

Why do people often behave in ways that are contrary to their best interests? Pepper & Nettle (P&N) ask this question while focusing on individuals of lower socioeconomic status (SES), who tend toward present-oriented behaviors that many would construe as maladaptive and indicative of poor self-control. P&N's answer is that this behavior does not result from a failure of willpower but instead originates from a rational, appropriate response to a lack of *personal* control: If people are less able to ensure they will receive future rewards, then it makes sense (logically and evolutionarily) to prioritize the present over the future in their behaviors.

We agree that contextual factors are important for understanding and addressing socioeconomic profiles of present-oriented behavior. Our work has highlighted the role of social norms and social trust: Children will delay gratification when they see that members of their own group do so (Doebel & Munakata 2017), and children and adults prefer immediate rewards when they believe those controlling the rewards are untrustworthy (Michaelson et al. 2013; Michaelson & Munakata 2016; see also Kidd et al. 2013; Lee & Carlson 2015). We have thus argued that present-oriented behaviors cannot be understood solely in terms of self-control abilities (i.e., willpower).

However, a full understanding of the “behavioral constellation of deprivation” (BCD) cannot discount self-control abilities in the way that P&N's account does. First, the ability to engage self-control does influence whether individuals engage in present-oriented behavior. For example, children who have worse self-control abilities at age 5 are significantly more likely to begin smoking, perform poorly in school, and engage in antisocial behaviors at age 12 compared to their twin siblings with better self-control, who are matched on nearly every aspect of the family environment, including SES (Moffitt et al. 2011). In addition, changes in self-control *within* an individual over time predict subsequent changes in academic achievement, but not vice versa (Duckworth et al. 2010). Moreover, some laboratory and classroom interventions suggest that short-term manipulations of self-control ability can influence present-oriented behavior (e.g., Bierman et al. 2008; Klingberg et al. 2005; Raver et al. 2011). Such findings from quasi-experimental and intervention studies highlight the importance of self-control abilities in avoiding the BCD. Personal control is not enough.

Second, contextual factors that influence willingness to engage in future-oriented behaviors may shape the development of self-control abilities, which in turn influence future-oriented behaviors. Thus, contrasting contextual factors with self-control may be a false dichotomy. For example, children from high-SES communities may experience many opportunities to practice self-control, due to such contextual factors as high personal control and social trust and the presence of social norms around self-control. Such experiences may themselves lead to greater abilities to control behavior and to neurocognitive substrates supporting self-control across the life span (Diamond 2012; Zelazo 2015). Moreover, such experiences may in turn lead to reciprocal, cascading effects (Karmiloff-Smith 1998; Sameroff 2009; Smith & Thelen 2003), whereby children who regularly practice self-control and see its benefits will increasingly value and use it. Thus, such experiences as these may substantially shape the development of self-control abilities. Such processes are consistent with the broader principles that P&N highlight regarding feedback loops that can amplify small initial disparities into large consequential ones. However, P&N focus on how such feedback loops can shape the *willingness* to engage in future-oriented behavior, whereas we highlight how such processes can also shape the *ability* to engage in such behavior.

Our account can provide insight into why childhood self-control predicts neural and behavioral indices of self-control in adulthood (Casey et al. 2011; Moffitt et al. 2011), and developmental links between SES and neural and behavioral indices of self-control (e.g., Hackman et al. 2015; Lawson et al. 2013; Noble et al. 2012). This account also suggests that targeted interventions

that support early opportunities to practice self-control (e.g., by addressing social norms and trust that may support or inhibit self-control) can yield benefits. For example, children may be motivated to engage and practice self-control if they learn that self-control is valued in their community and leads to valued outcomes, and if they are provided with experiences of delayed rewards being delivered as promised. Considering learning processes and reciprocal, cascading effects in developing abilities to control behavior is essential for adequately addressing the complex ways in which contextual factors can shape the BCD.

Personal control and sociostructural inequalities clearly matter and are important targets. But concluding that self-control abilities do not matter is inaccurate and unnecessary. Self-control abilities influence present-oriented behaviors and may be one mechanism whereby small differences in present-oriented behavior get amplified into consequential ones. Thus, future work should address the processes that shape developing abilities to control behavior in the BCD and their distinct implications for intervention.

## Toward a balanced view of stress-adapted cognition

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**Abstract:** Pepper & Nettle's paper exemplifies an emerging resistance against an exclusive focus on deficits in people who come from harsh environments. We extend their model by arguing for a perspective that includes not only contextually appropriate responses but also strengths – that is, enhanced mental skills and abilities. Such a well-rounded approach can be leveraged in education, jobs, and interventions.

Deficit models dominate much of the psychological literature.

– APA Task Force on Socioeconomic Status, 2007, p. 25

Pepper & Nettle (P&N) argue that exposure to uncontrollable disability and death leads people to value immediate rewards over longer-term goals. Whereas deficit models view this response as pathological, P&N consider it “contextually appropriate” – that is, understandable, given the context of hardships related to socioeconomic status (SES) in which people are operating. Their perspective is consistent with results from mathematical modeling in biology and cognitive science. Such modeling shows that when “the future's uncertain, and the end is always near” (The Doors 1970), individuals may benefit from seizing smaller, immediate rewards at the expense of investing in larger, later rewards (Ellis et al. 2012; Fawcett et al. 2012; McGuire & Kable 2013; Sims et al. 2013).

Despite a focus on appropriate responses to external context, P&N fully acknowledge that harsh conditions can lead to deficits (e.g., due to neglect or poor nutrition), and so do we (Ellis et al. 2017; Frankenhuis & de Weerth 2013). However, deficit models are not the whole story. Contextually appropriate responses may also include the development of *enhanced skills and abilities* that are ecologically relevant in harsh, unpredictable environments. Here, we focus on such skills and abilities, which have only recently become a target of investigation, so we know little about them. Initial findings, however, are promising (for review, see Ellis et al. 2017; Frankenhuis & de Weerth 2013). We focus specifically on the skills and abilities needed to make

the most of a world that is difficult to predict and control (Frankenhuis et al. 2016; Mittal et al. 2015). What protean skills and abilities might we expect in such a continually changing world?

The short answer is: It depends. What aspects of the environment are unpredictable and uncontrollable – the home, school, neighborhood, country, or all of these – and to what extent? Is there some social support that can be relied on? Barring such nuances for now, let us consider the poorest and most chaotic inner-city areas, in which there is generally little scope for predicting and controlling outcomes in multiple life domains, including health, work, and love.

We distinguish between “specialization” and “sensitization” effects (Ellis et al. 2017). “Specialization” occurs when repeated developmental exposures to a stressor improve attention, perception, learning, memory, and problem solving relevant to this stressor across a variety of contexts (Frankenhuis & de Weerth 2013). “Sensitization,” in contrast, occurs when skills and abilities manifest only in currently stressful contexts that match the contexts in which the stressor has normally been encountered (e.g., Dang et al. 2016; Mittal et al. 2015).

When opportunities are sparse and fleeting, people should be extra-attentive to them (Nederhof et al. 2014). Although we are not aware of studies directly testing this assumption, two recent studies do suggest that stress-adapted people develop enhanced abilities for flexibly switching between tasks or mental sets. Consistent with specialization, Vandenbroucke et al. (2016) find enhanced response shifting in Belgian children from low-SES backgrounds (but see Obradovic 2010). Consistent with sensitization, Mittal et al. (2015) observe enhanced attention shifting in U.S. adults from unpredictable backgrounds when they were experimentally put into a mind-set of economic uncertainty. In this mind-set, people exposed to high childhood unpredictability also displayed enhanced aspects of working memory central to tracking novel environmental information (Young et al., [under review](#)).

When encountering short-term rewards, people from harsh environments might show enhanced abilities for procuring them. Consistent with specialization, Suor et al. (2017) report enhanced reward-oriented problem solving (e.g., gaining access to an attractive toy encased in a transparent box) in four-year-old U.S. children with bold temperaments from low-SES backgrounds. These same children, however, displayed reduced performance in an abstract visual problem-solving task similar to the kinds of tests administered in schools. Thus, bolder children from low-SES backgrounds might develop enhanced reward-oriented problem-solving skills for gaining access to immediate rewards, which may trade off against abstract problem-solving skills.

So far, we have discussed (a) shifting between tasks and mental sets, (b) tracking novel environmental information, and (c) exhibiting persistence in procuring immediate rewards. What about learning new contingencies? Consistent with sensitization, Dang et al. (2016) report that when they were experimentally put in a mind-set of high financial demand, lower-SES Chinese students showed enhanced procedural learning (i.e., acquiring novel stimulus–response associations) compared with their higher-SES counterparts. Other work shows that in such a mind-set, community samples from the United States and India showed reduced performance on cognitive functions that rely heavily on working memory (Mani et al. 2013). An interesting and open question for future research is to determine which components of working memory can become enhanced and which impaired by exposure to specific forms of adversity.

Traditional deficit models consider individuals from harsh backgrounds to be at risk for impaired development, and the intervention goal is to reduce or repair the damage. Following Ellis et al. (2012), P&N critique this approach by arguing that present-oriented behaviors are a “contextually appropriate response to structural and ecological factors, rather than pathology or a failure of willpower.” Ellis et al. (2017) take this critique one step further

by arguing that deficit-based intervention approaches fail to leverage the unique strengths and abilities that develop in response to high-stress environments. Uncovering a high-resolution map of these “hidden talents” would enable the design of classroom environments, instructional strategies, and job training to work with, instead of against, the capacities of stress-adapted people (see Ellis et al. 2017 for detailed illustrations), enabling a wider range of individuals to achieve their full potential.

In conclusion, we propose to extend P&N’s model by arguing for a well-rounded perspective on stress-adapted cognition, which includes deficits, contextually appropriate responses, and strengths (i.e., enhanced skills and abilities). Our perspective has scientific merit for its completeness and societal value for its ability to inform a class-conscious psychological science that attends to social-structural inequalities (see Geronimus 2013). It underscores the unique skills and abilities that develop in high-adversity contexts and that can be leveraged in policy and practice to better fit the needs and potentials of stress-adapted people.

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### What about the behavioral constellation of advantage?

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**Abstract:** Many short-sighted behaviors are more common among poorer people. These behaviors are neither evolutionarily nor historically unusual and have strong contemporary encouragement. The bigger puzzle is their lower frequency among the affluent. The behaviors also have clear cultural and normative aspects that limit the usefulness of strictly individualist theories.

Poor people are disproportionately likely to make various choices that appear obviously counter to their long-run interests. These include decisions regarding finances, childbearing, parenting, recreation, and health; Pepper & Nettle (P&N) collect various examples that they call the “behavioral constellation of deprivation.” Bad choices make poor people easy to pathologize as chronically undone by a lack of intelligence or impulse control. Against this view stand efforts to recast these choices as, in one way or another, reasonable responses to the deprivations that low-socio-economic-status (SES) people confront in their everyday lives: In P&N’s parlance, as a “contextually appropriate” response.

Implicit throughout P&N’s argument is that premise that the behaviors associated with lower SES pose a puzzle. What cannot be emphasized enough is how dependent this puzzle is on the perch from which academics observe it. In truth, we – not poor people – are the weird ones. From an evolutionary perspective, many commonplace high-SES behaviors in developed societies, from long-delayed first pregnancy to voluntary low fertility to regular recreational exercise to deliberately abstemious diets, are downright peculiar. As more recent history, SES differences in several behaviors P&N cite – smoking, breastfeeding, age at first birth – have emerged more from changing behavioral patterns among high-SES individuals than low-SES individuals. For example, in the United States, little SES difference in smoking existed until rates began dropping among higher-SES individuals, creating a gap as rates among lower-SES individuals declined more slowly (Link & Phelan 2009).

The behaviors identified by P&N surely exacerbate challenges that poor people confront. Yet what we recognize as the social policy problem is not necessarily the most productive way to