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The effects of socioeconomic status on cognitive functioning and decision-making

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Abstract:	Low income groups are often criticised for making decisions that harm their long-term life outcomes. This article reviews research that attempts to understand these decision-making patterns as a product of adaptive responses to the situation of low socioeconomic status. It proposes that low income contexts present socioecological cues concerning resource scarcity, environmental instability, and low subjective social status, which trigger a regulatory shift toward the present and the tuning of cognitive skills and focus to address immediate needs. These shifts in psychological processes lead to decisions that are rational in the immediate context of socioeconomic threat, but may hinder the achievement of long-term goals.
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The effects of socioeconomic status on cognitive functioning and decision-making

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Low income groups are often criticised for making decisions that harm their long-term life outcomes. This article reviews research that attempts to understand these decision-making patterns as a product of adaptive responses to the situation of low socioeconomic status. It proposes that low income contexts present socioecological cues concerning resource scarcity, environmental instability, and low subjective social status, which trigger a regulatory shift toward the present and the tuning of cognitive skills and focus to address immediate needs. These shifts in psychological processes lead to decisions that are rational in the immediate context of socioeconomic threat, but may hinder the achievement of long-term goals.

The socioeconomic hierarchy is one of the most prominent ways in which power and status is distributed in contemporary societies. Yet it is only recently that researchers have attempted to understand the psychological impact of one's socioeconomic position (see (1–4)). This review focuses on how the experience of low socioeconomic status affects cognition and decision-making in ways that matter for life outcomes. It thus tackles a key question that has troubled the social sciences for decades (e.g., (5–7)): why do those on low incomes so often make decisions, from smoking cigarettes to taking out high-interest loans, which seem to harm their life outcomes?

Psychological shifts in response to socioecological cues

Attempts to answer this question have moved from assuming that decision-making patterns of low socioeconomic groups reflect a set of deficient psychological traits, to investigating them as the product of the experience of low socioeconomic status (SES) itself (see, e.g., (8–10)). While appealing at the policy level, this shift in orientation will only succeed as a scientific endeavour if it can document how the workings of specific psychological mechanisms are shaped by specific components of the experience of low SES, and why.

Two broad sets of decision-making mechanisms that have been the focus of research on the psychology of poverty are self-regulation and cognitive functioning. Observations of unhealthy eating, unwise spending, and poor academic performance among low income groups have been explained, in part, in terms of the disruption of key regulatory and cognitive processes by the mental pressures of poverty, as documented through present-based behaviour and poor performance on executive functioning tasks among those for whom resource scarcity is made salient (11–13) (though see (14)). Yet the experience of low SES involves more than resource scarcity, and its impact is not merely disruptive. Two other psychologically potent aspects of low socioeconomic positioning are instability (and consequent unpredictability) and low subjective social status. I propose that cues concerning scarcity, instability, and low status trigger adaptive shifts in regulatory and cognitive functioning that can help us make sense of seemingly suboptimal decision-making patterns at the bottom of the socioeconomic hierarchy ((15); for treatments also taking an adaptive focus, see (16–19)).

Low SES cues resource scarcity

Given the importance of food and shelter for survival and reproduction, it is no surprise that the mind has evolved to respond rapidly to cues that such resources, or the means to acquire them, are scarce (20,21). One suite of adaptive responses to resource scarcity involves taking extra care with the resources one has, and prioritising mental efforts toward behaviours that can meet the immediate shortfall. Energy, both mental and physical, is limited for any organism, so investing it in meeting an urgent shortfall comes at the cost of investing it in meeting longer term goals, yet this can still be the best way of enhancing fitness in a challenging environment (22,23). To the extent that not having enough money to meet one's needs triggers this basic sense of resource scarcity, it should cause regulatory and cognitive priorities to shift toward the most immediate financial concerns, at the cost of long-term economic outcomes.

This logic can help us make sense of the finding that the lower one's SES, the more likely one is to exhibit signs of apparent failures in self-regulation, such as impulsivity, future discounting, and poor planfulness (24)(1), and that reminders of economic scarcity lead to present-biased financial decisions among those who grew up in families experiencing financial strain (25) (though see (26)). On this account, it is not that early life or adult

exposure to adversity diminishes self-regulatory capacity (8,27), but that it shifts regulatory priorities toward meeting short-term goals (see (28–31)).

An adaptive approach can also help recast the literature on the link between SES and cognition, which has focused on the ways in which cognitive functioning is damaged by exposure to deprivation in childhood ((32–39) or financial strain in adulthood (40,41), including where the latter is experimentally made salient (11,12,42,43) (though see also (14,44,45)). Pivoting away from this focus on impairment, research informed by evolutionary and ecological considerations is beginning to chart how childhood adversity may lead to specialisation in cognitive development, enhancing cognitive skills most useful for survival in challenging environments, such as those that enable the navigation of social conflict (46–49). Experimental studies are also showing how financial scarcity shapes cognition in subtle ways, directing the mind's attention toward money-related concepts (50), inoculating people against framing effects that can distort perceptions of value (51), and even improving performance on some cognitive tasks (52).

Low SES cues environmental instability

Effectively navigating one's ecological context relies not only on having basic needs met, but also on being able to predict how and when environmental conditions may change (53). Indeed, consistency and predictability are recognised as key to successful psychological development in childhood and self-regulation in adulthood (54–56). Yet low income environments often feature forms of instability affecting everything from housing and family structure to income and employment (57–60). If one is constantly exposed to cues that one cannot predict what one's income will be in a month's time, or what one's living situation will be in a year, then it makes sense to focus energy on meeting needs in the present, rather than waste it on an uncertain future (see also (23)).

In the economics literature showing the negative impact of personal financial instability over and above absolute income (e.g., (61)) instability was shown to increase levels of obesity (62), consistent with its proposed effect on self-regulation. Indeed, recent attempts to understand the regulatory shift toward the present observed in low income groups highlight the psychological potency of environmental instability and consequent uncertainty, whether experienced in childhood (62) or adulthood (63).

Similar findings are emerging concerning the impact of environmental instability on cognition. Here, research is documenting how unpredictability as experienced in childhood, once it is made salient again in adulthood, down-regulates the performance of some executive functions, while up-regulating the performance of others (64,65) (see also (66)). The extent to which experiences of low SES involve the salience of ecological cues of environmental instability is thus a key component in understanding how it shapes psychology and decision-making.

Low SES cues low subjective social status

Of course, humans do not navigate challenging environmental conditions alone: they do so in the presence of others with whom they can cooperate or compete, and among whom status and hierarchies are key (67–69). The context of low SES is thus a *socio*ecological one, in which decision-making should be shaped by consideration not only of absolute resources, but of relative resources in comparison to others (70–72). It is thus no surprise that humans early on come to detect where they stand on the socioeconomic hierarchy (73), that measures of subjective SES explain important aspects of socioeconomic differences in well-being (74), and that perceived social rank features prominently in theories of the psychology of social class (2,75).

One of the many psychological effects of perceptions of low hierarchy position is a shift from focusing on one's own goals to the goals of high power others (76,77)—one that makes sense to the extent that the latter act as gatekeepers to meeting one's needs, but will be reflected in apparently poor self-regulation. Furthermore, the low sense of control that comes with low subjective social status diminishes one's confidence that the future will turn out as planned (78), thus reducing the perceived payoff of forgoing immediate rewards. In line with this, there is evidence that experimentally induced perceptions of being low in a hierarchy, including in financial terms, increases future discounting (79,80) (though see (81)). One way of addressing a status threat is to seek ways of rapidly regaining status in the immediate social context, whether through risky behaviours that signal commitment, or consumption of status goods (82–84), both aspects of decision-making in low income groups that are often cast as self-defeating (7,85,86) yet may be rational regulatory responses to the socioecology of low SES.

Moving from self-regulation to cognition, experiments have shown that feeling low in power can disrupt performance in executive functioning tasks (87), a pattern that is replicated in the case of low perceived socioeconomic standing (88), echoing findings on social class-based stereotype threat (89,90). An exciting area for future research would investigate whether some cognitive functions are enhanced in response to low subjective social status, or whether performance on cognitive tasks might be improved where those tasks are made relevant to ways of addressing status threats (see (15)).

Conclusion & Future Directions

It is not as simple as debating whether poverty is driven by poor self-regulation and cognition, or whether, on the other hand, such core decision-making processes are impaired by the experience of poverty. Rather, this article has argued for a focus on the motivational shifts and specialist skills activated by the socioecological cues most pronounced in low SES contexts, in the context of limited mental resources (see also (1)). To the extent that self-regulation and executive functioning evolved to help us get away from needs of the immediate context (91), they should be modulated to allow us to direct attention and energy back to the immediate where the situation demands. Cues concerning scarcity or instability in resource supply and threats to personal status are important socioecological indicators that should trigger just such a psychological shift. The reorientation of the study of the psychology of poverty and social class toward an awareness of the rationality and adaptiveness of decisions made in low income contexts not only does greater justice to the behavioural choices of those at the bottom of the socioeconomic hierarchy; it can also reveal the role of underlying mechanisms in terms of ultimate explanations, and point us toward interventions that are multi-levelled and sustainable (10,17,19). One avenue for exploring interventions to align decision-making in low SES contexts with long-term goals is to test for moderators that may buffer the link between SES and decision-making, such as social or community support (e.g., (92)).

There is much further research to be done to complete this picture, and likely more socioecological cues and psychological processes to consider. In addition to scarcity, instability and low status, low SES contexts often involve a range of psychologically salient experiences, such as stress (see (8,93)), social exclusion (94), high mortality risk (95) (see also (4)), and even sleep deprivation (41). The influence of each aspect of the socioecology of low SES will likely vary by psychological mechanism, individual life stage, and wider economic and political conditions. Life history theory leads us to expect that cues of scarcity and instability have the greatest impact on regulatory strategies when experienced at birth and early childhood ((23); but see (96) for a critique), while developmental psychology research highlights the importance of status concerns in adolescence and early adulthood (97), and recent neuroscience points to the cognitive impact of poverty at multiple life stages (33,98–100). The importance of scarcity likely decreases as a country's level of economic development increases (101), though there may be important cross-nation differences in this relationship depending on the strength of social protections for those at the bottom of society. The salience of instability among low income populations likely diminishes when such social protections take the form of guaranteed income, housing or healthcare, though this may be balanced by a trend toward casualization and resultant instability in low-paid work (102). Finally, the salience of low subjective social status likely increases with nation or area level inequality, given evidence that the latter increases the tendency for people to compare themselves with others (103).

Socioecological cues, in turn, likely shape the workings of a range of psychological processes beyond self-regulation and cognition, including self-appraisals (10), emotion (104), personality (105), and risk propensity (see (62,93)), in a way that may matter for important life decisions. These influences are unlikely to happen in parallel, and an understanding of potential additive and interactive effects will be central to developing a full explanatory framework. One possibility that might unify findings on the link between SES and a range of behaviours is that the socioecology of low SES shifts the mind to focus on the proximal on all four dimensions of psychological distance (see (106)): not just the 'now' (as opposed to later), but also the 'here' (as opposed to far away), the actual (as opposed to the hypothetical), and those socially close (as opposed to those socially distant) (10,70). Testing this possibility in the social dimension might even help resolve an apparent paradox in the link between SES and prosociality, in which low social class is linked to greater compassion (107) and altruism (108) at the same time as being associated with low social trust (e.g., (109)) and increased aggressivity (110). A model of psychological shifts in response to socioecological cues would predict that the experience of low SES might trigger a kind of parochial prosociality, orienting one positively toward those from whom one is likely to get help (e.g., family, friends and community members), at the cost of those with whom one has no existing social bonds (e.g., outgroup members and representatives of large institutions). Evidence

on the link between SES and breadth of social trust (111), in addition to the association between nation-level economic development and general trust (112), are consistent with this possibility (see also (10,62,92)).

Psychology may have come late to the study of the antecedents and consequences of socioeconomic conditions, but if it takes advantage of its position at the interface of the social and natural sciences, it might make yet sense of some of its most puzzling dynamics.

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Readings of special (*) and outstanding (**) interest:

*Piff PK, Kraus MW, Keltner D. Chapter Two - Unpacking the Inequality Paradox: The Psychological Roots of Inequality and Social Class. In: Olson JM, editor. Advances in Experimental Social Psychology. Academic Press; 2018. p. 53–124.

This is a comprehensive overview of research on the psychology of social class conducted from multiple perspectives. It weaves together key findings to argue for a framework in which economic inequality is maintained by the way in which socioeconomic status shapes and is shaped by behaviours of those at all levels of the socioeconomic hierarchy.

** Sheehy-Skeffington J, Rea J. How poverty shapes people's decision-making processes. York, UK: Joseph Rowntree Foundation; 2017.

This report summarises a set of fifteen systematic reviews of the relationship between poverty and key psychological processes underpinning decision-making, including self-regulation, cognition, appraisals, and social behaviour. It proposes considering behaviour in the context of poverty as rationally responsive to constraints and oriented toward proximal over distal goals.

* Sheehy-Skeffington J. Inequality from the bottom up: Toward a 'psychological shift' model of decision-making under socioeconomic threat. In: Social Psychology of Inequality. New York, NY, US: Springer; 2019.

This chapter introduces the psychology of low socioeconomic status as a case of psychological shifts in response to socioecological cues. It presents a model outlining how scarcity, instability, and low status shape sense of control, cognition and self-regulation, with downstream effects on decision-making.

* Ellis BJ, Bianchi J, Griskevicius V, Frankenhuis WE. Beyond Risk and Protective Factors: An Adaptation-Based Approach to Resilience. Perspect Psychol Sci. 2017 Jul 1;12(4):561–87.

This paper proposes an approach to the study of the impact of childhood adversity on cognitive functioning that focuses on how the mind is shaped, rather than necessarily damaged, by exposure to adversity. Applying insights from life history theory, it proposes that exposure to harshness and/or unpredictability in early life sets in train a specialisation in psychological skills designed to thrive in such environments, which are then triggered by later exposure to cues of such early childhood conditions.

* Pepper GV, Nettle D. The behavioural constellation of deprivation: Causes and consequences. Behav Brain Sci. 2017 ed;40.

This paper also applies life history principles to the question of the psychology of low socioeconomic status, this time focusing on the impact of exposure to deprived environments with high extrinsic mortality risk on the development of present-focused versus future-focused regulatory strategies.

** Brienza Justin P., Grossmann Igor. Social class and wise reasoning about interpersonal conflicts across regions, persons and situations. Proc R Soc B Biol Sci. 2017 Dec 20;284(1869):20171870

This paper presents an evolutionary ecological view of cognitive skills of low income groups, proposing that experiences of low socioeconomic status lead to the enhanced development of 'wise reasoning', described as recognising the limits of knowledge, considering a world in flux, and integrating different perspectives. Data from two studies showed an association between lower social class and higher levels of wise reasoning across multiple levels of analysis—situations, individuals, and regions.

** Amir D, Jordan MR, Rand DG. An uncertainty management perspective on long-run impacts of adversity: The influence of childhood socioeconomic status on risk, time, and social preferences. J Exp Soc Psychol. 2018 Nov 1;79:217–26.

This paper presents another evolutionarily informed framework for understanding the adaptive nature of decision-making processes of those exposed to adversity in childhood. It proposes that attempts to manage the downside risks of uncertainty lead those with low SES backgrounds to be more present-biased, risk averse, and prosocial. Data from four large online samples supported these predictions, and found no interaction between childhood SES and an experimental prime of mortality salience, challenging some life history based approaches.

* Young ES, Griskevicius V, Simpson JA, Waters TEA, Mittal C. Can an unpredictable childhood environment enhance working memory? Testing the sensitized-specialization hypothesis. J Pers Soc Psychol. 2018;114(6):891–908.

This paper presents data in support of a life history theory framework through which early life environments shape the development of some cognitive skills (specifically, executive functions) over others. Participants who grew up in unpredictable environments, when presented with an uncertainty prime, performed worse than those who grew up in predictable environments on working memory retrieval and capacity, but better on working memory updating—the latter a skill claimed to be adaptive for navigating unpredictable contexts.

Conflict of Interest

Declaration of interest: none