

Translational Issues in Psychological Science

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Online First Publication, October 15, 2020. <http://dx.doi.org/10.1037/tps0000243>

CITATION

Leer, J., Gaither, S., & Gassman-Pines, A. (2020, October 15). Behavioral Science Interventions: Integrating the Decision Task, Context, and Individual Differences to Inform Policy. *Translational Issues in Psychological Science*. Advance online publication. <http://dx.doi.org/10.1037/tps0000243>

Behavioral Science Interventions: Integrating the Decision Task, Context, and Individual Differences to Inform Policy

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Interest in applying evidence from psychological science to strengthen public policy has increased in recent years. The governments of at least 20 countries have “nudge units,” or teams of researchers and policymakers dedicated to applying insights from psychological science to improve public policy. Many international agencies and consulting firms have followed suit, and other disciplines are also increasingly interested in using psychological science to better understand decision-making. We argue that policymakers should use psychology to adopt an integrative understanding of behavior as shaped by three factors: features of the decision task (e.g., how choices are framed), the context (e.g., access to institutional resources), and individual differences (e.g., race and ethnicity). Identifying which factor to focus on requires an understanding of the interdependent nature of these factors. As a test case, we show how this integrative model of decision-making can be used to support parents’ ability to provide nurturing and stimulating early learning environments. We argue that for behaviors that parents want to do, but need an extra nudge to follow-through, targeting the decision task is effective. In situations of cumulative risk, policies should ease contextual constraints such as economic hardship, or support context-level strengths, such as peer networks. Finally, considering individual differences such as race and ethnicity through a strengths-based, cultural, and historical lens can increase the effectiveness of parenting interventions by allowing policymakers to tailor interventions appropriately.

What is the significance of this article for the general public?

Using a case study of parenting behavior, we show how decision-making is influenced by three interrelated factors: features of the decision task itself (e.g., how a choice is framed), the context (e.g., access to resources), and the individual. Each of these factors should be considered as potential targets of policy intervention. In this way, psychological science can be used not only to inform small-scale policy tweaks to nudge people toward desirable behavior, but also to reduce contextual constraints to desirable behavior, and to more effectively integrate individual differences from a strengths-based, cultural, and historical perspective.

Keywords: behavioral science, decision-making, policy, nudge, parenting

By many accounts, interest among policymakers, researchers, and the general public in how psychological science can inform policy is

at an all-time high (Brooks, 2008; Gopalan & Pirog, 2017; Teachman, Norton, & Spellman, 2015). More than 20 countries around the

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world, as well as many nongovernmental organizations, such as the World Bank and the United Nations, have “nudge units,” or teams of researchers and policymakers dedicated to applying insights from psychological science to improve public policy. The United States’ version of the “nudge unit,” the Office of Evaluation Sciences, was launched by President Obama in 2015 and has conducted more than 70 projects in collaboration with federal agencies such as the Department of Education, Veterans’ Affairs, and Health and Human Services.

The current approach to using psychological insights to inform policy, which we refer to henceforth as the *behavioral paradigm* (Gopalan & Pirog, 2017), focuses primarily on developing small changes to existing policies to nudge people toward socially desirable behavior (Lowenstein & Chater, 2017). This approach has led to many cost-effective innovations, especially for policies related to goal pursuit and self-control, for example in the areas of health and retirement savings (Ariely, 2010; Thaler & Sunstein, 2008). However, in this paper, we argue that policymakers should use psychology to adopt a more holistic understanding of behavior as shaped by three factors: features of the decision task (e.g., how choices are framed), the context (e.g., access to institutional resources), and individual differences (e.g., race and ethnicity). By understanding the interdependent nature of these three factors, psychological science can illuminate which policy goals and circumstances call for a focus on the decision task, when to target the context, and how to more effectively integrate individual differences from a strengths-based, cultural, and historical perspective.

The Behavioral Paradigm to Date: Supportive Evidence and Critiques

Nudges and similar behavioral policy tools aim to steer people toward a desired behavior in unobtrusive or inexpensive ways (Thaler & Sunstein, 2008). To do so, behavioral science tools change features of the decision task to reduce cognitive constraints to optimal decision-making, such as decision inertia, the failure to act when choices seem equally valenced, (Alison et al., 2015) and present orientation, the natural tendency to prioritize short-term payoffs at the expense of future outcomes (Thaler &

Sunstein, 2008). A classic example is switching the default choice option from “opt out” to “opt in,” which has been shown to dramatically increase participation in savings and retirement programs, for example (Madrian & Shea, 2001).

From a policy perspective, the benefit of behavioral science tools is twofold. First, targeting the decision task is inexpensive compared to more traditional policy tools, such as the provision of social services or cash assistance, at least in the short term. Second, nudges explicitly leverage the fact that people often behave in ways that do not align with their stated goals (e.g., failing to exercise regularly despite wanting to be healthy; Ariely, 2010).

However, there have also been critiques of the behavioral paradigm. In particular, critics argue that the movement’s focus on the decision task ignores the systemic nature of societal problems (Bhargava & Loewenstein, 2015; Loewenstein & Chater, 2017). Here, we show that targeting the decision task is just one of many ways that psychological science can inform policy. We argue that policymakers should use psychological evidence to adopt an integrative understanding of behavior as shaped by the decision task, context, and the individual. By illuminating when and how policies should focus on each of these factors, we show how psychological evidence can be used not only to nudge people toward desirable behavior, but also to reduce contextual constraints, and to more effectively integrate individual differences from a strengths-based, cultural, and historical perspective.

Integrating the Decision Task, Context, and Individual to Understand Behavior

Our argument rests on evidence from judgment and decision-making research (Appelt, Milch, Handgraaf, & Weber, 2011; Einhorn, 1970), showing that any given decision is a function of three factors: (a) the decision task itself, including how it is framed and the number of choices available; (b) contextual features within which the decision is faced, such as the availability of time, financial, and cognitive resources; and (3) individual differences, such as age, gender, race, ethnicity, and cultural background. As described above, interventions within the behavioral paradigm have focused primarily on changing features of the decision

task (Lowenstein & Chater, 2017). However, for any given decision, constraints and promotive factors exist at each level, from how a decision task is framed, features of the context that determine which choices are available and to whom, and individual knowledge and attitudes toward the decision. It follows that for any given societal problem, each factor should be considered not just as predictors of behavior but also as potential targets of policy intervention. Further, by considering the context and individual differences not just as potential constraints to optimal behavior but also as potential sources of strength and resilience, psychological science can help dismantle assumptions about what is and is not optimal for different groups.

We use parenting behavior as a test case of this argument. Specifically, we describe how psychological science can be used to improve parents' ability to provide nurturing and stimulating home environments by focusing on the decision task, context, or individual differences, depending on the circumstances and policy goal.

A Conceptual Model of Decision-Making Applied to Parenting Behavior

Parents make an infinite number of decisions every day that, cumulatively, have a large effect on child development. This includes things like how much time to spend reading and playing with their child, how to discipline their child, and whether or not to take their child to preschool, to name but a few. As shown in Figure 1, these decisions influence child development, including physical and mental health, behavioral adjustment, cognitive and language devel-

opment, and learning (Jenkins & Handa, 2017; Vernon-Feagans et al., 2012).

Within the model presented in Figure 1, each parenting decision is described as a function of the decision task, context, and individual differences. As illustrated by the bidirectional arrows, none of these domains operate in isolation. Features of the decision task operate in different ways depending on the context (e.g., the amount of time available to make a decision), and individual differences, such as cultural background. Likewise, the effect of context on parenting depends, in part, on the decision task as well as individual-level factors. Thus, although we describe the decision task, context, and individual differences separately as potential targets of policy intervention, sound policy depends on an understanding of how each of these factors are interdependent.

Interventions That Target the Decision Task

Common cognitive biases affect in-the-moment decision-making in ways that can lead parents to underinvest in things like reading to children or ensuring regular preschool attendance (Gennetian, Darling, & Aber, 2016; Maloney, Converse, Gibbs, Levine, & Beilock, 2015). One example is present orientation, or the natural tendency to prioritize short-term payoffs at the expense of future outcomes (Thaler & Sunstein, 2008). Because children's long-term development is determined by the accumulation of parenting decisions over time, any given decision can feel inconsequential, thereby leading to the decision to watch 15 min

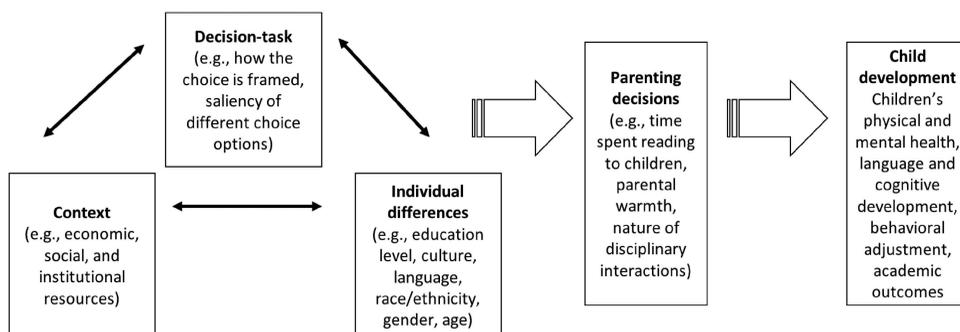


Figure 1. Parenting behavior as a function of the decision task, context, and individual.

of TV rather than read a 15-min bedtime story, for example (Maloney et al., 2015).

Cognitive load, or short-term stresses on working memory and executive control (Valcke, 2002), is another example of a cognitive bias that can influence parental decision making. Parents face multiple demands, including balancing work, family life, and finances, among others. Together these demands can lead to moments of high cognitive load, especially for parents living in poverty (Shah, Mullainathan, & Shafir, 2012). Parents may want to read to their child, but the demands of poverty—juggling multiple jobs, piecing money together to pay rent on time—present a cognitive load that makes it challenging to focus attention on parenting activities (Gennetian et al., 2016; List, Samek, & Suskind, 2018; Shah et al., 2012).

In parenting programs, the use of behavioral tools targeting the decision task is driven by an understanding of how the context of poverty poses not only a financial challenge but also a cognitive challenge for low-income parents. Behavioral tools that target the decision task aim to override cognitive biases such as present orientation to nudge parents toward optimal decisions. For example, two recent school readiness interventions sent parents text message reminders during opportune moments for parent–child interactions (e.g., right after school or dinner; Gennetian, Marti, Kennedy, Kim, & Duch, 2019; York, Loeb, & Doss, 2019). These text message reminders were designed to override cognitive load and make it easier for parents to focus on things like reading a bed-time story. Relative to the control group that did not receive reminders, parents that received text-message prompts spent more time engaged in learning interactions with their children. Another study used planning prompts (e.g., “Who is able to help you drop off Alex if you are not able to? Reply with your answer”) to focus parents’ attention on preschool attendance, leading to a 20% reduction in preschool absenteeism (Kalil, Mayer, & Gallegos, 2019).

What the above examples have in common is a focus on behaviors that parents want to do, but just need an extra push (or nudge) to follow through. This common focus suggests that interventions that target the decision task work well if the policy goal is one that is within reach, something that parents have the skills and tools to implement, and the constraints they face

are primarily cognitive (e.g., present-orientation). Of course, the extent to which targeting the decision task will work depends on the context and the individual. For example, before text-message planning prompts can be used to improve preschool attendance, families must have access to an affordable and conveniently located preschool in their community, which is not the case for roughly 50% of families in the United States (Malik et al., 2018).

Interventions That Target the Context

Other circumstances and policy goals require a focus on the context. Ecological systems theory (Bronfenbrenner, 1977) provides a useful framework to understand why this is the case, as it posits that parenting behavior is embedded within multiple layers of mutually influencing contexts. Parenting decisions happen within the context of the immediate family, but are also influenced by contexts within which the family is embedded—such as the neighborhood, parents’ workplace, local and national policies, and social norms and values related to child rearing. Each level of context includes both risk factors and protective factors. Risk factors, such as exposure to environmental toxins or police brutality, have adverse consequences for parents’ physical and mental health, making it harder for parents to provide a nurturing care environment (Galster & Sharkey, 2017). Protective factors include neighborhood collective efficacy and access to institutional resources, both of which buffer the negative effect of economic hardship on parenting practices (Leventhal & Newman, 2010; Odgers et al., 2009).

The embedded nature of the context means that parents face multiple risks and multiple protective factors. For low-income families in particular, the combination of risk factors at different levels leads to what is referred to in the literature as cumulative risk (Gassman-Pines & Yoshikawa, 2006). Relative to high-income families, low-income families are less likely to have stable housing (Desmond & Shollenberger, 2015), more likely to live in high-poverty neighborhoods (Galster & Sharkey, 2017), and less likely to have access to institutional resources such as high quality preschools (Bassok, Finch, Lee, Reardon, & Waldfogel, 2016). Each one of these risk factors on its own can have adverse effects on parenting, but cu-

mulative risk is known to be especially damaging (Burchinal, Vernon-Feagans, & Cox, 2008). Cumulative risk is linked to decreased parental investments in cognitive stimulation, such as less time spent reading (Mistry, Benner, Biesanz, Clark, & Howes, 2010), as well as less parental responsiveness, less warmth, and greater use of harsh discipline practices (Burchinal et al., 2008; Schenck-Fontaine, Gassman-Pines, Gibson-Davis, & Ananat, 2017).

Interventions that target the context aim to ease one or more of these risk factors. Home visit parenting programs, which target the family context, are one example. There are many different types of home visit programs, but in general, home visits provide information about child development and demonstrate activities that parents can do to support children's learning, with the goal of increasing the quality of parent-child interactions (Michalopoulos et al., 2019). Some of the most effective home visit programs also create links between contextual environments, for example by connecting parents in the family context to resources in their community context such as like subsidized child care programs (e.g., Olds et al., 1999, as described by Azzi-Lessing, 2011). A robust literature shows that high quality home visit programs strengthen parenting behaviors such as cognitive stimulation, affection, and warmth (see summaries in Azzi-Lessing, 2011; Michalopoulos et al., 2019).

Policies can also target the context by easing economic constraints within the family context. Some policies increase income directly via direct cash transfers to low-income families or tax credits such as the Earned Income Tax Credit. Numerous experimental and quasi-experimental studies show a positive effect of increased income on parenting practices (Gennetian, Castells, & Morris, 2010). Other policies, such as the Supplemental Nutrition Assistance Program and unemployment insurance, ease economic constraints within the family context by helping low-income families weather shocks, which supports parents' ability to provide nurturing care (Daminger, Hayes, Barrows, & Wright, 2015).

In contrast to risk factors, protective factors are less often considered by policymakers (Bornstein, Davidson, Keyes, & Moore, 2003). One notable exception is Head Start, a federally funded early childhood education program serv-

ing low-income families (Head Start, 2020). Through its Parent, Family, and Community Engagement Framework, Head Start encourages its staff to strengthen families' social networks by creating ways for participating parents to get to know each other (e.g., buddy systems). Examples like this that support contextual sources of resilience are another means of targeting the context.

Incorporating Individual Differences

Numerous reviews have detailed the ways in which individual differences related to culture, race, ethnicity, and language factors shape parenting practices, goals, and values (García Coll, Jenkins, Mcadoo, Crnic, & Wasik, 1996; Hammer & Weiss, 2000). Here, we focus on two key aspects of individual differences that are key to policy design: valuing individual differences as a potential strength rather than risk factor, and contextualizing individual differences from a cultural and historical perspective to more effectively tailor interventions.

Individual-level factors such as race, ethnicity, and language are typically used by policymakers to identify "at risk" populations, without considering how these identities can also strengthen parenting practices and child development. Indeed, a wealth of evidence shows that the transmission of cultural values, traditions, history, and pride from parents to children predicts a range of positive outcomes for youth (e.g., Umaña-Taylor & Hill, 2020) and young children (Caughy et al., 2002). However, interventions rarely consider individual differences from a strengths-based perspective. A recent synthesis of early literacy interventions found that while many were linguistically responsive (meaning they included program materials in multiple languages), few were culturally responsive—that is, few incorporated the values, beliefs, practices, and experiences relevant to the cultural backgrounds of the intervention participants (Larson et al., 2020). Of 41 interventions reviewed, only 12 included cultural adaptations, but those that did had larger effects on children's language development.

A first step toward designing culturally responsive interventions is to recognize that what is a protective factor for one group may not be a protective factor for all groups. Doing so requires contextualizing individual differences

from a cultural and historical perspective. A study of parent–child picture book sharing among indigenous Mayan families in Guatemala shows the value of this approach (Nieto, Leyva, & Yoshikawa, 2019). The authors found that when sharing books with their child, mothers with *more* education were *less* likely to encourage their child to participate by asking questions and engaging with pictures or text in the book. Meanwhile, mothers with *less* education used a *more* participatory style. This finding contrasts with evidence from middle-class European American samples—upon which many parenting interventions are based—in which maternal education is typically associated with more participatory parent–child learning interactions and higher literacy skills among children (Fletcher & Reese, 2005). The relation between book sharing styles and children’s literacy outcomes in Guatemala remains to be seen. However, identifying the unique, naturally occurring parenting styles as these authors did is the first step toward building culturally responsive interventions.

Understanding individual differences from a historical and structural perspective further illuminates how and why what works for one group will not work for all. For example, a study of parenting behavior found that the presence of an active neighborhood association predicted lower rates of harsh discipline practices among predominantly African American neighborhoods, but not among white neighborhoods (Coulton, 1996). The author interprets this finding from a structural-historical perspective, noting that the role of informal participation mechanisms such as neighborhood associations may be especially beneficial for those whose access to formal mechanisms for civic participation is persistently threatened. This example highlights the need to examine individual differences in parenting behavior, such as those linked to maternal education and race, within the cultural, structural, and historical setting that they take place. Such an approach is necessary to move beyond one-size-fits-all approaches to policy interventions.

Conclusion

Policies targeting the decision task, context, and individual differences can improve parents’ ability to provide nurturing and stimulating

home environments. Regardless of which factor is the policy focus, sound policy depends on an understanding of the interdependent nature of the decision task, context, and individual differences. Identifying the appropriate factor to target requires an understanding of the joint nature of these three factors. Moreover, the decision task, context, and individual differences are not mutually exclusive. Interventions targeting the decision task will be most effective in contexts with preexisting structural or institutional resources—that is, when parents have access to books to read to their children and access to affordable preschools in their community. Similarly, interventions that target the context, such as home visits or cash transfers, may benefit from the use of behavioral tools such as text-message reminders to improve participation among eligible population groups (Gennetian et al., 2019). Finally, a focus on individual differences should be built into all programs, no matter what the target of the intervention is nor whom the beneficiary population is (Brown, Mistry, & Yip, 2019). Assuming that individual differences based on race or ethnicity only apply to policies targeting racial minorities ignores the fact that race, culture, and history affect everyone—whether as a source of privilege or a source of oppression.

Although we have used parenting behavior as an illustrative example, our argument extends to behavioral domains beyond parenting. For example, as we write, the COVID-19 crisis is sweeping the world, and behavioral scientists are being called on to help reduce the spread of the virus by increasing adherence to safety measures such as social distancing. Interventions that target the decision task may improve people’s understanding of the virus, thereby increasing willingness to practice social distancing. Some have suggested using digital prompts to nudge readers to verify the accuracy of COVID-related news before sharing on social media, which could help by debunking myths about the virus being a hoax (Pennycook, Mcphetres, Zhang, & Rand, 2020). However, for many, the main barrier to practicing social distancing is not lack of awareness but rather lack of a secure location to shelter in place. This calls for a focus on the context, such as providing hotel rooms to those who would otherwise be living in the streets or staying in shelters, as some cities have done (Florida, 2020). Finally,

historical and contemporary forms of systemic racism mean that racial minorities are not only disproportionately at risk of COVID-19 morbidity and mortality (Eligon, Burch, Searcyey, & Oppel, 2020), they are also less likely to trust health recommendations from a government that has systematically and historically denied their rights (Halbert, Armstrong, Gandy, & Shaker, 2006). Efforts to increase adherence to safety measures such as social distancing among these groups will need to be sensitive to these injustices, and will likely be more effective if they are also accompanied by policy change to ensure that the pandemic does not exacerbate preexisting racial health disparities.

In sum, by considering the decision task, context, and individual differences we have shown how policymakers can adopt a more holistic understanding of behavior. Psychological evidence can be used not only to inform small-scale tweaks to nudge people toward desirable behavior, but also to reduce contextual constraints to desirable behavior and to more effectively integrate individual differences from a strengths-based, cultural, and historical perspective. This approach can help policymakers and researchers move beyond the quest to identify “what works,” to what works, for whom, and under what conditions (Seidman, 2012; Trickett, 2009).

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Received April 15, 2020

Revision received July 16, 2020

Accepted September 2, 2020 ■