Using Behavioral Economics to Encourage Parent Behavior Change: Opportunities to Improve Clinical Effectiveness

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Received for publication April 19, 2018; accepted August 25, 2018.

ABSTRACT

Pediatric clinical practice often involves improving child health by changing parents' behavior. Strategies from behavioral economics—a field that leverages predictable patterns in human decision making to overcome barriers to behavior change—can improve health outcomes in adults. Although more research is needed, the application of these approaches to parent behavior change in pediatric settings has the potential to improve the clinical effectiveness of child health care. We review the foundational concepts of behavioral economics and identify the unique role of pediatricians in motivating parent behavior change. We then discuss how to apply 4 key strategies in practice—message framing, use of defaults, enhanced active choice, and harnessing social forces—to support parent decision making to improve child health. Leveraging behavioral economic principles around parental decision making has the potential to supercharge program effectiveness and improve patient and family health.

KEYWORDS: behavioral economics; defaults; parent behavior change

ACADEMIC PEDIATRICS 2019;19:4−10

PEDIATRIC CLINICAL PRACTICE often involves improving child health by changing parents' behavior. Strategies from behavioral economics—a field that leverages predictable patterns in human decision making to overcome barriers to behavior change—can improve health outcomes in adults. Although more research is needed, the application of these approaches to parent behavior change in pediatric settings has the potential to improve the clinical effectiveness of child health care. In the following, we review the foundational concepts of behavioral economics, identify the unique role of pediatricians in motivating parent behavior change, and discuss how to apply key strategies in practice to support parent decision making that improves child health.

BEHAVIORAL ECONOMICS

Behavioral economics applies economic and psychological principles to overcome barriers to behavior change.[1] A key contribution of the field is identifying predictable decision errors that characterize human decision making and may undermine healthy choices. Individuals are "predictably irrational" in that they make biased decisions that are ultimately not in their best interests and that defy traditional economic theory.[2] For example, individuals exhibit status quo bias when they tend to stick with a current choice even if better alternatives exist. People are also loss averse, meaning that they are more sensitive to losses than to comparable gains; for example, the pain of losing $100 will outweigh the joy from winning $100.[3] Further, individuals are prone to present bias, meaning they over-weight immediate costs and benefits relative to those occurring in the future, an issue especially important in pediatrics where the consequences of many decisions occur years later.[4] Present bias and status quo bias can help explain procrastination, as we undervalue the cumulative costs of small decisions; favor immediate results over delayed gratification; and, when faced with a choice, choose the option involving the least effort.[5]

With its careful attention to decision making and predictable decisions errors, behavioral economics offers insights and solutions to help individuals optimize their

choices. Behavioral economics has been used to improve public policies, such as the dramatic shift toward automatic enrollment of employees in retirement savings programs. More recently, behavioral insights have advanced public health and health care goals as well.[1] Individuals are more likely to become organ donors when the choice is presented as the default option ("opt out") as opposed to something they need to request ("opt in").[6] Adults are more likely to engage in primary and secondary preventive behaviors, such as using sunscreen and quitting smoking, if information presented focuses on the benefits of these actions, not harms.[7–9] Patients are less likely to miss medical appointments if they are told how many other patients attend theirs and they then leverage the importance of social norms and peer comparisons.[10]

Dramatic results have been seen in adult health care contexts when behavioral economics are applied to smoking cessation,[11] physical activity and weight management,[12] medication adherence,[13] and end-of-life decision making.[14] In a randomized trial of an employee wellness program, incentives worth $750 for smoking cessation nearly tripled quit rates, from 5.0% to 14.7% at 9 or 12 months after enrollment.[11] Another randomized trial of physical activity promotion found that a loss-framed incentive design (participants received the total incentive payment upfront in a virtual account but lost small amounts each day that they failed to reach the 7000 steps goal) led to 50% relative increase in goal attainment than typical gain-framed financial incentives.[12] A randomized trial of patients at high risk for myocardial infarction found that targeting incentives at both patients and physicians achieved better reductions in cholesterol levels and improvements in medication adherence than no incentives.[13] In an attempt to better align patient values with clinical care at the end of life (most seriously ill patients value comfort care over life extension, but routine care often leads toward treatment that focuses on extending life), investigators explored how default presentations influenced advanced directive decisions. When seriously ill patients were randomized to preselected check boxes favoring either comfort-oriented care or life-extending care or to a standard advance directive with no options checked, defaulted (prechecked) options significantly influenced choices, even given that most patients preferred comfort-oriented measures.[14]

There is limited but growing evidence for applying behavioral economics approaches to parent behavior change to improve the health of children. Potential foci for action include improving the frequency with which parents prepare school lunches and their nutritional content,[15] promoting breastfeeding and safe infant sleep practices in underserved communities,[16,17] and increasing vaccine adherence in pediatric health care settings.[18] As the application of behavioral economics expands to the pediatric setting, further work is needed to better understand parental decision making, the pediatrician's role in influencing these decisions, and the application of strategies to yield sustained improvements in clinical effectiveness. In the following, we discuss the unique opportunity for pediatricians to motivate parent behavior change and 4 key behavioral economics strategies that may be applied to improve pediatric outcomes.

UNIQUE ROLE OF PEDIATRICIANS IN MOTIVATING PARENT BEHAVIOR CHANGE

Pediatricians are uniquely positioned to guide parental decisions about their own health behaviors to improve both parent and child health. Recognizing this, the American Academy of Pediatrics and consensus clinical guidelines recommend pediatric-based clinical interventions for a variety of parental health issues, including maternal mood and substance use, parental smoking, family food insecurity, and parent immunizations.[19–23] These services meet the needs of busy parents and families and, importantly, come from a trusted source of health care advice. This approach is a core principle of patient- and family-centered care that supports improved family health outcomes, more targeted allocation of resources, and greater patient and family satisfaction.[24] Survey evidence confirms the importance of this role. Parents, for example, expect their pediatrician to ask about smoking status, and mothers of newborns expect to be asked about their own mental well-being. Parents are receptive to these interventions, including receiving or being connected to needed treatment resources.[25,26]

Although pediatricians are uniquely positioned to intervene for family health, and parents welcome their role in guiding decisions, several challenges complicate decision making in pediatric practice. First, the relationship between the involved parties is complex and shifting. Parents may or may not be entirely aligned with each other regarding priorities for their child's health. The dynamic nature of child intellectual development results in children's expanding participation in decision making with age.[27] Thus, strategies developed in adult settings for the physician–adult patient dyad do not automatically translate into pediatric settings; they often must be adapted to meet the needs of the more nuanced parent-child-pediatrician triad.[28] For example, with regard to translating effective tobacco treatment interventions from adult settings into parent-targeted interventions in pediatric settings, researchers have identified that for improved effectiveness and further dissemination, a different understanding of how best to communicate these interventions to parents is needed.[29]

Further complicating pediatric decision making, parents make different decisions for their children than they might for themselves.[30] The parent role influences treatment decisions such as chemotherapy for a slow-growing cancer, as more parents accept these interventions for a child than for themselves.[31] Preliminary evidence suggests that parents are more motivated to engage in behavior change when they are confident that such actions can improve the health of their children. For example, successfully quitting smoking for parents is strongly associated with their belief that quitting will benefit their children rather than themselves.[32]

For certain interventions, parents appear to emphasize the harms caused by their own direct actions more than harms caused indirectly by inaction.[18] When parents make decisions regarding vaccinations for their children, for example, the decision is strongly influenced by the idea that the potential harm that occurs as a result of deciding to vaccinate (commission) is less acceptable than the potential harm that occurs as a result of deciding not to vaccinate (omission)—a phenomenon known as omission bias.[33] Conceptually, this pattern of decision making relates to the powerful influence of loss aversion. Parents may overreact to harms of commission because they perceive those harms as losses while significantly undervaluing the harms from omission. This omission bias in parents can be corrected, or at least overcome, by simple advice from a trusted physician that emphasizes the importance and direct benefit of the intervention.[31] Physician recommendations—for example, simply stating that "the doctor recommends that you get the vaccine"—can have a powerful impact on patient decisions.[34]

Despite these insights, work remains to better develop our understanding of the unique dynamics of decision making in pediatric settings and to further evaluate the efficacy of behavioral economics solutions in helping parents make healthier choices for their family. For example, few studies have applied insights from behavioral economics to parent-focused health interventions or to more distal health outcomes.[35] The field is primed for innovative work in pediatric settings that combines a greater understanding of predictable patterns in parent decision making with the trusted role that pediatricians play to optimize the health-related choices of parents. We highlight 4 key behavioral economics strategies that may now be applied more broadly in clinical practice to promote parent behavior change (Table).

KEY STRATEGIES

MESSAGE FRAMING

How a health message is presented matters. Insights from behavioral economics suggest that the effectiveness of messages for health behavior change differs according to whether a message is gain framed or loss framed—in other words, presented to emphasize the potential gains versus losses relating to performing or not performing the targeted health behavior or treatment along with the risk inherent to that behavior or treatment.[3,7] In particular, gain-framed messages are more likely to have a positive impact on attitudes toward activities that target prevention, whether primary or secondary, and are low risk (ie, the only thing risky about them is not engaging in them), such as sunscreen use[8] and smoking cessation.[9] Loss-based messages may be more effective at encouraging screening behavior that has a higher degree of perceived risk (ie, higher risk because of the possibility that a serious illness could be discovered), such as mammography.[36] Overall, evidence suggests that when discussing activities or interventions targeting prevention or secondary prevention (eg, smoking cessation), it is important to emphasize the potential benefits of the actions (eg, "Quitting smoking will improve your health"). When discussing screening interventions, the emphasis should be on the potential harms of inaction (eg, "If we don't screen for cancer, we could lose the chance to treat early before it does more harm"). When applying these concepts to pediatric settings, a question emerges regarding how to frame the impact of the decision on the child. When discussing interventions focused on parents, emphasis should be placed on the potential benefits for both the parent and the child. As an example, a message encouraging treatment for maternal depression could include a statement such as "Working with a counselor not only improves your health but will help you improve the health of your child as well."

USE OF DEFAULTS

Defaults are a widely studied approach to presenting treatment options to adults.[1] The way in which choices are presented to people has an outsized impact on what they actually choose across a range of topic areas. Defaults are "sticky." Individuals tend to stick with a choice they made even if there are better choices available and also stick with a default choice that is presented to them even if new options emerge.[1] Further, default options in health care settings help guide decisions without potentially offending parents by restricting choice.[37] In terms of clinical efficiency, an opt-out presentation of information reduces the time required to present content while also decreasing the parental effort required to make healthy choices. This occurs because using an opt-out approach signals the appropriate choice through an implicit recommendation while leaving parents the choice to opt out if they have strong preferences. Setting defaults can guide both adults and clinicians toward better health-related decisions, including adults choosing to donate organs[6]; following up for appointments to receive influenza vaccinations[38]; choosing comfort-oriented approaches to care in advance directives for adults (as described earlier)[14]; and, for clinicians, prescribing generic rather than trade-name medications.[39]

In pediatrics, the use of defaults has focused primarily on child vaccine receipt. Training pediatricians to use an opt-out communication style (eg, an announcement or presumptive approach detailing that a child is due for routine vaccines) as opposed to an opt-in communication style (eg, a participatory conversational approach) when discussing vaccines with parents leads to a clinically meaningful increase in vaccination rates.[40] Further, the efficacy of these defaults can be augmented by priming parents before the visit with information about "routine" vaccines due at the upcoming visit.[41] Additional research is needed, but encouraging the use of defaults in vaccine receipt can be leveraged in additional contexts. For example, a parent who screens positive for tobacco use could be presented with information about the importance of quitting and automatically connected to the state tobacco quitlines, which are effective, telephone-based, publicly

Table. Key Behavioral Economics Strategies

Behavioral Economic Principle	Brief Description	Clinically Relevant Example
Message framing	How a health message is presented matters. Health messages can be framed to highlight either the benefits of engaging in a particular behavior (a gain frame) or the consequences of failing to engage in a particular behavior (a loss frame).	When advising a parent who smokes about smoking cessation, the physician could say "Quitting smoking will improve both your health as well as your children's health by keeping them away from secondhand smoke" (gain frame).
Use of defaults	The way in which choices are presented to people has an outsized impact on what they actually choose across a range of topic areas. Defaults are "sticky." Individuals tend to stick with a choice they made even if there are better choices available, and they also stick with a default choice that is presented to them even if new options emerge.	When communicating with families regarding necessary vaccinations, the physician can announce that the child is due for routine vaccines: "Your child is due for these routine vaccines today—[vaccine names]. We'll give those at the end of today's visit."
Enhanced active choice	Active choice involves inserting a decision that is relevant in front of consumers at a time when they are primed to think about it and in a position to say "yes" or "no" without much effort. This approach can be enhanced by highlighting the salient benefits of action and potential losses of inaction.	For the parent who is interested in quitting smoking, the physician could say "Since you're interested in quitting smoking to improve your child's health, which of these smoking programs would you like me to sign you up for today?"
Leveraging social forces	Social comparisons, in which an individual's actions are visible to others, and social support systems, in which existing social relationships are leveraged in positive ways, can amplify the impact of health interventions. Simple social comparisons can be used to increase adherence.	Parents can be reminded that most children in a particular clinic receive their routine vaccines or that most families successfully attend their scheduled, routine well-child visits.

funded, and scalable programs that help smokers quit.[42] The quitline would then call the parent within 24 to 48 hours to engage the parent in smoking cessation treatment. Such an approach sends a clear message about the importance of quitting and minimizes the decisions necessary to start a treatment that improves both the parent's health and the health of the child. In this way, the use of opt-out default approaches can be a powerful tool for steering patients and families toward making beneficial choices by reducing the effort required to choose the most health-promoting option.

ENHANCED ACTIVE CHOICE

Although defaults meaningfully impact choices, they are not always feasible or acceptable. Defaulting individuals to certain treatment options may result in people feeling like they are being manipulated. Enhanced active choice, in which a choice is presented to an individual with an explanation of costs built into the question itself, offers an alternative.[43] Active choice involves inserting a decision that is relevant in front of consumer at a time when he or she is primed to think about it and in a position to say "yes" or "no" without much effort. For activities that involve ongoing commitment, active choice may produce higher levels of perceived responsibility and satisfaction than defaults, leading to longer-term rates of ongoing adherence.[44] This approach can be enhanced by highlighting the salient benefits of action and losses of inaction. For example, automatic refill programs—when used—can increase medication adherence, but uptake rates for these programs are often low. Defaulting patients into these programs may not be feasible or desirable, as patients may not want to automatically pay for a medication each month. In 1 study, when individuals received reminder notifications to refill their medications, program designers presented individuals with a choice: "Press 1 if you prefer to refill your prescriptions by yourself each time" or "Press 2 if you would prefer for us to do it for you automatically." This simple approach—choosing to sign up for the program with the salient advantages of automatic refills highlighted in terms of convenience—more than doubled the rate at which patients both participated in the refill program and actually refilled their medications.[43] Further, this approach has the advantage of making joining the program reflect a conscious choice, which may result in higher rates of engagement over time.

Enhanced active choice avoids procrastination by empowering the decision maker to make a choice, increases perceived responsibility by having the individual commit to a choice, and leverages loss aversion for the new opportunity by highlighting disadvantages of not selecting the preferred option. In select situations, this approach achieves the same goal of a default—ensuring that people who would benefit from an intervention receive it—without the disadvantages of defaults.[43] This concept has not been well studied in pediatric settings but can be explored in any situation where a decision is needed but cannot be defaulted. The choice of whether or

not to participate in most pediatric health intervention programs falls on the parent, especially for younger children. Automatically enrolling the families of obese pediatric patients into a healthy weight program, for example, can increase referral rates but is unlikely to lead to increased participation without parent or family buy-in. Instead, the parent could be presented with 2 treatment options: begin a healthy weight program or begin a home-based intervention of reducing sugar-sweetened beverage consumption. Benefits and limitations of both options would be presented clearly and concisely. Creating this choice signals that action is necessary and could increase engagement by instilling in parents the sense of responsibility that comes from committing to their preferred choice.

Leveraging Social Forces

Social comparisons, in which an individual's actions are visible to others, and social support systems, in which existing social relationships are leveraged in positive ways, can amplify the impact of health interventions.[45] Social comparisons targeted at physicians, for example, improve adherence to evidence-based antibiotic prescribing guidelines in pediatrics.[46] Creating and embedding individuals into social support systems, through either peer mentorship programs or reciprocal peer support programs, can lead to improved diabetes management over financial incentives, medications, or more typical nurse-led care management.[47,48] Such interventions add to the growing understanding of how behavior is mediated by social networks. Individuals are more likely to smoke if people close to them smoke, and they are more likely to quit if the people who are important in their lives quit.[49] Overall, these approaches reveal opportunities to advance health by taking advantage of naturally occurring social forces, but health care organizations rarely leverage these forces to drive improved outcomes.[45]

The shifting focus of health care organizations toward population health, combined with the pediatric health care setting's natural focus on children (and therefore social play), creates unique opportunities to develop and test social interventions to advance family health. Simple social comparisons, for example, could be used to increase adherence. Parents could be reminded that most children in a particular clinic receive their routine vaccines or that most families make their scheduled appointments. Further, pediatric institutions could sponsor adherence competitions or create simple platforms for peer support. As an example, for parents of infants at high risk of becoming obese, participating in mentored online peer groups resulted in a high level of engagement and improvements in feeding behaviors.[50] As these examples illustrate, pediatric health care settings should consider how they might implement peer comparisons and peer support to motivate health-promoting parent behavior.

Synthesizing the Approaches

Behavioral economics holds the potential to empower parents to make healthier choices for themselves and their children. New programs, such as treating parents who smoke within pediatric settings, could apply a combination of these concepts to a smoking cessation intervention. The pediatrician could frame the parent quitting smoking as benefiting the child. Active choice would be effective here (given the need for ongoing program involvement): "Since you're interested in quitting smoking to improve your baby's health, which of these smoking programs would you like me to sign you up for today?" This active choice is enhanced with message framing, which provides information about the benefits of quitting now and the harms of failing to act today. Program enrollment and onboarding should be effortless; a counselor, through the tobacco quitline, could reach out to the parent within 24 hours to follow up, reinforce behavior change, and identify any barriers. Physicians can leverage social forces by reporting to parents which programs other parents in the practice have chosen and emphasizing that most parents want to protect their children from the harms of secondhand smoke. Each individual behavioral economic approach could lead to small increases in smoking cessation behavior; the synergistic combination could lead to meaningful increases in parent quit rates and subsequent improved parent and child health.

Limitations

Additional research in pediatric settings is needed to fully explore how to work best with parents to counter common decision-making errors and guide them toward healthier choices. Behavioral economics experts themselves have cautioned about potential pitfalls in applying these insights—policy can get ahead of the science, and guiding decisions can turn into paternalism, especially if program designers assume too much about the individual choices of their target audience.[5] Individuals crafting new programs must seek out and incorporate feedback from diverse groups, avoid oversimplifying solutions to complex problems, and be cautious in not misconstruing structural problems (eg, lack of access to safe outdoor spaces for activity) as individual lifestyle choices or cultural norms. Many of the most dramatic results in behavioral economics studies in adults have focused on the use of financial incentives as 1 tool to overcome common decision-making errors to improve health outcomes.[11–13] How these approaches are best scaled across health systems remains to be seen. Further, the efficacy, unintended consequences, and acceptability of behavioral economics interventions delivered to parents in pediatric settings, especially for families from lower socioeconomic settings, have not been well established. How will parents respond as more potential choices are defaulted for them and children in health care settings? Although pediatricians are trusted sources of health care advice for patients and families, patient autonomy can be lost when individuals are unaware of the decisions confronting them. Pitfalls

can be avoided by adhering to evidence-based approaches. Input from parents and families must be continuously sought and feedback incorporated into interventions to ensure that they align with parent goals, thus helping parents protect the health of their children in addition to their own health.

CONCLUSIONS

Pediatricians are uniquely positioned to guide parental decisions, and behavioral economics holds the potential to empower parents to make healthier choices for themselves and their children. Pediatricians, pediatric researchers, and program leaders can make use of key strategies—message framing, use of defaults, enhanced active choice, and harnessing social forces—to support parent decision making to improve child health. Leveraging behavioral economic principles around parental decision making has the potential to supercharge program effectiveness and improve patient and family health.

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