your feedback, your suggestions, and especially your submissions.



Craig R. Fox & Sim B. Sitkin
Founding Co-Editors



Incivility awareness could save lives

Xilin Li, Christopher K. Hsee, & Li Wang

abstract

We introduce the idea of deterring undesirable behaviors by raising *incivility awareness*—sensitivity to when one is violating norms of civil behavior. We demonstrate that this approach is effective in deterring pedestrians from crossing intersections at red lights, which is a serious worldwide safety problem. In three field experiments conducted at urban intersections (involving more than 12,000 total observations), we found that posting signs raising pedestrians' incivility awareness significantly reduced red-light crossing rates. We also found that the incivility-awareness message of "Crossing at the red light is uncivil" made those signs more effective than signs with messages that emphasized the importance of not crossing at a red light ("Don't cross at the red light"), civil behavior ("Waiting for the green light is civil"), safety ("Waiting for the green light is good for safety"), and danger ("Crossing at the red light is bad for safety").

Li, X., Hsee, C. K., & Wang, L. (2021). Incivility awareness could save lives. *Behavioral Science & Policy*, 7(1), 1–12.

Core Findings

What is the issue?

Reducing socially undesirable behaviors could often quite literally save lives. Framing messaging for the public plays an important role in doing so. To reduce the number of pedestrians who violate traffic safety rules and risk casualty, raising awareness about the *incivility* of doing so has proven to be an effective intervention.

How can you act?

Selected recommendations include:

- 1) Reminding pedestrians to consider their image, especially their public image, before crossing streets
- 2) Targeting crowded venues rather than uncrowded ones, such as busy streets instead of quiet ones, for interventions

Who should take the lead?

Researchers and policymakers in transport and urban planning

Psychological science delivers insights that can be used to develop cost-effective interventions to tackle real-world problems, ranging from improving influenza vaccination rates to encouraging retirement saving.^{1–11} In this article, we introduce a new psychology-based intervention—raising incivility awareness—and we explain how we tested its ability to induce pedestrians to follow traffic rules.

We chose pedestrian protection as a test case because it is a worldwide safety problem. For example, about 0.3 million pedestrians worldwide were killed in road traffic in 2016, and many more were injured.¹² Many pedestrian casualties occur because pedestrians violate traffic rules and cross intersections when the light is red.^{13,14} Doing so not only endangers the pedestrian but also hinders the smooth flow of traffic, resulting in traffic jams and delays. Some governments tackle the problem by having police officers patrol crosswalks, but this consumes extensive human and financial resources.

Two lines of psychology research suggest that raising people's incivility awareness—their sensitivity to whether they are behaving uncivilly—could help deter pedestrian red-light crossing. One focuses on social desirability. Research shows that people are motivated to avoid socially undesirable behaviors to maintain a positive public image.^{15–18} This means that raising incivility awareness could lead people to expect that others would disdain their uncivil behavior, which could damage their positive image. The other line of research is on loss aversion. People are more responsive to negatively framed messages than to positively framed messages, because the pain of losing is more powerful than the pleasure of gaining something equivalent.^{19–22} This suggests that highlighting the negativity of uncivil behaviors would be more effective than highlighting the positivity of civil behaviors.

Drawing on these insights, we propose a new pedestrian-safety intervention that relies on raising people's incivility awareness. This intervention would remind pedestrians to consider their image, especially their public image, before

acting and highlight how crossing the street while the light is red is a negative act of incivility. Our intervention aims to nudge pedestrians to obey red do-not-walk signals and refrain from crossing the street when they do not have the right-of-way. It is important to note that this intervention is easy to implement and virtually free.

To test whether raising pedestrians' incivility awareness deters red-light crossing, we posted a sign with the message "Crossing at the red light is uncivil" on each side of a crosswalk and conducted three studies of pedestrian behavior at crosswalks in a large city. (See Figure 1 for a sample scene from our research.) The first study was a preliminary test of our hypothesis. The second study expanded on the first by comparing the incivility-awareness message with other messages, and the third examined how long the effect persists. We conducted our studies at three busy, unpatrolled intersections, each in a different district of Shanghai, the city in China with the largest urban population. The time and duration of each experiment were predetermined, and the sample size depended on pedestrian traffic.

Figure 1. A scene from the research



Study 1

Method

In Study 1, we tested the effectiveness of an incivility-awareness sign by comparing crossing rates under three conditions. The first condition was a *no-sign control*, when we posted no signs. The second condition used a *no-crossing imperative*, during which we posted signs that directly ordered pedestrians not to cross—a common method of attempting to prevent red-light crossing. We did this by erecting two 110-cm x 70-cm signs, one on each side of the crosswalk, that read “不要乱闯红灯” (Don’t cross at the red light). The third condition, *incivility awareness*, involved replacing the imperative no-crossing signs with two equally sized incivility-awareness signs that read “乱闯红灯没素质” (Crossing at the red light is uncivil).

The study proceeded over the course of seven hours (9:30–11:30 a.m. and 12:30–5:30 p.m.) on a weekday at one of the crosswalks of a busy intersection, where each red light lasted about 85 seconds. We rotated among the three conditions every hour, with each condition lasting about 20 minutes.

Data were collected by two research assistants who were unaware of the study’s hypotheses and remained far enough away from the signs that

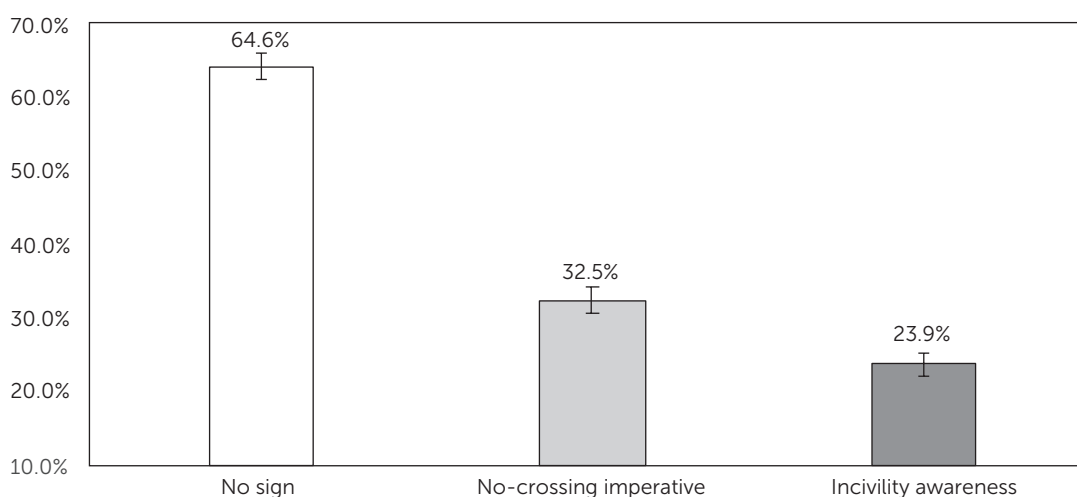
“people are motivated to avoid socially undesirable behaviors to maintain a positive public image”

the pedestrians would not notice them. For each red light, the research assistants recorded (a) the total number of *street crossers*, defined as those who arrived at either side of the crosswalk while the light was red and wanted to cross the street, and (b) the total number of *red-light violators*, defined as those street crossers who crossed the street while the light was red. These numbers allowed us to calculate the *violation rate*—the percentage of people who arrived at the red light and then crossed while the light was red.

Results

Of the 2,022 street crossers observed, 832, or 41%, were red-light violators. A chi-square test found a significant difference in violation rates across the three conditions, $p < .001$ (see Figure 2). (The chi-square details for all results in Study 1 and Study 2 are in the Supplemental Material. See note A for information on the statistical terms used in this article.)

Figure 2. Violation rates in Study 1



Note. The error bars represent ± 1 standard error. See note A for information on the statistical terms used in this article.

“people commonly associate traffic violations with a lack of safety”

The violation rate was only 23.9% for incivility awareness, the lowest violation rate across the three conditions, as opposed to 64.6% for the no-sign control, $p < .001$, and 32.5% for the no-crossing imperative, $p = .001$. (See the Supplemental Material for hour-by-hour statistics.)

Study 1 therefore provided initial evidence that prompting incivility awareness was effective. It is possible that the incivility-awareness signs were more effective than having no signs simply because they were more salient and attention-grabbing than the normal red-light signal. However, this salience cannot explain the difference between the rates of crossing in the incivility-awareness condition and the no-crossing-imperative condition, as the signs used in these conditions were the same size and had the same appearance. Nor could it explain the differences between the incivility-awareness condition and the other three sign conditions in Study 2, as we report next.

Study 2

Because people commonly associate traffic violations with a lack of safety, in Study 2, we included signs that reminded pedestrians that they were safer when they obeyed crossing signals. We compared the data from the incivility-awareness condition with the data from four other conditions: *no sign*, *safety awareness*, *danger awareness*, and *civility awareness*. We predicted that the two kinds of civility-related signs would be more effective than the two kinds of safety-related signs. This is because most pedestrians are probably already aware of the safety risks of crossing a street against a traffic light and so would be less likely to take note of the safety-related signs. Further, safety is an issue affecting only the self, whereas an incivility sign draws attention to not only

one's self-image but also one's public image, as discussed earlier.

We further predicted that the negatively framed signs would be more effective than the corresponding positively framed signs because of loss aversion and negativity bias. Because we expected negative messages to be more effective than positive ones and civility messages to be more effective than safety messages, we expected the incivility-awareness condition to be the most effective condition in the study.

Method

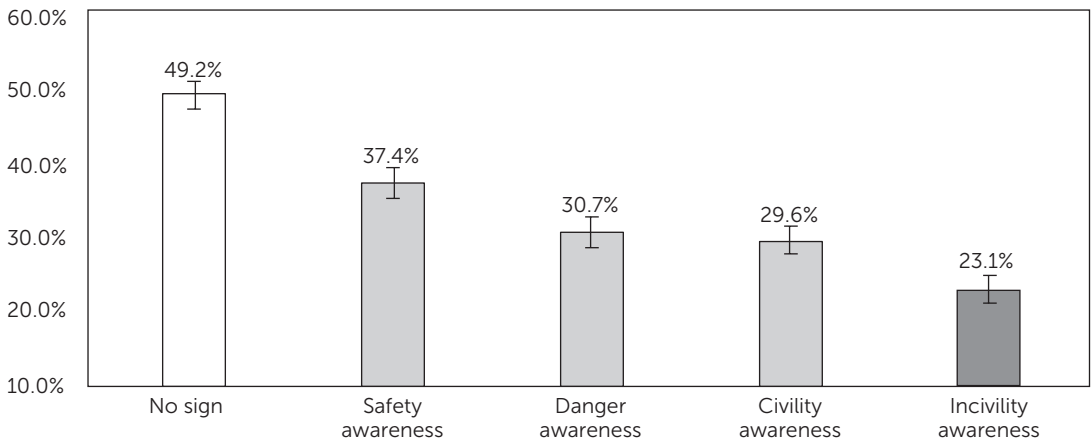
In Study 2, we followed the same procedure as in Study 1, except for the following details. In Study 2, the positively framed signs included a thumbs-up icon, and the negatively framed signs included a thumbs-down icon. We conducted this study at one of the crosswalks of a busy intersection, where each red light lasted 80 seconds before 2:50 p.m. and 60 seconds after 2:50 p.m. It included roughly 6.5 hours of observations (10 a.m.–11 a.m. and 12 p.m.–5:35 p.m.) on a weekday. For the first six hours, we rotated among the five conditions every hour, with each condition lasting about 12 minutes. For the last 35 minutes, we rotated one more time, with each condition lasting about seven minutes. The signs read as follows in the various conditions:

- For the safety-awareness condition, “等待绿灯有利安全” (Waiting for the green light is good for safety)
- For the danger-awareness condition, “乱闯红灯不利安全” (Crossing at the red light is bad for safety)
- For the civility-awareness condition, “等待绿灯有素质” (Waiting for the green light is civil)
- For the incivility-awareness condition, “乱闯红灯没素质” (Crossing at the red light is uncivil)

Results

Of the 2,847 street crossers observed, 993, or 35%, were red-light violators. A chi-square test

Figure 3. Violation rates in Study 2



Note. The error bars represent ± 1 standard error. See note A for information on the statistical terms used in this article.

found that the violation rate differed significantly across the five conditions, $p < .001$.

As we predicted, the incivility-awareness condition was the most effective of the five conditions at mitigating red-light crossing, with a violation rate of only 23.1%. This rate was lower than the rates in any of the other conditions—49.2% in the no-sign control condition, 37.4% in the safety-awareness condition, 30.7% in the danger-awareness condition, and 29.6% in the civility-awareness condition, all with $ps < .015$ (see Figure 3). (See the Supplemental Material for hour-by-hour statistics.)

We further found that the civility-focused signs were more effective than the safety-focused signs ($p < .001$). Between the two safety-focused signs, the negatively framed sign was more effective ($p = .019$). Between the two civility-focused signs, the negatively framed sign was also more effective ($p = .013$).

Study 3 Method

In Study 3, we tested whether the incivility-awareness effect lasts after people have seen the signs repeatedly—in other words, whether repeated viewing makes the effect wear off. We conducted this study over four weeks (from Thursday of week 1 to Friday of week 4)

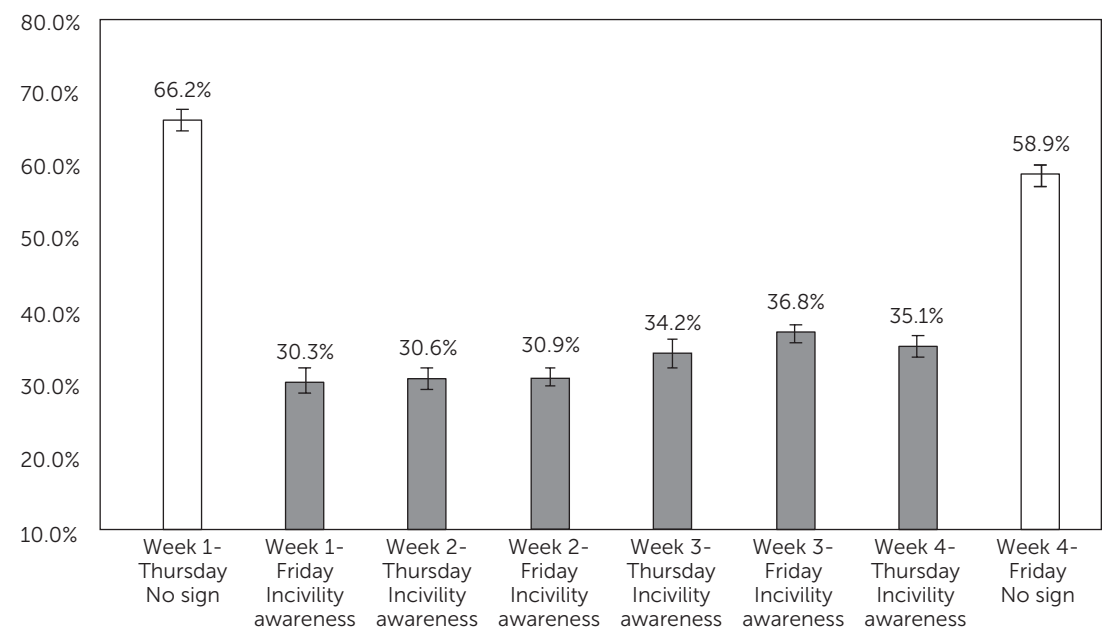
at one of the crosswalks of a busy intersection, where each red light lasted for 55 seconds. We selected this crosswalk partly because it was near a school and multiple residential buildings, which meant that the pedestrians there likely crossed that intersection daily. This allowed us to test whether our signs had an enduring effect among pedestrians who probably saw them repeatedly.

We did not post any signs on the first and last days of the four-week test period. This was our control condition. We treated all the interim days as treatment conditions. We erected two incivility-awareness signs on each side of the crosswalk from 10 a.m. to 5 p.m. on all the interim days; the signs were identical to the signs used in Study 2. We collected data the same way we did in the other studies for a total of four hours (11:30 a.m.–1:30 p.m. and 3:00 p.m.–5:00 p.m.) every Thursday and Friday.

Results

Of the 7,792 street crossers observed, 3,215, or 41%, were red-light violators. Figure 4 shows the day-by-day results. (See the Supplemental Material for hour-by-hour results.) On the first day of the experiment, when the incivility-awareness signs were not yet present, the violation rate was 66.2%. On the second day, after the incivility-awareness signs were erected, the violation rate dropped to 30.3%. Violation

Figure 4. Violation rates in Study 3



Note. The error bars represent ± 1 standard error. See note A for information on the statistical terms used in this article.

rates remained below 37% on each interim day (all $ps < .001$), although they increased somewhat over time. It is important to note that on the last day of the experiment, when the signs were removed, the violation rate rebounded to 58.9%, which was significantly higher than the rate when the signs were present (all $ps < .001$). These results suggest that incivility-awareness signs may keep the red-light violation rate low even when people see them repeatedly. The results also suggest that the effect may vanish once the signs are removed, suggesting that continuous reinforcement is needed.

Discussion

With this research, we introduce incivility awareness as a method of deterring undesirable behaviors and test its effectiveness in the context of pedestrian traffic violations. Our findings raise questions that we hope future researchers will address.

First, for our intervention to be useful, it should have a sustainable effect. Although the results of Study 3 show that pedestrians continued

responding to the signs for four weeks, we do not know if the effect would eventually wear off or how much longer it could last.

Second, the signs we used are larger and less formal than the typical stop sign. We do not know whether smaller and more official-looking signs would be similarly effective.

Third, we have focused on the benefits of incivility awareness rather than the costs, such as potentially upsetting pedestrians, and have not determined whether the benefits outweigh the costs.

Fourth, we compared the incivility-awareness method against only a limited number of alternatives; we do not know if more effective methods exist. For example, would a frightening picture showing the dead body of a red-light crosser killed by a passing truck be more effective?

Finally, we have demonstrated only the effect of incivility awareness and have yet to pinpoint the underlying psychological mechanism that

makes it work. For example, we do not know the extent to which our effect is driven by concerns about public image, namely, fear of losing face in front of others.²³

Understanding the underlying psychological mechanism could help in identifying the settings in which an incivility-awareness intervention would be most effective. If the effect is driven primarily by concerns about public image, as opposed to concerns about self-image, then we would predict that incivility-awareness interventions will be more effective at deterring undesirable behaviors that occur in public venues where other people are around (for example, crossing on red lights and talking loudly on public transportation) than undesirable behaviors that occur in private venues where no other people are around (for example, not washing one's hands after using the restroom). We also predict that incivility-awareness interventions would be more effective in crowded venues than in uncrowded ones, such as on a busy street rather than on a quiet street.

We further predict that if public-image concerns are a driving force behind the behavior change, incivility-awareness interventions will be more effective in collectivistic cultures such as China, where people are more concerned about potential loss of face^{23,24} than are people in individualistic cultures such as the United States.

We expect future researchers to test these speculations and identify the limitations of our intervention. We also hope that future researchers will test whether our intervention can be used as a nudge to deter undesirable behaviors beyond red-light crossing, such as cutting in line, littering, and not wearing a face mask in public places during a pandemic. We hope that our method can make our environment not only safer, but also friendlier, cleaner, and healthier.

endnote

- A. From the editors to nonscientists: For any given data set, the statistical test used—such as the chi-square (χ^2), the t test, or the F test—depends on the number of data points and the kinds of variables being considered, such as proportions or means. The p value of a statistical test is the probability of obtaining a result equal to or more extreme than what would be observed merely by chance, assuming that there are no true differences between groups under study (this assumption is referred to as the *null hypothesis*). Researchers traditionally view $p < .05$ as the cutoff for statistical significance, with lower values indicating a stronger basis for rejecting the null hypothesis. Standard deviation is a measure of the amount of variation in a set of values. Approximately two-thirds of the observations fall between one standard deviation below the mean and one standard deviation above the mean. Standard error uses standard deviation to determine how precisely one has estimated a true population value from a sample. For instance, if one took enough samples from a population, the sample mean ± 1 standard error would contain the true population mean around two-thirds of the time.

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supplemental material

- <http://behavioralpolicy.org/journal>
- Data, Analyses, & Results



2,022, 2,847, and 7,792 study samples were observed for street crossers



In the three studies, 41%, 35%, and 41% of pedestrian street crossers were red-light violators

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Using behavioral economic interventions with remote-monitoring technologies to increase physical activity

Sujatha Changolkar, Kevin G. Volpp, & Mitesh S. Patel

abstract

Many workplaces and insurers sponsor programs to increase employees' physical activity, but these programs often fail to create healthy behaviors or else work only temporarily. They typically offer financial incentives without considering cognitive biases that influence whether people will join the programs and remain committed to exercising. We argue that interventions should leverage both insights from behavioral economics and the availability of remote-monitoring technologies, such as automatic step trackers, to be more effective. In this article, we summarize relevant insights from behavioral economics, highlight research findings that show the value of combining behaviorally informed program design with remote monitoring, and suggest strategies for selecting interventions and remote-monitoring devices.

Changolkar, S., Volpp, K. G., & Patel, M. S. (2021). Using behavioral economic interventions with remote-monitoring technologies to increase physical activity. *Behavioral Science & Policy*, 7(1), 11–24.

Core Findings

What is the issue?

Organizations continue to implement programs aimed at improving employee health outcomes. But these workplace wellness programs often fail to (a) address underlying cognitive biases, (b) capitalize on behavioral insights, and (c) use emerging remote-monitoring technologies that would lead to sustained improvements in employee health.

How can you act?

Selected recommendations include:

- 1) Designing social incentives that give rewards to individuals only if the group as a whole meets predetermined health targets
- 2) Embedding remote-monitoring technologies within some form of a feedback loop to help people develop a habit of regular wear and use

Who should take the lead?

Researchers, employees, managers, and organizations

Employees who exercise regularly reduce their risks for heart disease and other serious disorders,^{1–4} and their efforts are also good for their employers' bottom line: the employees use fewer health care dollars, show up to work more often, and are more productive.⁴ Yet most Americans are not active enough to reap these benefits for themselves or their employers. Only 53% of adults do the recommended amount of aerobic exercise identified in the Physical Activity Guidelines from the U.S. Department of Health and Human Services,⁵ and only 23% achieve the recommended amounts of both aerobic and muscle-strengthening activities. Consistent with the Centers for Disease Control and Prevention's recommendations,⁶ over 85% of large employers offer financial incentives for health promotion through workplace wellness programs.⁷ Recent evidence indicates, however, that the programs may not be effective at sustaining the behavior change needed for better health.⁸

We believe that workplace programs intended to increase physical activity can be improved by applying insights from behavioral economics research and incorporating remote-monitoring technologies, such as smartphone apps, wearable activity trackers (like Fitbits), and smart watches. This combination addresses two major limitations of typical programs. For one, the designs of workplace wellness programs are often based on standard economic thinking, which assumes that people act rationally and make decisions that align perfectly with their long-term goals.⁹ Yet, as behavioral economics research has revealed, people commonly make decisions that belie these assumptions. For example, individuals tend to be more motivated by the prospect of losing a given amount than by the prospect of gaining the same amount.¹⁰ People also tend to choose to receive smaller awards immediately rather than larger rewards later.¹¹ They are strongly motivated to avoid regret over choices they make.¹² Interventions that take people's "predictably irrational"^{13–16} tendencies into account should help to improve motivation and outcomes in several phases of exercise programs, including initial engagement with a fitness program, participation in the early

stages, and long-term maintenance of the exercise habit.

The other major limitation of most workplace wellness programs is a reliance on self-reported data: participants have to log in to a website and manually input step counts, gym attendance, or other information. This requirement creates extra work for participants and also creates the possibility of inaccuracies, either because of a desire to be seen favorably by others or because of recall errors.¹⁷ Activity trackers, smart watches, and smartphones^{18,19} provide an easier, more accurate way of tracking exercise. In the 2018 Physical Activity Guidelines for Americans, the U.S. Department of Health and Human Services recommends using such technologies to monitor physical activity levels.²⁰ However, evidence indicates that remote-monitoring tools are not by themselves enough to motivate sustained behavior change.^{18,19,21} The immediate feedback (which is more motivating than delayed feedback) facilitated by such technologies can add to the motivational prods provided by interventions based on behavioral economics.

In this article, we review a number of the behavioral biases that influence human decisionmaking and discuss how employers and insurers can leverage these factors to improve the design of physical activity interventions in the workplace. Table 1 summarizes many of these ideas. In the course of that discussion, we provide examples from clinical trials that used behaviorally designed interventions in combination with remote-monitoring technologies, and we highlight current gaps in evidence that warrant further investigation. We also provide strategies for selecting interventions and describe options for remote-monitoring technologies.

Behavioral Biases That Can Affect Responses to Exercise Incentives

Status Quo Bias

People tend to stick with the current state (or status quo)—that is, the path of least resistance.²² When offered a default option, most

Table 1. Factors influencing behavior & their potential design implications

Influence	Design implication
Status quo bias	Make participation the default option.
Present-based preferences	Provide multiple stepwise goals and immediate rewards; use precommitment pledges.
Probability inflation	Use lottery-based rewards.
Regret aversion	Inform individuals of what they would have received had they met their goal.
Loss aversion	Put rewards at risk of being lost if a goal is not achieved.
Sensitivity to social forces	Set up competitions; require participants to collaborate in groups; enlist participants' friends and family to provide support; contribute to charitable causes on behalf of participants.

people choose it because doing so requires less effort than opting out does. Studies have shown that health care decisions related to prescribing medications, ordering imaging tests, and setting goals for end-of-life care are significantly affected by the choice that is presented as the default.^{23–29}

Most physical activity interventions are presented as opt-in choices, requiring participants to actively enroll, which is a barrier to high participation rates. For example, in a study of health insurance beneficiaries across the United States, only 1.2% signed up for a wellness program that offered rewards for connecting to an activity tracker and achieving physical activity goals.¹⁹ Several studies of medical interventions have demonstrated that presenting participation as the default, with an opportunity to opt out, leads to higher participation. In a randomized trial among people with uncontrolled type 2 diabetes, making a remote-monitoring diabetes management program an opt-out default resulted in 38% enrollment, compared with 13% enrollment in the opt-in arm.³⁰ In a randomized trial among patients who had recently had heart attacks, framing a remote-monitoring medication management program as an opt-out plan led to 39% enrollment, compared with 16% enrollment in the opt-in arm.³¹ In the same way, in a randomized trial of patients due for colorectal cancer screening, presenting the screening tool known as fecal immunochemical testing as an opt-out default led to 29% of patients being screened; in the opt-in arm,

10% were screened.³² Similarly, physical activity programs could well attain higher engagement if enrollment were framed as the default, with people being given the choice to opt out.

Present-Based Preferences

Evidence shows that people tend to place more value on the present than on the future, preferring immediate rather than delayed gratification. This preference holds true even when the delayed reward is larger.^{11,33} A present-biased person, therefore, would rather receive \$10 today than wait for \$20 at a later time. Although many wellness programs ask participants to change their present behavior in anticipation of a future reward, it may be more effective to offer more immediate rewards and more frequent communications about progress toward earning more rewards. For example, individuals could be given a daily target for steps and notified each day as to whether they achieved their goal and earned a reward. The reward itself can be delivered at a later time (such as weekly or monthly), but daily communication about fitness achievements and the rewards those achievements have unlocked is a powerful motivator. This type of daily communication (combined with automatic recording of measurements) has been tested in several clinical trials and found to lead to significant improvements in diabetes monitoring,³⁴ physical activity,^{35,36} and weight loss.^{37,38}

Present bias may also help to explain some other phenomena that could be useful in designing interventions. One is that people tend to work

“people work harder as the finish line becomes part of the present rather than the future”

harder as they get closer to a goal, or, to frame it in terms of present bias, people work harder as the finish line becomes part of the present rather than the future. Studies have shown that working toward multiple stepwise goals (or *goal gradients*) sustains motivation better than does one big far-off goal.^{39,40}

Conversely, temptations are harder to resist in the present than in the future. It is easy to decide to skip dessert tomorrow night but difficult to resist a dessert on the table in the present moment. Written and signed precommitment pledges can help to keep commitments top of mind and thereby help people stick with long-term plans, including exercise goals.

Probability Inflation

Individuals tend to overestimate the likelihood that low-probability events will occur.^{41,42} That is why so many people buy lottery tickets, and it is also why lottery-based incentives can motivate people to exercise. Programs can, for instance, incentivize participants by entering them in lotteries when they meet program requirements, such as attending an exercise class twice a week.

In a randomized trial of overweight and obese adults, physical activity levels were measured automatically via a smartphone app for participants in three experimental groups (each offered a different lottery incentive) and in a control group that did not receive lottery tickets.⁴³ Two of the incentives were single-tiered: one provided a high probability of winning a small reward, and one provided a lower probability of a much larger reward (a jackpot). The third incentive was two-tiered and included a high-frequency small reward along with a low-frequency large reward. People in the jackpot lottery condition, a setup commonly used in health promotion efforts, had worse outcomes over time than those in the control

condition did, perhaps because the lottery participants realized they were unlikely to win. The two-tiered lottery, which likely balanced both immediate rewards (owing to frequent wins) and probability inflation, was the most effective in increasing participants' physical activity.

Regret Aversion

People anticipate and strongly fear the regret they feel after making a wrong choice; having such aversion to regret, they will often take action to avoid it. The Dutch Postcode Lottery has been highlighted as an example of a program that capitalizes on regret aversion.¹² In this lottery, a postal code is randomly selected, and prizes are distributed only to people who entered the lottery and reside in the selected area. Residents living in a winning postal code who did not buy a lottery ticket see neighbors being rewarded and, wanting to avoid future regret over missing out on the winnings, become more likely to purchase a lottery ticket the next time tickets are available.

Physical activity interventions could use a similar technique by randomly selecting a different group of program participants each day and rewarding those in the group who met their goals. Group members who see their friends being rewarded would be motivated to hop back on the wagon to prevent that feeling of regret the next time the group was selected. In the absence of multiple groups, program designers could capitalize on regret aversion by informing participants of what they would have won that day had they met their goals, as a way of encouraging them to try again tomorrow.

Loss Aversion

Prospect theory, a core concept in behavioral economics, holds that people are loss averse: they tend to be motivated more by avoiding losses than by obtaining equivalent gains.¹⁰ This principle has been implemented in health promotion efforts through deposit contracts, which ask participants to forfeit money (that is, lose all or part of their deposit) if a goal is not achieved. However, many people do not like to participate in programs that could involve losing money. For example, in a randomized

trial focused on smoking cessation, only 14% of those assigned to a deposit contract incentive chose to accept it, compared with 90% of those assigned to a reward-based incentive.⁴⁴

Several studies have tested the value of leveraging loss aversion by framing reward-based incentives as losses. In a randomized trial of overweight and obese adults, participants in an exercise program were randomly assigned to receive one of three daily financial incentives each valued at \$1.40 per day for three months or to a control group.³⁶ All participants used a smartphone to track step counts and were asked to achieve at least 7,000 steps a day. The three incentives were framed as either a gain (receive \$1.40 for each day the goal is met), a lottery (similar to the two-tiered lottery incentive previously discussed), or a loss (lose \$1.40 from a virtual account of \$42 for each day that the goal is missed). Participants in the control group, who received daily feedback but no financial incentives, achieved step goals 30% of the time. Participants in the gain-framed incentive and lottery incentive arms achieved goals 35% and 36% of the time, respectively, but neither result was statistically different from the result for the control group. The most effective design used the loss framing: its participants achieved the goal 45% of the time.

Loss-framed financial incentives were also used in a clinical trial aiming to increase physical activity among patients with heart disease.³⁵ Patients were asked to use a waterproof wrist-worn activity tracker that could go over six months without needing its battery charged, and they were randomly assigned either to a control group that used the wearable activity trackers alone or to an intervention group that used the activity trackers, had personalized step targets, and received loss-framed financial incentives. Step targets increased gradually from baseline for the first eight weeks and then remained constant for another eight weeks. During the 16 weeks, \$14 was allotted to a virtual account weekly and \$2 was taken away each day the participant did not achieve the step goal. Over the course of the trial, patients in the intervention group increased their daily activity from baseline by 1,368 more steps than the control

“participants in the intervention group took 1,154 more steps daily”

group did. During an eight-week follow-up, the participants in the intervention group took 1,154 more steps daily than those in the control group did, sustaining a significant difference even after the incentives ended.

Several insurers have launched programs that use loss-framed incentives to motivate their members. These programs often include a wearable activity-tracking device provided to the user at no or very low cost, as long as the user meets a monthly activity goal. Each month that users do not meet their goal, they pay back a portion of the cost of the device through their health insurance premium. By offering an expensive wearable activity-tracking device at little or no cost, these programs engage a larger proportion of the population than a typical wellness program otherwise might. The insurers also stand to reap a financial benefit: they recoup the cost of the device from people who do not meet activity goals and foot the bill only when people engage in the desired healthy behavior, which can yield lower costs in the future by mitigating health problems that often arise from inactivity. A recent study by the RAND Corporation found that a program of this sort offered by Vitality resulted in increased physical activity among members who opted to receive an Apple Watch.⁴⁵

Incentive Options

So far, our examples of interventions have illustrated ways that insights from behavioral economics can inform the design of financial incentives, such as lotteries and deposit contracts. See Table 2 for descriptions of study designs that use financial incentives informed by behavioral research. But anything that motivates a behavior can be an incentive. Behavioral economics research has generated evidence that various nonmonetary incentives can also influence behavior—such as by tugging on

Table 2. How financial incentives can leverage behavioral principles

Incentive	Design example	Description	Sample communication to an individual	Behavioral economic principle applied
Conditional payment (reward tied to meeting a goal)	Reward framed as a gain and given immediately	Reward allocated once a goal is completed	Each day you achieve your step goal, you will receive \$2.	Present-based preferences (immediate gratification)
	Reward framed as a loss	Reward allocated up front and taken away if the goal is not met	\$14 has been allocated to your account this week. Each day you do not achieve your step goal, \$2 will be removed.	Loss aversion
Deposit contract	Individual's money is put at risk	Individuals allocate their own money and, if the behavior is not completed, it is not returned	You put down \$100 of your own money for the 50-day program. If you achieve your average step goal, this will be returned with a 1:1 match. Otherwise, you will lose your contribution.	Loss aversion
Lottery	Single tier	Tickets earned for a lottery with <i>either</i> a high probability of winning and low incentive amount <i>or</i> a low probability of winning and high incentive amount	Each day you achieve your step goal, you are eligible for a lottery with a 1% chance of winning \$200.	Probability inflation
	Multiple tiers	Tickets earned for a combination of two or more single-tier lotteries	Each day you achieve your step goal, you are eligible for a lottery with a 10% chance of winning \$10 and a 1% chance of winning \$100.	Probability inflation and present-based preferences

people’s social sensitivities or evoking their desire to win at games. Socially based incentives, as discussed next, can be applied alone or embedded in interventions that use financial incentives, and the effects of both financial and social incentives can be enhanced through a gamified design.

Social Incentives

The social sensitivities that influence motivation can take many forms.^{46–48} For instance, people can be motivated by the support of another person, the desire to help others, the desire to win a competition against other people, or even the enjoyment of bonding with others in the pursuit of shared goals. In Table 3, we present some benefits and risks of using social incentives.

In one type of social incentive, a program makes a donation to charity when a participant meets a goal. Kristin Harkins and her colleagues conducted a physical activity trial assessing the impact of weekly feedback plus incentives consisting of either money given to the individual, money given to a charity, or money

split between the individual and the charity.⁴⁹ (All participants, including those in the control group, wore digital pedometers.) People in all three incentive arms increased physical activity more than participants in the control group did. The researchers did not find significant differences between the intervention arms.

Eric Finkelstein and his colleagues conducted a randomized trial of individuals in Singapore to test whether waist-worn activity trackers could increase physical activity either alone or in combination with a cash payment given (if set goals were met) to the participant or to a charitable cause.⁵⁰ The participants in the cash and charity incentive groups (who could earn up to \$30 per week) increased their physical activity most during the six-month intervention. The participants in the charity incentive group performed significantly more exercise than did the control group participants, who received neither trackers nor incentives. However, the differences between the cash incentive and control groups quickly dissipated during the six-month follow-up period. Two groups continued to engage in significantly more

Table 3. Opportunities & challenges posed by social incentives

Incentive type	Potential opportunity	Potential challenge
Support	Participants are motivated by the support of others in their social networks.	This requires effort from others, who may not be as engaged in the behavior.
	Participants are motivated to help others by earning rewards that are donated to charity.	The participant may not feel directly tied to an external organization, so the reward feels distant.
Competition	Participants are motivated to improve behaviors after seeing others' behavior.	Lower performers may become discouraged and drop out.
Collaboration	Participants are motivated to work together in groups to accomplish a collective goal.	Lower performers may prevent the group from reaching its goal.

physical activity than the control group did, though: those who had received a tracker with no incentives during the study and those who had received the charity incentive. This study, like that of Harkins and her colleagues, demonstrates that charitable financial incentives can bring about behavior change. However, the results of the study conducted by Finkelstein and his colleagues suggest that extrinsic rewards, such as financial incentives given directly to the individual, work only while they are being offered, as activity tracker use dropped rapidly after the individual incentives ended.

Another type of social incentive involves giving rewards to individuals only if the group as a whole meets its targets. Members of our research group conducted two trials using social and financial incentives in tandem, along with remote-monitoring technology, to increase physical activity.⁵¹ In the first trial, they examined the impact of financial incentives valued at \$1.40 per day at two levels—the individual and the team—and found that a combination of both was the most effective. People who received only individual or only team incentives did no more exercise than did participants in the control group, who received no incentive. This result suggests that incentives are likely to be most effective if they both reinforce the actions of individuals and appeal to their desire to contribute to their team's success.

In the second trial, our research group evaluated the impact of letting teams know how their performance compared with that of other teams.⁵² In some teams, participants received

lottery-based financial incentives for taking 7,000 steps a day, whereas the others received no financial incentives. All teams received weekly feedback on how their step counts compared with the steps achieved by teams who were in either the 50th percentile (that is, the average teams) or the 75th percentile. This trial revealed that the combination of monetary reward with normative feedback (50th percentile) was the most effective at increasing physical activity. These findings are directly relevant to many programs that display leaderboards of the top performers, because highlighting superior performance may inadvertently discourage those participants who need motivation the most. Programs could be improved by delivering normative information in the feedback rather than putting so much focus on the top performers.

Evidence from other research suggests that providing peer comparisons without incentives can have an unintended consequence of pulling down individuals' performance to match the levels of the lowest performing participants; it is possible that in our trial, the lowest-common-denominator effect was mitigated in the 50th percentile comparison group through the use of team-based collaboration along with peer comparison.⁵³ It may be that one type of comparative feedback works better for those who already exercise at a level close to the goal, whereas a different type works better for those for whom there is a large gap between current activity and the goal; this is a question for future research to explore.

85%

Large employers offering financial incentives in workplace wellness programs

53%

U.S. adults who do the amount of aerobic exercise recommended by the DHHS

23%

U.S. adults who do the amount of both aerobic exercise and muscle-strengthening activities recommended by the DHHS

Several other clinical trials have also shown that competition in combination with incentives—at either the individual or the team level—can be effective for increasing adherence to exercise goals.⁵⁴ Jingwen Zhang and coauthors compared four groups of participants who were rewarded for attending exercise classes (this study did not use remote-monitoring devices). In one group, participants competed as individuals. In another group, teams of participants competed against other teams. In a third group, participants received incentives as a team but did not compete against other teams. In the control group, participants simply received individual incentives for attending the classes. The researchers found that participants in the two groups involving competition attended significantly more exercise classes than did participants in the other groups.

The use of social incentives has not been restricted to research; many workplace programs have been leveraging both social and financial incentives to promote physical activity. In 2015, Target launched its Fall Fitbit Challenge, using a corporate wellness platform from Fitbit. More than 300,000 Target employees were eligible for one free or discounted Fitbit, and they competed in teams for the highest daily step counts. Target, which did not publish a formal analysis of its employees' physical activity, donated \$1 million to a charity selected by the winners.

Gamification

Gamification is the use of game elements such as points and levels in nongame contexts; the fun of amassing points and reaching new levels can be motivating, even in the absence of monetary rewards. Insurers and smartphone applications often use gamification to try to spur people to be more physically active.^{18,55} However, a recent review of the top health and fitness applications found that although two-thirds used elements of gamification, few, if any, used key insights from behavioral economics to optimize their design.⁵⁵

Members of our research group conducted one of the first clinical trials using behaviorally designed gamification to increase physical

activity among families (this was, by the way, the first intervention study ever done with participants in the famous Framingham Heart Study, which has been investigating the risk factors for heart disease since 1948).⁵⁶ The game incorporated many elements of behavioral economics. Participants signed a pledge to strive to reach their goal (precommitment). Points were endowed up front and could be lost if goals were not met (loss aversion). Participants, whose steps were tracked by a wearable device, progressed through levels (goal gradients) and were informed of progress daily via text message or email. Further, they were teamed up with family members (collaboration). Each day, one person from each group was selected at random to represent the family, and the entire family lost points if that person had not achieved the prior day's goal. Family members in the three-month intervention achieved their step goals about twice as often as did participants in the control group (who only received daily feedback on step goal attainment and no other intervention). They also walked nearly 1,000 more steps per day. Differences were smaller but sustained during the three-month follow-up period.

In a later clinical trial, we conducted a similar behaviorally designed gamification intervention for overweight and obese employees from 40 U.S. states and compared three social incentives: collaboration (the team was rewarded if a randomly chosen team member achieved a daily step goal), competition (participants competed against teammates for first place), and support (a friend or family member received performance reports and offered support).⁵⁷ During the six-month intervention, all three intervention groups increased their physical activity at statistically significant levels relative to the control group's activity. The competition group performed the best, with its participants increasing their physical activity by 920 more steps per day than participants in the control group did. The people assigned to the collaboration and support arms had daily step increases of 637 and 689, respectively. During the three-month follow-up after the game's end, the physical activity of participants in the collaboration and support arms looked no different from

the activity of those in the control condition, but participants in the competition arm maintained increases of 569 steps more per day than the control group participants did. It is possible that a competitive social incentive compounds the benefit of a gamified design, as there are two rewards for participants to win: points in the game and first place on a team. This possibility could be explored further in future research.

Selecting the Right Behavioral Economic Approach

The collected findings suggest that combining remote-monitoring technologies with behavioral economic approaches holds great promise for spurring people to exercise more. However, different behaviorally designed interventions have not been tested head-to-head or for long durations. More evidence is therefore needed before comprehensive guidelines for designing programs meant to increase physical activity can be constructed. Nevertheless, on the basis of existing research, we can offer some ideas for selecting behavior-change strategies and technologies.

First, the easier it is to use a remote-monitoring technology, the more likely it is that people will use it consistently. Syncing, charging, and recording are all barriers to use, as is having to remove a wearable device before showering or swimming. Many new wearable devices have long-lasting batteries and are waterproof; these features help circumvent barriers that contribute to disengagement over time. In accordance with the status quo bias (and common sense), the less participants have to do to maintain the technology, the more likely it is they will continue engaging in the program.

Second, several low-cost and easily applied interventions have been shown to motivate exercise-related behavior change—notably, precommitment contracts, in which participants pledge to do their best to increase physical activity, and goal setting by the participants themselves.^{56,57} These approaches can be useful when a program lacks the resources needed to provide frequent interactions with participants.

“Syncing, charging, and recording are all barriers to use”

Third, social incentives should be considered when people already have strong ties with one another, as is the case at work or when multiple members of a household need to increase their activity. Gamification often pairs readily with interventions that include social incentives and can help to make challenging endeavors more fun. Social interventions and ones that leverage features of gaming are particularly suitable for helping people sustain new habits when providing ongoing financial incentives is not feasible.

Fourth, financial incentives—which can be easily distributed through mechanisms that already exist, such as insurance plans or workplace wellness programs—can help accelerate the adoption of new behaviors. However, deciding when they are worth the cost can be difficult. Monetary incentives can be worth it when enticing people to join a program is challenging or if the incentives can offset other costs, for example, by decreasing hospitalizations or the recurrence of health problems (such as second heart attacks). Although most physical fitness programs still frame incentives in terms of gains,⁵⁸ evidence suggests that they could be more effective if framed as losses or delivered in the form of lotteries.

Selecting the Right Remote-Monitoring Technology

Table 4 outlines differences among traditional pedometers, wearable activity trackers, and smartphone apps. Pedometers are meant to be carried or clipped to clothing and serve no major function outside of tracking step counts. Smartphones can passively track physical activity data and transmit information to remote servers; however, a person’s activity is monitored only while the phone is being carried.

Wearable devices, such as Fitbits and other activity trackers, are more fashionable and are designed to be worn visibly, typically on the

Table 4. Characteristics of devices & tools to monitor physical activity

Characteristic	Pedometer	Wearable activity tracker	Smartphone application
Remote-monitoring capability	No	Yes	Yes
Location commonly worn	Waist or pocket	Wrist	Pocket
Behavior for physical activity tracking	Carry or clip on	Wear	Download app, carry phone
Managing physical activity data	User manually logs in to website	User regularly syncs to another device and charges battery	Phone passively transmits to cloud servers
Cost	\$10+	\$100+	Free
Population-level adoption in United States	Very low (<1%)	Low but increasing (~5%–10%)	Very high ^a (81%)

^aThis figure refers to smartphone ownership (as reported by Pew Research Center: <https://www.pewresearch.org/internet/fact-sheet/mobile/2019/>); use for tracking activity can be assumed to be lower.

wrist. They tend to serve multiple functions, with capabilities ranging from displaying time to providing directions in addition to tracking steps and heart rate. Table 5 presents features of various activity trackers and advice for how to choose among the options.

A common challenge posed by wearable devices is that people stop using them over

time.^{18,19,59} Therefore, to help people develop a habit of regular wear and use, it is critical to embed these technologies within some form of a feedback loop. Figure 1 depicts a strategy known as *automated hovering*, in which constant monitoring and feedback promote a desired activity.⁶⁰ Data from the sensor are transmitted regularly to remote cloud servers that process and compare it with criteria for

Table 5. Characteristics of wearable activity trackers

Characteristic	Description	Selecting a device
Price	Ranges from about \$30 to over \$200	Almost all wearables track steps, distance, minutes, and calories. Fancier and often more expensive models collect additional information related to sleep or other biometrics such as heart rate. Smart wearables can run applications that provide holistic insights into other physical activity, such as swimming and biking.
Typical features	Displays counts of steps taken, distance traveled, active minutes, estimated calories burned	
Other features	Sleep quality tracking, heart rate readings, waterproof or water resistant, training recommendations, GPS and navigation, music storage, Bluetooth connection	
Where worn	Strapped on wrist, hanging around neck, or clipped to clothing	The wristband is most popular. The wearable should be minimally intrusive for the user if it is to get regular use.
Sync compatibility	Usually compatible with iOS and Android applications (with some exceptions; for example, Apple Watch uses only iOS)	If the targeted population has a variety of phone operating systems, select a wearable that is compatible with all.
Battery types	Rechargeable battery or coin-cell battery (which can last from a few months to a year)	Program duration is important to keep in mind when selecting battery types. For shorter programs, a coin-cell battery may be suitable, as the participant would not need to recharge it regularly. For longer programs, battery replacement can be a barrier, so rechargeable wearables may be preferable.
Battery life (if rechargeable)	Ranges from about five to 10 days per charge	Long-duration batteries are best because participants will not have the hassle of frequent charging. Short-duration batteries can be used, though, especially for a proactive group.

the specific individual. After determining the person's goal and whether it was achieved, the system can automatically deliver feedback that includes both a reward (or penalty) and a trigger that reminds the user to hit that day's target.

Because pedometers do not allow remote monitoring, they are not well suited for behavioral interventions that focus on using frequent feedback to build new habits. Smartphone apps are useful for programs that lack the money for sophisticated wearable devices. Programs that need to record metrics that go beyond steps, such as heart rate or sleep patterns, may require wearable trackers. As tracking technologies evolve and battery life lengthens, the user experience and program designers' ability to apply behavioral economic approaches will also improve.

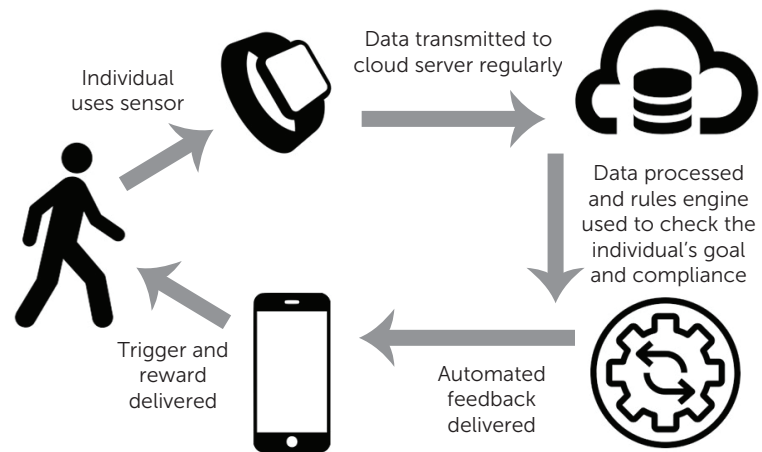
Conclusion

Smartphone apps and wearable activity trackers can help monitor activity levels, but unless they are combined with a well-designed behavior change strategy, they are unlikely to be effective. Applying evidence-based insights from behavioral economics to interventions aimed at increasing physical activity should help people reach their exercise goals and improve their health.

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Figure 1. Remote-monitoring technology can provide continuous monitoring & feedback (automated hovering) to promote physical activity



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Combining a lottery incentive with protection against losing the lottery improves exercise adherence

Daniella Meeker, Tara Knight, Patra Childress, Elmar R. Aliyev, & Jason N. Doctor

abstract

Two common incentives for participating in exercise programs are cash rewards for meeting goals and the loss of deposited money when goals are missed. Direct cash rewards lead to higher enrollment, but the risk of losing money is a stronger motivator for sticking with a program. We conducted an experiment using loss protection to leverage the power of both approaches. Participants were offered two exercise classes a week for 12 weeks. Anyone who attended the first weekly class received a chance to play a lottery that was very likely to pay a cash reward, but they also faced a low risk of not winning any money. Participants in the loss-protection group could insure against the loss by also attending the second class of the week. Participants in the control group could earn the equivalent money by likewise attending the second class, but the incentive was a straight reward for class participation (a flat payment), not as loss protection. For any weekly pattern of attendance, expected earnings were the same in both groups. We randomly assigned 153 participants to either the loss-protection or the control group. The loss-protection framing resulted in greater exercise class attendance, suggesting that the approach could enhance the outcomes of reward-based programs without increasing program costs.

Meeker, D., Knight, T., Childress, P., Aliyev, E. R., & Doctor, J. N. (2021). Combining a lottery incentive with protection against losing the lottery improves exercise adherence. *Behavioral Science & Policy*, 7(1), 27–38.

Core Findings

What is the issue?

Motivating individuals to participate in exercise and diet programs should take into account that people are more driven to avoid a loss than to achieve a gain of the same amount. Loss avoidance interventions, however, are a challenge for low-income groups. Instead, leveraging both cash rewards for meeting goals and the anticipated loss of deposited money when goals are missed—that is, *loss protection*—offers the best of both worlds.

How can you act?

Selected recommendations include:

- 1) Offering incentive structures with features of both reward and deposit contract programs
- 2) Incorporating a repeated and public lottery to make losses more salient to individuals

Who should take the lead?

Researchers and decision-makers in health care, insurance, and labor policy

Regular exercise offers well-known benefits, including reduced risk for heart attacks, high blood pressure, type 2 diabetes, and colon cancer.^{1–4} Yet sticking to an exercise plan is often challenging.

Various kinds of financial incentives meant to encourage a healthy lifestyle have been tested, with mixed results.^{5–8} These include paying people cash for meeting particular goals or having them sign “deposit contracts,” which obligate them to forfeit money if they do not meet the agreed-on goals.

Once signed, deposit contracts are much more motivating,^{9,10} probably because they leverage aversion to loss: people are more driven to avoid a loss than to achieve a gain of the same amount. In one early study of aerobic exercise, participants in a deposit contract condition ran more than twice as far overall than participants who earned lottery tickets through their efforts.¹¹

Deposit contracts help only those who agree to them, however. Many individuals refuse to lay out money that they may lose. People may be as much as six times less likely to enroll in a deposit contract than in a straight reward program.¹² Participation is particularly low, in the range of 11%–14%, when the required deposits are large.^{12,13} The reluctance can be mitigated by requiring only extremely small deposits (from \$0.01 to \$3.00), offering matching (or doubled) sums, allowing early withdrawal from programs, or permitting daily deposits to be slowed or stopped during the contract; such features result in participation rates between 29% and 96%.^{10,14–16} This increase in participation comes at the cost of reducing the strength of the motivation that results from the prospect of larger losses, however. Moreover, people who lack financial resources may be unable to afford deposits of any amount.

We wondered whether an incentive structure that was based on rewards but that also included the powerful forfeiture feature of a deposit contract could enhance the rewards’ ability to motivate people to exercise. In the

study presented here, we tested an intervention in which the reward for doing a certain amount of exercise was a ticket to a lottery that was highly likely but not guaranteed to pay off. People could protect against the risk of loss by doing still more exercise. We call this incentive structure *loss protection* because exercising to prevent a loss is analogous to purchasing an extended warranty to avoid having to pay for repairs on a consumer product.

We had a few reasons for thinking that the loss-protection approach would result in more physical activity than a straight payment for extra exercise would. For one, people entered in a low-risk lottery are likely to think of the projected lottery winnings (the reward) as money that already belongs to them. They would then view the possibility of losing the lottery as a forfeiture similar to losing a deposit and would thus be motivated to avoid the loss if possible.¹⁷ (Botond Köszegi and Matthew Rabin have termed the desire to avoid forfeiting anticipated income *expectation-based loss aversion*.)¹⁷ We suspected that people would also want to avoid feeling regret over not taking action to assure a lottery win.^{18,19}

Methods

Overview

In earlier work, we showed that loss protection was a powerful incentive for attending a scheduled health screening.²⁰ We extended this concept in our study to evaluate the effectiveness of loss protection as an incentive for exercising. The trial lasted 12 weeks. Participants were offered two exercise classes each week. For attending the first session of the week, all participants earned a ticket for a lottery drawing held the following week; the drawing offered each player a 90% chance of a \$20 payout and a 10% chance of no payout. In other words, participants would expect to win 90% of the time and lose 10% of the time, which comes to average winnings of \$18 a week ($0.90 \times \20).

Half the participants were randomly assigned to the loss-protection arm. These participants could insure against a loss by attending a

second session in the same week (guaranteeing themselves a payout of \$20, for a gain of \$2 over the expected winnings of \$18). The remaining participants were assigned to the control arm. These individuals were not offered the insurance option; if they attended the second session as well as the first, they received a fixed sum of money—\$2—in addition to the chance to play the lottery.

From a funder's perspective, this \$2 payment for attending a second class is equivalent to the average payout it would take to indemnify the lottery under loss protection. The study design thus ensured that, on average, participants in both arms who participated in the same combination of classes each week would expect to receive the same amount of incentive money. Any difference in exercise patterns between these groups would therefore not be explained by the incentive's cash value and would have to stem from differences in the motivational effects of the incentive designs.

Setting

The study took place at QueensCare Family Clinics, which serves more than 30,000 patients in locations around central and eastern Los Angeles. QueensCare Family Clinics is a federally qualified health center that cares for financially disadvantaged and medically underserved individuals. The organization provides a variety of disease-management services to its clients. Primary care providers refer their patients to disease-management programs, such as clinician-taught classes about lifestyle, diet, exercise, and medication regimens. Case managers improve patients' adherence to care plans by helping them with educational, language, and logistical barriers. The clinics also offer free one-hour exercise classes in an on-site facility.

Participant Recruitment & Eligibility

Adult patients (18 years of age or older) who were referred to the exercise program by their primary care provider were invited to participate in the study if they were referred because they had a chronic disorder, such as diabetes, or because they were overweight or obese, with

"Deposit contracts help only those who agree to them"

a weight-to-height ratio, or body mass index (BMI), of 25–40 kg/m². All patients meeting referral criteria, including physician clearance for exercise, were eligible. A bilingual enrollment coordinator recruited participants either by phone or in person from March 2012 to May 2014. Interested patients provided verbal consent. The coordinator scheduled the classes.

At the first class of the program (Week 1, Class 1), participants received a one-time \$10 payment and training on how the incentives would be issued. Training was based on study-arm assignment, as described below. After training, participants were asked a set of questions to ensure that they understood how the incentives would be administered; when needed, we provided additional training and retesting until comprehension was confirmed. (Find the questionnaires in Tables S1 and S2 of the Supplemental Material.)

Experimental Design

When participants enrolled in the study, we randomly assigned them to one of nine classrooms. Participants in five of the classrooms were in the loss-protection arm of the study, and participants in the other four classrooms were in the control arm.²¹ The study was partially masked: Exercise instructors and statistical analysts were unaware of the incentive conditions. We had adequate statistical power to determine whether being in the loss-protection condition affected the outcome, as is described in the Supplemental Material, which also presents more details about the screening, enrollment, and randomization for this study (see Figure S1 in the Supplemental Material).

Exercise Program & Lottery

The exercise program offered 24 one-hour sessions—two per week across all 12 weeks. Each session included aerobic and nonaerobic exercise, and participants had to attend the sessions in the classroom to which they

were assigned at the start. All classes in a given room were taught by the same instructor and occurred either on Monday and Wednesday or on Tuesday and Thursday.

As noted in the Overview section, participants in each condition were given a ticket enabling them to participate in a lottery drawing as an incentive for completing the first session of the week. The lottery was held at the start of the first session the following week. It was carried out using a masked raffle drum containing nine green balls and one red ball. The drum was turned several revolutions before each participant reached in to grab a ball; participants could not see the color of the ball before they pulled it out of the drum. If a green ball was selected, the participant received \$20 in cash. If the red ball cropped up, the participant received no payment.

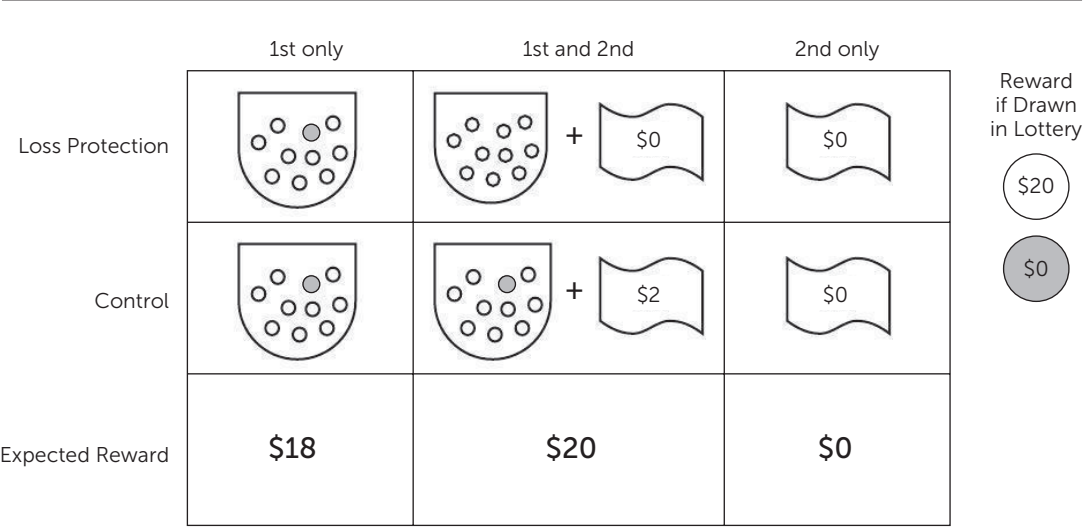
Also as noted earlier, this arrangement yielded an average weekly anticipated payout of \$18 ($0.90 \times \$20 = \18) to each participant who attended only the first class of the week. We gave participants a lot of leeway for playing

the lottery: they were not required to attend the exercise session at which they played the lottery, they could exchange an unused ticket for the chance to play any future lottery during the 12-week period, and they could play two or more unused tickets in a week. This way, the payouts relating to one week’s participation were not affected by how the participant acted in the other weeks.

Loss-Protection Incentive & Control Condition

Figure 1 depicts the experimental and control conditions. In the loss-protection arm, participants who earned a lottery ticket by participating in the first exercise class session of a week could protect against the potential loss of the \$20 lottery payout by also participating in the second session that week. This action would ensure a 100% chance of receiving payment, even if the person picked a red ball. Essentially, for them, all lottery balls were green. For someone in the loss-protection arm who attended all proffered classes, this insurance yielded an expected gain in reward of \$2 per week ($0.10 \times \$20 = \2) over what would likely be earned if the person had

Figure 1. Comparison of incentives offered each week in the loss-protection & control groups, depending on which classes were attended



Note. Participants in both groups were offered two classes a week. Attending the first weekly class earned a ticket for a lottery to be played at the start of the first class held the following week. During the lottery, each participant drew one of 10 balls from a masked drum. Nine (depicted by the open circles in the figure) were worth \$20; one (depicted by the solid circles in the figure) was worth nothing. Hence, each player had a 90% chance of winning \$20, for an average expected take-home payment of \$18 for attending the first class of the week. For the loss-protection group, also attending the second class of the week insured that all the balls drawn would be \$20 winners (an expected gain of \$2). For people in the control group, attending the second class of the week earned a flat cash payment of \$2. Any pattern of attendance during the week yielded an equivalent expected reward for both groups.

no insurance. Put another way, over 12 weeks, a person in either arm who attended only the first class each week would be expected to win 90% of the time, a yield of \$216. Over 12 weeks, a person in the loss-protection arm who attended both sessions each week would win 100% of the time, a yield of \$240. This difference amounts to \$24 dollars, or an average of \$2 per week—the amount of added earnings given to those who insured the lottery outcome with a second day of exercise.

In the control arm, participants who added the second class in a week to the first received a voucher for \$2, an amount equal to the expected gain in reward received by the loss-protection group, for participating in that second class. People in this arm were not offered the ability to protect against loss and guarantee a lottery win. The control group received payment at the same time as the lottery group did. Thus, the financial rewards expected by people in the loss-protection and control groups were identical.

Primary & Secondary Outcomes Defined
Our primary outcome was the difference in the overall rate of exercise class attendance between the loss-protection group and the control group. We also examined secondary outcomes relating to patterns of attendance, including changes in rates of attendance by study week and by day of the week.

Statistical Analysis Methods
The attendance rate was calculated as the number of classes attended relative to the number offered. We analyzed the rate in multiple ways to ensure that the results were robust and not sensitive to any particular analytic approach. The details of these analyses are described in the Supplemental Material.

By randomly assigning participants to each condition, we equalized the probable influence on outcomes of such factors as how much participants liked gambling or exercise. Given that participants in the two conditions expected to gain the same amount of money for attending both exercise classes in a week, we hypothesized that if money alone motivated

attendance, participants in the loss-protection condition and participants in the control condition would attend classes at equal rates (this was the null hypothesis). If, however, the opportunity to “purchase” loss protection with extra exercise added to the motivation provided by the cash, participants in the loss-protection condition would attend significantly more exercise classes than would people in the control condition. We assessed the differences between the two study conditions using logistic regression, which measured the probability of class attendance on any given day. The regression controlled for such potential confounds as different effects of the classrooms people were assigned to, the days of the week when classes were held, and which week was examined.

Results
Participant Characteristics & Attendance Patterns

Research coordinators contacted 488 eligible patients who were referred to an exercise class by clinic physicians: 153 (31%) enrolled. Of those, 79 were randomly assigned to the loss-protection group and 74 were assigned to the control group. Demographic characteristics and lottery outcomes by study arm are displayed in Table 1. The groups did not differ significantly in demographic characteristics or lottery outcomes. The average participant was 50 years old, obese (with an average BMI of 31.4 kg/m², which exceeds the standard 30 kg/m² obesity threshold), female, and Latino. Participants in both groups won the lottery at empirical frequencies very close to the expected 90%

Table 1. Participant characteristics & lottery outcomes

Demographic characteristic	Loss protection (n = 79)	Control (n = 74)
Mean age in years (SD)	50.0 (10.3)	50.2 (9.3)
Mean BMI (SD)	31.8 (4.9)	31.0 (3.9)
Female	84.8%	83.8%
Latino/Hispanic	94.9%	87.8%
Lottery outcomes ^a	91.9%	91.0%

Note. BMI = initial body mass index; SD = standard deviation. For nonscientists: Subtracting the standard deviation from and adding it to the mean yields the range for 68% of the sample.
^aThe odds of winning a lottery were 90%.

“offering loss protection is more effective than offering a straight cash reward for added exercise”

frequency (91.0% for the loss-protection group and 91.9% for the control group).

Effects of Loss Protection

Our data support the hypothesis that offering loss protection is more effective than offering a straight cash reward for added exercise.

Overall, for the 12-week study period, participants in the loss-protection group attended 64.8% of classes offered (95% CI [62.6%, 67.0%]), and participants in the control group attended 55.5% (95% CI [53.2%, 57.8%]). The 10% difference was significant ($p = .01$). (For information on the statistical notations used in this article, see

note A.) We saw much the same pattern when we adjusted the data to statistically correct for baseline differences in exercise among individuals and between people assigned to different classrooms. The adjusted difference between the loss-protection and control groups was 15.8% (95% CI [0.5%, 31.2%], $p < .05$). We used the statistical approach known as randomization inference to evaluate the significance of the adjusted results. Table 2 shows the adjusted data comparing the effects of loss protection against the effects of a direct cash reward on the rate of class attendance. Unadjusted differences can be seen in Table S3 of the Supplemental Material.

Not surprisingly, participants in both groups were more likely to attend the first than the second class of the week. The adjusted difference between attendance rates on the first and second days—15.5% (95% CI [11.2%, 19.8%], $p < .001$)—no doubt stems from the fact that the lottery voucher earned at the first class of the week came with an expected value of \$18, whereas attending the second class would be expected to add just \$2 on average in a week.

Table 2. Rate of exercise class attendance, by study arm & day (exercise session $N = 3,655$)

Variable	<i>M</i>	<i>SE</i>	<i>p</i> ^a
Overall attendance			
Proportion loss protection	0.75	0.04	
Proportion control	0.59	0.06	
Difference	0.16	0.05	.0485
First day attendance			
First day loss protection	0.81	0.03	
First day control	0.68	0.04	
Difference	0.13	0.05	.0693
Second day attendance			
Second day loss protection	0.69	0.04	
Second day control	0.50	0.04	
Difference	0.19	0.05	.0415

Note. *SE* = standard error. Participants in the loss-protection arm attended a greater proportion of the offered classes than did participants in the control arm. The data shown were adjusted to account for such factors as first-day attendance levels of individuals and people assigned to different classrooms.

^aFor scientists: The *p* value for group differences was calculated using randomization inference with 10,000 permutations of linear combination of regression coefficients corresponding to each comparison. Unadjusted analysis used *t* test for group differences. See the Supplemental Material for more information.

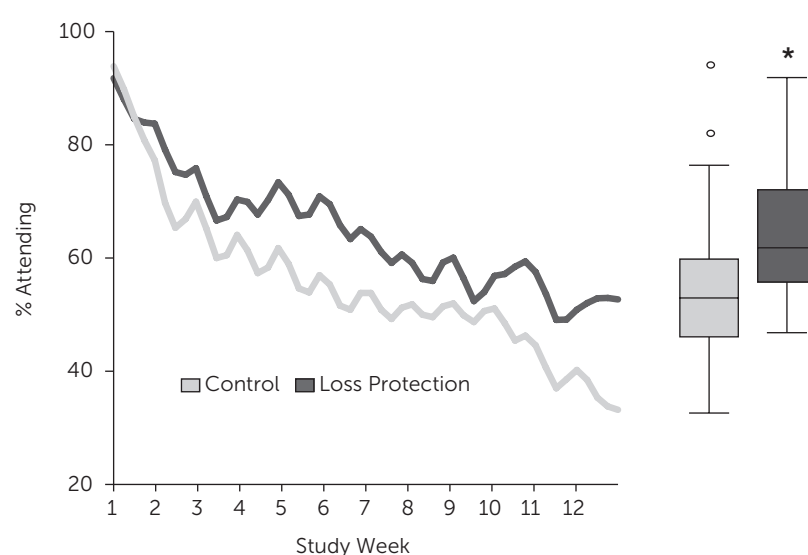
The participants in the loss-protection group did, however, attend more of the first-day and second-day classes than did the participants in the control group, although only the second-day differences retained significance after adjustment. The adjusted data show that participants in the loss-protection group attended 68.6% of the second-day classes and participants in the control group attended 50.0% of those classes, a difference of 18.6% (95% CI [0.006%, 36.01%], $p < .05$). In the early weeks of the study, the control and loss-protection treatment arm participants were more similar in their attendance patterns than they were in later weeks, as can be seen in Figure 2 here and in Figure S2 of the Supplemental Material (which breaks out attendance according to whether the class was the first or second of the week). Experiencing a lottery loss did not affect future class attendance.

Figure 3 depicts the mean expected earnings by week for the lottery protection and control conditions. The lottery protection group's expected earnings (that is, earnings based on probabilities rather than on whether they were actually lucky on the day of the drawing) are consistently higher than those of the control group, indicating that sponsors of an exercise program would have no reason to give people a choice between a loss-control or direct-reward incentive plan. Lottery insurance is favored each week to produce the greatest number of people willing to exchange exercise for a reward.

Discussion

We found that using an incentive structure with features of both reward and deposit contract programs led to better results than a reward program alone. Participants in an exercise program who were randomized to a loss-protection condition incorporating both features engaged in exercise 16% more often than did those in the reward-only control condition, even though participants in both conditions expected equivalent amounts of money for full participation. The ability to procure protection against losing a low-risk lottery each week by doing added exercise (attending the second exercise class in a week after receiving a lottery

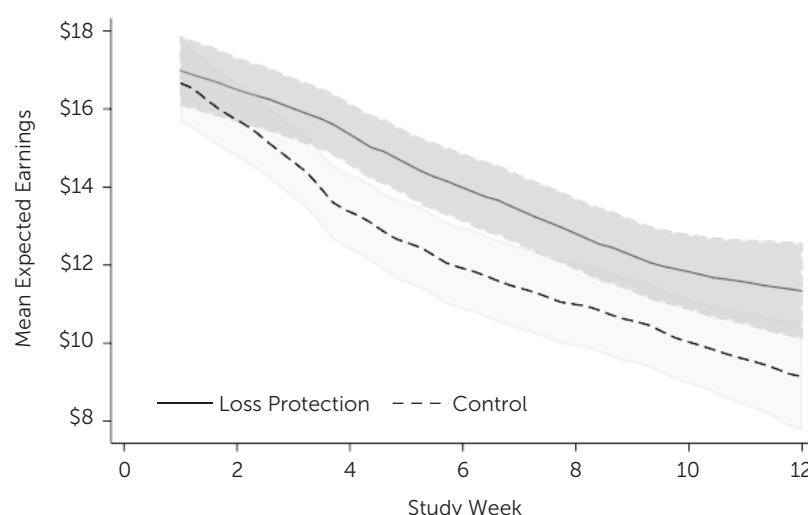
Figure 2. Average attendance by participants in the loss-protection & control groups, by week of study & overall



Note. Using adjusted data, the left plot shows that across the 12 weeks of the study, both groups had attrition, but fewer people in the loss-protection group than in the control group skipped classes each week. The right plot shows that overall, people in the loss-protection group attended more classes than those in the control group did. The plot at the right displays the interquartile range and median values (box boundaries and horizontal bars, respectively), high and low values (capped lines), and outliers (open circles). For nonscientists: The interquartile range is a measure of the overall attendance of the middle 50% of each group after its data were divided into four quartiles.

*For the difference between medians, $p < .01$.

Figure 3. Weekly mean expected earnings per person for the classes attended



Note. Despite being offered the same potential rewards, people in the loss-protection arm had higher expected earnings than did those in the control group—a reflection of the loss-protection group's harder work. (Anticipated earnings were \$18 for attending the first class of the week, \$20 for attending the first and second classes of the week, and \$0 for attending no classes or only the second class.) The shaded areas represent 95% confidence intervals for the mean of expected earnings. The data are unadjusted.

“loss-protection incentive structures might combat the typical attrition seen in exercise and diet programs”

ticket as a reward for attending the week’s first class) appeared to promote overall greater attendance at the second class.

It is possible that factors beyond avoiding loss per se helped to increase the motivation of participants in the loss-protection group. For instance, the ability to take action to protect themselves from loss may have boosted participants’ self-efficacy—that is, their sense of command over a situation (the lottery outcome) that would otherwise have been out of their control. Greater attendance at the first class of the week might have been spurred in part by a combination of knowing that control over obtaining the expected reward was in their hands and optimism bias: that is, they were confident that they would do what it took to earn insurance against losing the lottery.²² As for the second session of the week, loss aversion or anticipated regret over losing the lottery for lack of effort could have helped to motivate attendance. Attendance at the two classes of the week, then, may have been spurred by somewhat different combinations of factors. These speculations may be fruitful areas for future research.

Risk aversion might also have played some motivating role in the loss-protection group, although theoretical models do not all agree on this point. Classic economic models of decisionmaking explain most insurance purchases, such as homeowner’s protection, but they do not predict insurance-buying behavior well when the risks are low (as in our experiment).²³ Newer behavioral models, however, predict that risk aversion can indeed lead people to purchase insurance against small risks, and these predictions have been borne out in empirical investigations.²⁴ In prospect theory,¹⁸ insurance purchase might be modeled as underweighting

of a high probability gain relative to a certain gain. Or, alternatively, insurance could represent a payment to rid oneself of a potential loss of the lottery’s value prior to it being played.²⁵ Each of these two approaches models the reference point differently. Our experiment cannot distinguish loss aversion from aversion to small risks.

In the early weeks, rates of attendance by participants in the control and loss-protection arms were more similar than in later weeks. This pattern suggests that loss-protection incentive structures might combat the typical attrition seen in exercise and diet programs.²⁶ Habit formation may have a role to play here. Attending more classes would have increased the likelihood that attendance would become more of a habit in the loss-protection group. And developing the habit of attending class as frequently as possible would ease the decision of whether to go each time by reducing the cognitive burden of calculating the value of attendance before each session. Greater habit formation in the loss-protection group might also result in exercise coming to have more intrinsic value for those individuals. Once ingrained, the habit might reduce the risk that when the external rewards are removed, competing activities will crowd out the motivation to exercise. Future work may help to better understand these dynamics.

Loss protection may be particularly suited to people who, as was true of our participants, have low incomes. People who are financially strapped might not be able to afford to put down money that they may then lose, but they may be willing to take nonmonetary steps that insure against losing a potential reward. Moreover, those who face financial stress also have to spend significant mental energy managing complex allocations of limited resources, often juggling resources to avoid the severe consequences of missing billing deadlines.²⁷ They may respond better to incentives that relieve these attentional demands than to incentives that strain their attentional resources. Low-income consumers may also be more open to the attractions of loss protection than other consumers are, if past findings are a guide. They are more likely to purchase extended warranties

and buyer protection plans than consumers in wealthier groups are,²⁸ even though these protection plans often end up costing more than they are worth. (The products being protected often have a low probability of failure, and any needed repairs often cost less than the purchase price of the protection plans.)

This study had several limitations. We did not evaluate health outcomes or have the power to detect clinically significant improvements in health status. We did not conduct a long-term follow-up or have a comparison group that did not receive lottery vouchers. And the design cannot distinguish whether the loss protection had a positive effect on attendance or whether the relatively low \$2 reward for the control group on the second day discouraged attendance. However, such negative effects of low rewards have been observed only with much smaller rewards than the ones in this study.²⁹ Future longitudinal studies that include a control group and a maintenance phase could address many of the open questions.

The generalizability of the program also requires additional evaluation. As implemented, our program was relatively “high touch,” with substantial effort devoted to training participants in the incentive schedule and verifying comprehension. If personal contact was necessary to achieve the treatment effect, this requirement might threaten the feasibility of applying the approach elsewhere. Further, we do not know whether our loss-protection intervention would be effective only in a low-income group. In prior work, we did find loss protection enhanced the response to a one-time activity in a broader sample,²⁰ but adherence to an exercise plan may be more challenging to maintain. Before the approach can be applied broadly, researchers will need to evaluate how well it fares in middle-income groups and in online programs (such as SticKK.com and SPAR) that can deliver incentives without extensive personal contact.

Follow-up studies should evaluate the effect of different incentive structures on habit formation and on long-term adherence in groups across levels of the socioeconomic spectrum.

Lotteries have been shown to be effective in promoting behaviors useful to maintaining weight loss.¹⁴ Some evidence shows that commitment contracts result in a lasting change in exercising.⁹ A recent evaluation of incentive structures that sought to dispose gym members to view nonattendance as a loss produced only small, nonsignificant effects on attendance during the project and no impact on attendance later on.³⁰ Contrary to the one-time-incentive design of that study, our design involves a repeated (weekly) and public lottery that may make losses more salient to participants. The public nature of the lottery could also potentially increase participants’ perception of the cost of a loss in a loss-protection group if peers and friends who are enrolled in the same exercise class have established a norm of procuring the loss protection. Whether loss protection, by increasing overall attendance, leads to greater habit formation is not yet known, but the lower attrition rates and implied differences in the intrinsic value of exercise in our study suggest that they may.

endnote

A. From the editors to nonscientists: For any given data set, the statistical test used depends on the number of data points and the type of measurement, such as proportions or means. The *p* value of a statistical test is the probability of obtaining a result equal to or more extreme than would be observed merely by chance, assuming that there are no true differences between groups under study (this assumption is referred to as the *null hypothesis*). Researchers traditionally view *p* < .05 as the cutoff for statistical significance, with lower values indicating a stronger basis for rejecting the null hypothesis. A 95% confidence interval (CI) for a given metric indicates that in 95% of random samples from a given population, the measured value will fall within the stated interval.

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Exercise program participation rates are 29%–96% when deposit programs mitigate against large losses, at the expense of motivation strength



The participation rate in deposit contract programs is 11%–14% when required deposits are large



There is a 16% increase in exercise engagement from a loss-protection approach over a reward-only approach

author note

Daniella Meeker and Jason M. Doctor had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. All authors substantially contributed to the article. Financial support for this research was provided by Grants 1RC4AG039115, P30AG024968, and R33AG057395 from the National Institute on Aging of the National Institutes of Health. The funders of the study had no role in study design, data collection, data analysis, data interpretation, or writing of the article. The Institutional Review Board at the University of Southern California approved all study procedures (HS-11-00478), and the study was registered with ClinicalTrials.gov (NCT01823458) prior to study commencement. All participants were referred to the exercise classes by their physicians. We thank COPE Health Solutions and QueensCare Family Clinics for their collaboration on this project.

supplemental material

- <http://behavioralpolicy.org/publications>
- Methods & Analysis

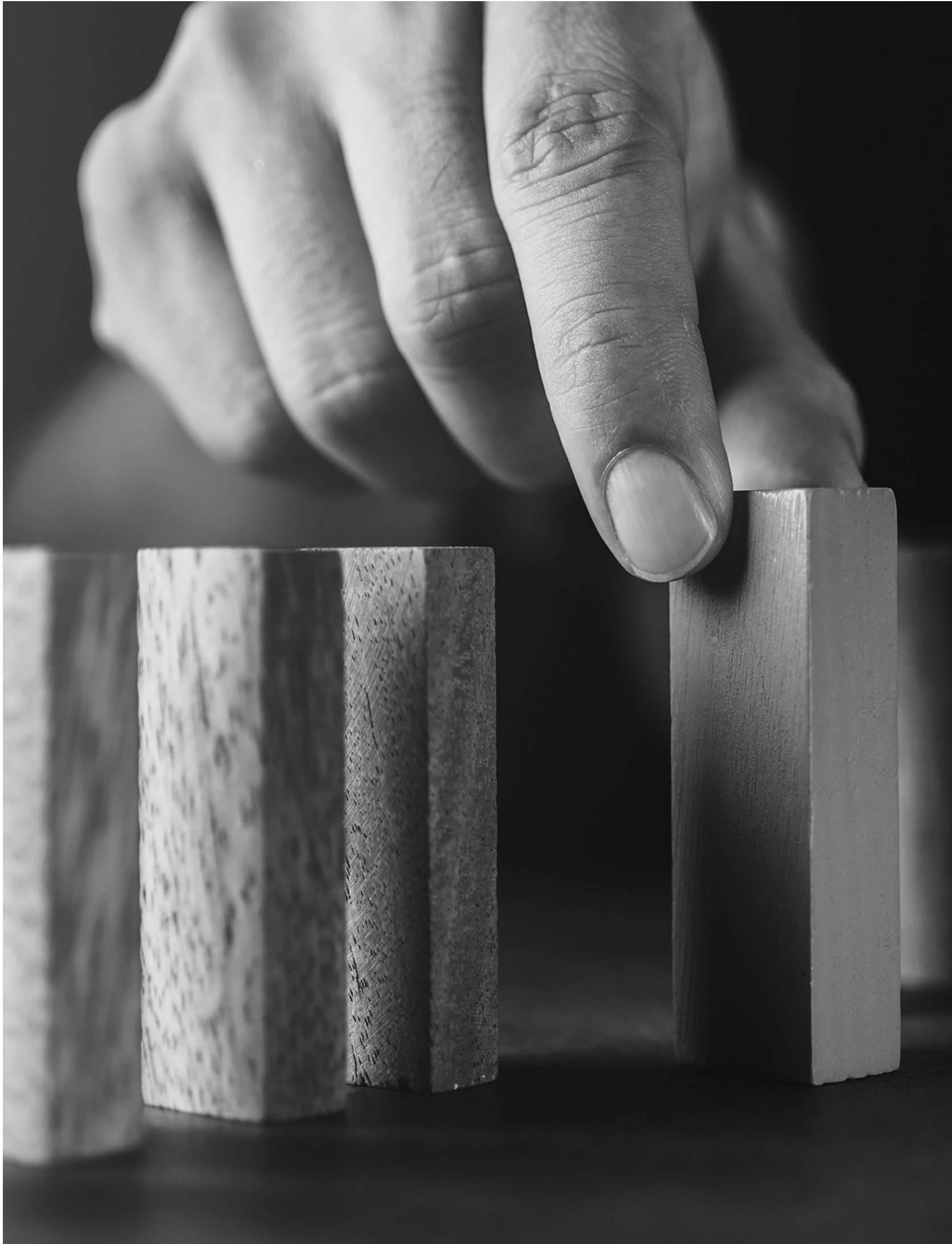
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Unlocking human potential through leadership training & development initiatives

David Day, Nicolas Bastardo, Tiffany Bisbey, Denise Reyes, & Eduardo Salas

abstract

Most organizations invest in leadership training and development initiatives, but which programs are worth the money is not always clear. To help leaders and policymakers make informed decisions about their leadership investments, we review empirical research from the organizational sciences and provide evidence-based guidance regarding the appropriate design and delivery of such interventions. Leadership training and development are distinct initiatives based on different needs and targeted at distinct albeit interrelated goals. We describe important characteristics of both kinds of interventions, detailing features with the most potential for influencing effectiveness and maximizing returns. Our recommendations provide clear and actionable suggestions for choosing the right interventions, providing the necessary resources to set the stage for success, and evaluating such programs.

Day, D., Bastardo, N., Bisbey, T., Reyes, D., & Salas, E. (2021). Unlocking human potential through leadership training & development initiatives. *Behavioral Science & Policy*, 7(1), 41–54.

The release of human possibilities is one of the most basic of social objectives and leadership goals.

—John W. Gardner, American public servant and founder of Common Cause, a nonpartisan grassroots organization devoted to upholding core principles of democracy in the public interest¹

Core Findings

What is the issue?

Organizations often invest much time and money in both leadership training and development without a clear idea of what is required or whether their initiatives will actually satisfy organizational needs.

How can you act?

Selected recommendations include:

- 1) Conducting relevant organizational needs analyses and evaluating scientifically validated training initiatives with an evidence-based approach
- 2) Creating a favorable organizational environment and culture by, inter alia, removing barriers to employee training motivation
- 3) Setting the appropriate expectations and mix between longer term developmental interventions and shorter term training interventions

Who should take the lead?

Top-level organizational leaders (such as CEOs), human resources and talent management leaders

Organizations make tremendous investments in leadership training and development initiatives to try to release leaders' full potential and, ultimately, enhance organizational sustainability and competitiveness. Leadership, after all, serves as the glue that holds organizations together when forces conspire to pull people apart. Effective leaders are able to get people to cooperate and to coordinate their activities in the service of accomplishing goals. Leadership can come from anyone, regardless of formal position, which means that organizations benefit when employees at all organizational levels have leadership skills.

Organizations need to invest in leadership training and development when a strong economy allows the prioritization of organizational growth as well as when social or economic conditions require downsizing or restructuring.² During times of change and disruption, organizations often need to turn to employees with unused or underdeveloped leadership potential for help in reshaping and bolstering the evolving leadership structure.

Indeed, the importance of leadership is widely recognized. Billions of dollars are spent annually on leadership training and development, with organizations reporting that, on average, leadership training and development claim the largest share—around 35%—of their learning and development budgets.³

Although organizations often make large investments in leadership training and development, they do not necessarily make these investments wisely. In this article, we review key findings from field research on leadership training and development practices and highlight those that have been shown to be the most effective.

In this review—which is targeted to top organizational leaders, general managers, human resources and talent management leaders, and other policymakers—we have three main objectives. The first is to draw a clear distinction between leadership training and leadership development. The second is to review evidence regarding effectiveness that is gathered from research studies done in the field rather than in the laboratory, because field studies are more likely to be applicable to the real world. The third is to propose specific policy recommendations for implementing effective leadership training and development, as well as to suggest ways to identify practices that may not be worth the investment of time or money.

Leadership Training & Leadership Development: What Is the Difference?

Leadership training and development both aim to foster individual change and unlock individual potential. But they have different timescales, focus on different content and processes, and generally target employees at different organizational levels.

Leadership training is a set of systematic learning initiatives designed to enhance specific job-relevant *knowledge* (what an employee knows), *skills* (what an employee can do), and *attitudes* (what an employee thinks or feels about the work), with the goal of improving job performance.⁴ Knowledge, skills, and attitudes necessary for a specific job are often referred to collectively as *KSAs*, and they provide the foundation for effective work performance. For example, human resources managers should know how to recognize when an employee needs emotional support, have the communication skills to convey their understanding

and discuss solutions, and hold empathic and supportive attitudes. As another example, first-line supervisors should know how to motivate the people they manage, have the supervisory skills to apply incentives fairly and effectively, and have attitudes that support drawing the best performance from each individual employee.

It is relatively straightforward to design and implement training to improve KSAs when the resources to do so are available. Although this type of training is easily replicable and therefore not a strong source of a sustained competitive advantage,² it is a powerful tool for workforce improvement that some organizations still fail to implement.

Leadership training is often used to teach employees new policies or technologies, to remediate the performance of leaders or their teams, or to improve performance when indices of business performance are declining. In contrast to training, leadership development seeks to enhance leaders' ability to address challenges that have no known or agreed-upon solutions. These kinds of problems, which have been referred to as *adaptive challenges*,⁵ cannot be solved through the application of specific technical skills. Leadership development takes on the complex and holistic challenges associated with changing the behavioral tendencies of human beings. Thus, the objective of leadership development is inherently more ambiguous than the objective for leadership training, because it relates to enhancing an individual's capacity to adapt and respond to the unfamiliar rather than teaching specific KSAs to be applied to well-known on-the-job situations.

Leadership development is highly varied and eclectic in practice. Organizations do not agree on what constitutes the best way to design and deliver leadership development interventions. Organizations may send employees to off-site residential programs, have in-house initiatives run by the human resources department, bring in external consultants to design and deliver programs, apply a mix of these options, or explore other possibilities. Some organizations value continuous, on-the-job development,

whereas others take more of an episodic, program-based approach.

Whereas training is bounded and lasts for a relatively short amount of time (for example, several hours), leadership development initiatives tend to last much longer (for example, several months). Leadership training is delivered in a highly structured way and imparts much more specific content than is true of leadership development, which comprises multiple inter-related activities such as assessment, feedback, coaching, and experiential learning. Leadership training tends to be targeted at low- to midlevel employees, whereas leadership development is usually offered to senior-level employees.

Although we have explored the differences between leadership training and leadership development in this section, we do not mean to suggest that an organization must choose one initiative to the exclusion of the other. In fact, whether to go with training or development is a false dilemma: both are valuable tools when it comes to realizing human possibilities in the form of more effective leadership.

Leadership Training

Evidence Overview

As we noted earlier, the goal of leadership training is to add new KSAs to an established or emerging leader's repertoire. But how does one know whether the training actually improves leadership performance?

The evidence is clear that leadership training works when done right, suggesting that it is beneficial for individuals and organizations. To arrive at the recommendations presented in this article, we relied on evidence from both individual field studies and aggregations, called *meta-analyses*, of multiple field studies. In these meta-analyses, researchers combined and statistically analyzed findings from many studies across many different jobs and industries, producing results that are more generalizable than those of an individual study. See the sidebar Key Insights and Recommendations for

Key Insights & Recommendations for Leadership Training

Leadership Training Insights
<div>1. Training consists of a set of systematic learning initiatives designed to teach specific job-relevant knowledge, skills, and attitudes (KSAs) with the goal of improving job performance.</div> <div>2. More specifically, the goal of leadership training is to provide a leader with new knowledge, add skills to the leader’s repertoire, and establish the attitudes necessary to learn and apply the knowledge and skills on the job.</div> <div>3. Leadership training leads to a 20%–30% increase in learning, on-the-job leadership behaviors, and positive organizational outcomes. The following recommendations can boost effectiveness even more.</div>
Leadership Training Recommendations
<div>1. Conduct a systematic needs analysis before instituting a training program.</div> <div>2. Choose scientifically validated training initiatives, and assess their effectiveness for your organization.</div> <div>3. Remove barriers to employee motivation to learn and apply skills.</div> <div>4. When conducting training, include multiple teaching modes, provide opportunities for practice, and offer feedback.</div> <div>5. Help the training stick: Make it easy to use the newly acquired KSAs by providing resources, opportunities for on-the-job practice, and incentives.</div>

Leadership Training for a summary of key findings and recommendations related to leadership training.

Christina Lacerenza and her colleagues conducted a meta-analysis of 335 studies of leadership training programs and found that, on average, such programs were associated with a 25% increase in learning, a 28% increase in on-the-job leadership behaviors, and a 25% improvement in organization-level outcomes (such as higher profits and lower costs, turnover, and absenteeism).⁶

In the same study, the researchers analyzed the effects of 15 different contextual variables and found that some were associated with even better outcomes.⁶ Among these influential variables were the location, timing, and duration of the training; the methods of teaching; whether the trainer was an external contractor brought in to give the training or an in-house resource; and whether a needs analysis was conducted before training. Differences in these variables can explain why an otherwise effective training design may not work. For instance, a particular training curriculum may show success across the industry but fail to generate results in a particular company because the organization did not first conduct an analysis to uncover its employees’ leadership training needs (see this

section’s Recommendation 1 for more about such analyses).

The meta-analysis also specifically examined associations between the 15 variables and learning, on-the-job leadership behaviors, and organizational-level outcomes. With respect to learning, the results showed that it improved when a needs analysis was conducted ahead of time and multiple methods of delivery (lecture, demonstration, practice) were used. Desirable changes in on-the-job leadership behaviors were associated with conducting a needs analysis, using multiple methods of delivery, conducting training in face-to-face (rather than online) settings, and making attendance voluntary.

Better organizational results were associated with mandatory attendance and holding the training on-site rather than off-site.

Although neither voluntary nor mandatory attendance is universally better when it comes to training effectiveness, when on-the-job behaviors need to change, allowing employees to voluntarily attend training may help ensure they have the motivation required for deep learning and to apply that training once back on the job. Mandatory attendance might be better reserved for programs targeting large numbers

of employees with the intent of shaping broad organizational results.

How to Create Effective Leadership Training Programs

Recommendation 1: Conduct a Systematic Needs Analysis. How do you know what content your leadership training should cover? An effective training strategy begins with a *needs analysis*, which explicitly defines the KSAs associated with leadership effectiveness in your organization and identifies the people who need them. Needs analyses involve conducting interviews, administering questionnaires, and observing leaders. These analyses can be conducted by in-house human resources specialists or external consultants with expertise in training design. Because leadership training is not “one size fits all,” conducting a needs analysis can help avoid wasting time and money on an ineffective, generic program or one that targets the wrong KSAs for your organization. As mentioned earlier, leadership training programs that were chosen on the basis of the results of a needs analysis outperformed others in terms of both learning improvements and transfer of learned leadership skills from the training to the job.⁶

When conducting a needs analysis and designing a training program for managers, it can be helpful to group skills into four main types: intrapersonal, interpersonal, business, and leadership.⁷ Intrapersonal skills relevant to leadership include possessing self-esteem and self-control, the ability to self-regulate, and other personal-development techniques. Interpersonal skills include an ability to build effective relationships with others. Business skills relate to proficiency at maintaining operational efficiency through strategic planning, monitoring and evaluating employee performance, forecasting and budgeting activities, and running meetings efficiently and effectively. Leadership skills are focused on building and maintaining effective teams by identifying, attracting, motivating, and retaining talented team members. These four main types of skills are not mutually exclusive; for example, leadership skills can depend in part on intra- and interpersonal skills.

“An effective training strategy begins with a *needs analysis*”

Meta-analytic evidence indicates that intrapersonal skills training is provided mainly to high-level leaders, who may derive more direct benefits from techniques—such as engaging in self-reflection, overcoming mental road blocks, and seeking social support—that help them to cope with the cognitive demands and responsibilities of their role.⁸ Interpersonal training is mainly directed at low-level leaders, who might benefit from building skills associated with being socially adept and developing rapport with others. Business skills training is also targeted to mainly low-level leaders; these skills are visible and therefore relatively easy to assess in performance evaluations.

The final category, leadership skills training, is offered for leaders at all levels who supervise others, and attendees are mainly taught effective leadership styles and the tactics to properly execute them,⁹ such as making sure employees have the resources they need for success, delivering support and encouragement, using goal-setting techniques, and implementing fair reward practices.^{6,7} Learning these tactics is important for preparing those in leadership positions to lead others toward business objectives in a way that is ethical, efficient, and effective.

One program worth emulating dedicated six months to conducting a needs analysis, which incorporated benchmarking against comparable companies and conducting interviews and focus groups with both new and experienced managers from the organization. This needs analysis informed the design and content of the leadership training program, which included a business simulation, lecture and discussion sessions, role playing, and case studies.¹⁰ After the training, participants demonstrated increased knowledge about the role of a manager, how to manage others in the company’s environment, and how to build a team,

suggesting that, overall, the leadership training program was effective.¹⁰

Recommendation 2: Choose Scientifically Validated Training Initiatives & Evaluate Their Effectiveness in Your Own Organization. A saying in the training literature notes that half of the money invested in training is wasted, but no one knows which half. For this reason, it is important not to select a program solely on the basis of faith in its efficacy. Instead, select training interventions that have been evaluated and validated.

To help you select a program, we identify in this section three key indicators of a well-evaluated leadership training program.

First, the evaluation ideally used an experimental design that randomly assigned participants to groups, such as training and control (no training) groups. Randomization provides the strongest evidence that the training accounts for the differences in the results between groups.¹¹

Second, the evaluation should have examined four main types of outcomes: trainee reactions, learning, behavioral transfer, and organizational results.^{12,13} *Trainee reactions* refers to participants' attitudes about the program's content, delivery, and usefulness. *Learning* focuses on measurable improvements in desired KSAs. *Behavioral transfer* means applying the skills in the workplace. *Organizational results* are the outcomes considered important for organizational success (for example, higher profits but lower costs, turnover, and absenteeism). Researchers suggest that to be effective, a program should demonstrate positive effects in all four of these dimensions.¹⁴

Third, the evaluator should have made sure that the measures used to examine these four outcomes aligned with the leadership KSAs that were identified in the needs analysis as being training targets (as already mentioned in Recommendation 1 of this section). For example, if a program is supposed to train a leader in how to run team meetings efficiently, an observer can evaluate behavioral transfer by observing specific meeting-related

interpersonal behaviors on the job. It would not make sense to observe interpersonal behaviors if the purpose of the program was to train leaders to handle forecasting and budgeting.

Just because a program has been scientifically validated does not mean it will perform equally well in all organizations. For that reason, once organizational managers have selected a validated leadership training program and implemented it, they should evaluate how well the program has performed among their own employees. Although many organizations may not find it practical to do a randomized controlled study, it is certainly possible to assess a leadership training program in terms of employees' reactions, learning outcomes, and behavioral transfer, as well as organizational outcomes.

Organizations should use self-report methods to assess employees' reactions because self-reports reveal how trainees feel about the program. However, learning outcomes should be measured with objective knowledge tests. As for transfer, observers can rate trainees on changes in their behavior. Objective organizational data, such as revenue figures, can provide evidence of a relationship between changes in leader performance and organizational outcomes.

Reactions should be collected directly after training is completed, while they are salient in the trainee's memory. Learning outcomes should be measured both before and after training to allow for comparison. As for transfer and organizational results, evaluation should compare a project's or organization's status before training, directly after training, and weeks or months after training. In short, a rigorous evaluation process should consider outcomes at multiple levels and time points, using various methods to capture a full picture of the program's effectiveness.

Recommendation 3: Remove Barriers to Employee Motivation to Learn & Apply Skills. Even the best training will have limited benefits if the workplace is not ready for learners to use their new KSAs when they return from training.

For employees, bringing a new way of doing something back to work is unlikely to result in lasting change without a supportive environment. This environment should be established even before training begins by removing any barriers to employees' motivation to participate in training, learn, and use new skills; such barriers can include lack of supervisor support or lack of an expectation of change.¹⁵ Research shows that learners may avoid participating in training opportunities if they perceive their immediate leaders are uninterested in their skill advancement, and they may avoid attending training events altogether in the absence of supervisor support.¹⁶ Therefore, before employees embark on training, ask them to set personal goals for how they will apply new skills on the job and convey the expectation that, after the training, they will teach others what they learned. These policies can signal to employees that their participation and learning are important and expected and that they will have some personal accountability for transferring training back to the workplace.

Supervisors can, moreover, boost motivation by framing the training in a way that signals its importance.^{17,18} One study compared situations in which potential participants received a realistic preview of a leadership program (including both favorable and unfavorable reviews) with those in which potential participants received a traditional all-favorable program description. The potential participants who received a realistic preview of the program were more likely to (a) deem the program to be appropriate for them to complete, (b) benefit from the program, and (c) show commitment and motivation to attend the program.¹⁹

Motivation to change is useless without the autonomy to do so. Just as autonomy is a key factor in effective work design,²⁰ it is also a key factor in allowing employees to use new skills after training. Training is not likely to be effective unless it is embedded in a work system that facilitates autonomy, responsibility, and a sense that the work is meaningful.²¹

Recommendation 4: Training Should Include Multiple Teaching Modes, Provide

Opportunities for Practice, & Offer Feedback.

An evidence-based approach to structuring training incorporates the following steps: (a) deliver information, (b) provide demonstrations for participants to watch, (c) include opportunities for practice, and (d) offer constructive feedback during practice.¹⁸ In other words, after trainees are exposed to the content, their new KSAs can be solidified by seeing demonstrations and engaging in guided practice. During practice, learners should be given feedback so they can make adjustments and improve. Constructive feedback should also be delivered after the official training is complete.

In general, this framework is necessary but not sufficient for training effectiveness. The methods used within each stage should also be evidence based.

Evidence shows that using multiple methods in training interventions enhances learning.¹⁰ For example, the information-delivery component could include a lecture supplemented with visual aids such as videos and written materials.²² An exemplar transformational leadership training program provided multiple opportunities for practice by following a lecture with a daylong interactive session that involved role playing, decisionmaking exercises, and a case study.²³ Moreover, people learn more when the information is presented by a professional teacher or trainer rather than acquired through self-study alone.⁶

When it comes to feedback during training, both positive and constructive critical feedback on behaviors need to be delivered, along with suggestions for how to improve responses to challenges or setbacks.¹⁸ Regarding posttraining feedback, debates continue on exactly who should deliver the feedback.²⁴ Many proponents support 360-degree feedback, in which assessments are solicited from multiple sources, such as the supervisor, subordinates, colleagues, and clients.²⁵ However, meta-analytic findings suggest that receiving feedback from multiple sources is not necessarily more effective than getting it from a single source.⁶ Using 360-degree feedback or other multi-source approaches may not provide returns

35%

Average share of organizational learning and development budgets allocated to training and development

25%

Average improvement in organization-level outcomes from leadership training programs

KSAs

Job-relevant knowledge, skills, and attitudes relevant for training

commensurate with the considerable investment in time and money associated with these practices.

Recommendation 5: Help the Training Stick by Providing Resources, Opportunities for On-the-Job Practice, & Incentives That Make It Easy to Use the Newly Acquired KSAs. Work conditions set the stage for successful maintenance of training benefits. In the training literature, these conditions are referred to as the *transfer climate* because they can determine whether trainees feel comfortable, engaged, and motivated to apply their new knowledge and skills to their work.^{26,27} The concept encompasses more than having the autonomy or ability to change the way that tasks are performed. A study of a customer service skills training found that transfer can be increased in a supportive work climate, such as one that provides resources, opportunities to practice new skills, appropriate incentives, or some combination of these features.²⁸

Resources can include mentors, checklists to help review the training material, refresher training, and feedback from supervisors and subordinates. Leadership practice opportunities can be provided by giving the trained individual a leadership role on a low-stakes project followed by a gradual increase in responsibilities.⁶

Finally, financial rewards are an effective way to encourage transfer, hold trainees accountable for using their newly acquired KSAs, and demonstrate how the KSAs support the organization’s goals and values.²⁹

Leadership Development
Evidence Overview

Evaluating the evidence supporting effective leadership development interventions is more difficult than evaluating the leadership training evidence. No large-scale meta-analyses have summarized the literature on best practices in leadership development. Moreover, until fairly recently, leadership development was not of keen interest to researchers.³⁰ However, times have changed, and some recent research has been devoted to understanding leadership development as a set of practices and processes distinct from leadership training. The results of relevant research studies are summarized in the following recommendations and in the sidebar Key Insights and Recommendations for Leadership Development.

How to Create Effective Leadership Development Programs

Recommendation 1: Leverage Work Experiences for Leadership Development. A widely shared tenet of leadership development is

Key Insights & Recommendations for Leadership Development

Leadership Development Insights
<div>1. Leadership development expands a person’s capacity to be effective in leadership roles, even as responsibilities and circumstances change.</div> <div>2. The goal of leadership development is to enhance an individual’s and the organization’s capacity to address challenges with no known or agreed-upon solution.</div> <div>3. Many of the effects—especially the long-term effects—of leadership development initiatives on individual and organizational outcomes are unknown. The following recommendations are based on the best evidence available. Adopting these recommendations should improve the return on investments made in leadership development.</div>
Leadership Development Recommendations
<div>1. Leverage challenging work experiences to create opportunities for leaders to learn and expand their leadership abilities.</div> <div>2. Provide feedback and support.</div> <div>3. Use evidence-based processes for structured reflection after significant positive and negative events.</div> <div>4. Facilitate positive change in leaders’ self-views—that is, help them develop their self-awareness, confidence in their leadership skills, and a sense of identity as a leader.</div> <div>5. Give development efforts time to work. Long-lasting individual change does not come quickly.</div>

that it is work experiences, and especially the lessons derived from work experiences,^{31,32} that drive much of the growth in leadership competence.³³ To spur growth, these experiences must be challenging, because change rarely occurs when someone is comfortable or complacent.

What types of experiences create challenge and take people out of their comfort zones? Researchers have empirically identified 15 dimensions of job challenge and organized them into three categories: job transitions (such as acquiring unfamiliar responsibilities and having to prove oneself), task-related characteristics (such as having to create change, bearing high levels of responsibility, and gaining cooperation from coworkers without having formal authority over them), and obstacles (such as adverse business conditions, lack of support, and a difficult boss).³⁴

A tool called the Developmental Challenge Profile incorporates these dimensions in a self-report survey meant to assess levels of challenge in a given job.³⁴ This self-assessment tool can assist individuals and superiors in understanding an individual's work-related challenges so as to leverage them in support of ongoing leadership development.

Research has shown that key transitions experienced by early-career managers—including taking on new roles; starting new businesses or initiatives; or undergoing personal challenges, such as juggling changes in work–life balance or deciding how to confront an ethical conflict at work³⁵—can provide the kinds of work challenges that are associated with developing leadership competency. Field research involving upper-level managers who were assigned to work in foreign countries has suggested that leaders assigned to work in places where the culture is highly distinct from their home culture (a contrast referred to as *cultural distance*) tend to display greater development in strategic thinking than do managers who experience smaller cultural differences.³⁶ Research involving executives also suggests that having worked in a variety of capacities—as a nonmanager, a manager, and a lead strategist, for example—is associated with enhanced development of

“change rarely occurs when someone is comfortable or complacent”

competence in strategic thinking.³⁷ Leveraging work experience is clearly a key practice in leadership development. We note, though, that in most of the research, the connection between work assignments and leadership development is correlational. Therefore, it is wise to temper any tendencies to draw strong causal inferences from those findings.

Recommendation 2: Provide Feedback & Support. Although having challenging work assignments is critical for leadership development, some challenges may find people in over their heads. When challenges are excessive, access to feedback becomes a key aid to leadership development. Field research using a sample of middle- and senior-level managers has demonstrated that the relationship between the intensity of work-related developmental challenges and leadership development showed a pattern of diminishing returns in the absence of feedback.³⁸ As the challenges became more intense, the gains in leadership competence leveled off unless feedback was available, in which case development continued even under very high levels of challenge.

A valuable resource for support is one's supervisor. Research has examined how supervisors provide support to leaders who are transitioning into positions of new responsibility.³⁹ When supervisors modeled effective leadership behavior and explicitly taught transitioning leaders about their new roles, these forms of support accelerated the development of the transitioning leaders, as indicated by self-perceived knowledge and time spent leading others. Again, these field studies were correlational, which limits the causal claims that can be made. Nonetheless, the findings point to the potential importance of providing access to feedback and support along with on-the-job

challenges to maximize opportunities for growth.

Recommendation 3: Use Evidence-Based Processes for Structured Reflection. Undergoing challenging experiences is important but insufficient for leadership development. Also needed is some way to enhance learning from experience. Because it is possible to go through an experience without learning anything from it, mechanisms to facilitate learning should be included in leadership development initiatives. One such learning mechanism is a process of structured reflection called *after-event* or *after-action review*.⁴⁰

As the name implies, after-event reviews provide a mechanism for individuals, in the wake of a challenging event, to systematically analyze their behavior, to suggest explanations for their successful or failed actions, to compare analyses with others sharing the experience, and to solicit feedback. After-event reviews are typically conducted in a group; however, the technique can also be used one-on-one with a coach or in a self-directed exercise.

The military uses after-event reviews extensively, and field research has demonstrated that structured reflection on both failures and successes is more predictive of performance improvement than are reviews of only failures.⁴¹ In another study, researchers demonstrated that using structured after-event review protocols was associated with greater changes in individual task-oriented and relational leadership behaviors over time than was a nonstructured debriefing protocol in the form of a general discussion of an event.⁴² This study was quasi-experimental, meaning that it had two comparison groups but assignment to those groups was not random. This design allows causal inferences to be drawn from the research with some degree of confidence, although randomized trials would provide stronger evidence.

Recommendation 4: Facilitate Positive Change in Self-Views. Leaders' views of themselves on various dimensions can influence their growth as leaders. Three of the key dimensions are

self-awareness, leadership self-efficacy, and leader identity.

A field study comparing high-performing and average-performing managers at middle and senior organizational levels suggested that the high performers were more self-aware, as measured by the level of agreement between leaders' self-assessments and assessments provided by the leaders' direct subordinates.⁴³ Although the study's focus was not leadership development, its results suggest that having self-awareness, and thus some understanding of the impact of one's actions on others, might be associated with better managerial performance. Self-awareness might also play a role in mitigating leader *derailment*—the failure to advance professionally or the involuntary loss of one's job—which is most often caused by problems with interpersonal relationships.⁴⁴

Field research has shown that managers' self-reported confidence in their effectiveness as a leader (that is, in their *leadership self-efficacy*) is positively related to performance as measured by subordinates' assessments.⁴⁵

Leader identity—that is, placing importance on seeing oneself as a leader—may also facilitate leadership development. Identities are grounded in personal values, which determine how people spend their time. People allocate time to those activities that are consistent with their identities. Developing and internalizing a leader identity is thought to support leadership development because it leads to spending time and effort learning and practicing relevant skills. Research has demonstrated that stronger leader identities correlate with more positive trajectories of development over time,⁴⁶ such that those who showed greater improvement in leadership also showed an increase in the value they placed on being a leader. Leader identities are also positively associated with self-assessments of leadership skills development.⁴⁷

Although viewing oneself as a leader is a potentially important component of the long-term leadership development process, little research to date addresses how to change leadership self-views effectively. However, the literature

on psychological empowerment provides some potential guidance.⁴⁸ Empowering employees through project-management opportunities is one way to help employees build leadership self-efficacy and strengthen their leadership self-view. This is especially the case when the opportunities to lead a small project are supported by other evidence-based practices, such as supervisor feedback. Taking on leadership responsibilities, even in a small way, can encourage employees to start thinking of themselves as leaders.

Self-views can also be used to assess developmental progress. Because becoming an excellent leader can take years, the effectiveness of development initiatives can be difficult to measure. Assessing short-term progress on self-awareness, leadership self-efficacy, and leader identity can provide an indication of progress, however.⁴⁹

Recommendation 5: Give Development Efforts Time to Work. Long-lasting individual change does not come quickly; developing as a leader might be considered a lifelong process. The higher one rises in an organization, the more complex the adaptive challenges become, which in turn demands more growth as a leader.

Leadership development can be defined as a journey to elite levels of expert performance as a leader.⁵⁰ A robust empirical literature suggests that in most expertise domains, a minimum of a decade of concentrated, deliberate practice is required to achieve expert performance.^{51,52} This finding helps to explain why on-the-job experiences are so well suited for leadership development: It is mainly through practicing leadership skills daily during ongoing, work-related challenges that anyone would accrue the necessary amount of practice time to achieve expert levels of leadership.

Another reason it is important to give leadership development initiatives considerable time to mature is that improvements do not necessarily proceed in a straight line. Indeed, aspects of competence, effectiveness, and leader identity tend to initially decline in response to challenging experiences before recovering and

“developing as a leader might be considered a lifelong process”

strengthening.^{46,47} Measuring someone’s progress too soon may give the mistaken impression that a leadership development initiative is not working.

Final Thoughts

With this review, we have primarily aimed to highlight ways that leadership training and development differ and to propose evidence-based recommendations for where to best invest resources in leadership training and development. We now briefly identify investments that are best avoided. On the leadership training front, avoid investing in practices that (a) are not based on a needs analysis, (b) do not include mechanisms to apply the training back to the job, and (c) have not been scientifically validated. In terms of leadership development, it is advisable to avoid investing in (a) approaches that rely mainly on classroom-based instruction, (b) initiatives that do not provide leaders with prompt feedback and support, and (c) interventions that promise quick-fix ways of developing leaders.

This is only a partial list of pitfalls to avoid. When it comes to investing in leadership training and development, the best advice is that which applies to any domain in which considerable sums of money are at stake: Caveat emptor! Ask to see the evidence behind the claims that a provider of training or development programs is making. If the provider claims that such evidence is proprietary, consider that a red flag. Transparency offers the best defense against exaggerated claims of effectiveness.

As we have summarized in this review, it is important to know what your organization’s leadership training and development needs are and what effective initiatives your money can buy to meet these needs and to invest accordingly. Leadership training and leadership

development are different entities, but they should be complementary endeavors. Both can unlock and cultivate leadership potential in the service of enabling individuals and organizations to reach their highest goals.

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Creating a culture of voice

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abstract

Developing a culture of *voice*, in which employees routinely speak up and organizations capitalize on the ideas from rank-and-file workers, is central to success in modern business. Such a culture enables organizational leaders to identify and correct problems they might have otherwise overlooked, to innovate in ways they would not have considered without employee input, and to more readily gain employee buy-in for organizational changes. Yet employees routinely withhold their ideas. When ideas do bubble up, managers frequently fail to act on them. Leveraging the literature on employee voice, we offer insights into why employees do not speak up and why managers often resist acting on ideas from below, and we suggest how organizations can develop policies that promote employee voice and its many benefits.

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Core Findings

What is the issue?

Organizations are better able to achieve positive performance outcomes and avoid disaster when employees are able to voice their ideas and concerns effectively. But there are significant barriers to ensuring that employee voice carries to upper management and throughout the organization. For a number of reasons, employees and managers can be reluctant to speak up and act accordingly. This contributes to a general sense of futility.

How can you act?

Selected recommendations include:

- 1) Decreasing power distance between leaders and employees and removing power cues to cultivate employee comfort
- 2) Shifting workflow management away from a short-term preoccupation with execution and key performance indicators to continuous improvement and learning

Who should take the lead?

Researchers, employees, managers, and organizations

Business history is rife with corporate disasters that might have been averted if only top managers had heard and heeded the voices of their own employees. Consider the 2014 recall by General Motors of more than million cars due to a faulty ignition switch. GM engineers and lawyers had known about the problem—which caused at least 124 deaths and ultimately cost the company \$4.1 billion—for about a decade.¹ And yet corporate leaders did not seem to have heard about or grasped the risks of the problem. Something similar happened at Boeing, where engineers working on the 737 MAX aircraft were concerned about its rushed production schedule and a flight control system that relied on only one sensor—issues that led to two fatal plane crashes, the global grounding of the planes, and yet untallied costs to Boeing.

Identifying critical issues with products is just one reason to cultivate a culture in which employees feel empowered to make their voices heard and where managers take those voices seriously. By fostering what researchers refer to as *employee voice* or simply *voice*, organizations can tap grassroots ideas that catalyze the launch of new products, reduce operational inefficiencies, enrich employee morale, and improve core business functions, as well as receive early warnings on potential disasters.

The concept of voice connects to core virtues seen in many societies. From the democratic ideal of free speech in the United States to the ancient Chinese adage “Let a hundred flowers bloom, and a hundred schools of thought contend,” the notion that individuals can and should have a voice is a fundamental human value. Those who contribute their ideas see the opportunity to use their voice as a worthwhile experience and a sign that they are respected.

Research on employee voice has documented its distinct benefits for organizations, leaders, and employees. At the organizational level, the evidence comes from a wide variety of industries and describes a range of outcomes. For instance, a 2014 study involving employees at 38 hospitals found that hospitals that had successfully facilitated employee voice in

customer relations had 27% and 41% higher service-performance scores, as rated by the organizations’ chief executive officers and vice presidents, respectively.²

Leaders who develop practices for cultivating employee feedback can likewise reap significant benefits, measurably improving the success of their units. James R. Detert, Ethan R. Burris, and two colleagues examined patterns of communications in financial service organizations, looking specifically at the people to whom employees directed their voice.³ When the flow of ideas gravitated toward the leaders of individual units, those leaders could address the issues that had been raised and improve the functioning of their workgroups. As a result, the financial and operational effectiveness of units where voice flowed to leaders was 16% higher than in units where voice flowed around (but not to) leaders.

Finally, voice can yield emotional and motivational benefits for individual workers. Studies show that when organizations offer their rank-and-file members fair and consistent mechanisms for participating in managerial decisionmaking, such as by suggesting ways to correct errors, employees more frequently reported feeling positive emotions toward their job^{4,5} and evaluated a given task at hand as more enjoyable and thus more intrinsically motivating.⁶ Consistent with longstanding research findings that higher job satisfaction and work engagement affect employee retention, research has shown employee attrition is approximately 50% lower in business units where voice is managed effectively by a manager who encourages new ideas.⁷

Yet a consistent theme in this stream of research indicates that getting people to speak up at work is easier said than done. It is particularly challenging to enable employees to communicate their ideas in ways that spark action. Many workers choose to remain silent rather than alerting leadership to an issue that might disrupt the status quo or cause alarm. For instance, in their book *Driving Fear Out of the Workplace: Creating the High-Trust, High-Performance Organization*, Kathleen D. Ryan and Daniel

K. Oestreich reported that 70% of employees across numerous industries said they had felt uneasy about raising an issue to their supervisors, even though they thought the issue was important.⁸ Another study found that 85% of employees in a number of industries feared speaking up and therefore withheld their ideas.⁹

A second and equally persistent challenge is that many managers end up discouraging or ignoring the very input they claim they need. They may respond this way because they feel that the input threatens their leadership, runs contrary to business as usual, or requires a complex response they feel unprepared to make. For instance, Burris found that managers were 69% less likely to endorse ideas from subordinates if those ideas significantly challenged some aspect of the status quo.¹⁰

In short, creating a culture of voice is difficult. But getting it right is critical, as organizational failures such as those at GM and Boeing demonstrate. Simply put, having employees who do not speak freely and managers who do not act on employee suggestions threatens the effectiveness and long-term functioning of organizations.

Next, after characterizing the term *voice* more formally, we discuss the two interrelated challenges to developing an effective culture of voice: the various barriers that prevent employees from speaking up and the separate set of barriers that impede managers from acting on ideas that are shared. In each case, we offer policy recommendations for how organizations and their leaders can counter these obstacles and more effectively leverage ideas from below.

What Is Voice?

The concept of employee voice—the discretionary communication of work-related ideas, suggestions, concerns, or opinions¹¹—first appeared in academic literature in Albert O. Hirschman's 1970 book *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States*.¹² Hirschman, a political economist, was interested in understanding when citizens,

employees, and customers would speak up about their reasons for dissatisfaction or simply withdraw (that is, not vote, voluntarily quit, or switch brand loyalties, respectively). Since that time, most organizational research on employee voice has centered on understanding the conditions that lead employees to engage in voice, which has come to be defined by four qualities:

- Voice is improvement oriented and prosocial. It provides ideas that enable learning and effective change¹³ and affect entire groups, departments, and organizations.⁷
- Voice is inherently discretionary—that is, speaking up is not usually prescribed as part of employees' formal responsibilities.
- Voice requires action from leaders to be implemented.¹⁴
- Voice is challenging to the present state of affairs, which means it can feel threatening to those very leaders in charge of carrying out the current procedures.

For the purposes of research, voice is usually quantified with a survey instrument in which an employee indicates the degree to which he or she speaks up about problems and gives suggestions for improving the business unit (the work group or organization). Employees typically are rated (by themselves or by others, such as their boss) on a five- or seven-point scale on items such as "I challenge my supervisor to deal with problems around here"; "I give suggestions about how to make this unit better, even if others disagree"; and "I speak up with ideas to address employee needs and concerns." Qualitative research usually involves in-depth interviews with employees and, in some cases, managers.

Barriers for Employees

As mentioned earlier, employees are often reluctant to put their ideas on the table. They tend to keep their ideas to themselves for two primary reasons: fear of negative consequences and a sense that speaking up will be futile.^{11,14–18}

"They feared being labeled a troublemaker, tattletale, or complainer..."

Without addressing these core concerns, organizations will be unable to tap their employees' unique insights and experiences.

Researchers have identified a number of ways that fear of negative consequences inhibits employee voice.^{14,17,19} At times, the consequences people worry about are interpersonal, such as getting ridiculed or embarrassed in front of colleagues or being ostracized for challenging the system. For instance, in a series of in-depth interviews with 40 full-time employees working in a wide range of industries, employees expressed strong concerns that they might appear to be too radical or to be overstepping the boundaries of authority if they exercised their voice. They feared being labeled a troublemaker, tattletale, or complainer and worried that speaking up would damage their personal and professional relationships with colleagues.⁹ One investment banker expressed her reluctance to speak up this way: "Because it is a consensus-oriented environment, your power comes from whether people see you as agreeable and easy to work with. Being a rebel is not embraced."⁹

Employees also expressed concern that the act of speaking up might damage their future career potential in the organization (such as by causing them to be excluded from promotion opportunities, to receive less generous raises and bonuses, or to be fired). Voice was viewed as something that fractures unity and weakens collective commitment to organizational goals, which could lead managers to evaluate employees more negatively.²⁰ For example, a chemist at a biotechnology firm described her fear of retaliation or punishment for speaking up: "Managers would take mental notes and you couldn't really express yourself. They would hold it against you. They valued loyalty above all else. . . . You had to watch what you said. If you did

an okay job and never said anything controversial, you would move up in the organization."⁹ In another study, a salesperson told researchers, "My manager determines my destiny at this company, therefore I dare not challenge him and what he's telling me to do. So, in a sense, it's not safe to speak up."²⁰

These examples from qualitative studies show how perceived interpersonal and career risk stymies the willing contribution of ideas to a shared enterprise. Multiple quantitative studies have substantiated the impact of fear and its opposite, psychological safety, on voice and silence. For instance, in a study of 3,149 employees in a corporate-owned restaurant chain, Detert and Burris found that frontline employees who felt higher levels of psychological safety, as indicated on a survey, reported speaking up 27% more frequently at work than those who reported feeling lower levels of safety.¹⁴ (The calculations compared people at the 67th percentile of psychological safety scores with those at the 33rd percentile.) A meta-analysis combining data from 21 different studies with a total of 8,544 employee participants came to a similar conclusion: with each one-point increase on a five-point scale measuring employees' sense of safety in speaking up, there was a 24% increase in expression of voice.²¹

Researchers have also highlighted the barriers to voice posed by feelings of futility. If employees believe their managers are unlikely to take meaningful action in response to their ideas, they become reluctant to speak up. In a study based on interviews with 89 employees at four units of a high-tech multinational corporation, employees made this point clearly: They reported that a leader's apparent lack of interest in their ideas led them to feel that it was useless to speak up.¹⁶ One employee recalled, "I think it would help if you saw them take your suggestions back to whomever and actually consider it, rather than just throw it in the trash bucket as soon as you walk out the door. I think that's the way a lot of people feel—you can speak in a meeting, you can tell your manager. It doesn't go any further."¹⁶

The futility factor has also been confirmed by quantitative research. In a classic study of speaking up about gender-equity issues at work, researchers asked employees to use a seven-point scale to rate their confidence in being able to influence positive change.²² Each additional point of confidence correlated with a roughly 35% greater willingness to voice their suggestions. Conversely, a meta-analysis of six studies involving 1,557 employees tied perceived futility to a 21% lower level of voice.²¹

Strategies That Support Employee Voice

Research into how to combat fear in the workplace and encourage employees to speak up points to strategies aimed at all three levels of enterprises: employees, managers, and organizations.

With respect to employees, several studies show that personality matters. For instance, Jeffrey A. LePine and Linn Van Dyne have reported that employees who score high on the Big Five factors of conscientiousness and extraversion are more likely to voice their ideas or concerns, whereas the factor of agreeableness is negatively associated with voice.²³ Moreover, the sense of personal control—that is, employees' belief that they have significant ability to change their environment, rather than having to just let the world happen to them—has been identified as a crucial factor leading to voice.²⁴ Although such findings suggest that organizations seeking to boost voice should seek out these qualities when recruiting new employees, the effects of individual differences on voice are much smaller than the effects of other factors. Detert and Burris reported that employees with more proactive personalities spoke up 8% more than those with less proactive personalities, whereas having more receptive leadership had more than twice the impact.¹⁴ Another team found an even more striking difference for voice directed to the manager's manager: the quality of the relationship with skip-level leaders had up to 17 times the impact that personality had on the extent of employee voice directed to those leaders.²⁵ Thus, although organizations could establish

hiring practices favoring such traits as conscientiousness or proactivity, they are likely to find that concentrating on training for managers and on developing a more psychologically safe organizational culture will pay bigger dividends.

Not surprisingly, then, research has repeatedly pointed to the marked impact of having the right kind of leaders to support employee voice. Team leaders and middle-level managers are the most essential actors for receiving, evaluating, and responding to employees' ideas. Specifically, research shows that middle managers who are seen as open, transformational, and ethical tend to create a culture of voice. The aforementioned large study of employees and managers in a national restaurant chain demonstrated that when employees perceived that their managers communicated a compelling vision for the organization, they were 19% more likely to engage in voice.¹⁴ Another study asked employees to use a seven-point scale to rate the quality of their relationship with their supervisors; those with a higher quality relationship engaged in voice 24% more frequently.²⁶ And a third investigation showed that leaders who were rated as more proactive in soliciting voice from employees received roughly 7% more voice from below.²⁷ However, if a leader was seen as abusive or disrespectful²⁸ or as treating subordinates in an unfair and untrustworthy way,²⁹ the amount of self-reported voice in the workgroup decreased by 13% and 8%, respectively. Although no research has directly examined the impact of a training intervention aimed at teaching leaders to listen more and act on ideas from below, it is logical that such training could ultimately lead to more voice from employees.²²

Research has also underscored the importance of organizational culture. A study involving 32 groups with a total of 253 engineers from a large chemical company revealed that employees working in teams with a positive climate toward speaking up displayed 32% more voice when compared with those in teams with an unfavorable environment.³⁰ A positive climate for voice is characterized by a number of factors, but the most prominent is a decreased power distance between leaders and employees—meaning

16%

Financial and operational effectiveness gain of business units where voice flows directly to leaders over units where it does not

50%

Reduction in employee attrition for business units where voice is managed effectively by a manager who encourages new ideas

“feedback loops play a vital role in enabling organizations to adapt, learn from experience, and continually improve...”

it has a flatter hierarchy with fewer tokens of prestige for the top brass (such as fancy offices or parking spaces reserved for specific executives).³¹ A 2009 study found that employees who felt more distance in power between themselves and their leaders displayed over 50% less voice.³²

Removing power cues seems to help employees feel more comfortable about expressing their views, according to a study conducted at a high-tech multinational firm. For instance, one manager there decided against sitting at the apex of a horseshoe-shaped table, as was customary for managers, because doing so was intimidating to subordinates. The change was noted and appreciated. “[He] realized that meetings are way too stiff, so he’s done things like rearranged the furniture,” a subordinate told researchers. “He’s thinking of ways to get more associate level people to contribute and for presenters to be less stiff.”¹⁶ Additionally, limiting formalized interactions in which employees are made to feel like they are under a spotlight for evaluation and creating more opportunities for low-key interactions can help employees speak up more often. An employee in the same study recalled a time when he connected with his supervisor in a more relaxed setting: “[Senior Manager Z] approached us in the cafeteria when I was sitting there with a friend of mine and we just started talking. I felt comfortable because of the atmosphere. It wasn’t his office. And ever since then, I was just relaxed.”¹⁶ Similarly, researchers found that employees at the Taiwan Customs Bureau demonstrated greater creativity in solving problems when they perceived decisionmaking to be less formal and less concentrated in the hands of a few. This was especially so when managers expressed a desire to learn from below.³³

Studies show that feedback loops play a vital role in enabling organizations to adapt, learn from experience, and continually improve.³⁴ For employees, a key feedback loop is being

informed of the fate of the ideas they voiced. Even in organizations that try to act on employees’ ideas, managers often do not follow up with the employees who offered the suggestions. Because it can take time to evaluate an idea and make a decision about its implementation, employees can come to feel like their ideas have vanished into a black hole. Research suggests that providing updates on the status of employee suggestions, even if the idea is on hold or rejected, is better than providing no feedback at all.³⁵ Encouraging managers to informally update employees on the status of their suggestions (as in a weekly team meeting) can provide the transparency employees need to know that their ideas are being considered and that their efforts are not fruitless. If the suggested idea entails controversial elements that may not be appropriate to raise in a group setting, managers may hold informal one-on-one meetings to follow up. Additionally, organizations can use technology (for instance, an employee suggestion platform) to both catalog the ideas submitted by employees and provide updates on their status.

Finally, employees could, in theory, be trained on when and how to offer voice. Although this sort of intervention has not been formally tested, it is clear that employees do best when they “read the room” and choose the right opportunity and the right framing for their suggestions. In 2015, Wu Liu and several coauthors showed that a leader’s emotional state is a useful cue for gauging whether it is appropriate to speak up, especially when the employee does not have a strong relationship with his or her manager.³⁶ In such cases, employees had an 18% higher intention to speak up when their supervisor was judged to be in a good mood compared with times when a negative mood was detected. In another study, employees who used language that supported a moral cause, such as corporate social responsibility, were 10% more effective in influencing management when the values associated with the espoused cause were aligned

Table 1. Encouraging employees to speak up

Barrier to offering voice	Example	Policy recommendation
Fear of negative consequences (feeling that it is psychologically unsafe safe to speak up)	Worker worries over <ul style="list-style-type: none">• damaged credibility.• being labeled a troublemaker, a complainer, or not a team player.• tangible career-related costs (such as receiving a negative performance evaluation or an undesirable job assignment, or being laid off).	Train employees <ul style="list-style-type: none">• Coach employees on how to read the room for clues to the best times to offer voice. (For instance, leaders in a positive mood tend to be more receptive to subordinate voice.)• Teach employees to frame the argument in ways that align with the values or mission of the organization or that suggest task efficiencies. Train team leaders and supervisors <ul style="list-style-type: none">• Give coaching on open, transformational, proactive, and ethical leadership behaviors that create a psychologically safe team environment.• Emphasize the importance of forming a close relationship with subordinates.• Encourage managers to provide employees with transparent feedback on voice and with regular updates on the status of their suggestions. Alter organization-wide policies <ul style="list-style-type: none">• Decrease the power distance throughout the organizational hierarchy.• Decentralize decisionmaking processes.• Develop policies to provide feedback to employees about their ideas.
Feeling that speaking up is futile (that leaders will not listen or take appropriate action)	<ul style="list-style-type: none">• Worker senses that leader is uninterested in employee ideas.• Worker perceives that leader is ill equipped or unwilling to obtain buy-in from stakeholders whose approval is needed.	

with the organization’s mission.³⁷ Thus, training employees to be more sensitive to the values of the organization or of their manager could help ensure that their voice is well received. For instance, one research team notes that “while an issue seller may care most about gender equity from a social justice standpoint, he or she may want to focus on talent diversity when talking to people in the human resources department, or creative diversity when talking to people in the design department.”³⁷ By surveying the landscape, employees can develop effective strategies for pitching their ideas. Table 1 lists suggested ways to foster employee voice.

Barriers for Managers

Getting ideas on the table certainly has its challenges. But once those ideas are raised, a second and arguably trickier hurdle comes into view: getting managers to act on those ideas. Although novel suggestions may initially succeed in drawing attention, employees often see them die on the desk of their manager. Those employees who expect that an organization’s standard practices will result in their voice being addressed by leadership can become frustrated and feel helpless when their ideas

are ignored by or not even presented to the people who could act on them. Thus, encouraging managers to create an open and inclusive environment may be a necessary but not sufficient condition for sustaining a virtuous cycle of voice. In this sense, it is also critical for corporate leaders to understand why many middle managers may be reticent or unable to act on the ideas raised by their subordinates. Research illustrates that managers tend to avoid acting for three primary reasons: ego threat, inadequate resources, and the challenge of gaining buy-in from multiple stakeholders.

In the first case, managers can be reluctant to act on suggestions if they perceive ideas from below as a threat to their status in the organization. For some, it is difficult to receive candid, critical feedback about policies they have devised or are charged with carrying out. Some managers even perceive the exercising of employee voice as an act of defiance. For example, Nathanel J. Fast, Burris, and Caroline A. Bartel have shown that leaders who reported feeling insecure in their role tend to feel threatened by any possible criticism from their employees.³⁸ They found that when these insecure managers in a large oil and gas company

“managers are less open to voice from their subordinates when they lack the requisite resources and influence to effect changes in their workgroups”

experienced a threat to their ego, they were 18% less likely than more secure managers to engage in voice-soliciting behavior.

In a study that involved a business simulation with 204 students in 51 small teams, each with a randomly assigned leader, Burriss showed that even when confronted with ideas that would objectively improve team performance, supervisors tended to be defensive and even retaliatory.¹⁰ They rated employees who spoke up and challenged the status quo as 33% less loyal and 37% more threatening than those speaking in support of the status quo. Further, as employees continued to speak up, the repercussions became stronger—those who spoke up and challenged the status quo more frequently were rated as 68% less promotable by leaders than those who spoke up less often. Perhaps this response is, in part, due to the way that many employees voice their ideas. For example, managers tend to rate employees who complain without proposing constructive solutions as worse performers.²¹ Managers are, understandably, more receptive when employees point out new opportunities. Nevertheless, managers need to be aware that even complainers could be raising issues that need their attention, and companies may want to provide training in how to react more constructively to all employees who speak up.

A lack of time, budget, and other resources can also impede managers from following up on employee suggestions. Middle managers

function as nerve centers for their organizations, and they must attend to hundreds of discrete incidents per day, usually spending no more than a few minutes on any one task or conversation.³⁹ With multiple deliverables vying for their time and attention, they may lack the cognitive slack to encourage and process additional ideas from below.⁴⁰ Encouraging employees to speak up only adds to a heavy workload, given that pursuing a thorough cost-benefit analysis on every voiced suggestion is nearly impossible. Research confirms that managers are less open to voice from their subordinates when they lack the requisite resources and influence to effect changes in their workgroups. For instance, in one study, ideas that required fewer resources to implement were endorsed 26% more strongly by managers than those requiring more external help and support.⁴¹

The third obstacle to supporting voice can arise when managers lack adequate authority to address the issues raised by their subordinates. When they lack the power to act alone, managers must seek out and convince others to enact the needed change, which potentially entails coordinating with multiple stakeholders across the organization. Some ideas require support from more senior leaders, which burdens the manager with the task of convincing his or her superiors, potentially at multiple levels of the organization, of the importance of a change. The more managers believe they have the influence to push ideas through, the more receptive they are likely to be to hearing from their employees. In a study of managers across a variety of industries and organizations, supervisors with higher degrees of personal control—that is, those who did not need to coordinate with other stakeholders to enact change—were found to be 19% more active in soliciting voice from their subordinates.⁴² These results illustrate that organizational practices inhibiting middle managers’ perceived autonomy and control over their responsibilities (such as micromanagement by the top management, poor job designs, and inadequate opportunities for social interactions at work) might lead to trickle-down inhibition of employee voice.

Strategies That Encourage Responsive Management

To spur managers to respond effectively to voice, it is necessary to address the threat they may feel when receiving ideas from subordinates while also empowering them to take action on those ideas. Several strategies have been identified. First, organizations should design their workflow management to allow flexibility for continuous improvement and learning. Most leaders organize their teams and business units around *execution*—completing sets of tasks to improve key performance indicators that are easily quantifiable and tracked. In this model, the team leaders are handed a set of goals from upper management, which often leads them to structure activities around standardized protocols while implementing accountability systems to ensure employees follow the rules. Although this model may excel in generating short-term efficiency, it can also discourage employees from reporting errors and highlighting opportunities for innovation. Amy C. Edmondson has documented the benefits of an alternative management approach: organizing to learn.⁴³ Managers who do so routinely talk about mistakes, invite questions, seek feedback, experiment with unproven strategies, and encourage the sharing of information. For instance, when employees of a hospital perceived that they were working in a supportive learning environment, they tended to display high levels of voice, which was, in turn, associated with an 83% reduction in the number of errors.⁴⁴

At its root, a learning orientation emphasizes attending to whether team performance is improving, searching for information the team might need, and soliciting feedback from people at all levels. When leaders actively encourage such an orientation, employees are more likely to want to share ideas for improvement. Therefore, organizations would be wise to provide concrete incentives to encourage managers to adopt and foster a learning orientation in their subordinates. For instance, managerial raises and promotions could be tied to such criteria as the number of innovative ideas generated by the team. Further, organizations could reward those

managers who routinely act on voice to further motivate their employees to offer insights and suggestions.

Second, organizations should give middle managers discretionary resources they can use to address issues raised by employees. Centralized budget control, a typical arrangement, is efficient but forces middle managers to go through administrative red tape to request additional resources from above, increasing their feelings of powerlessness and alienation.⁴⁵ Empowering them to take action on issues they deem essential can encourage them to cultivate more and better ideas from their employees and to be more open and proactive toward addressing employee concerns—which, in turn, may generate positive outcomes throughout the workforce. For example, a 2013 study demonstrated that employees who spoke up to managers who had access to organizational resources had 21% lower turnover over a six-month period compared with employees who spoke up to managers who did not have such access.⁷ Of course, resources can come in the form of budgets, but other resources are simply the time and the internal political capital to encourage collaboration.⁴⁶

A third way to support managers in their efforts to act on employee voice is to facilitate ways for them to acquire support from key stakeholders. Middle managers are typically the first gatekeepers of voice, but many ideas require the coordination of several teams or business units. When Jennifer A. Howard-Grenville observed teams that were successful at selling new ideas, she found that what they had in common were managers who had the authority and skill to coordinate with other teams and spur cooperation among everyone whose buy-in was needed to make the desired changes.⁴⁷ Organizations can provide managers with structured opportunities for cross-team coordination by holding brainstorming sessions, interdepartmental strategy meetings, and the like that are routinely attended by key decisionmakers.⁴⁸ The practice would provide a forum in which team leaders could share ideas they acquired from below with the people who could act on them and sustain

Table 2. Encouraging managers to respond to voice

Barrier to receiving and implementing voice	Example	Policy recommendation
Ego threat	Leaders may <ul style="list-style-type: none">perceive subordinates' voice as criticism.see employees as defiant.see voice as an attack against the leaders' status in the hierarchy.	Set organization-wide policies <ul style="list-style-type: none">Organize around a learning orientation.<ul style="list-style-type: none">Incentivize both team leaders and subordinates to search for avenues of improvement.Write criteria for evaluating managers to include objective counts of innovative ideas generated within a work group.Provide tangible rewards to employees who frequently contribute ideas and insights and point out important concerns to the work group (such as a Voicer-of-the-Month Award). Improve resource allocation <ul style="list-style-type: none">Dedicate a discretionary budget for middle managers (such as allocating separate funds for following up on employee ideas).Help navigate resource constraints and administrative red tape in securing additional support from the organization. Enable stakeholder support <ul style="list-style-type: none">Establish structured opportunities to meet with decisionmakers on other teams (such as regularly scheduled coordination meetings for idea discussion and implementation).Have higher-ups of the organization participate in such forums as regular members of the audience.
Lack of discretionary resources	<ul style="list-style-type: none">Managers are often overloaded.Managers often lack adequate financial resources to address the issues raised by employees.	
Difficulty obtaining buy-in from multiple stakeholders	Buy-in can be hard to obtain when <ul style="list-style-type: none">top-management micromanages or uses ineffective organizational work designs (such as excessive bureaucratic red tape).managers have inadequate opportunities for cross-team interaction at work.	

momentum for meaningful changes throughout the organization. Table 2 lists suggested ways to increase managerial responses to employee voice.

Conclusion

Effective decisions cannot be made solely at the top of an organization. Leaders need to develop avenues for idea generation, error detection, learning, and innovation at all levels. Our central tenet in this article is that organizations cannot benefit from new knowledge or ideas from workers unless those ideas are both expressed by employees and acted on by managers. Both research on voice and the attention of executives are focused on getting employees to speak up, on the assumption that if organizations can get people to be honest, corrective actions will somehow follow. However, if organizational leaders do not think about the challenges facing managers—and do not address the barriers that

managers face in responding to employees' ideas—the benefits of voice will be minimal.

We have suggested specific policy prescriptions for creating a safe environment that encourages employees to speak up about issues they see as important. We have further proposed specific mechanisms that would enable managers to be less threatened, to have more resources for responding to employee voice, and to be more empowered to transform new ideas into concrete initiatives. By considering the attitudes of both employees and their managers toward voice, organizations stand a much better chance of benefiting from ideas for change.

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Behavioral insights into cash transfers to families with children

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abstract

Cash transfer programs aim to lessen the harmful effects of economic deprivation by giving cash or its equivalent directly to people in need. In this article, we combine insights from three areas of behavioral science—economics, child development, and cognitive psychology (including behavioral economics and the psychology of poverty)—to shed light on the logic behind providing cash transfers to families with children and to identify specific design features that policymakers should consider when creating these programs. We also summarize key research findings on the outcomes of such programs and present case studies of projects that have been evaluated in randomized controlled studies. We argue that unconditional cash transfers (which provide the money with no strings attached) are preferable to conditional cash transfers (which require recipients to meet specified conditions) for providing economic security and improving children's life outcomes. Conditional cash transfers can achieve similar goals, however, if they impose little administrative burden on parents and if infrastructure is in place to support meeting the conditions for receiving the cash. We end with recommendations for how best to design cash transfer programs for families with children.

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Core Findings

What is the issue?

Children in families facing economic precarity are exposed to a number of risks that affect their long-term cognitive and health development. To combat this, policymakers have increasingly turned to cash transfers in times of crisis. But the type of cash transfer matters for efficacy. Upon review, we find that unconditional cash transfers should be preferred where possible.

How can you act?

Selected recommendations include:

- 1) Directing cash transfers to families with children for an amount that is at least 20%–25% of a region's poverty threshold
- 2) Using debit cards as a money-provision vehicle for a seamless, easy-to-access delivery system

Who should take the lead?

Researchers, policymakers, and philanthropists focused on child development, economics, education, health, or labor

Hundreds of millions of children around the world live in poverty.¹ Indeed, even before the COVID-19 pandemic, more than 20% of children below the age of 5 years lived in poverty in the United States, and an equal proportion lived in extreme poverty worldwide, according to official poverty measures.²

It is now all too clear that economic deprivation and financial instability can pose severe risks to children beyond immediate consequences like hunger and homelessness. More than 250 million children under 5 years of age in developing countries are estimated to be at risk of missing standard cognitive or health developmental milestones because of conditions stemming from poverty.^{3,4} The National Academies of Sciences, Engineering, and Medicine have reported that in the United States,

on average, a child growing up in a family whose income is below the poverty line experiences worse outcomes than a child from a wealthier family in virtually every dimension, from physical and mental health, to educational attainment and labor market success, to risky behaviors and delinquency.⁵

(See note A.) Reducing the prevalence and child development consequences of poverty should therefore be a global policy aim.⁶

Even in politically stable countries, families can end up in financially precarious states for any number of reasons, such as unsteady, low-paying jobs; permanent decreases in the demand for low-skill workers in an industry; lack of access to low-interest credit; unexpected natural disasters and economic crises; and the failure of governmental or private support programs to provide sufficient food, shelter, and other necessities. To alleviate the consequences of economic precarity, governments often turn to cash transfers—the direct delivery of money or its equivalent (such as debit cards) to be expended as recipients deem necessary. Cash transfers are increasingly being used by countries around the globe, although only a minority of the world's population has access to them.^{7,8}

In light of the dire risks that poverty poses to children, we examine in this article the rationale for providing cash transfers specifically to families with children, and we make recommendations for enhancing the effectiveness of such programs. Knowing that children thrive when they have stable, nurturing environments; set routines; responsive parenting; and good health care, nutrition, and education, we have as our ultimate goal understanding how cash transfer programs can best support parents' efforts to give their children a fair shot at future economic security and the opportunity to reach their full potential. We also argue that parents should be supported in ways that respect their dignity and agency, preserving their right to make decisions for themselves and their family.

We apply an interdisciplinary lens to the understanding of how cash transfers affect recipients, incorporating insights not only from classical economic and child development theories but also from cognitive psychology, particularly behavioral economics. Behavioral economics explores unconscious cognitive processes that influence people's decisions and behavior and recognizes how the context of poverty drains mental resources. Our analysis illuminates the features that policymakers should consider when designing and implementing a cash transfer program—such as whether the program should provide money without strings attached or set certain behaviors as conditions—and it indicates that specific behavioral science-informed design features can be incorporated into cash transfer policies to harness human agency in support of families' and children's economic well-being. We also draw insights from selected studies of cash transfer programs from around the world that target families with children and from several programs that have been formally evaluated through a randomized controlled design.

We conclude that cash transfers targeted to families with children are an effective strategy for enriching children's environments and their development but could be improved by implementing the design strategies that we outline. We also conclude that combining cash transfer policies with targeted investments in

early childhood development could generate outsized improvements in children's environments and development.

Basics

Cash transfers are one approach among many that can be applied to combat poverty in families with children. Other types of programs provide specific services, such as health care, housing, early literacy training, or mental health counseling, rather than money. Such strategies can achieve narrowly defined outcomes but usually work only in specific locales and often are not scalable.⁹ Moreover, interventions that require certain behaviors, such as attending literacy classes, are likely to fail if families lack the stability and economic resources needed to reap the program's full benefits.¹⁰ Further, although strategies to supplement services or build infrastructure are well intended, they often fail to reach income-poor people in a timely manner, at the moments when they are needed most.

Giving money directly to recipients avoids these drawbacks. Cash transfer programs, which are often government sponsored, usually have the dual aim of alleviating the detrimental effects of economic deprivation on families with children while at the same time supporting the productivity of the children's caregivers (that is, their ability to work).^{11,12} For instance, an infusion of money might enable a parent to afford the childcare that makes holding a job possible. Giving people cash to meet their basic day-to-day needs is also the ethical thing to do, in accordance with the principles of human rights, dignity, and social equity.

Governments and humanitarian aid organizations around the globe recognize the importance of cash as an economic support. For example, in 2016, Canada introduced the Canada Child Benefit program, which provides from Can\$5,000 to Can\$6,400 per year to qualifying families, depending on the family's income and children's ages (see note B). In the United States, to meet the goal of reducing child poverty by half, the National Academies of Sciences, Engineering, and Medicine have

recommended a bundle of policies, including a refundable child tax credit in which larger refunds go to families with children younger than 5 years of age as well as a monthly allowance for each child under 17 years of age in a family.⁵ As this article is being written, lawmakers and the Biden administration are considering several child allowance proposals for families in the United States. Organizations like UNICEF advocate for and sometimes assist in implementing cash transfers that provide immediate economic resources to displaced families.

As briefly mentioned earlier, cash transfers often take one of two basic forms. *Unconditional* transfers enable recipients to receive the money with no strings attached. These transfers can be one-time outlays or provided at regular intervals for a period of time. The programs rest on the assumption that adults want the best for their children, know what is good for their families, and can be trusted to spend their income accordingly. The programs can also be relatively cost efficient in that they do not incur the administrative expenses of setting up and maintaining the infrastructure for providing specific services or goods.

Unconditional programs, however, can run into political opposition, primarily by people who fear that the cash will encourage people to not work (and will thus fuel dependency on handouts and drain government budgets)¹³ and that recipients will squander the money on vices such as alcohol or cigarettes. Research does not support these beliefs, but the opposition persists. Not surprisingly, governments in nations where a greater share of the populace attributes poverty to laziness spend a lower proportion of the gross domestic product on cash transfers.¹⁴

One response to the critiques is to implement *conditional* cash transfer programs, which provide money on the condition that would-be recipients perform selected behaviors thought to be beneficial to them and society at large.¹⁵ Proponents of conditional transfers argue that these programs can help to address what economists call *externalities*: the costs or benefits to society of someone's behavior.¹⁶ For instance,

recipients' valuation of the benefits of school participation might not match society's valuation, which may emphasize the future benefit of producing a skilled workforce. Conditional transfers targeted to schooling may encourage parents to invest effort and time in making sure their children attend class regularly. Some proponents also argue that conditional transfers help policymakers counteract a purported culture of poverty among recipients—a concept presuming that the norms and values of recipients favor behaviors that are detrimental to the recipients themselves and to society.¹⁷ For such reasons, conditional cash transfers have become one of the most widely practiced anti-poverty initiatives in the developing world.^{18,19}

Because conditional cash transfers are perceived to reward what the program developers consider good behavior and to strengthen the impression that a desired behavior is a norm to be followed, they are thought to be an efficient way to achieve socially desirable ends. They may also be necessary at times for making cash handouts palatable to politicians and voters. One concern, however, is that they may dampen intrinsic motivation to perform the targeted behaviors, with the result that the behavior disappears when the rewards go away. (It is conceivable, though, that a behavior initially performed to obtain some external reward will eventually be experienced as worth doing on its own merits).²⁰

Studies of cash transfer programs have shown that each type of program can be beneficial. On balance, we view unconditional cash transfers as preferable and optimal, for reasons we explain later.

We should note that the unconditional cash transfers we emphasize in this article differ from *universal basic income*, which is money given regularly to everyone in a population regardless of need. (See note C.) A universal basic income has been famously advocated by Facebook cofounder Chris Hughes²¹ and by former presidential candidate Andrew Yang, who during the 2020 campaign proposed giving all American adults \$1,000 a month. The idea has also

been embraced by mayors across the country.²² Universal basic income is a promising idea and appealing in its administrative simplicity, but we do not discuss it in depth in this article because it does not yet have a well-established evidence base and its effects specifically on families with children remain unclear.

Theoretical Bases for Cash Transfers

When seeking insights into optimizing the design of cash transfer programs, we adopted an interdisciplinary approach that incorporated concepts from cognitive psychology, because the standard economic and child development rationales on their own fall short in offering guidance.

The Classic Economic Lens

Classical economists justify cash transfer programs mainly on the basis of the programs' ability to efficiently provide the money needed for goods and services when the marketplace fails to stably provide the required income. Textbook economic theory assumes that people are fully rational and optimize their decisions by carefully weighing all the factors that could affect the resulting outcomes, regardless of the contexts people find themselves in. Economic theory would suggest, for instance, that a cash transfer program conditioned on children attending a given school will invariably increase attendance because parents will see attendance as providing a tangible and immediate economic benefit. Yet it has become abundantly clear that people often do not behave in the ways that rationality assumptions predict.

The Child Development Lens

Child development theory supports the value of cash transfers. However, it falls short on guidance for an optimal cash-transfer program because, like economic theory, it assumes that parents can be perfect decisionmakers and are not distracted by juggling multiple responsibilities and challenges. In line with that view, some child development authorities favor conditional transfers meant to encourage parents to behave in specific ways.

Cash transfers that are conditioned on parents performing behaviors known to support children's development (such as reading to youngsters) have, indeed, been shown to be able to shape children's outcomes.¹⁴ As we demonstrate in the next section, however, unconditional transfers have been hypothesized to also improve parenting, in part by relieving stress and fostering senses of competence, autonomy, and readiness to invest in child development.

Research suggests that proper timing of either conditional or unconditional cash transfers can optimize child development—that is, it makes sense to deliver money that will help meet basic needs during periods when children usually meet milestones important to future development (such as learning to speak and read).²³ In the case of conditional cash transfers, for example, the power of incentives to get children to attend school can vary with a child's age. In general, though, evidence from developmental neuroscience suggests it is particularly important to stabilize basic material conditions and economic resources in the earliest years of children's brain development (that is, during infancy and toddlerhood)—a period when adults generally have difficulty meeting work and other demands on top of accommodating the needs of their children.²⁴

The Cognitive Psychology Lens

The cognitive psychology perspective on cash transfers acknowledges that, when making decisions, human beings do not reason as a computer would: their decisions are affected by their emotions, state of mind, and limited bandwidth for attending to the decisions at hand. This perspective draws from research into both the psychology of poverty and behavioral economics. Behavioral economics research has shown, for example, that people have a tendency, or *bias*, toward satisfying needs immediately rather than worrying about future needs (known as *present bias*), for taking the path of least resistance, and for giving extra weight to whatever is most salient in their minds at the time a decision is being made.

Research into the psychology of poverty indicates that poverty and economic instability create high cognitive loads and attentional demands that drain the mental resources required for parents to work efficiently, care for their children effectively, and engage in civic life.^{18,25–27} In other words, parents who live in poverty and lack a steady income have a lot on their minds and a lot of stress, and both conditions can distract them from concentrating fully on the decisions they make and giving their children the attention they might need—whether for learning, emotional growth, or regular visits to health care providers. They have to care for their children while also contending with stressful issues such as which bills will have to go unpaid for the month, whether to borrow money from unscrupulous payday lenders, and how to keep their families safe.

The behavioral economic perspective further suggests that cash transfer programs that impose multiple demands or require recipients to follow detailed instructions can increase the already high cognitive demands on parents in ways that ultimately interfere with their ability to reap the programs' intended benefits—even if, in theory, the programs would efficiently enhance earnings, savings, parenting, and child development outcomes. Conditional programs require more attention and planning from recipients than unconditional programs do. For example, a chronic lack of resources may activate several related biases that can deter parents from participating in programs intended to promote saving for education: present bias favors spending money to relieve current pressures rather than putting it aside for the future, loss aversion promotes avoiding earmarking money for education when the payoffs of that action are unclear, and the discounting of future benefits leads people to place more value on benefits they see immediately than on potentially bigger benefits they might receive in the future.¹⁸

The behavioral economics lens suggests, therefore, that unconditional cash transfer programs could be more effective than conditional programs, especially if they deliver a guaranteed, predictable income. By providing

20%

Children* living in poverty
in the United States
pre-COVID

20%

Children* living in extreme
poverty globally
pre-COVID

250m

Children* in developing
countries at risk of
missing developmental
milestones because
of poverty

*under 5 years old

“unconditional cash transfers may also free up parental time and mental energy”

much-needed money, they should alleviate the challenges of juggling and preoccupation, thus improving parents’ capacity to manage their day-to-day lives, to make and follow through on near- and long-term decisions for their children, and to engage in more attentive parenting. By lessening financial stress and increasing financial stability, unconditional cash transfers may also free up parental time and mental energy, thereby allowing caregivers and their children to take advantage of educational or other opportunities offered to them.^{28,29}

What is more, by empowering and enabling parents to invest in their children and their environments as they see fit—and thus showing trust in the adults’ parenting behaviors and related investment decisions—unconditional cash transfer programs should reduce stress levels in the family as a whole and improve family climates. Ultimately, by fostering senses of competency and autonomy, unconditional cash transfers can also reinforce in parents the intrinsic value of spending quality time with their children and creating environments that enhance the children’s welfare.

The Interdisciplinary Lens

In short, insights from cognitive psychology reinforce the classic economic and child development arguments in favor of providing cash transfers to families with children. They also teach that conditional and unconditional cash transfers each can free up parents’ emotional and cognitive resources to support senses of self-efficacy, autonomy, and competence—essential characteristics that are often taxed when finances are unstable and resources are scarce. These characteristics, when promoted in parents and their households, are favorably associated with supportive environments for children.¹⁸ In the case of conditional cash transfers, desired behaviors are determined by an

outside authority (and can require both recipients and cash providers to coordinate their activities and manage paperwork and time), whereas unconditional cash transfers are driven by the presumption that parents are best suited to make decisions about how to allocate money and are hampered mostly by the demands created by having low, unstable, and uncertain resources.

Policy Design Considerations

The interdisciplinary lens contributes in two key ways to the policy conversation about cash transfers to families with children. First, at a broad societal level, it emphasizes the importance of respecting parental agency and children’s rights,³⁰ while attempting to counteract the job market failures that are especially pernicious for economically vulnerable families. Second, at the specific operational level, it points to an array of design considerations—described next—that can influence how well cash transfers serve children, families, and society at large. Behavioral economics, in particular, teaches that details of design can influence how people react to a program, which, in turn, can affect the program’s effectiveness.

Type of Transfer

As we have noted, cash transfer programs are either unconditional or conditional. Unconditional transfers can be delivered once or on a regular basis. Use of one-time transfers is generally based on the assumption that the funds will be invested in a way that produces a future stream of income, such as to buy livestock or start a small business. Lump sums have yielded mixed results,^{31–33} possibly because of variations in the availability of investment opportunities, in the market infrastructure, and in how well recipients transform the cash infusion into a future stream of income.

Research into the psychology of poverty and behavioral economics suggests that ongoing unconditional transfers are more likely than conditional transfers to be effective for families with children because they can liberate parents from many of the cognitive demands placed

on them when they are struggling to figure out how to cover their family's needs using low and unstable economic resources.³⁴ They may also be useful when recipients who are already coping with multiple demands would feel even more burdened by having to meet the requirements of conditional transfers. However, when public and political will to support unconditional cash transfers is undermined by perceptions that income-poor people are undeserving,³⁵ conditional transfers may be the most politically feasible option.

At least one study shows that unconditional programs might be able to nudge recipients toward selected goals without making formal demands on them. In Morocco, a cash transfer program provided unconditional cash benefits but explicitly messaged that the benefits were meant to support children's school participation. The program led to substantial improvements in education outcomes^{36,37}—a result that did not differ much from those obtained when cash transfers were provided on the explicit condition that the recipients' children attend school.

Providing unconditional cash transfers to every household in a given population is another option. As with unconditional transfers targeted to selected families, these transfers can face strong political headwinds. They can, however, also avoid some unintended negative consequences of typical unconditional cash transfers,³⁸ such as price inflation or pressure on recipients from nonrecipients who want access to the funds. In places where the cash conferred on some recipients leads to rising prices for food or other items, the well-being of nonrecipients can be compromised when their buying power is reduced. In an emergency situation (such as a pandemic or war) requiring a fast response that would be hampered by having to assess qualifications, one-time cash transfers to everyone in a community may be the most logistically feasible option.

Delivery Mechanism

The mechanism of delivery—whether cash transfers are provided by charitable agencies, integrated into existing government platforms

and services, delivered locally through independent institutions, or distributed in another way—can matter for outcomes as well. The delivery method may affect which recipients are reached seamlessly and which are reluctant to participate because they feel stigmatized by the program or distrustful of the organization administering the program.

In the United States, tax refunds can be a vehicle for providing funds to a broad swath of the population, and eligibility for the refunds is easy to verify. But, as the COVID-19 stimulus payments in the spring of 2020 illustrated, this approach can bypass people with incomes too low to require tax filing. For such reasons, various U.S. organizations opt for a boots-on-the-ground approach, working with partners in local communities to reach the most economically vulnerable people in person. Delivery through the Social Security system is also under consideration in the United States as this article is being written.

To avoid the security risks inherent in handing out literal cash, many programs rely on debit cards for providing money. Other options are available as well, such as cash-exchange apps on cell phones.

Amount, Frequency, Predictability, & Timing

The amount, frequency, predictability, and timing of a cash transfer can significantly affect the transfer's effectiveness. These factors are often influenced by government budgets and politics.

Small cash amounts can increase the salience of the need to adopt certain behaviors today to attain long-term or future benefits, but small sums are unlikely to significantly ease the stress of impoverished and unstable day-to-day economic conditions. Large amounts can reduce demands on a recipient's cognitive resources and thus are more likely to support greater behavioral change.

One-time lump-sum transfers may be the most feasible in terms of garnering political

support expediently, such as when used in a rapid response to an economic crisis. However, effective use of a single large sum depends on recipients having the cognitive bandwidth to allocate the money carefully for current and upcoming demands. Delivery of large sums repeatedly on a predictable schedule would be most likely to help recipients address financial constraints and reduce debt. Frequent (such as monthly), predictable payments minimize the challenges of juggling and can alleviate cognitive resource constraints.

The wisdom of delivering large sums on a predictable schedule, even if only once a year, is supported by studies of the annual earned income tax credit refund available to eligible low-earning tax filers in the United States,³¹ whereas the random delivery of a single large sum has not been shown to produce equivalent benefits.³²

The importance of predictability highlights a drawback of conditional cash transfers, which, by definition, are only delivered once stated conditions are met: the timing of transfers matters. Sometimes, just a few days can make the difference between being able to subsist until the next cash transfer and being forced to resort to a costly loan to avoid losing housing or going hungry.²⁵ It is important for outlays to be delivered in time to buffer the effects of earnings shortfalls, such as when a public health or financial crisis hits, when weather conditions decimate farmers' revenues, or when conditions arise that could cause a family to become homeless.

Program Duration

The duration of a cash transfer program is another important consideration, because it can affect whether the benefits derived from the transfers persist. Longer durations are more likely to facilitate the formation of habits, such as budgeting and planning for large purchases.

A long duration may also enable recipients to become economically comfortable enough to put some money aside for harder times, and certain long-term programs can actively

promote such saving. For instance, economic instruments known as *commitment savings accounts* involve stowing some portion of one's money in an untouchable fund until a certain condition (such as an emergency) has arisen or a set time period has passed.³⁹

In general, extending the period of cash transfer delivery should encourage people to make incremental contributions to a financial cushion, thereby supporting their sense of control over their finances as well as their economic security and mobility. Program designers need to keep in mind, however, that even when they clearly communicate the program's parameters and end date, recipients may face financial and psychological hurdles when the transfers cease, such as loss of trust in the institution that had been providing the money and renewed stress over finances.

Life-Course Timing

The majority of cash transfer field experiments and evaluations have focused on adult or household behavior or on children's school attendance or physical health, but relatively little research has comprehensively examined children's broader cognitive, social, or emotional development or measured child development beyond schooling. As a result, the evidence for the benefits cash transfers convey for children's development is newer and less definitive. The promise of the approach is, however, backed by studies showing that increasing net household income and reducing material hardship is beneficial to children.⁴⁰ And logic dictates that providing cash transfers during critical periods in children's development—and ensuring that the transfers are substantial, frequent, and predictable—would be particularly useful for enabling parents to guide their children through those periods.

A study called Baby's First Years is underway in the United States to test the value of making cash transfers to low-income mothers starting at the time of their child's birth and continuing through the child's preschool years.⁴¹ One thousand mothers have been randomly assigned across four sites to receive a relatively high

monthly unconditional cash gift (\$333) or a relatively low monthly unconditional cash gift (\$240) at the time of the birth of their child and for 40 months thereafter. Recruitment was completed in June 2019. The researchers intend to collect data on family life outcomes, including family stability and spending on consumption (that is, on immediate needs such as food, electricity, heat, gasoline, and rides on public transportation), and on child development outcomes, such as brain functioning, social and emotional development, language skills, and learning of children at ages 1, 2, and 3 years.

Field Research Into Cash Transfers to Families

Overview

Overall, evidence from field studies involving cash transfer programs shows a range of positive familial outcomes relating to economic, social, employment, and health-related criteria as well as to improvements in children's well-being and certain aspects of parenting. Although some studies were conducted in Western settings, most of the evidence comes from Latin America and sub-Saharan Africa. We cannot do full justice to the broad literature examining the effects of cash transfer programs in this article, but we can highlight key findings from particular studies that speak to their effects on families with children.

In a systematic review of 201 studies on conditional and unconditional cash transfer programs, researchers found the programs reduced poverty and increased expenditures on basic needs, such as food.⁴² Other evidence convincingly debunks the critique that recipients lose their incentive to work and spend the cash on "temptation goods."^{21,43,44} In fact, the increase in income may exceed the value of the cash transfers themselves if households invest the money in productive (income-generating) activities^{45,46} such as job training, starting a business, or livestock. In addition, enhanced financial security can result in reduced stress, improved satisfaction, and better mental well-being among adults.^{33,47–49}

A review of 14 evaluations of programs targeting families showed that cash transfers help reduce violence against children,⁵⁰ although decreases in rates of violence did not occur in all studies.^{51,52} The decrease in stress experienced by parents is one possible explanation for the drop in violence.

Research focused on babies has shown that cash transfers can support infants' health and growth.^{53–55} However, the programs examined did not show equally strong effects, and questions remain about the pathways through which cash transfers improve child health.⁵⁶

Some studies have found favorable effects of cash transfer programs on young children's cognitive development.^{57,58} Cash transfers also improve children's school participation.⁵⁹ Conditional cash transfer programs that require school participation tend to result in higher attendance than unconditional programs do, although the unconditional programs can also be beneficial. Evidence of cash transfers' long-term benefits for learning is less abundant.^{24,59,60}

With respect to adolescents, research has found that unconditional cash transfers improve adolescents' mental health.^{61–63} Other work has revealed that cash transfers to teens and households with teens can play a positive role in their transition to adulthood. Several studies show that conditional and unconditional cash transfers often delay sexual activity and lower the chances of early pregnancy and marriage,^{64–66} although these effects do not appear in all studies.⁶⁷ Concerns that unconditional cash transfers targeted to families with young children or teens would increase fertility have also not been borne out in evidence to date. Existing evidence, only some of which is from randomized controlled trials, shows that cash transfer programs have increased birth spacing among women in South Africa and delayed pregnancies among youth in South Africa and Kenya, while having no effects on fertility in Zambia and Malawi. A recent systematic review of 21 studies found that both conditional and unconditional cash transfers reduced pregnancy among teens.^{44,68}

"The long-term effects of cash transfer programs are mixed"

The long-term effects of cash transfer programs are mixed. A review of studies of school-age children whose families received cash transfers when the children were infants or in utero and of early adults whose families received cash transfers when the adults were school age fairly consistently found improvements in school participation and grade reached in both groups.⁶⁹ Findings for other outcomes, such as health and cognitive development in the younger group and income and labor force participation in the older group, were less definitive, possibly because of the challenges inherent in measuring long-term effects.

In a stand-alone study, which focused on adolescent females, the beneficial effects of unconditional cash transfers on pregnancy and early marriage evaporated after five years, although children of unconditional cash transfer recipients were taller for their age than were children whose parents did not receive such transfers.⁷⁰ An analysis of a Mexican cash transfer program (which we discuss more fully in the next section of this article) found that recipients made long-term progress in geographic mobility, employment, and household income, with the effects on participation in the job market especially pronounced for women.⁷¹

Exactly why the long-term effects of cash transfer programs are mixed requires further study. Presumably, however, success can be affected by the precise structure of the transfer and by whether recipients have opportunities to invest the money in assets, such as livestock, or their own human capital, such as an educational degree, that can generate future income (see note D).

In the Dominican Republic, researchers are investigating the long-term effects of cash transfer programs by looking at what happens when the programs end. Solidaridad is a program that provides conditional cash transfers to income-poor households if they invest

time and attention in supporting their children's education, health, and nutrition. Every three months, participating families who comply with the program's child-focused conditions—enrolling their children in school, ensuring their children attend school, and bringing the children to health clinics for regular health checkups, for example—receive US\$75. Transfers are made via debit card to be used to purchase food items at approved stores, and participants meet every three months in community groups to receive training in nutrition and health. Researchers are using a randomized evaluation to assess whether providing financial literacy and business training to conditional cash transfer recipients can help them "graduate" from the cash transfer program and what type of training is most effective. The goal of this research is to develop a graduation strategy to encourage recipients to improve their financial management and develop stable sources of income.³⁹

Case Studies

Next, we examine in more depth a handful of cash transfer programs that offer insights into designing programs that will maximally benefit families with children. We selected the programs according to the following criteria: In addition to focusing on families with children, the programs had to have been evaluated by studies that assigned participants to intervention and control groups randomly (to avoid biasing the results), and the results had to be available to the public (for transparency). We also wanted the collection to include examples of both conditional and unconditional cash transfer programs, as well as programs in high-income countries and in low- and middle-income countries, and programs sponsored both by governments and private funders. See Table 1 for summary descriptions of the chosen programs and their effects. Note that these case studies do not provide a comprehensive overview of all randomized trials examining the impact of cash transfers, nor do they comprehensively cover the broad spectrum of cash transfer programs in developed and developing countries.

Conditional Cash Transfer: Progresa, in Mexico. The Progresa program, created in 1997 under Mexico's president Ernesto Zedillo, instituted

Table 1. Outcomes & key policy design components of illustrative cash transfer programs targeting families with children

Program	Type	Duration of payments	Frequency	Delivery vehicle	Near-term effects	Long-term effects
Progresa: 5 million families across all 31 states in Mexico ^a	Conditional on school attendance and health clinic visits; recipients must forgo receipt of other benefits	3 years guaranteed	Monthly payments on verification of required behavior	Deposit savings accounts (until 2005), debit cards	Consumption stability; improved school attendance, health, and nourishment	Higher educational attainment; increased employment up to 17 years later among participants 7–16 years old at the program's start
Opportunity NYC: 6 high poverty communities in New York City; 4,800 families and 11,000 children	Conditional on schooling, health, and employment outcomes; recipients remain eligible for other benefits	3.5 years	Payments made when behavior is verified by manual coupon submission (up to \$3,000 annually)	Bank accounts, prepaid stored-value cards	Reduction in poverty and material hardship	Increased schooling among least economically disadvantaged youth 3–4 years after program's start
Family Hope Program: Income-poor households with children or pregnant mothers, nationwide in Indonesia; millions of families	Nominally conditional on health and education obligations, but verification of meeting the obligations was incomplete	Indefinite (program is ongoing)	Quarterly payments	Pickup at post office	Results not available	6 years after the program's start: increased school attendance, reduction in stunting
Child Grant Program (CGP) and Multiple Categorical Targeting Program (MCTP): Households in impoverished rural districts in Zambia, with children under 5 years (CGP) or female or elderly heads or a disabled family member (MCTP), roughly 2,500 (CGP) and 3,000 (MCTP) households ^b	Unconditional	Approximately 3 years	Monthly payments	Paid by ministry employees to recipients in person at designated pay points	Consumption stability; increased earnings	4 years after the program's start: continued stability in consumption and expenditures on children, improvements in housing, reduction in debt
GiveDirectly's Program: Rural Kenya, 302 villages in Rarieda	Unconditional	2 years	Lump sum and monthly payments	Mobile phone	After lump-sum payment, increased purchase of durable goods Monthly payments resulted in food security; increased parental psychological well-being; increase in assets	3 years after program start: continued higher levels of asset holdings, consumption, food security, and psychological well-being

Note. Consumption = fulfillment of immediate needs, such as food, electricity, heat, gasoline, and rides on public transportation; long-term effects = outcomes reported three or more years after initial receipt of transfers.

^aMexico rolled out the program in 1997; researchers evaluated samples of participants.

^bInitiatives that build on these programs are underway nationally.

cash transfers to alleviate existing and future family poverty by encouraging recipients to take steps to improve their children's nutrition, education, and health.⁷² Cash transfers were delivered to all eligible households via savings accounts (from 2002 to 2005) and then debit cards (since 2009).⁴³ By 2007, the program's budget had expanded to Mex\$3.2 billion and was serving 24.06 million people (5 million families) in 92,672 localities across all 31 Mexican states.¹¹ Transfers, provided monthly, were conditioned on school attendance (being present for at least 85% of school days) and health clinic visits. Parents received subsidies for school supplies and a bonus at the end of the term if school attendance goals were met all year. Participants were selected on the basis of demographics (families with children in targeted communities), and benefits were guaranteed for three years with the possibility of renewal.^{11,36} Progresa required households to stop taking benefits from other programs.

Comparisons between households in the randomly assigned experimental and control villages found that Progresa did not replace or reinforce any preexisting risk-sharing arrangements among households within villages or lead to any statistically detectable changes in how families coped with financial shocks. Households who received Progresa benefits were, however, better able to continue their usual consumption when their non-Progresa sources of income fluctuated.^{36,73} Another evaluation also found substantial increases in school attendance, lengthened educational trajectories, improved nourishment, and improved health outcomes relative to the control group.⁷⁴ Recent research that followed, for up to 17 years, children who were between 7 and 16 years old in 1997 found that longer participation in Progresa was associated not only with greater increases in educational attainment but also with a higher likelihood of being employed and of having a high-quality job.⁷⁵

Conditional Cash Transfer: Opportunity NYC, in the United States. In 2007, using the Progresa program as a model, private funders launched this experimental program in six of New York City's highest poverty communities. The first

conditional cash transfer program in a developed country, Opportunity NYC offered cash incentives to families with income at or below 130% of the federal poverty level to meet specific targets in education, health, employment, and employment training. Participating families could earn about \$3,000 a year in payments, depending on family size and the conditions met. Rewards for specific targets ranged from \$20 to \$600, and payments were made once, monthly, or yearly, depending on the specified behavior. For example, families were paid \$25 a month for a 95% attendance rate in elementary school, \$600 for students' passing a high school Regents exam, \$20 per month for maintaining health insurance, and \$200 per family member who had an annual physical. To claim rewards for meeting other goals, participants manually filled out coupons and included appropriate documentation verifying their compliance with the program's conditions. Money was then transferred to their bank account or, if they preferred, onto prepaid stored-value cards.⁷⁶

Researchers evaluated Opportunity NYC through a randomized controlled trial involving 4,800 families and 11,000 children.^{76,77} The effects on behavior, health, school participation, and education were positive but limited and modest, with the largest effects, in the reduction of poverty and material hardships, occurring during the first three years.⁷⁷ Relative to families in the control condition, those in the experimental group increased their savings and borrowed less money from family and friends. They were also more likely to report having full-time employment but did not see improvements in obtaining jobs that were covered by the unemployment insurance system. Improvements in children's schooling participation were limited to those who were least economically disadvantaged at the time of study enrollment.

Some observers have argued that Opportunity NYC's modest results are in part accounted for by inadequate planning.¹¹ Mayor Bloomberg's program was prematurely launched, they argue, for political reasons (namely, to gain electoral credit), and it lacked a pilot phase or evaluation of a metropolitan policy on which his program

could be based. Others posit that the bureaucratic complexity of Opportunity NYC could explain the results being weaker in New York than in Mexico.¹¹ In addition, Opportunity NYC competed with several other poverty-alleviation initiatives. By contrast, Mexico's Progresa program, implemented by the state, was participants' only source of economic support.

Conditional Cash Transfer: Family Hope Program, in Indonesia. The Indonesian government launched the Family Hope Program in 2007, providing quarterly cash transfers to income-poor households with children or pregnant mothers.⁷⁸ The payments, received at local post offices, were supposed to be conditioned in part on fulfillment of several health- and education-related obligations. However, in practice, verification that people met the conditions was not part of the process until 2010, and even now, verification is not always complete before recipients receive the money. Six years after the program began, recipients had increased their use of trained health professionals and facilities for childbirth and had achieved a greater than 50% reduction in the truancy rate of children aged 7 to 15 years. Researchers also observed a 23% reduction in stunting among participating children and increased enrollment in school for teenagers. Of note, with its lack of verification, this program has functioned something like an unconditional transfer program, indicating that setting conditions was not critical to meeting its goals.

Unconditional Cash Transfer: The Child Grant Program & the Multiple Categorical Targeting Program, in Zambia. In sub-Saharan Africa, the use of cash transfers has expanded rapidly. The number of cash transfers doubled between 2010 and 2015, and by 2015 close to 50 million people had received transfers.⁷⁹ Zambia launched two similar unconditional cash transfer programs, one in 2010 and one in 2011; each provided grants for approximately three years. The Child Grant Program targeted households with children under 5 years of age in three poor, rural districts; researchers evaluating the program looked at households with children under 3 years of age at baseline and assessed the program's effect on households.

The Multiple Categorical Targeting program targeted households considered vulnerable—such as those with female or elderly heads and those with disabled family members—that also had children. Both programs entailed an unconditional monthly cash transfer equivalent to approximately US\$12, which was paid in person by ministry employees at designated payment sites, and each program was studied via a randomized controlled trial as well as at several longitudinal follow-ups starting 24 months after enrollment.⁸⁰ These programs were not explicitly geared toward people in poverty at the household level but instead were geographically targeted; 90% of the participants were below the national poverty line.

Overall, both programs were quite beneficial across both protective and productive domains—that is, they improved recipients' ability to pay for basic needs (that is, goods and food) and to earn money. Both programs also helped to relieve children's material deprivation. On the strength of the findings, Zambia has instituted related programs on a large scale nationwide.

When evaluated 24 months after inception, the Child Grant Program showed significant positive effects on consumption, food security, asset holdings, and satisfaction of material needs, although not on schooling or young children's physical growth. The largest effect sizes were found for adult subjective well-being (such as their perception of whether they were happier or less impoverished than they had been previously) and satisfaction of children's material needs.

At 48 months, after cash transfers had been received for three years, the patterns found were similar. Investigators also found that, in addition to being more food secure, families at 48 months were "improving their housing conditions, buying more livestock, buying necessities for children, reducing their debt, and investing in productive activities."⁸¹

At 24 months, the Multiple Categorical Targeting Program showed significant effects in all the same domains that were affected at that stage

in the Child Grant Program except for income and revenue, but improvements in earnings were statistically significant by 36 months. As with the Child Grant Program, the greatest improvement occurred in adult subjective well-being. A more recent study of the Multiple Categorical Targeting Program found that the program increased the value that recipients placed on future gains (that is, it reduced the discount rates in their minds) and facilitated future planning: Participants were more willing to postpone current consumption in return for future benefits.⁸²

Unconditional Cash Transfer: Program Sponsored by GiveDirectly, in Kenya. In a controlled trial that started 2011, households in rural Kenya were randomly assigned to receive unconditional cash transfers via mobile phone from the nongovernmental organization (NGO) GiveDirectly.^{36,83} Researchers also divided the experimental group by whether the cash grant recipients were a female or male head of household and randomized participants into groups that differed in the frequency of the transfers (lump sum versus monthly installments over nine months) and the amounts received (US\$404 versus US\$1,520 per year).

Consistent with findings from other unconditional cash transfer programs, data reported in 2013 indicated spending on consumption was higher as a result of the transfers, with the monthly spending going from an original baseline of US\$157 to US\$194 at four months after the transfers ended (a rise equal to 23% of the control group's consumption spending at the four-month mark). In addition, spending on food, health, and education increased, while spending on alcohol and tobacco decreased. Monthly transfers were more likely than lump sums to improve food security, whereas lump sums were more likely to be spent on durable goods. (See note E.) Improvements were also noted in food security and investments: The value of nonland assets, such as livestock, bicycles, and stoves, held by recipients increased by US\$279 (a rise equal to 58% of the control group's mean and 39% of the average transfer). The program also increased recipients' psychological well-being and self-esteem

(particularly among female heads of households) and reduced stress, depression, and cortisol levels (a biological sign of stress). A follow-up study of the same program showed that recipients had 40% more assets than their nonrecipient counterparts did but did not find statistically detectable differences in indices of health, education, and female empowerment.³³

Policy Recommendations

Combined, our theoretical and empirical examination of cash transfers to families with children suggests that unconditional cash transfers are generally superior to conditional transfers in that they improve life outcomes and economic security for families and children without adding cognitive burdens on parents and without the stigmatization that can accompany having to show documentation or retrieve payments through entities that make recipients feel uncomfortable. What is more, the administrative costs can be low thanks to there being no need to provide an infrastructure for service delivery or for assessing whether recipients have met the conditions for payment.⁸⁴ We believe, however, that conditional cash transfers—such as those targeting school attendance or having children immunized—can support the same goals if they impose little administrative burden on the recipients and if the necessary infrastructure is in place. The private sector, particularly philanthropy, can play a complementary role to governments in the provision and distribution of money, as the NGO GiveDirectly does.

Studies of various programs have not yet systematically studied and pinpointed the best design features. The case studies we have described represent a potpourri of approaches—with payments ranging from a lump sum to monthly or quarterly being delivered via direct deposit to bank accounts, mobile phones, and in-person pickup at post offices. What is more, the choices could have been made on the basis of feasibility in specific contexts rather than on the basis of which approach would be most supportive of the targeted families. Our analyses suggest, however, that program success is strongly influenced by recipients' trust in the source of distribution and the ease with

which they can join the program and obtain the money.

The importance of a seamless, easy-to-access delivery system puts debit cards at the top of our list of recommended money-provision vehicles. (See Figure 1.) Debit cards are readily available in most middle- and high-income, economically stable settings and are backed by established credit companies (such as Mastercard) or large banks. They typically offer flexible, no-fee ATM withdrawals and can be used in a variety of online and in-person transactions. Large host companies provide customer service lines that can offer assistance in a wide range of languages for problems such as lost cards, fraud, or missing PINs. Debit cards are also used widely by the general public with little stigma. In the United States, cash transfers can be loaded seamlessly onto existing debit cards dedicated to safety-net benefits such as food stamps.

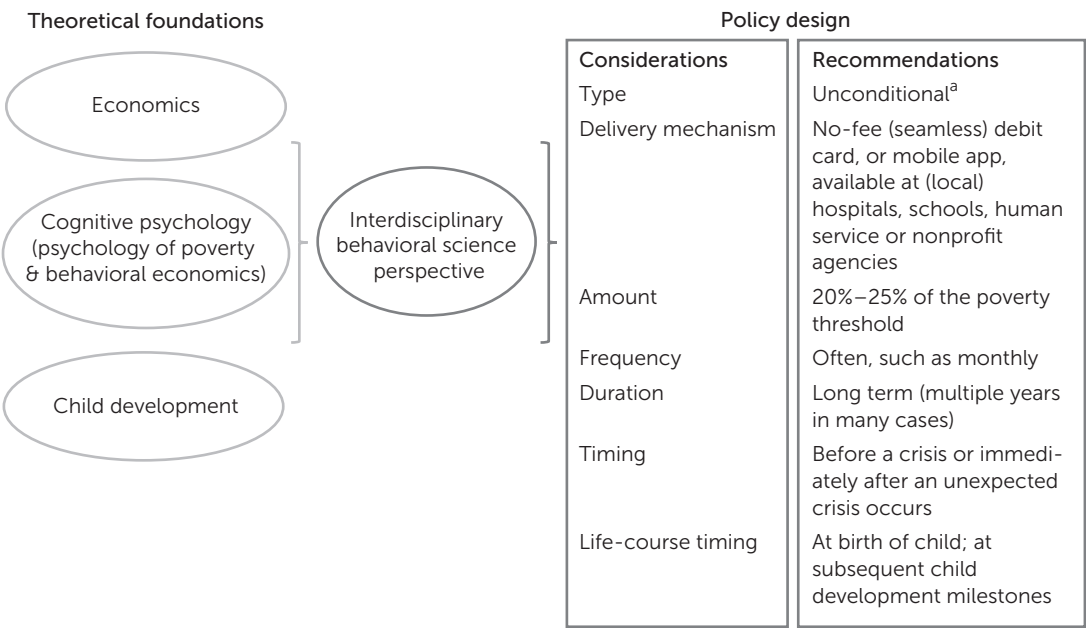
If debit cards cannot be used, such as in low-income countries where the credit or banking infrastructure is inadequate, mobile money (that is, money or its equivalent received and sent via cell phone) is a good alternative.⁸⁵ Although mobile money is being tested for cash transfers

in most low- and middle-income countries, it is now available in the United States to Supplemental Nutrition Assistance Program recipients who have the FreshEBT app. For mobile money to be useful, though, an infrastructure has to be available to consumers (buyers of goods) and producers (sellers of goods) throughout a community.

We recommend that policymakers and program designers select delivery agents who are trusted and will not make recipients feel stigmatized. In the United States, for example, the Latino/a community would likely be reluctant to interact with an anti-immigrant community organization charged with disbursing cash transfers.^{86,87} Worldwide, health care providers, hospitals, schools, other educational institutions, and faith-based institutions tend to be trusted in their communities.

The evidence base is inconclusive on the amount of money that should be transferred. We suggest an amount that is at least 20%–25% of a region’s poverty threshold, because this amount would likely be meaningful both financially and in terms of relieving stress and cognitive load. Imagine how useful \$4,000 to \$5,000 would be

Figure 1. An interdisciplinary framework for cash transfers to families with children



^aA conditional program can be a good alternative, however, if it does not impose much of an administrative burden on the recipients and if the needed infrastructure is in place.

“To best support families’ economic stability, cash transfers should be delivered on a predictable schedule”

for a family that brings in \$20,000 annually. An alternative could be a sliding amount that lifts a household’s annual income to 20%–25% above the region’s poverty threshold.

To best support families’ economic stability, cash transfers should be delivered on a predictable schedule, and families should be clearly informed of the amount, frequency, and timing of the payments and how long they will be eligible to receive payments. Both lump-sum and more frequent cash transfers can support families, as we have already discussed, but evidence indicates these payment methods have different effects. Large lump-sum cash disbursements are more likely to be invested in assets (such as livestock or a business) that can produce future income or be used to pay down debt or buy big-ticket items. Smaller, more frequent cash disbursements may give rise to different choices, such as whether to accumulate savings, earmark money for a future large purchase, or alleviate immediate consumption needs. A large lump-sum cash transfer might be coupled with smaller, more frequent transfers to encourage savings and investment as well as address immediate consumption needs and demands.

Research into child development suggests that cash transfers are particularly important for supporting successful development during windows when children’s progress is sensitive to environmental influences. During infancy, for instance, a child’s brain development is highly malleable, yet this period is also when parents must adjust to their new role and family member; reallocate their energy, time, and money to accommodate the life-changing event; and also try to nurture their child as much

as possible. The birth of a child is thus a good occasion on which to provide financial support. Other key times are the preschool years (when children are ready for group-based early education), the transition to primary school, and the onset of adolescence. Some research indicates that providing a lump sum during a mother’s pregnancy can increase the likelihood of a healthy birth.⁸⁸

When unconditional cash transfers are infeasible, such as when lawmakers do not view income-poor people as worthy recipients of such support, conditional transfers could be a viable option, but policymakers should consider potential roadblocks to achieving their intended aims. For instance, transfers conditioned on recipients’ having a job will be less effective during periods of labor market contraction than during expansion and when childcare is hard to come by. Further, the effectiveness of conditional cash transfers is likely to be dampened if they are complicated by requiring certain types of formal paychecks as documentation before cash can be delivered. In a hybrid solution, policymakers could offer both conditional and unconditional cash transfers.⁸⁹ This approach could provide an incentive to meet the desired conditions while facilitating people’s ability to do so and would also still offer basic protection to people who are unable to comply with the conditions. Hybrid models deserve more rigorous evaluation.

As another recommendation, we strongly support use of cash transfers, particularly unconditional transfers, during humanitarian emergencies. Humanitarian aid providers were increasingly turning to cash transfers in such circumstances even before the COVID-19 pandemic struck, and the pandemic has markedly increased their use. In an influential 2015 report, the Overseas Development Institute and the Center for Global Development argued that cash transfers in these contexts can be less costly to deliver than other kinds of support, allow beneficiaries to use the money to address their own greatest needs, and help to sustain local markets.⁹⁰ Cash transfers to people in crisis also make sense from a behavioral perspective:

populations experiencing an emergency are under severe stress, which, as we discussed earlier, adds to cognitive load and to distraction that can interfere with clear-eyed decision-making and effective parenting.

Finally, when implementing cash transfer programs, policymakers need to be aware of the very real potential for unintended consequences for nonrecipients. So far, relatively little attention has been paid to ways that cash transfers could inadvertently undermine antipoverty goals.^{91,92} If not provided to everyone, cash transfers could have the unintended consequence of contributing to local inequality and could exacerbate rather than improve communities' overall well-being. In a randomized evaluation of a cash transfer program in the Philippines, for instance, an overall 9% increase in village income led to increased prices of certain foods, especially in areas where the program reached a high proportion of people.⁹³ Despite significantly improving nutrition-related outcomes among beneficiary children, the program inadvertently led to an 11% increase of stunting among nonbeneficiary children living in poorer and more remote areas, presumably because their families could not afford the elevated food prices. Health care utilization by nonbeneficiary mothers and children also declined, although it is not known whether this decline resulted from an increase in health costs or from other reasons.

Cash transfer programs may also have negative effects on the mental health of nonbeneficiaries. For example, while a cash transfer program in Malawi was operational, the program resulted in significant reductions in depressive symptoms among beneficiary schoolgirls. (See note F.) Their sisters also experienced reductions in depressive symptoms. In contrast, schoolgirls who did not live in a household receiving transfers experienced an increase in depressive symptoms. Both positive and negative effects on depressive symptoms disappeared shortly after the program ended.⁹⁴ Similarly, the unconditional GiveDirectly cash transfer program described earlier in this article led to a

deterioration in the psychological well-being of nonrecipient neighbors.⁹⁵ Here, too, the effects dissipated over time.

A recent analysis of a one-time large cash transfer to over 10,000 households across over 600 villages in Kenya showed positive financial spillover to other households and businesses, with little impact on prices.⁹⁶ Still, the potential for unintended psychological and financial consequences merits further exploration. In the meantime, policymakers need to be cognizant of potential spillover effects and would be wise to monitor whether they occur when cash transfer programs are implemented.

Conclusion

Going forward, one open question is whether cash transfers to all families with children (sometimes referred to as a *child allowance*) would be a superior strategy for addressing poverty in families with children. UNICEF and various partners have established the Universal Child Grants Initiative to explore this issue.⁹⁷

Meanwhile, we conclude that theory and evidence both favor the use of cash transfers—particularly unconditional transfers—to help financially pressed families with children. These transfers support families directly through increased income and indirectly by influencing behavior and decisions. By expanding household income, cash transfers may enable parents to increase investments in child health and development and take advantage of other available support programs. And, by lowering the stress that accompanies scarcity, they may enable caregivers to make better decisions for themselves and their children. In other words, cash transfers not only support the ethical goal of an equitable society, they also increase the odds that recipient adults and their children will thrive and thereby contribute to the economic development of their communities.⁸²

end notes

- A. For a thorough recent review of U.S. evidence on the effects of poverty on child development, see Chapters 1 to 4 in *A Roadmap to Reducing Child Poverty*, published in 2019 by the National Academies of Sciences, Engineering and Medicine.⁵
- B. The Canadian cash transfer program was accomplished by eliminating a demonstration grant called the Universal Child Care Benefit, which went to all families with children below a set age, and by enhancing the targeting of recipients that was occurring through the Canada Child Tax Benefit and its associated National Child Benefit Supplement.
- C. For reviews of research into universal basic income, see the 2020 report *What We Know About Universal Basic Income: A Cross-Synthesis of Reviews* by Rebecca Hasdell⁹⁸ and the 2019 working paper *Universal Basic Income in the US and Advanced Countries* by Hilary W. Hoynes and Jesse Rothstein.³⁸
- D. Long-term effects of cash transfers can depend on the precise structure of the transfer. Unconditional one-time asset transfer programs provide beneficiaries with money to buy a productive asset, such as livestock. The effects of a one-time asset transfer program could differ from those of a longer lasting cash transfer program, particularly when limited access to savings devices might prevent households from accumulating sufficient funds to purchase the productive asset. Transfers of US\$120 to microenterprises in Ghana increased some measures of profit for men but none for women at the first year of follow-up, and US\$200 transfers to youth in Liberia temporarily increased earnings.⁹⁹ One possible reason for the lack of sustained impact might be that recipients do not have access to good investment opportunities. Another possibility is that beneficiaries are reluctant to take the risks associated with investments. Some studies showed success in the form of large long-term increases in income after one-time cash transfers when risks were relatively low. In Uganda, for example, young people with existing businesses who received transfers started trades and achieved a 40% annual rate of return after four years.⁵⁷
- E. The pattern of economic behavior in response to monthly payments, as compared with lump-sum payments, that was seen in Kenya's program is similar to that observed among people in the United States who receive the earned income tax credit.¹⁰⁰
- F. In the Malawi study that showed reduced depression in schoolgirls whose families received cash transfers, the amount of the transfers and whether they were unconditional or conditional apparently mattered. When the transfer amounts were low, the reductions in depression were similar across recipient families' girls regardless of whether conditions were set. Yet when the transfer amounts were high, the reductions in symptoms were smaller in the conditional design, potentially because the girls felt a responsibility for helping to earn the greater sum and experienced the responsibility as a burden.

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author note

The findings, interpretations, and conclusions expressed in this article are those of the authors and do not necessarily reflect the policies or views of their affiliated institutions.

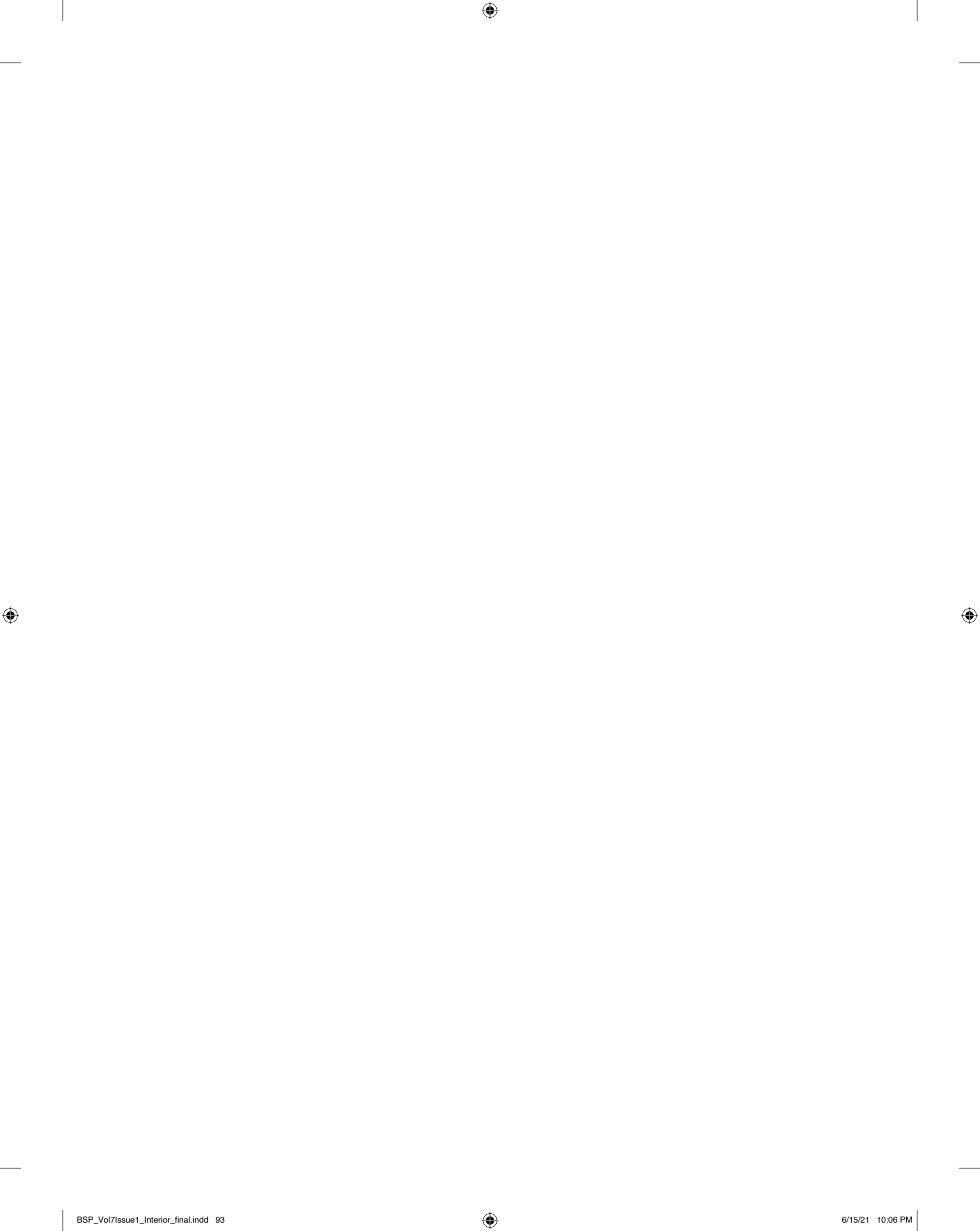
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How cities can apply behavioral science to promote public transportation use

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abstract

In this review, we present and critically evaluate evidence regarding how policymakers can apply behavioral science–based strategies to encourage the use of public transportation. After briefly introducing the theoretical background, we describe selected rigorously studied interventions informed by behavioral insights. We organize the interventions into three overarching groups: (a) communication-based approaches (information provision, goal setting and plan formation, and message framing), (b) bias-busting approaches (strategies that can counter negative perceptions of public transportation, break habits by timing interventions strategically, overcome anticipated dislike of social interactions on public transportation, and tap into emotional influences on decisionmaking), and (c) technology-based approaches (feedback and gamification). On the basis of the reviewed findings, we identify the interventions that seem most promising for increasing public transportation use.

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Core Findings

What is the issue?

Increasing public transport use is an important policy method for decreasing carbon emissions and combating climate change. However, interventions designed to do so may not always work in practice. A review of different interventions yields a framework of (a) *communication-based* approaches, (b) *bias-busting* approaches, and (c) *technology-based* approaches that are all worth considering.

How can you act?

Selected recommendations include:

- 1) Using multiple transport intervention strategies to have a better chance at being effective
- 2) Designing interventions that convey information emphasizing the intrinsic reasons for using public transportation and elements that will promote habit formation

Who should take the lead?

Researchers and policymakers in transportation

Before the COVID-19 pandemic, the transportation sector accounted for 23% of global energy-related carbon dioxide emissions, and these emissions were climbing.¹ It was clear that use of public transport was critical for limiting carbon emissions: It saved the United States roughly 4.2 billion gallons of gasoline each year.² But there was room for improvement, given that 88% of Americans still owned a car.³ The pandemic has temporarily depressed ridership, but once public transport becomes safe again, policymakers concerned about global climate change and sustainability will need to use every tool possible to raise the ridership numbers.

This task will not be easy. Policy change occurs slowly, particularly in the transport sector. As Greg Marsden and Iain Docherty have noted, this slowness is related to at least two factors.⁴ One is the length of the planning cycle for new investments in transportation—the “carrots” of new infrastructure that may induce individuals to use public transportation more often.⁵ A second is that politicians may be reluctant to enact policy measures that could be perceived as “sticks,”⁶ such as measures seen as threatening individual autonomy.⁷ (One recent review of alternative transport policy measures explains when and why carrots may be effective.⁸)

What is more, people’s patterns of transportation use are notoriously difficult to change, in part because the patterns are often central to individuals’ lifestyle and identity and can influence feelings of well-being.⁹ The ways individuals get around also tend to be governed by deeply ingrained habits. Therefore, even when technological advancements and infrastructure investments have made public transportation more attractive and accessible, massive changes in human behavior will still be needed to ensure that much more of the American population transitions to environmentally friendly public transport.^{10,11}

By applying insights from behavioral science, policymakers can create effective interventions to promote the use of public transportation. In the pages that follow, we briefly look at theories

that may help explain people’s transportation choices, and we describe a framework and a methodology we have developed for evaluating relevant studies. Then we review the strongest research having implications for interventions and, on the basis of that research, offer policy recommendations.

Insights From Behavioral Science Theory

A number of behavioral theories offer guidance for altering the transportation decisions people make.^{12–17} Some view behavior change as resulting from internal factors (such as values, attitudes, and personal norms), whereas others view change as a function of external factors (such as social norms and financial incentives). Still others consider change to be the result of a combination of internal and external influences.

Rational choice theory,¹² which has been studied extensively, posits that people make logical decisions based on the goal of maximizing their best interests.¹⁸ This theory has been refuted by a growing body of research examining decisions in a variety of domains, including transportation,^{19,20} although one of its implications—that people are more likely to choose an option when they are given an incentive to do so—can be used to help prompt a switch from cars to public transportation in some contexts.²¹

Other behavioral theories—going by such names as *prospect theory*, *theory of planned behavior*, and *habit formation theory*—provide more nuanced insights.^{13–17} They are used to more accurately understand and predict the hidden influences on human behavior, being based on the assumption that individuals are influenced not only by logic but also by other conscious thought processes, unconscious processes, and small situational cues. One central notion of these theories is *bounded rationality*,¹² the idea that individuals’ decisions are restricted by the limited willpower, time, and energy people have to devote to thinking choices through. Bounded rationality can introduce systematic biases into people’s decisionmaking, as will be seen later in the article. By explicitly incorporating ways

to overcome travelers' cognitive limitations and harness their behavioral biases, policymakers should be able to create more effective behavior change initiatives. (See note A for more information on bounded rationality.)

Overview of Research Into Changing Transit Behavior

In recent years, a growing number of experiments have tested behavioral interventions for changing people's travel behavior. However, attempts to synthesize the findings have come to conflicting conclusions. Several literature reviews (also known as *narrative reviews*)^{22–24} and meta-analyses (which combine data from multiple related studies)^{25–27} have concluded that these behavioral science–based interventions are generally effective at motivating car users to change their travel mode. However, a more recent systematic review and meta-analysis focusing on studies that included control groups found no significant effect on the proportion of journeys made using alternative modes of transport.²⁸ Further, few of the experiments cited in the literature reviews and none of the meta-analyses focused exclusively on inducing travelers to switch from cars to public transportation, and so the potential and limitations of behavioral science–based interventions for increasing public transportation are not yet well established.²⁹

To help fill this knowledge gap, in our review, we highlight research that applies behavioral science to specifically promote a switch from driving private vehicles to using public transportation. As we noted earlier, our goal is to help policymakers and the practitioners who run or are otherwise involved with transportation systems to design more effective, evidence-based transport policies and programs. Our review, it should be said, is not meant to be exhaustive. Rather, we present an overview and critical evaluation of intervention approaches that have successfully changed behavior. We selected studies for inclusion if they pertained specifically to promoting a switch from car driving to using public transportation and incorporated behavioral science insights (as

opposed to solely traditional policy tools such as direct incentives and regulations). When it was possible, we preferred studies that were rigorous and well controlled. As much as we could, we concentrated on gold-standard studies—namely, randomized controlled trials that had large numbers of participants who were followed longitudinally (that is, the participants were assessed at multiple time points). We chose to highlight a handful of high-quality studies in each category rather than all possible examples so that readers could learn the details of the procedures and the studies' limitations. (Readers may refer to a 2015 article by Marta Garcia-Sierra and her colleagues³⁰ for a review of empirical evidence on behavioral biases in general travel choices and the implications of those biases for transport policy.) We acknowledge that people can reduce their use of cars in ways other than riding buses or trains, such as by ridesharing, but those other options are outside the scope of our article.

A Framework for Behavioral Interventions

We postulate that all behavioral science interventions to increase the use of public transit fall into three broad categories: *communication-based approaches*, *bias-busting approaches*, and *technology-based approaches*. In this review, we highlight eight key interventions that fit into one or another of these categories (see Table 1). These eight stood out to us as the most promising actions when we closely examined Eric Adjei and Roger Behrens' 2012 review of theories related to experiments conducted with the aim of decreasing demand for single-occupancy car use³¹ and Garcia-Sierra and colleagues' 2015 review of behavioral economics concepts and insights related to travel behavior.³⁰ Behavioral economics, as many readers may know, stands in contrast to classical economics in considering the psychological and social factors that influence decisionmaking and often lead people to make choices that differ from those a purely rational actor would make.

We present field studies supporting each of the eight main intervention approaches. Three of these approaches are based on communication:

Table 1. Examples of behavioral intervention studies & their action implications

Strategy and source	N	Design	Outcome	Key details of intervention	Main findings	Action implications
Communication-based approaches						
Information provision						
Brög & Schädler (1999) ³⁴	NA	Nonrandom control group; pre–post test	Self-reported proportion of travel on public transportation (according to a travel diary)	1. Information about public transportation alternatives 2. No information (control)	Public transportation use increased from 53% to 64% among those informed about public transportation alternatives; no change in control group.	<ul style="list-style-type: none"> • Provide informative brochures about public transportation services, schedules, and fares.
Beale & Bonsall (2007) ³⁷	71	Randomized controlled trial	Self-reported bus use	1. Marketing material designed to correct common misperceptions of the bus services 2. Marketing material plus free bus ticket 3. Control	After six months, 62% of participants in the information only and information plus free ticket groups reported taking the bus, compared with 47% in the control group.	<ul style="list-style-type: none"> • If possible, provide tailored information, specific to citizens' local public transportation needs and available services.
Bamberg (2013) ⁴⁰	NA	Randomized controlled trial	Self-reported proportion of trips by car	1. Tailored travel information 2. Standardized travel information 3. Control	Medium ($d=-0.54$) decrease in car use in the tailored information condition, and a small ($d=-0.17$) decrease in the standardized information condition.	<ul style="list-style-type: none"> • Combine the provision of information with one or more of the other intervention approaches.
Goal setting and plan formation						
Fujii & Taniguchi (2005) ⁴²	292	Two intervention groups; no control group; nonrandom	Self-reported proportion of trips by car (travel diary)	1. Tailored information and advice on reducing car use 2. Planning group (asked to make behavioral plans for methods to reduce car use)	28% reduction in total trip duration; 12% reduction in car-use days by the planning group. No significant changes in the advice group.	<ul style="list-style-type: none"> • Ask citizens to set goals for the percentage they would like to increase their public transportation use.
Taniguchi & Fujii (2007) ⁴⁴	495	Nonrandom control group; pre–post test	Self-reported frequency of bus use	1. General information on how to use bus services, two free bus tickets, and a request to form behavioral plan 2. Control	Proportion of participants in the experimental group using the bus (38%) was more than double that in the control group (18%).	<ul style="list-style-type: none"> • Encourage and support citizens in developing a detailed behavioral plan to achieve the goal.
Message framing						
Kormos et al. (2015) ⁴⁷	78	Randomized controlled trial	Self-reported proportion of trips by car (travel diary)	1. Low social norm information (underreporting others' ability to switch to sustainable transportation) 2. High social norm (overreporting others' behavior) 3. Control	Participants in the high social norm condition decreased commuting-related private vehicle use by five times, compared with their baseline.	<ul style="list-style-type: none"> • Use dynamic social norm messages emphasizing positive trends in others' behavior regarding public transportation.

Strategy and source	N	Design	Outcome	Key details of intervention	Main findings	Action implications
Bias-busting approaches						
Countering negative views of public transportation						
Pedersen et al. (2012) ⁵⁶	42	Randomized controlled trial	Predicted satisfaction with public transportation	Defocusing: Participants listed up to 10 daily activities and the amount of time allocated to each activity	Significant increase in car users' predicted satisfaction with public transportation.	<ul style="list-style-type: none"> • Reduce perceived waiting time and combat the perception of unreliability by giving real-time arrival (wait time) information to users. • Counter the waiting time paradox and ambiguity aversion by providing accurate waiting times in a mobile app. • Use a defocusing technique in which participants list daily activities, as well as the amount of time they usually allocate to each activity. This exercise counters the focusing illusion (the tendency to focus on a few negative aspects of public transit rather than putting the commute in the context of a full day's activities).
Watkins et al. (2011) ⁵⁴	655	Two groups; nonrandom	Self-reported perceived wait times of transit riders (survey) Actual wait times of transit riders	Perceived and actual wait times for riders with and without access to real-time information for commuters arriving at Seattle-area bus stops; measures based on observations and surveys of researchers	Perceived wait times of transit riders was greater than actual measured wait times for riders without real-time information (but not for riders using real-time information). The addition of real-time information decreased perceived wait time by 0.7 min (about 13%). Real-time information users reported average wait times (7.5 minutes) that were 30% lower than those reported by riders using traditional arrival information (9.9 minutes).	
Breaking habits						
Fujii et al. (2001) ⁶⁸	335	Pre-post test; no control group	Self-reported frequency of public transportation use	Took advantage of an eight-day freeway closure (for maintenance)	Public transportation use by commuting drivers increased from 9% to 20%.	<ul style="list-style-type: none"> • Leverage structural changes like temporary road closures and withdrawing parking spaces. • Offer financial incentives, like free travel cards or congestion charging. • Ask citizens to think through their various commuting options. • Use timely interventions; the best time is right after an individual has moved or started a new job.
Bamberg (2006) ⁷¹	169	Randomized controlled trial	Self-reported proportion of car and public transportation (mobility diary)	Newly relocated residents received a free bus ticket (for one day) plus personalized information and map about bus services	Public transportation use increased from 18% to 47% among newly relocated residents.	
Fujii & Kitamura (2003) ⁶³	43	Randomized controlled trial	Self-reported frequency of bus use	Free bus ticket (for one month) and bus route map provided to student car drivers	Bus use frequency increased by 126% from baseline in the experimental group during the free month and by 20% one month after the free ticket expired.	

(continued)

Table 1. Examples of behavioral intervention studies & their action implications (*continued*)

Strategy and source	N	Design	Outcome	Key details of intervention	Main findings	Action implications
Bias-busting approaches (<i>continued</i>)						
Overcoming anticipated dislike of social interactions on public transportation						
Epley & Schroeder (2014) ⁷⁸	118	Randomized controlled trial	Perceptions of commuting experience	Train commuters asked to (a) speak with a nearby stranger, (b) focus on solitude, or (c) commute as normal	Commuters reported a more positive experience on public transportation when they connected with other commuters versus when they did not.	<ul style="list-style-type: none"> Try physical changes in design that encourage conversations on public transportation.
Tapping into emotional influences on decisionmaking						
Pedersen et al. (2011) ⁸³	106	Randomized controlled trial	Current and predicted satisfaction with public transportation (self-reported via survey before, during, and after the test period)	1. Free 30-day public transportation pass and signed a commitment to use public transportation 2. Control	Experimental group satisfaction ratings at the end of the period were significantly higher than their initial satisfaction ratings as well as control group ratings.	<ul style="list-style-type: none"> Expose citizens to the experience of public transportation to (ideally) improve their attitudes toward it.
Technology-based approaches						
Feedback and gamification						
Taniguchi et al. (2003) ⁹⁷	599	Pre–post test; no control group	Self-reported proportion of car and public transportation (travel diary)	Maintain travel diary, then receive seven-day feedback summarizing travel diary	Proportion of trips taken by family car decreased by 5%. Proportion of trips by public transportation increased by 4%.	<ul style="list-style-type: none"> Push for the integration of feedback and gamification functionality into commuters' current routines (such as in popular apps).
Kazhamiakin et al. (2015) ⁹⁵	36 overall (20 completed all phases)	Within-participant comparison across three phases; no control group	Selection of sustainable routes via mobile app (Viaggia Rovereto)	Mobile app to log trips; sustainability features and gamification added to app during each subsequent two-week phase	Sustainable route choice significantly increased from 42.7% to 60.6% with the addition of gamification.	

Note. NA = not available. Pre–post tests compare the same group before and after an intervention. Measures such as Cohen's *d* reflect the size of the observed effects: values of 0.2, 0.5, and 0.8 typically indicate small, medium, and large effect sizes, respectively. Superscript numbers identify each source's location in the reference list.

(a) information provision, (b) goal setting and plan formation,³² and (c) message framing.^{14,15} Four of the intervention approaches revolve around what we call “bias busting.” They are meant to counter (d) misplaced negative perceptions of public transportation,^{12,13,18} (e) the selection of transportation modes out of habit,¹⁷ (f) the conviction that public transportation will entail unwanted social interactions,³³ and (g) emotions that cloud decisionmaking about whether to drive or take public transport. Interventions targeted to emotions have not been well studied to date, but the literature suggests they could be important to include.³⁰ The final intervention approach fits into the technology-based category and involves (h) the use of feedback and gamification.

Communication-Based Approaches

Information Provision. The most common intervention for steering commuters toward public transportation is the public awareness campaign, which is undertaken on the assumption that commuters lack sufficient knowledge of their transportation options and that providing such information will alter their behavior. Indeed, some studies show that when lack of knowledge is a barrier to action, information provision can be helpful. For example, an intervention in Leipzig-Grünau, Germany, resulted in a statistically significant increase in public transportation use from 53% to 64% among those informed about public transportation alternatives (for instance, via brochures and maps) as part of the IndiMark program—which was implemented in various European countries and based on a targeted marketing approach with customized travel information. People who received no information showed no change in behavior.³⁴

Travelers’ perceptions of the quality of public transportation services often contradict objective reality.³⁵ Therefore, when accurate information is provided, travelers may find public transportation more attractive because their misperceptions have been corrected.³⁶ Researchers conducted a randomized controlled trial to explore whether inaccurate negative public perceptions about

“perceptions of the quality of public transportation services often contradict objective reality”

bus travel could be improved through informational material. The British researchers found that providing accurate information did promote bus use among habitual bus users and those with preexisting positive attitudes toward bus use, although it caused a significant decrease among already infrequent users and those negatively disposed toward bus use.³⁷

In line with the findings from Germany mentioned earlier, some researchers have argued that information about alternative travel modes must be customized to the individual to optimally promote behavior change,^{38,39} such personalization can minimize the cognitive energy a person must expend in formulating new plans. For example, compared with a control group, participants in one study chose public transportation significantly more frequently after receiving a personalized travel information package, whereas the same was not true for participants who received a standardized information package of public transportation brochures.⁴⁰ This study had some limitations. Notably, participants were randomized to conditions but baseline data were unavailable; thus, the possibility of preexisting baseline differences cannot be excluded.

Overall, the effectiveness of providing information to change car drivers’ travel choices seems limited. A review by Caspar G. Chorus and his colleagues of relevant studies conducted over 15 years found the evidence to be mixed.⁴¹ Therefore, the overall effects of information provision remain uncertain. However, this type of intervention has the benefit of being politically uncontroversial and thus may be best applied in conjunction with another intervention, thereby increasing the likelihood of a positive effect.

Goal Setting & Plan Formation. Another information-based approach to switching peoples' choice of transportation uses techniques that harness their ability to change behavior voluntarily.^{38,39} Sebastian Bamberg, Satoshi Fujii, Margareta Friman, and Tommy Gärling have proposed a theoretical framework for transportation behavior change, the first two stages of which are setting a change goal and forming a plan to achieve the goal.³⁸ Research in Japan has shown, for example, that public transportation use increased 76% for a travel feedback program that specifically requested that participants set goals (that is, participants chose the percentage by which they wanted to increase their public transportation use), versus only 25% among those not asked to set a goal.²⁷ Similar findings were obtained in another study by some of the same authors.⁴²

Researchers have further argued that—beyond merely setting a goal—commuters must make a detailed plan for achieving the goal.⁴³ A meta-analysis of 14 travel management programs found, for instance, that in 11 interventions in which participants were asked to form a plan to use their cars less, the participants reduced their car use.²⁷ In a study using a controlled pre-post test design, in which behavior before an intervention was compared with behavior after it, researchers in Japan found a significant increase in the self-reported bus use of participants in their experimental group, who received general information on how to use bus services as well as two free bus tickets and formed a plan to increase their bus use.⁴⁴ One month later, the proportion of participants in the experimental group who reported using the bus (38%) was more than double that in the control group (18%). A limitation of this study, however, is that the control group was not randomly assigned.

The advantage of using goal setting and plan formation is that such interventions are generally well studied and seemingly effective. However, the key disadvantage is that these interventions require self-directed behavior and therefore work only on those who are already motivated to change. Consequently, they are not easily implemented with people who do not wish to

alter their behavior. In addition, these interventions can take time to execute, and they may not be politically desirable if they are perceived as an infringement on individual autonomy. Last, as is true of the experiment described in the previous paragraph, these interventions tend to use a pre-post design without random assignment to groups; this feature decreases their validity for drawing causal inferences.

Message Framing. Framing involves rearranging words and concepts within a message in specific ways to encourage a particular change in decisions or attitudes without altering the greater meaning of the message. Framing is also meant to elicit behavior without limiting the recipients' freedom of choice. For instance, a message may be framed in a way that nudges employees to sign up for a discounted train pass as a default while still allowing them to opt out of the program if they desire. Message-framing strategies are helpful primarily in situations in which decisionmakers base their choices at least partly on messages they read.

In 2013, researchers found that when they described two modes of transportation according to the modes' carbon dioxide emissions, using loss framing rather than gain framing of the same data increased the likelihood that people would be more inclined to favor the lower emitter. For example, participants who read a loss-framed message were told that one mode of transportation emitted 2,900 more grams of carbon dioxide than the other on a five-mile trip (and so was worse for the environment), whereas participants who read a gain-framed message were told that the second mode emitted 2,900 fewer grams than the first (and so was better for the environment).⁴⁵ Conversely, another study showed that a benefit-framed message tested in a lab setting was more effective for increasing intentions to use green transportation modes than was a loss-framed message.⁴⁶ Thus, to date, findings related to loss-gain framing—while promising—have been somewhat contradictory.

Other message-framing studies have examined the influence of social norms on changes in travel behavior. For instance, at the University of

Victoria, British Columbia, Canada, researchers used a monthlong randomized controlled field experiment to evaluate how different descriptive social norms—descriptions of how other people typically behave—affected the willingness of faculty, staff, and student participants to reduce their private vehicle use.⁴⁷ Participants who received personalized e-mail messages that overestimated the true social norms for the use of sustainable transportation increased their own use of sustainable transportation (including public transportation, carpooling, and cycling) for commuting by approximately five times. However, this study used deception—it included statements that either under- or overestimated true social norms—to demonstrate a causal effect, which is not ethically defensible in public policy.

A less controversial approach would be to highlight an accurate *dynamic norm* (that is, a norm that is changing) by citing, for example, positive trends in behavior change among commuters. In a 14-week intervention experiment in Germany, investigators found that presenting a dynamic norm (“More and more customers are switching from to-go-cups to a sustainable alternative. Be part of this movement and choose a reusable mug”) was effective at encouraging sustainable behavior.⁴⁸ The message increased the use of reusable alternatives by 17.3%.

Bias-Busting Approaches

Countering Negative Views of Public Transportation. Several different biases—systematic deviations from some benchmark of rationality—can come into play when people decide how they will travel from here to there. As a result of bounded rationality, people who are pressed for time or face multiple demands on their cognitive powers, as is common, often rely on *heuristics*; these simplified decisionmaking rules can lead to biases that can influence travel mode choice.^{30,49} For example, the *immediacy effect*, also known as *hyperbolic discounting*, can come into play: This is the tendency for people to view immediate rewards as being more valuable than future rewards of equal or greater objective value. This view, in turn, can lead individuals to focus on the short-term benefits of car driving rather than the potential

longer term financial and environmental benefits of using public transportation. The *car effect bias* causes car users to unreasonably interpret or discount information about travel options, dismissing alternatives and reinforcing their own driving decisions and habits. *Loss aversion* leads people to resist losing even small amounts of time by using public transportation.³⁰

A few other biases that affect transportation behavior have been successfully targeted by interventions. People who are accustomed to driving can become frustrated and overestimate waiting time when using public transportation. This frustration leads to the *waiting time paradox*, wherein individuals tend to perceive their wait time as being longer than it is.⁵⁰ Additionally, *ambiguity aversion* suggests that the uncertainty surrounding travel time is more unattractive to travelers than are longer travel times themselves.^{51–53} Both the waiting time paradox and ambiguity aversion can be neutralized by providing real-time arrival information for public transportation options, such as through mobile apps and signage on public transit.

One study involving commuters who were waiting for buses in Seattle found that those who used real-time travel apps had significantly lower actual and perceived wait times, presumably because they were able to plan their commutes more precisely.⁵⁴ That said, the researchers observed and surveyed only commuters who were willing to stop and talk to them on the bus platform. As such, the researchers could not control for self-selection bias; preexisting differences in mood, stress level, patience, or sociability could have affected results. Additional experimental research, ideally using randomization, is needed. It appears, however, that reducing perceived wait times could increase public transportation ridership.⁵⁵

Another cognitive bias that can cause travelers to shy away from public transportation is the *focusing illusion*,⁵⁶ in which people concentrate on the details of a particular, or focal, event and attribute more importance and impact to those details than they actually have in reality. For example, travelers may perceive switching

“habits can sometimes prevent people from making rational choices”

to public transportation as unsatisfying because they focus on negative aspects of such a change without recognizing how little those aspects actually matter in the context of their day. This bias can be combated fairly effectively using a *self-relevant defocusing technique*, in which travelers are reminded of the minimal role that their commute plays in their overall day. In a study conducted in Sweden, for example, participants listed up to 10 of their daily activities (which usually included commuting), along with the amount of time they generally allocated to each of those activities. This simple intervention was conducted before they took a survey about their predicted satisfaction with public transportation. Presumably by revealing that public transportation was a less important part of their day than the participants would otherwise assume, the list making significantly increased the group’s predicted satisfaction ratings compared with the ratings of a randomized control group. (A generic defocusing technique, which consisted of the same exercise but used a preset list of activities instead of a list generated by the participants themselves, was not effective.) Thus, reminding travelers of the minimal role their commute plays in the grand scheme of their day can counteract the focusing illusion to potentially improve attitudes and behavior involving public transportation.⁵⁶

These biases can be further classified according to whether they (a) have been demonstrated to influence attitudes toward public transportation and have an associated intervention that has been tested (as is the case for the waiting time paradox), (b) have been demonstrated to have an effect on attitudes about transportation but have no potential intervention associated with them (as is true of the car effect bias), or (c) have not yet been documented to have an effect on transportation behavior and therefore have

not been subject to an intervention (as with the immediacy effect).

The strategies discussed in this section seem worthy of both implementation and further exploration. For example, the outcomes for many of the interventions that have been tested consisted of measured attitudes toward using public transportation rather than changes in behavior. Although attitudes can indeed inform behavior, to better understand the effectiveness of an intervention, investigators need to track how these strategies influence actions.

Breaking Habits. As automatic behaviors that require minimal cognitive processing and deliberation,⁵⁷ habits can sometimes prevent people from making rational choices.¹⁷ Of course, they can be helpful shortcuts that allow commuters to conserve brain power, saving them from having to think through the same travel problems repeatedly.⁵⁸ However, they can also pose a significant barrier to changing transportation choices. If a decision to drive to work is made when commuting starts, the driving habit may then be automatically reapplied each day without being reassessed to determine whether it is the best choice. Interventions implemented to break a travel habit should aim not only to curtail the less preferred behavior but to establish a new, more environmentally sustainable habit in its place. The strength of a travel habit, which can be measured by variability in transport choices, can predict how resistant travelers will be to an intervention meant to increase their use of public transportation.⁵⁹

Three elements are involved in the creation of habits: repetition of the behavior, associated context cues, and rewards.⁶⁰ Financial incentives, such as free travel cards or congestion charging, can promote new habits effectively.^{61–63} A review of qualitative (nonstatistical) research has found that reduced-fare promotions can successfully encourage car users to try public transportation services.⁶⁴ However, such external rewards have the potential to overshadow intrinsic motivation for using public transportation by making people feel like they have the right to pollute the environment as long as they are paying for

it. This tendency can make behavior return to baseline levels once the incentive is removed.⁶⁵

Studies using behavioral interventions that specifically target commuting habits have had some success at increasing public transportation use. One such approach involves *vigilant monitoring*, which is the conscious override of automatic inclinations; this monitoring is difficult to sustain but can be helpful when paired with the other strategies.⁶⁰ For example, participants in two studies in Sweden were made to think through their various commuting options (such as by keeping a written travel diary that documented how they chose to get to work each day). In both studies, participants who had a strong car-driving habit reduced their use of the car.^{66,67} By deliberately considering their choice of transportation, participants were able to change their driving habits.

Once a new habit is formed, however, the old one can still be triggered by cues from the environment that are associated with that behavior, such as passing familiar car routes people are used to following. It is therefore important to neutralize these context cues. One way to break the hold of cues on habits is to add friction to the undesired behaviors and remove friction from desired ones, so the impulse to indulge a habit is more difficult to act on even when cues are encountered. In the case of the car-driving habit, changes in the environment (also known as *environmental reengineering*)—such as temporary road closures⁶⁸ and withdrawn parking spaces⁶⁹—can prompt people to rethink their commuting habits and increase their use of public transportation. These times may be the ideal moments for a messaging or a targeted-information campaign.

Changes in the choice context can also facilitate the breaking of habits.⁷⁰ For instance, the best time to implement an intervention (such as the provision of information about local public transportation) is right after an individual has moved to a new home or started a new job—times when habits are weak or not yet formed.⁴ One randomized controlled trial began six weeks after participants had moved to Stuttgart,

Germany. An intervention combined capitalizing on a change in context with the provision of customized information (about public transportation in the area) and a financial incentive (a free one-day travel pass). Six weeks after the intervention, public transportation use in the experimental group had dramatically increased from 18% to 47%, whereas a control group of recently relocated participants showed a much smaller increase (rising from 18% to 25%). The intervention was particularly effective among those who reported a strong intention to reduce car use. A couple of weaknesses of the study, acknowledged by the authors, were a lack of long-term follow-up and a lack of direct analysis of the effect of relocation, which would have required a comparison with an intervention group already living in Stuttgart.⁷¹

Existing research on changing habits to increase public transport use has some limitations. Many studies lack longitudinal follow-up as well as participant masking—that is, the participants know the general goal of the intervention. When the purpose of an intervention is known, a conscious or subconscious desire to please the researchers may affect participants' behavior while they are being monitored but not necessarily afterward. Despite these limitations, it seems that disruptive events—such as the lifting of stay-at-home orders related to the COVID-19 pandemic—can be leveraged to encourage new habits and thus effect behavior change. However, one key disadvantage of the interventions described in this section is that they are somewhat difficult to implement and so are perhaps best paired with another intervention approach, such as offering free passes.

Overcoming Anticipated Dislike of Social Interactions on Public Transportation. Satisfaction with one's work commute contributes to overall life happiness.⁷² Bus commuters tend to be the least satisfied of all commuters,^{73,74} although bus riding, like other means of public transportation, offers an opportunity that riders have deemed a top factor in satisfaction with their trips: talking to others during the ride.⁷⁵ Those who socialize as part of their commute tend to feel more positive about their journey.^{75,76} Individuals

report increased positive affect even when they have forced themselves to act extraverted in response to a researcher's request.⁷⁷ Therefore, it is possible that public transportation companies could increase commuters' satisfaction and, in turn, ridership levels by encouraging interactions and extraversion on buses and trains.

One randomized controlled intervention, reported in an article published in 2014, demonstrated commuters' satisfaction with social interactions on public transportation.⁷⁸ Commuters in Illinois who were asked to speak to a stranger during their trip had a much more positive commuting experience than were those asked to "keep to yourself and enjoy your solitude." This pattern is the opposite of what commuters in a parallel experiment by the same authors predicted would occur.⁷⁸

A primary hurdle to acting on the finding from Illinois and promoting social interaction among commuters is that, as the experiment involving predicted feelings showed, commuters tend to believe that solitude is preferable to social interaction. To reap the benefits of social interactions, they would first need to be convinced to give public transportation a try. Once they did, though, they might be prodded to socialize more if transportation authorities applied such strategies as making physical alterations that encouraged conversation, such as installing chairs that face each other in pods.

Tapping Into Emotional Influences on Decisions. No studies have examined interventions aimed at altering emotions in a way that will prompt people to choose public transportation, but affective influences on transit choices have been found to rival the influence of practical considerations.⁷⁹

Obstacles to using public transportation include the positive feelings of freedom, independence, comfort, and apparent control that people ascribe to the experience of driving a car.^{80–82} Making decisions using shortcuts based on their current emotions—that is, by relying on the *affect heuristic*—people may choose, for instance, to commute by car rather than via

public transportation because driving makes them feel good.

Research has shown that a variety of emotions come into play when transportation decisions are made. For instance, individuals are not good at *affective forecasting*, or estimating the future impact a particular event will have on them and their emotions. This forecasting difficulty can stem from the *intensity bias*, in which people overestimate how intensely they will be affected by an event, or from the *duration bias*, in which individuals overestimate how long they will be affected by something. In the public transportation realm, commuters may overestimate how unsatisfied they would be if they shifted from driving to using public transportation.

A randomized controlled trial has demonstrated that exposing people to public transportation can improve the accuracy of their forecasts about how they will feel about a given form of transport. Participants in an intervention in Sweden were given a 30-day public transportation pass and signed a contract to use public transportation as their main travel mode to and from work for that period. They were surveyed before, during, and after the test period for their current satisfaction and predicted future satisfaction with public transportation. Their ratings at the end of the period were significantly higher than their initial satisfaction ratings and higher than the ratings of participants in the control group.⁸³

Much as negative feelings toward public transportation can undermine its use, negative feelings about one's choice of less green forms of transport—such as guilt, shame, or disappointment—can lead to the increased use of public transportation.^{84–86} Although it is difficult to ethically harness these feelings in an intervention, policymakers could attempt to activate the psychological mechanisms that lead to them, such as the senses of responsibility and moral obligation that are elicited by reminders of an individual's personal norms^{87,88} or pro-environmental values.^{89,90}

Some positive feelings about cars are reinforced, if not manufactured, by the advertising

industry. Legislators can potentially combat the industry's messages by taxing "dirty" advertising (that is, ads promoting vehicles that pollute the environment) and subsidizing "clean" advertising (for example, ads promoting public transportation).^{91,92}

Technology-Based Approaches: Feedback & Gamification

Feedback through web-based apps can change transportation behavior.⁹³ Feedback typically works by providing a mild form of reward or punishment, which can facilitate goal-directed behavior; at times, it can consist simply of information that is useful in assessing one's progress toward a goal. Feedback can, therefore, be used as the basis for other interventions that amplify its effects, such as gamification—the application of game-design elements in nongame contexts to make behavior change fun.⁹⁴ For example, smartphone apps such as Viaggia Rovereto have reduced car use among commuters by 13% while simultaneously increasing biking, walking, and use of public transportation through such gamification features as earning points, badges, and free bikeshare memberships.⁹⁵ Although using apps that provide feedback could be considered a type of communication-based intervention, we view apps as being a distinct, separate category because they are typically more interactive than the communication-based approaches we described earlier and are meant for ongoing use rather than being focused on one moment in time.

In one review, researchers examined studies of 10 apps meant to promote the use of sustainable transportation and found that most of the apps used the strategies of personalization, feedback (self-monitoring), and information provision.⁹³ Only three of the studies measured actual changes in behavior, though. The three apps appeared promising, but the studies included no control groups, used relatively small samples, and relied on short time frames (less than nine weeks).

Experiments conducted in Japan before smartphone feedback and gamification apps came into wide use demonstrated one way to leverage feedback to increase public transportation use.⁹⁶

Researchers asked participants to complete daily diaries of their transportation use.^{42,97} The investigators analyzed and repackaged that information for participants as three-day or seven-day personalized travel summaries, including details of where they went, how they got there, and how they could increase their use of public transportation. With these summaries, the researchers were attempting to change behavior by leveraging insights from psychological studies that indicated such information would lead to behavior change by increasing the perception of self-efficacy, eliciting thoughts of how to implement intentions, and activating personal norms (such as the belief that the individual is the kind of person who wants to protect the environment). The intervention reduced family car use by an average of 15%,^{42,97} with a 4% increase in the proportion of trips by public transportation,⁴² as compared with a control group that was not chosen randomly. In 2012, this type of diary-feedback procedure was tested with a dedicated app over a three-week period, and researchers discovered that a small number of frequent commuters significantly increased their walking and cycling (although not public transportation use) while also decreasing their driving by a statistically significant amount.⁹⁸ This small intervention trial did not include a control group.

Although both feedback and gamification approaches hold promise for affecting public transportation decisions, they have not been well evaluated to date. None of the app or simple feedback interventions mentioned in this section were tested in randomized controlled trials. The app studies also had a relatively small number of participants (for instance, several included only 15 or 20 participants).⁹⁶ However, the evaluations used strong outcome measures (for instance, data obtained from travel diaries filled out in real time) from actual commuters. Thus, if a larger and better controlled intervention could be designed, the results might be replicated. That said, perhaps the greatest barrier to the large-scale implementation of these strategies is the requirement that participants actively opt in and take actions they would not normally do, such as filling out diaries. Anything that requires effort can deter a change

23%

Transportation's share
of global energy-related
CO₂ emissions

88%

Americans who own a car

42b

Gallons of gasoline
saved each year through
public transport use

“even interventions with small effects can add up to a large influence on emissions”

in behavior and may cause selection biases in the research.

A simpler and more effective approach, therefore, may be to integrate feedback and gamification functionality into commuters' current routines rather than asking them to complete daily diaries or download new apps. For example, if travel feedback or gamification modules could be integrated into Google Maps and Apple Maps, they would affect a large number of commuters who already use those programs. Policymakers may consider advancing proposals that encourage the introduction of gamification functions.

Discussion

Main Findings

Transportation is a difficult domain in which to effect behavior change. Yet the research we describe in this article indicates that behavioral science-based interventions have the potential to increase public transportation use. Given transportation's high impact on greenhouse gas emissions, even interventions with small effects can add up to a large influence on emissions.

Policymakers and practitioners have various options at their disposal to encourage public transportation use. Pricing approaches, such as free bus passes, have shown success, although such fiscal measures risk crowding out travelers' intrinsic motivation to take public transit,⁹⁹ so the effects may be short-lived. Information provision through public awareness campaigns—which have long been a mainstay policy measure—can be a reasonably priced way to help correct inaccurate perceptions about transit services, but assessments of their effectiveness have produced inconsistent results. As such, we do not recommend launching an information provision campaign without also implementing one or more additional strategies that can

capitalize on it. Alternative policy options and programs that leverage the behavioral insights and the three categories of interventions—specifically, communication-based approaches, bias-busting approaches, and technology-based approaches—described in this article may increase the effectiveness of traditional measures.

Advice for Policymakers & Practitioners

Given the scarcity of rigorous behavioral research on how to increase the use of public transportation and the limitations of the intervention strategies reviewed above, what should policymakers and practitioners do? As a general rule, programs that use multiple strategies have a better chance at being effective than do single-strategy programs. In particular, programs that provide free public transportation passes (incentives) and customized schedules and maps (tailored information), use effective message framing, and are delivered at times when habits are likely to be reconsidered (such as during life changes or road closures) are more likely to succeed than programs that lack these features. The odds of maintaining a new transportation habit increase if the programs also include both information that emphasizes the intrinsic reasons for using public transportation (health, happiness, and the like) and elements that will promote habit formation (that is, repetition of the behavior, cues that trigger a desire to use public transportation, or rewards for taking the train or bus).

However, this plan of action may not be feasible for all policymakers or practitioners. For example, budget-constrained programs may not have the resources to provide free transit passes or to send individually tailored messages, maps, and schedules to customers. Some programs may not have access to information about customers' recent life transitions (such as moving or taking on a new job), or they may target residents who are not necessarily undergoing a life transition.

We recommend that when policymakers design a behaviorally informed public transportation promotion strategy, they first take stock of any available resources and information and,

if possible, undertake preliminary research, such as examining existing data and reports and conducting surveys, interviews, and focus groups. Once these preliminary steps are complete, program designers can select a strategy that best suits their target population and situation. For example, if a program designer is interested in boosting transit use among potential riders and preliminary research finds that such travelers have misperceptions about the comfort or convenience of bus rides, then providing information directly to these individuals (for instance, through mail or social media) may be an effective strategy.³⁷

Direct delivery of information can be augmented by applying behavioral insights derived from research into message framing or overcoming biases in decisionmaking. For example, using public advertising to encourage potential riders to defocus (that is, to think about how they actually spend their time during the day) can remind travelers of the minimal role their commute plays in the grand scheme of their workday, which can counteract the focusing illusion, thereby improving attitudes and ideally behavior involving public transportation. Correcting waiting time misperceptions can also increase perceived satisfaction with public transportation when people choose to

use it. If a preintervention review of commuting trends reveals that a number of commuters are already switching to public transportation, then policymakers might want to consider delivering messages that are framed to highlight that change (that is, they may want to call attention to the *dynamic norm*).⁴⁸ Another possibility would be to explore ways to partner with motor vehicle bureaus to identify and send targeted messaging to those who have recently relocated to an area, so as to harness the effects of changed choice contexts.⁷¹

Alternatively, when preliminary research indicates that some residents are already interested in commuting via public transportation, policymakers could target those residents with interventions that encourage goal setting and plan formation. This approach essentially plucks low-hanging fruit for increasing transit use. Asking already engaged residents to make a plan (in person, by mail, by social media, or through another method) can help them fulfill their goal of using public transit more often, as Fujii and Taniguchi have demonstrated.⁴² Asking for a public commitment can further increase the likelihood of success. Table 2 provides guidance on when to consider the interventions described in Table 1, according to the policymakers' goals and target populations. We

Table 2. Considerations for selecting an intervention approach

Project or target population characteristic	Recommended intervention
If knowledge about public transportation services is a barrier, or if misperceptions exist . . .	provide information (or combine information provision with another intervention approach).
If your target population already wants to change . . .	use goal setting and plan formation.
If you have an opportunity to present communications directly to people who travel in personal vehicles . . .	use message framing.
If you want to use a light touch . . .	provide real-time arrival information, or use message framing to remind travelers of the minimal role their commute plays in their day.
If you have the ability to change design elements of public transportation . . .	increase social interactions on public transportation.
If you are able to target travelers who have recently experienced a major life event (such as a move or a job change) . . .	take advantage of the timing to break old habits.
If you are planning a marketing campaign or a free trial . . .	tap into the emotional influences on decisions.
If you have access to personal travel data and a method of direct communication with travelers . . .	give feedback and gamify the intervention.

encourage policymakers to combine solutions to best address their specific situation.

Limitations & Future Research

Experiments conducted to study behavioral science-based interventions for increasing public transportation use are a relatively new and growing phenomenon. Syntheses of their findings have led to contradictory conclusions. As we mentioned earlier, multiple narrative reviews^{22–24} and meta-analyses^{25–27} have concluded that behavioral interventions can motivate car users to switch travel modes, whereas a more recent systematic review and meta-analysis examining the efficacy of behavioral interventions studied in controlled trials found no significant effect on the proportion of trips made via alternative modes of transport.²⁸ What is more, none of the meta-analyses conducted so far have focused exclusively on public transportation. As a result, the true potentials and limitations of behavioral interventions for increasing public transportation are not yet established conclusively.²⁹ More studies focused on ways to increase use of public transportation could help to resolve the contradictions.

From a methodological perspective, many studies of interventions would be improved by using a randomized controlled design, which could more convincingly demonstrate effectiveness, prove causality, and eliminate confounding factors. They would also benefit from the inclusion of measures that would help to assess whether any observed behavior change could be attributed to a change in the suspected underlying mechanism, as well as from decreased reliance on self-report measures,¹⁰⁰ which are less accurate than objective observations. Researchers conducting future studies should also aim to include longitudinal components that cover one or more years; none of the interventions surveyed followed participants for as long as two years, and very few followed them for even one year. Additionally, exploring potential contextual differences in the effectiveness of various intervention approaches may allow for more refined and tailored applications of the interventions. For example, a free public transportation trial was effective at the Massachusetts Institute of Technology but ineffective

when implemented in Switzerland, possibly because of differences in sociodemographic factors and population attitudes.¹⁰¹ Last, a major challenge to translating research insights into policy is that some of the interventions may be difficult to carry out at the scale that would be needed. Overcoming these hurdles will depend on the creativity of future researchers and practitioners.

Several experiments generated promising results but warrant replication after design improvements. For instance, collecting baseline data would strengthen findings that public transportation use increased after people received a customized travel information intervention but not after they received standardized information.⁴⁰ In addition, research on travel apps that provide real-time information about waiting times⁵⁴ and on delivering information to newly relocated commuters⁷¹ could benefit from randomizing participants into intervention and control groups and keeping participants in the dark as to whether they are receiving an intervention. Similarly, of the few mobile apps meant to influence transportation choices that have been studied, none were assessed in randomized controlled trials and none had large samples.⁹³ Results from interventions using gain-⁴⁶ or loss-oriented⁴⁵ message framing have been contradictory; further studies are needed before a conclusion can be reached. Another study found success when messages were framed in a way that exaggerated the state of social norms,⁴⁷ but such exaggerations could not ethically be used by policymakers. Policymakers could, however, highlight true changing trends (that is, dynamic norms) in others' travel behavior. If future researchers made some key improvements to the designs of past studies, they would make important contributions to the field.

Some potential interventions suggested by behavioral science research have not yet been studied but seem worth examining, ideally using randomized controlled trials. In particular, several biases relevant to public transportation^{30,49}—such as the immediacy effect, the car effect bias, and loss aversion—have yet to be targeted in any kind of study. Moreover,

the effects of biases such as the waiting time paradox, ambiguity aversion, and the focusing illusion have been assessed only through attitude changes rather than through the more direct measure of behavior change. Further, because commuters' satisfaction grows with any activity that makes them think their commutes offer benefits aside from simply getting to work,¹⁰² framing a message to emphasize that commuting by public transit frees up time for other things might help elicit behavior change. In addition, as previously mentioned, travelers' emotions can influence their transport choices. For example, negative emotions (such as guilt over polluting the atmosphere) may lead to increased use of public transit,^{84–86} but this line of research has not been pursued much, probably because it not ethical to try to induce negative emotions in study participants. Creative researchers, policymakers, and practitioners may, however, be able to ethically apply a similar mechanism through the activation of personal norms^{87,88} (such as "I am a person who tries to behave in a socially conscious way") or proenvironmental values.^{89,90}

Conducting academic studies of various interventions is not the only way to fill gaps in the research: Policymakers and practitioners can also contribute by using existing research to inform policy decisions. Documenting the successes and failures of such behavioral policy initiatives can supply data needed to provide the grounds for further study. In this way, policymakers can enrich the literature while simultaneously enacting real-world change.

Conclusions

The COVID-19 pandemic led to a dramatic decline in public transportation use. Policymakers will need to use every tool available to increase ridership once doing so is safe and to achieve a broader transition toward public transportation use. In this effort, innovative behavioral science-based policies that go beyond public awareness campaigns to include other communication-based approaches, bias-busting approaches, and technology-based approaches can potentially complement more traditional policies. The application of behavioral science to public transportation policy is a relatively new concept and, as we have noted, faces some challenges. But it holds considerable promise for effecting meaningful change in society's use of public transportation. We hope this article will motivate and enable policymakers and practitioners to explore ways to merge behavioral science with rigorous evaluation and thus more effectively encourage the use of public transportation.

end note

- A. For a more detailed review of the implications of bounded rationality and social preferences for travel policy, see reference 10. For an article with a focus on behavioral economics and its implications for transport, see reference 103.

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