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APPLICATIONS FROM COGNITIVE AND SOCIAL PSYCHOLOGY

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ABSTRACT

We outline a research agenda for behavioral development economics that seeks to understand the role of psychological channels in: (i) impeding individuals' ability to climb out of poverty, and (ii) shaping the organization of production, functioning of markets, and role of informal institutions in developing countries. We apply a missing markets lens to rationalize why tools, products and services that help individuals overcome their biases will be under-supplied by the market and why behavioral biases can have large impacts in steady state, even among highly experienced agents. We argue that these biases are especially likely to matter for the field of development because core features of poverty---proximity to subsistence, high volatility, market failures, weak formal institutions, and reliance on social ties---amplify the impact of psychological constraints. We organize our review around a core set of psychological constructs: self-control, cognitive constraints, self-beliefs, mental health, and social norms. For each construct, we highlight places where there is only a proof of concept versus evidence of meaningful impacts, and the resultant implications for future research. We also highlight where social capital can be deployed to mitigate the impacts of missing markets. The field research to date has only begun to scratch the surface in document how psychological mechanisms affect behavior and decision-making, and substantial scope remains for future work to determine whether these constraints play a first-order role in shaping poverty.

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1. INTRODUCTION

Much of development economics has focused on constraints in individuals' external environments, such as missing markets and weak institutions. The literature has theorized and empirically explored how these external constraints may inhibit individuals and nations from climbing out of poverty. These external constraints play an important role in the development literature because they offer channels through which the condition of under-development itself poses a barrier to upward mobility and growth.

In this chapter, we argue that *internal* constraints—stemming from innate features of human psychology—similarly have the potential to impede individuals' climb out of poverty. These features, often referred to as “behavioral biases” in the behavioral economics literature, are common to all people. However, they are likely to have increased relevance in developing country environments. Consequently, psychological constraints constitute an additional set of channels through which poverty may reinforce itself.

In addition, psychological forces enable many prominent informal and social institutions in developing countries. These range, for example, from the widespread use of ROSCAs to provide financial services, to the implementation of (second-best) informal insurance through social norms, to market power generated through informal cooperation among atomistic agents. These institutions—many of which arise to fill the holes left by missing markets—alter the nature of economic exchange. Consequently, ideas from social psychology have important bearing for understanding how markets function in poor countries.

We use this chapter to lay out a research agenda for the field of behavioral development economics. The goal of this agenda is to understand whether psychological channels: (i) play a meaningful role in the perpetuation of poverty at the individual level, taking the market and institutional environment as given; and (ii) shape the organization of production, functioning of markets, and nature of informal institutions in developing countries.

We begin by considering psychological constraints through the lens of missing markets in Section 2. To solve their behavioral biases, people need “behavioral aids”, which we define as tools, products, or services that mitigate the impacts of psychological constraints. Examples of behavioral aids are a commitment device to enable self-control or a decision tool to compensate for limited cognition. However, markets will often not be able to supply behavioral aids due to impediments like naivete on the part of consumers, the propensity of firms to profit from exploiting rather than solving behavioral biases, or contracting problems. This means that missing markets for behavioral aids are especially likely to arise, in both rich and poor countries. This can help us understand why psychological constraints can distort people's behavior in equilibrium at even very high stakes. This also means policy intervention is justified not due to a normative paternalism, but because it is needed to fix missing markets—providing a more direct impetus for intervention.

The missing markets lens also offers guidance on why behavioral biases are likely to matter more in low income settings. Building on Breza and Kaur (2025), we highlight five key features that are endemic to the condition of poverty: proximity to subsistence, high volatility, market failures, weak institutions, and reliance on social ties. We argue that these five features can amplify the consequences of psychological constraints in several ways. First, because of weak institutions, people in developing countries have to navigate much more of their life on their own, including for very consequential decisions. For example, they have to figure out where to obtain safe drinking water, which doctor to trust, whether it is worth sending their kids to school, and if the seeds that will determine their annual crop income are counterfeit. In contrast, in rich countries, people can go about their lives without ever having to even think about such decisions. Even if rich and poor people have the same cognitive bandwidth, having to spend so much of it navigating the basics of life means the poor will have fewer cognitive resources left over for things like on-the-job productivity. Second, because of the proximity to subsistence, higher volatility, and missing credit and insurance markets, the welfare consequences of making “mistakes” are much higher. For example, if a person fails to save, a shock could drive them below subsistence levels; similarly, they cannot simply use credit to bail themselves out.¹ Third, behavioral biases can alter the production side of the economy. For example, heterogeneity in psychological constraints—which in turn leads to differences in savings and investment across micro-enterprises—could be a source of factor misallocation across firms.

In Sections 3–8, we review work on each of the following sets of psychological constructs: self-control, cognitive constraints, self-beliefs, mental health, and social norms and dynamics. For each construct, we discuss how the five key features of poverty may increase the relevance and impacts of that construct for behavior. We highlight places where there is only a proof of concept versus evidence of meaningful impacts, and the resultant implications for future research. Our review builds on and complements the excellent earlier article on behavioral development economics by Kremer et al. (2019).²

The literature on behavioral development has also advanced the field of behavioral economics by providing some of the first field tests of important concepts—often due to the methodological advantages afforded by conducting field experiments in high stakes settings. However, in this review, we focus our attention on papers that are inherently about studying underdevelopment. Consequently, some excellent papers, which are primarily tests of behavioral economics ideas and which just happen to be set in a developing country, are not covered in detail.

¹In the review, we discuss counter-examples to this as well. For example, the expansion of credit markets could lead to too much borrowing, making people worse off.

²While we organize our review by psychological construct, Kremer et al. (2019) organize their review by application (e.g. savings, health, etc.), and do an especially good job highlighting how ideas from behavioral economics can resolve knowledge gaps in each of these application areas. Given the pace of the field, there has been an explosion of new work in the last six years—for example on soft commitments in self-control, cognitive constraints, self-beliefs, and social norms—which we update in this review.

We conclude that the literature on psychology and development has produced a rich and dynamic body of work illustrating that psychological forces are meaningful for the lives of the poor. However, this literature has only begun to scratch the surface in exploring the impacts of various mechanisms for decision-making and behaviors. While much of the literature remains at the proof of concept phase, there are now a range of studies that show meaningful impacts of addressing psychological constraints on outcomes like education, investment, and earnings. There remains large scope for future research to test whether psychological constraints are first order for the study of poverty.

2. PSYCHOLOGICAL CONSTRAINTS: A MISSING MARKETS LENS

The concept of missing markets plays an important role in development economics. This framework is also useful for understanding what is special about psychological constraints.

Behavioral economics has built a robust body of evidence documenting that psychological forces impact how people think, choose, and act. These include features such as self control, limited attention, cognitive processing costs, aspirations, mental health, and social norms. To the extent that these features lead to (potentially undesirable) departures from the neoclassical benchmark, why don't markets or institutions step in to offer "behavioral aids"? We define a behavioral aid as a tool, product, or service that mitigates the impact of a psychological constraint. Examples of behavioral aids include commitment (for self-control), reminders (for limited attention), a cognitive decision aid (for cognitive processing costs), or psychotherapy (for depression).

We posit that markets are unlikely to solve behavioral biases because it is challenging for markets to provide behavioral aids—in both rich and poor countries. This is due to four core impediments. (i) First, almost all the psychological features we discuss embed some element of naivete: the individual themselves may not realize that their behavior is being affected by the psychological constraint. For example, a person may not be aware they are making a planning error or suffering from depression, making them unwilling to seek a behavioral aid. (ii) Second, and relatedly, firms do not necessarily have the incentive to offer behavioral aids: they may profit more from exploiting psychological constraints rather than solving them (O'Donoghue and Rabin, 2000; DellaVigna and Malmendier, 2004; Heidhues and Köszegi, 2010). (iii) Third, some behavioral aids, like hard commitment devices or interventions that increase aspirations to unachievable levels, can lower welfare unless they are tailored to the individual's specific parameters (e.g., Andreoni et al., 2023; Bai et al., 2021; McKenzie et al., 2022). Unobserved heterogeneity can make it difficult to provide such tailoring. (iv) Fourth, many of the traditional reasons why missing markets arise in neoclassical applications—like contracting frictions, moral hazard, or adverse selection—also apply for behavioral aids. For example, cognitive constraints suggest the importance of a market for expertise, which is susceptible to these problems. The presence of this traditional set of reasons, in addition to three other impediments which

are unique to psychological constraints, create a challenging environment for the provision of behavioral aids. Consequently, missing markets for behavioral aids are especially likely to arise.

The missing markets lens has two notable implications. First, a common view in economics is that when the stakes are sufficiently high, people have the right incentives to solve their problems, and so behavioral biases are unlikely to cause large distortions in steady state. The missing markets lens provides a rhetorical counterpoint to this argument. People need behavioral aids to solve their biases, and the market may not have the ability or the inclination to provide these aids. This leaves governments or informal institutions, which still may push up against the first, third, and fourth impediments detailed above. For example, our review documents instances where individuals do not realize they are making cognitive errors for high stakes behaviors—leading these errors to persist in equilibrium despite decades of experience (e.g., Hanna et al., 2014; Augenblick et al., 2023).

Second, more normatively, behavioral levers are often couched as a way to more effectively achieve traditional policy objectives—for example, helping people save, exercise, or study. This raises natural questions of paternalism (e.g. Camerer et al., 2003; O’Donoghue and Rabin, 2003; Laibson, 2018). In contrast, a key view in economics is that when market failures arise, outside policy intervention is not only justified, but actually desirable. The missing markets lens therefore offers a much more direct impetus for policies that seek to help people navigate their psychological constraints. Under this lens, the goal of policy intervention is not to encourage a downstream objective like savings, but rather to correct a missing market. Despite this more fundamental rationale, issues around welfare remain potentially thorny—in particular due to the presence of naivete (see, e.g., Bernheim, 2009).

3. SELF-CONTROL

3.1. Conceptualizations of self-control. Psychologists view self-control as the act of resisting temptation—where temptations are actions or experiences that offer gratification in the present, but which go against one’s long-run interests or goals. Conceptualizations of self-control in psychology often call on a dual-self view of decision-making. For example, one conceptualization is that of a “hot” emotion-driven system that is automatic and impulsive, and a “cool” cognitive system that values long-term goals (e.g. Metcalfe and Mischel, 1999; Loewenstein and Carbone, 2024). Under this view, the rational long-run self has some ability to think dispassionately about its long-run interest and intervene to prevent the short-run self from giving into temptation that would harm that interest.³ Some work in behavioral economics has sought to model self-control through a dual self process, such as Thaler and Shefrin (1981) and Fudenberg and Levine (2006).

³Potentially consistent with a dual-self view, there is work in neuroscience indicating that different regions of the brain respond to immediate rewards vs. delayed rewards McClure et al. (2004, 2007), and that the prefrontal cortex exerts cognitive control over impulsive valuation processes Hare et al. (2009).

In psychology, attention plays a key role in the management of self-control (e.g. Chun et al., 2011). In his classic book, *The Marshmallow Test*, Walter Mischel posits that the exertion of self-control requires the active direction of and management of attention (Mischel, 2015). Similarly, Kahneman (2011) reviews literature arguing for attention as the scarce resource through which individuals prevent themselves from giving in to temptation.

One salient feature of the discrepancy between the immediate self and long-run self is the difference in the time horizon over which they operate. By its nature, the gain from temptation is typically immediate. Spurred by this, by far the most prominent conceptualization of self-control in economics has been through the lens of time discounting, and specifically through hyperbolic (rather than exponential) time preferences Strotz (1955); Loewenstein and Prelec (1992). Pioneering work by Laibson (1997) and O’Donoghue and Rabin (1999) formalizes self-control by imposing the assumption that individuals discount the future quasi-hyperbolically, where the discount function is characterized by two parameters: β and δ . The standard discount factor δ is applied to future periods, while any choice between the present and the future is further discounted by β . The standard exponential discounter has $\beta = 1$, while a present-biased individual has $0 < \beta < 1$. Because of the extra utility weight these models place on the current moment, in economics, self-control has come to be used interchangeably with the terms present-bias or present-focus. Modeling self-control via time discounting is parsimonious, tractable, and makes it possible to fold self-control into many standard economic analyses (e.g. Harris and Laibson, 2001; Lee and Maxted, 2023). However, in Section 3.7, we discuss the potential benefits of complementing this approach with the other conceptualizations discussed in psychology.

In an alternative formulation, Banerjee and Mullainathan (2010) postulate that different types of consumption goods (e.g., temptations versus durables) may similarly generate divergent preferences between current and future selves. Gabaix and Laibson (2017) model an agent who faces cognitive constraints and has an imperfect ability to forecast the future, with noise increasing with the time horizon; they show that this can generate behavior that resembles hyperbolic discounting without needing to invoke time preferences.

3.2. Self-control and missing markets. The behavioral economics literature has discussed several reasons why markets will lack either the ability or inclination to solve individuals’ self control problems. All of the barriers to the provision of behavioral aids discussed in Section 2 above exist for the provision of commitment devices. Moreover, the concept of naivete is an important one in this literature (O’Donoghue and Rabin, 1999), leading agents who would benefit from commitment to fail to seek it. More perniciously, partial sophistication—where individuals’ actual β is lower than their self-perceived $\hat{\beta}$ —can lead individuals to select costly commitment goals that they then do not meet. Hence, the availability of commitment can actually makes agents worse off, even in the absence of any uncertainty. One could, in principle, attempt to design mechanisms to target commitment contracts to individuals’ specific needs

(Andreoni et al., 2023). However, this is a complex task and may often prove difficult given the measurement challenges discussed above. Moreover, in the presence of (partial) naivete, firms will derive profits from exploiting consumers' self-control problems rather than solving them (DellaVigna and Malmendier, 2004; Heidhues and Köszegi, 2010).

The conditions of development pose additional hurdles to the success of offering commitment technologies. Commitment devices require a sound contracting environment and trust—for example, that a bank or mobile money provider will pay back money that is deposited and locked away for some time. More starkly, the pension schemes and 401(k) arrangements in rich countries require funds to be locked in for decades. Such arrangements are harder to pull off in the weaker contracting environments of poor countries. For example, Casaburi and Macchiavello (2019) argue that in their setting of Kenya, there are very few agents in the economy with the credibility to offer commitment over even a one-month horizon. A second distinct, but equally important, issue is that high levels of volatility render hard commitment devices potentially costly to welfare and undesirable. For example, even though a present biased individual may desire to lock away money in order to save toward a lumpy asset, the very real possibility of a shock that creates a financial emergency may make it unwise to do so.⁴

The features of development also amplify the negative consequences of failing to solve one's self control problem. This has implications across various economic domains from savings and borrowing behavior, to health care demand, to labor productivity and earnings. For example, irregular income flows coupled with large and frequent expenditure shocks means that the need for precautionary savings is higher in poor countries—raising the stakes for a lapse in self-control. Because most casual workers and micro-entrepreneurs receive their income daily, self-control problems in consumption mean that it may be quite difficult to save up lump sums of income. Similarly, Kaur et al. (2010) discuss a variety of ways in which self-control may have larger scope to affect labor supply and earnings among the poor. In poor countries, the majority of individuals have an extraordinarily high level of discretion to flexibly choose their labor supply daily—from casual daily laborers to farmers to micro-entrepreneurs. This means that self-control problems are particularly likely to distort labor supply in these settings. Moreover, self-control problems may also especially distort effort provision in agriculture, given the extremely long lags between when the costs of effort are borne (e.g. at planting) and when returns are realized (months later at harvest).

At the same time, there may be ways in which poverty makes it easier to solve self-control problems. The improved liquidity that arises from the development of credit markets could exacerbate temptation spending (Laibson, 1997), making self-control problems harder as economies develop. As another example, the higher levels of social capital in poor settings may more readily enable informal institutions that leverage social pressure to provide commitment, such

⁴(O'Donoghue et al., 2006) consider optimal incentive design for present-biased agents including contexts where flexibility is valued.

as ROSCAs (Besley and Coate, 1995; Breza and Chandrasekhar, 2019). Despite the myriad ways in which self-control problems potentially interact with the condition of poverty—for good or bad—there is limited work explicitly exploring the ideas discussed above.

3.3. Testing present focus. Models of present focus generate two important predictions for behavior. First, they predict time inconsistency: individuals will appear impatient when making choices involving the present moment, but more patient for choices involving future horizons. This prediction has typically been tested using “money earlier or later” (MEL) tests, where subjects are given a series of incentivized trade-offs at different dates and prices to look for preference reversals (e.g., Andreoni and Sprenger, 2012). However, this approach poses serious conceptual and interpretational challenges (for excellent reviews, see Chabris et al. (2008), Ericson et al. (2015), and Cohen et al. (2020)). A core conceptual challenge is that because money is fungible over time and not all consumed immediately upon receipt, the mapping to time discounting (which is over utility over time) is unclear. Some work in the lab in the U.S. has attempted to overcome this issue through trading off effort tasks (Augenblick et al., 2015).⁵ However, other challenges—such as trust, liquidity constraints, and uncertainty—are likely to be especially pronounced in developing country contexts (Cassidy, 2018; Dean and Sautmann, 2021; Mahajan et al., 2025). In addition, in practice MEL measures often tend to be only weakly or modestly correlated with field behaviors associated with self-control, such as the demand for commitment, which we discuss next.

The second prediction of models of present focus is that individuals will seek to prevent themselves from giving into immediate gratification in the future via commitment devices. This requires individuals to be sophisticated about their self control problems. Sophisticated agents understand that their future selves will also behave in an overly myopic way and take this into account in their optimization problem. For example, in the absence of a commitment technology, sophisticated agents may decide to save even less than a naive agent—since they recognize that any savings accumulated today for a longer-term goal will be “squandered” for immediate gratification tomorrow. There is a robust body of field evidence testing for commitment demand, which we review below.

3.4. Evidence: Hard commitment. The bulk of field evidence on self control has involved testing for the demand for commitment, and measuring whether the provision of commitment devices changes behaviors. In order to construct sharp tests, researchers typically offer individuals dominated contracts: contracts that would not be preferred by a time consistent agent, but might be valued by a time inconsistent sophisticate who wants to bind her hands in the future. These contracts usually feature some sort of high-powered incentive to deter undesirable behavior by one’s future self.

⁵Bessone et al. (2021)’s experimental evidence on sleep in India, which we discuss in Section 5.2, is one of the few field studies that uses this methodology to elicit time preferences.

Ashraf et al. (2006) is one of the first papers to test for the demand for a formal commitment device in a field setting. They conduct a field experiment in partnership with a bank in the Philippines offering a new commitment savings account to existing customers. Customers can make deposits into the commitment account, but withdrawals are not possible until a specific date arrives (for those who choose a date-based goal) or a specific savings level is reached (for those who choose an amount-based goal). Note that this restriction on withdrawals means that the commitment account is dominated by a typical deposit account. Among the treatment group, 28.4% opt to open a commitment savings account, though only 50% of accounts receive any deposits over the 12-month study period. Moreover, clients in the commitment arm experience an 81% ITT effect on total savings relative to the pre-intervention mean of approximately \$10. As is typical in such studies, time preferences elicited through MEL trade-offs have some, but not overly strong, predictive power for commitment field behaviors (in this case, they predict take-up among women, but not among men).

Kaur et al. (2015) consider self-control problems in labor effort among full-time data entry workers who earn piece rates for output. They randomly assign the day of each worker's weekly payday, enabling them to examine cyclicalities in worker effort over the pay cycle. At the start of the pay week—when workers are far from their payday—output is low, driven in large part by absenteeism. Effort then rises steadily as the payday approaches, with an 8% increase in output from the beginning to the end of the pay week. This test has the benefit that it holds regardless of whether workers are naive or sophisticated, and reveals substantial potential distortions in effort. The authors note that this behavior matches that documented among piece rate workers under the “putting out” system in the early stages of the Industrial Revolution (Clark, 1994). This suggests the potential ubiquity of irregular labor supply when workers have large discretion over labor supply levels, as is typically the case in developing countries.

To construct a sharper test, Kaur et al. (2015) couple the above with offering workers commitment contracts, randomized daily at the individual level over a 9 month period. Workers who take up the contracts select an output threshold for the day; if they fail meet the threshold, they lose half their earnings for the day. Consequently, these contracts are dominated: workers can never earn more by selecting a commitment contract, but risk earning substantially less. Workers select the dominated contracts 36% of the time. In addition, the authors find that these two sources of variation are correlated in their sample: workers with above mean payday effects are 49% more likely to select the dominated contracts and experience a 9% increase in their output from being offered them—indicating stable differences in self-control problems across workers. In contrast, the correlation with MEL measures of time inconsistency is present but less strong—consistent with the challenges in using such measures.

In general, take-up of commitment devices tends to be far from universal across contexts (Laibson, 2015). The design in Kaur et al. (2015) touches on two potential impediments to take-up. First, the authors find large amounts of sorting with experience: workers with bigger

self-control problems (i.e. large payday effects) drastically increase take-up over time—so that treatment effects increase with experience. This suggests the importance of learning. Note that this also indicates that workers who come to recognize the benefits of the commitment contracts are unable to find other ways to replicate commitment outside of the experimentally provided contracts. This is consistent with our argument that it can be quite difficult for individuals to obtain effective commitment devices on their own. Second, the authors document that workers who face greater uncertainty in their output, due to more uncertain commute times or being randomly assigned computer stations with larger network fluctuations, are less willing to take up commitment in advance of the workday. This points to the importance of uncertainty in mediating commitment demand.

Schilbach (2019) considers self-control problems in the context of alarming rates of alcohol consumption among low-wage workers in urban India. In a sample of rickshaw pullers and other male workers in Chennai, 76.1% of rickshaw pullers surveyed in his sample in Chennai had a drink the previous day, and 50% had positive breathalyzer test results during the surveys. Moreover, conditional on drinking, number of drinks ranged from 3.8 to 6.5 per day. Low-income laborers in this setting consequently spend a striking 9-43% of daily income on alcohol. Schilbach designs an experiment to test whether financial incentives can reduce alcohol consumption and whether workers have a demand for commitment to help them do so. In the experiment, workers are randomized into three groups: 1) a group given a fixed stream of payments; 2) a group given a stream of payments conditional on a negative breathalyzer test; or 3) the choice between the fixed or conditional payments. Workers who are willing to opt into conditional payments that are lower than the unconditional payments on offer are inferred to demand commitment.

Schilbach finds between a third to one half of individuals select a weakly dominated set of incentive payments over unconditional payments. This is one of the rare instances in the literature where individuals give up money explicitly to choose commitment. The incentives work, to an extent: while they reduce daytime drinking, there is no impact on overall drinking, suggesting substantial intertemporal substitution. Despite the reduction in drinking during the work day and the physical demands of rickshaw pulling, there are no detectable impacts on productivity, labor supply or earnings. However, workers are more likely to save a portion of their earnings in a savings account offered by the project. Schilbach argues that the increased savings are not fully driven by changes in income or alcohol expenditures, but rather by reduced self-control problems that otherwise make it harder to save.⁶

A set of experiments offering commitment devices reveal the potential for such products to lower welfare—driven by forecasting errors which likely reflect some combination of partial

⁶This study offers one of the few examples in the literature that people are explicitly willing to pay money for commitment (rather than implicitly demanding it by choosing a dominated contract). As Laibson (2015) and Laibson (2018) highlight, most commitment is implicit rather than explicit.

sophistication and more general over-optimism.⁷ Giné et al. (2010) offer a commitment product to help smokers quit. Those who sign up make savings deposits over six months; their money is returned to them only if they pass a urine test for nicotine and is given to charity otherwise. 11% of smokers in the treatment group sign up, with an average savings contribution of 20% of their monthly income. Treated individuals are 3 percentage points more likely to pass a surprise urine test 6 months after the end of the intervention. However, despite these benefits for some, 66% of those who take up commitment accounts ultimately fail their nicotine test and forfeit their accumulated savings. Similarly, it is hard to know whether those who save in illiquid commitment accounts experience negative shocks that, if they had been known *ex ante* to their long-run selves, would have led them to decide not to take up those contracts.

Bai et al. (2021) further examine these ideas in an experiment with individuals who have, or are at high risk for, hypertension in India. In one treatment arm, participants are offered a fixed commitment contract in which they prepay for three future visits plus a lump-sum deposit that is refunded if they attend all visits. In another arm, participants can choose the size of this lump-sum deposit. In order to separate the commitment features from pure incentives, the authors cross-randomize a 50% subsidy. They find modest demand for unsubsidized commitment devices ($\approx 14\%$) and higher demand for the subsidized versions (26% – 39%), with individuals opting into a customized contract generally choosing lower levels of commitment. However, the treatments fail to translate into any healthcare visits for a majority of individuals who take up a commitment contract. The findings are consistent with a mass of partially naive agents choosing commitment contracts that are too weak to ultimately generate behavior change. Using a structural model, the authors conclude that in their setting, commitment likely decreased participant welfare.

However, it is unclear from these studies whether such negative welfare effects would persist in the presence of learning. For example, in Kaur et al. (2015), workers with low self-control problems—as proxied by small payday effects—do not experience output gains from dominated contracts. Despite this, such workers initially have high take-up rates of the dominated contract. However, this take-up decreases sharply with experience: workers learn that these contracts do not help them and stop choosing them, while those with high self-control problems increase take-up. In the context of the US, Allcott et al. (2022) find that while inexperienced payday loan borrowers hold over-optimistic beliefs about their future repayment behavior, experienced borrowers are quite accurate. These findings point to the importance of giving agents the chance to experiment and learn. They also suggest that equilibrium take-up of commitment

⁷Experimental evidence on gym attendance in the US by Carrera et al. (2022) shows that commitment contract take-up is influenced by noisy valuations and incorrect beliefs about one’s degree of time inconsistency. Estimates from a structural model imply that offering commitment contracts can actually lower consumer surplus and decrease social efficiency relative to simple subsidies. Moreover, Augenblick and Rabin (2019) find that in their sample of UC Berkeley Xlab subjects, individuals predict at most one quarter of their actual present bias.

devices in more naturalistic settings, where repetition enables learning, is probably more likely to be welfare enhancing.

3.5. Evidence: Soft commitment. The review paper of Bryan et al. (2010) explores the many different forms that commitment devices take and coin the idea of “hard” versus “soft” commitments. In contrast to the above examples, soft commitments typically rely on non-monetary commitment costs such as internal psychological costs or social pressure. These costs are thought to be lower in many cases and easier to reverse or break. However, as we discuss in Section 3.7 below, some soft commitment tools may be better understood through the lens of attention.

As an early example within development, Dupas and Robinson (2013) offer households a lockbox that they keep at home and into which they can make deposits labeled for health savings. In one treatment arm, the key to the lockbox is held by the program officer; in another arm, the participant holds onto the key and can therefore open the lockbox whenever they like. The authors find that individuals are more likely to use the softer commitment version—i.e., when the key is kept with the recipient—and this version consequently leads to larger treatment effects. However, the authors are careful to point out that the demand for commitment is likely driven by a mixture of self-control problems and a desire to avoid redistributive pressure, a topic we return to in Section 8.

The effectiveness of lockboxes has been replicated in at least two additional studies. Aggarwal et al. (2023) randomize the provision of labeled lockboxes or mobile money accounts to urban micro-entrepreneurs in Malawi. They find comparable effects of either type of labeled savings tool. However, in contrast with the mental accounting results of Wicker et al. (2025), they find no additional benefit of multiple lockboxes.

In addition, lockboxes play an important role in the post-harvest loan intervention described in Burke et al. (2019). Specifically, in a companion paper, (Mukherjee et al., 2024) report results from cross-randomizing provision of a lockbox with the post-harvest loan. All the benefits of the loan—which lead to substantively higher farm investment and household consumption—are concentrated among farmers who also receive the lockbox. This result is striking and quite consistent with self control problems. For present focused individuals, the provision of a large amount of credit post harvest can be squandered. Coupling the credit with a commitment tool can enable these households to deploy the credit toward productive use. Examining such interactions more directly with a focus on mechanisms is an interesting direction for research.

Karlan and Linden (2025) directly compare a strong commitment account, where funds are restricted to educational expenses only, to a weak commitment account leveraging mental accounting, where savings are simply labeled for educational expenses. Students in the weak commitment group accumulate greater savings relative to control, and when combined with parental outreach, spend more on school supplies and achieve higher test scores (0.14 standard deviations higher on language and math exams). In contrast, the authors find no detectable

effects of strong commitment. They argue that a “loose knot” or a weak commitment device may be more effective, especially for goals with a long time horizon or in settings where liquidity needs are unpredictable.

Derksen et al. (2025) run a similar experimental horse race between weak and strong commitments in the context of HIV testing in Malawi. They find that appointments bundled with reminders have double the treatment effect relative to a hard financial commitment device. Given the low rates of testing across all arms, most respondents in the hard commitment group lose their investments. Individuals who demand commitment *ex ante* experience the largest gains from the soft commitment device. The authors hypothesize that appointments are effective because they create social commitment, where failing to attend the appointment causes embarrassment or shame, and are bundled with reminders. Alternately, as Beshears et al. (2016) argue, plans themselves can change behavior.⁸

Together, this set of work suggests that, in practice, soft commitment tools can have comparable or more desirable effects than hard commitment ones—at least in one-shot interventions where learning dynamics are not possible—because they lead to higher use and because they avoid draconian consequences from failing to meet the commitment. Of course, in some circumstances, hard commitments are likely to work much better. For example, it is unclear whether 401(k)’s would be as effective in enabling retirement savings if withdrawals were possible without penalty.

The effectiveness of soft commitment technologies is not necessarily predicted by models of self-control that are rooted in time inconsistency alone. This raises the question of how one should interpret the mechanism behind soft commitments, and the implications for how they affect our conceptualization of self control (see Section 3.7 below).

3.6. Naturally occurring commitment devices. In each of the studies discussed above, researchers designed and introduced an external commitment device into participants’ environments. The resultant designs offer clean tests of theory, but by construction are often quite artificial.

In developing country contexts, there are many common behaviors that could plausibly reflect a demand for costly commitment. One prominent behavior is the demand for illiquidity. As a stark example, a common institution is daily savings deposit collectors, sometimes referred to as a money guard in South Asia or susu collector in Sub-Saharan Africa (e.g. Collins et al., 2009). These collectors collect a small cash deposit daily from participants’ doors, and return the accumulated savings net of a fee after a length of time (typically a month). This negative return on savings demonstrates that the poor are willing to pay to build up lump sums of money. Similarly, rotating savings and credit associations, or ROSCAs, are the most prevalent

⁸Beshears et al. (2016) propose several behavioral microfoundations including attention and memory as well as reference dependence (Kőszegi and Rabin, 2006; Kahneman and Tversky, 1979). See Section ?? for further discussion.

financial institution in the world. In the most basic version of a ROSCA, a group of individuals (typically women) meet weekly and contribute a fixed deposit amount to the group’s common pool; one member takes home the entire pool each week, rotating across members until each one has had a turn. More subtly, people often save in assets like gold or bricks in part because they are more costly to liquidate than cash (Duflo and Banerjee, 2011). Cows and large livestock represent another common indivisible store of value for households in LMICs, and these also can have a negative expected returns (Anagol et al., 2017). One interpretation of the prevalence of illiquid savings tools is that they make it possible to avoid small amounts of temptation spending that create a “leaky bucket”.⁹ Consequently, while exponential discounters typically need to be compensated for illiquidity, agents with self-control problems may be willing to pay for it.

In this vein, Casaburi and Macchiavello (2019) notice that many dairy farmers in Kenya sell their milk twice daily to the large local cooperative and only receive payments once per month. This is despite the existence of smaller milk traders who pay higher prices than the cooperative and pay on the spot. The authors devise a set of experimental elicitations to show that farmers prefer the illiquidity of the cooperative payments as a form of commitment. When asked whether they would prefer the existing monthly versus daily payments, 86% of farmers prefer the status quo even when daily contracts pay a 15% premium. To probe why sellers so strongly prefer monthly payments, the authors offer either the status quo monthly payment or a flexible payment plan at the same procurement price. Notably, in the flexible payment plan, sellers tell the coop each day whether they want that day’s procurement paid immediately (cash or mobile money) or direct-deposited at the end of the month (bank account). 91% of coop sellers again prefer the status quo monthly (inflexible) payment plan, which is dominated by the flexible plan.

This paper highlights the scope for missing markets for behavioral features to affect the production side of the economy. The authors note that in their setting, only the large cooperative has the reputational capital to credibly offer commitment; farmers would not trust the numerous smaller traders who operate in their villages to hold their money. This enables the cooperative to charge a premium (in the form of lower prices) for offering deferred savings. This indicates that, in their context, the combination of incompleteness in the savings market (due to a demand for commitment) *along with* incompleteness in the output market (due to contracting frictions) potentially distorts the milk prices received by dairy farmers.

⁹Consistent with this, both Brune et al. (2021) and Kansikas et al. (2023) also document substantial demand for deferred and lumpy payments. See also Morduch and Schneider (2017) for helpful qualitative accounts of the leaky bucket for savings among low income households in the U.S.

The approach in Casaburi and Macchiavello (2019) is a marked departure from the majority of existing work on self-control because it starts from existing behavior, and constructs a research design to uncover that the behavior is indeed symptomatic of self-control problems.¹⁰ In addition to offering direct evidence for the relevance of self-control in individuals' daily lives, this approach yields useful normative insights. For example, most people have daily spending needs as well as lumpy expenses. For individuals who face a self-control problem in consumption, it may be difficult to save small streams of daily payments for a lumpy expense; at the same time, it may also be difficult to take a one-time lumpy payment and spread it over many days to pay for daily expenses without running out of money too soon. In the dairy example, although farmers choose to lock up their money with the cooperative for the entire month, they also sell some milk to the traders who pay on the spot daily. This arrangement enables farmers to generate a steady stream of money for daily needs and also obtain a lump sum at the end of the month—balancing these two considerations. Moreover, this arrangement offers flexibility to respond to shocks: if there is a day when money needs are high, farmers can choose to divert fully to the traders who pay on the spot. This offers guidance for how commitment tools may be able to balance the various considerations faced by households in practice.

There are myriad other examples of existing behavior and institutions that may embody commitment demand. As Ericson and Laibson (2019) argue, the tools individuals use in the world that embed commitment features look quite different than the pure costly commitment devices developed by researchers.

For example, the social observability characteristic of ROSCAs and other types of savings groups may provide a form of soft commitment that helps individuals to save more. Breza and Chandrasekhar (2019) conduct a stylized experiment to isolate the impacts of social observability on savings in rural India. They recruit individuals who express a desire to save more and provide them with a bundle consisting of a new bank account, saving goal elicitation, and bi-weekly reminder visits to all participants. Some savers are randomly chosen to receive a monitor—a member of the community who receives bi-weekly updates about the saver's progress toward their goal for the six-month intervention period. The authors find that the addition of a monitor increases savings by 36% and reduces the likelihood of reporting a shock that the household did not have the resources to mitigate.¹¹

Moreover, models of present bias have been applied to the demand for microfinance. One notable feature of standard microfinance contracts is the high repayment frequency (often weekly) imposed by lenders. (Fischer and Ghatak, 2016) argue that this structure can increase the maximum incentive-compatible debt capacity for present-biased borrowers. In contrast, exponential

¹⁰Another paper which takes this approach of examining existing behaviors is Dupas et al. (2020), who document that the labor supply behavior of Kenyan bicycle taxi drivers is consistent with income targeting, benchmarked to their perceived cash needs for the day. A literature in behavioral economics explores the idea that income targeting can be used to overcome self control problems.

¹¹Also see Kast et al. (2018).

borrowers would demand contracts with more flexibility.¹² Similarly, the weekly payments to repay a microfinance loan can also be interpreted as imposing the discipline for saving—a service that households are willing to pay for in the form of interest on the loan (in absence of access to a commitment savings account). This is consistent with anecdotal reports that some Indian microfinance clients borrow to save for a child’s future marriage expenses. Present bias might also generate a simultaneous demand for credit and savings (Afzal et al., 2018). (Basu, 2014) proposes a theoretical framework where a present-biased individual desires to save for a durable, and, as in the standard model, commitment savings accounts can help some individuals save for the durable who would not have been able to do it on their own. However, Basu further argues that this behavior incentivizes monopolist banks that have the ability to enforce commitment on loans to strategically decide to not offer commitment savings.

Another stark stylized fact about borrowing behavior in LMICs is the widespread reliance on high interest-rate loans to finance recurrent, predictable expenses (Banerjee, 2003). For example, Karlan et al. (2019) document that vegetable vendors in both India and the Philippines use daily loans to finance their working capital—they buy inventory on credit each morning and repay with interest each evening—and have been doing so for nine years on average. The 5% daily interest rate they pay substantially eats into their take-home profits. The authors calculate that by simply buying one less cup of tea per day, these vendors could become debt-free in one month. Moreover, in a field experiment, the authors pay off the loans of a randomly chosen subset of these vendors in both countries—and find that all of them revert back to financing through debt cycles within 1-2 years. As another example of the recurrent and stable use of high interest credit, low-income farmers across countries use crop loans to finance planting each year with repayment at harvest.

These examples indicate that high interest borrowing is not simply being used for emergencies or discrete high-return one-off investment opportunities—when the marginal utility of extra funds is particularly high—as we might predict under neoclassical theory. While speculative, one interpretation of this behavior is that recurrent loans are akin to a costly savings tool: the pressure to repay creates a commitment device to ensure that some fraction of profits are continually reinvested in the business. Under this view, the interest on the loans is simply the cost people are willing to pay to enable savings—much as in the case of the fee paid by households to deposit collectors.

3.7. Self-control: Future directions. The behavioral development literature has offered evidence for the presence of self-control problems across a range of contexts in developing countries. However, our view is that the literature has barely scratched the surface in applying

¹²An empirical prediction is that holding fixed selection into loans, reducing repayment frequency should lead to an increase in default. Feigenberg et al. (2013) randomize borrowers who selected into weekly payments into monthly repayments versus the status quo and find no effect on repayment. More work is needed to better understand the role present bias plays in the demand for microfinance, especially given the heterogeneous uses and impacts of credit.

the concept of self-control to the study of poverty. We suspect that research that incorporates additional psychologically-grounded paradigms for understanding self-control, such as those discussed in Section 3.1, may lead to important positive as well as normative insights. This includes improving our understanding of whether self-control problems may in fact be more severe for those in poverty. There is also limited work applying self-control to interpret many prominent behaviors of the poor, as well as how self-control interacts with missing markets. We argue that these directions are important to uncover the extent to which self-control problems may be consequential for interfering with individuals’ climb out of poverty. We break these directions into four parts in this section.

3.7.1. A psychologically grounded view of self-control. The effectiveness of soft commitments is not predicted by models of time inconsistency alone. Take the example of the lockbox. If an individual decides they would rather spend money on a temptation good today rather than saving it for an expense tomorrow, it would seem unlikely that the 10 seconds it takes to open a lockbox should so drastically flip this inequality that many people decide to save instead. To accommodate soft commitments into present focus models, researchers typically add an additional psychic cost, such as loss aversion from deviating from one’s long-term goal; this then provides commitment via a high-powered psychological incentive (rather than a monetary one). One potential implication of this is that it should perhaps be possible to construct purely mental soft commitments: it is not clear why a physical lockbox is needed, versus a purely mental commitment such as verbalization of a goal. However, there is less clear evidence that simply articulating goals is effective in inducing long run behavior change.¹³

In contrast, a view of self-control rooted in cognitive costs or attention—as in Kahneman (2011) or Gabaix and Laibson (2017)—may more readily predict why the lockbox reduces temptation spending. For example, a small transaction cost or physical action, like unlocking the lockbox, may trigger one’s mind to attend to the fact that a plan made by the long-run self is being violated, prompting the individual to intervene to exert self-control. This might also help explain why the soft commitments that were effective in Section 3.5 required physical actions—unlocking a lockbox or taking money out of an envelope earmarked for farm inputs. Physical actions are a salient signal that one’s plan is being violated, more effectively drawing attention to the deviation. In contrast, if the goal is purely mental—with all of one’s money kept in the same place—then withdrawing some cash from one’s pocket to pay for the temptation may have a more “fuzzy” opportunity cost.¹⁴

The above discussion is only speculative, and both theoretical and empirical work along these lines is extremely limited. We encourage researchers to explore more psychologically-rooted

¹³For example, Breza and Chandrasekhar (2019) find that the bundle of goal elicitation, reminders and bank account opening received by the control group has no effect on savings relative to a pure control group.

¹⁴Note that this discussion still potentially allows for various conceptualizations of what drives temptation in the current moment—whether rooted in inattention, emotions (e.g. Loewenstein and Carbone, 2024), or time preference—and it is important for the literature to explore these different conceptualizations.

possibilities because they may yield novel positive insights about the nature of self-control. In addition, they may potentially help explain some of the outstanding questions in the present focus literature, such as those highlighted by Ericson and Laibson (2019). They may also deliver normative insights on how to design improved products and services for individuals, in both poor and rich countries. However, such alternate conceptualizations will likely be less tractable than present focus models. This is an important trade-off, and it may be that time preference versus alternate paradigms will each lend themselves to different uses, based on the goal and requirements of the application.

3.7.2. The potential for poverty to exacerbate self-control problems. Another underexplored dimension is whether poverty may make self-control problems more severe. This may be due to two very different sets of reasons: (i) due to the structure of markets in developing country economies, or (ii) due to the psychological underpinnings of how temptation itself works. We discuss several potential examples of (i) in Section 3.2, and refer the reader to those. Consequently, we focus on (ii) here, but view both directions as equally important.

Banerjee and Mullainathan (2010) offer an interesting model of time inconsistency, where self-control problems cause larger distortions for low income individuals. Their key assumption is that the fraction of the marginal dollar that is spent on temptation goods is declining in consumption levels. Effectively, this amounts to assuming that temptation is lower for the rich. They argue that this formulation can explain a variety of stylized facts about poor households—including many of those discussed above.

A psychologically grounded view of temptation may lend itself to thinking about why self-control problems may be especially relevant for people living in poverty. For example, Loewenstein and Carbone (2024) argue for an affect-based interpretation of temptation—where affects may be emotional (e.g., anger or fear), physiological (e.g., exhaustion, pain, hunger, or sleepiness), or cognitive motivational states associated with attention, memory, or information processing (e.g., curiosity, boredom, or mental effort). For those in poverty, the affective reward is likely high from eating three meals a day instead of two after harvest when cash is available or purchasing candy for one’s crying child at the market. Precisely because the marginal utility of consumption in the moment is so high, so is the visceral desire to engage in current consumption. In contrast, viewed through the lens of time discounting, while the marginal utility of consumption may be high today, it will also be very high tomorrow. In a mathematical sense, then, the tradeoffs in temptation spending faced by the poor are not substantively different than those faced by the rich. Consequently, under an affective view of temptation, the emotional compulsion to spend today for individuals so close to subsistence may help us understand, for example, why low-income individuals have such a hard time holding liquid savings balances. Such reasoning could offer a micro-foundation for the ideas in Banerjee and Mullainathan (2010). However, it remains an open and under-researched question whether the affective view of temptation is correct, versus some other conceptualization.

In summary, there has been limited work that examines whether self-control is indeed worse under poverty—whether due to the environmental conditions of poverty, or due to the psychological underpinnings of temptation. The fact remains that we see stark differences in financial behavior for poor versus rich households, within both poor and rich countries. Given this, exploring the possibility that self-control may operate differently for the poor versus the rich is a fruitful direction for future work in behavioral development.

3.7.3. Self-control in the wild. In Section 3.6, we discuss a variety of naturally occurring behaviors in developing countries that could reflect unresolved self-control problems or embody features of commitment. Prior work—for example, Laibson (1997) and Banerjee and Mullainathan (2010)—also contains myriad examples of such behaviors in both rich and poor countries, respectively. In contrast, the field evidence in development has largely focused on artificial commitment devices externally introduced by researchers. While this approach has important benefits for enabling theory-based tests, it should be coupled with much more work that tries to make sense of people’s existing behaviors. The work by Casaburi and Macchiavello (2019) offers an example of one possible research approach in this vein.

Looking at existing behaviors offers fodder for research ideas, and opportunities for researchers to apply their creativity in unpacking them with conceptual rigor. However, in such exercises, it may be infeasible to achieve the same level of precision about mechanisms as is possible when designing one’s own external intervention. Consequently, these two different approaches present a trade-off between exploring broader and more externally valid phenomena versus complete mechanistic control. This is a trade-off to which we hope referees will be sympathetic. Our view is that both sides of this tradeoff have an important place in the literature. Ensuring that development economists engage with observed widespread phenomena in developing countries is essential for ascertaining whether behavioral biases are first order for the lives of the poor.

3.7.4. Links to developing country markets and growth. On its own, self control can lower savings rates, labor supply, health, education, business investment among entrepreneurs, and other forward-looking behaviors. Such consequences are especially likely when other markets in the economy are missing. For example, if a person does not save for their child’s school fees when credit markets exist, they can borrow, and their child can still go to school. If there is no credit market, then under-saving can lead to the much more serious consequence of the child dropping out of school. To date, there is little guidance in the literature on whether the consequences of self-control are exacerbated in the presence of other missing markets.

This has added relevance for the production side of the economy. For example, if a farmer does not save for their fertilizer investment and there is a credit market, they can borrow. In this case, utility is still lower (from the perspective of the long-run self) due to the under-saving, but the production side of the economy does not suffer: the efficient investment still gets made.

Consequently, when the missing market for the behavioral aid (e.g. lack of commitment) is coupled with another missing market (e.g. credit constraints), this can generate allocative inefficiency. Development economists should incorporate behavioral missing markets into existing missing markets frameworks.

Thinking about the impact of self-control on markets raises a number of additional research questions. For example, what are the equilibrium impacts on credit markets from savings failures? Has the introduction of mobile credit—which has greatly increased liquidity in poor country settings—crowded out traditional savings institutions such as ROSCAs? Given that self-control is likely heterogeneous across individuals, what are the distributional implications for long-run asset accumulation? Does self-control meaningfully depress long-run investments in health or education, and if so, does this play a role in the inter-generational transmission of poverty?

These questions also naturally feed into the macroeconomic determinants of growth. For example, does a permanent change in the commitment environment lead to permanent shifts in the steady state savings rate? What are the implications for business growth? For example, do those who exhibit larger present bias also reinvest less in their businesses, explaining differences in firm size? If so, does providing commitment reduce capital misallocation across firms? There is broad scope to apply the implications of self-control to questions that are core to economic development.

4. COGNITION I: IMPACTS OF LIMITED COGNITION

The human capacity for cognition is limited: different tasks must compete for mental resources, and even when focused on a particular task, the mind's computing power is extremely limited (e.g. Kahneman, 2003). A core tenet in neoclassical economics is that people can engage in constrained optimization: they consider all possible alternatives, induct backward, and choose the optimal path taking into account all our known information in complex situations. The presence of limited cognitive resources calls this assumption into question—raising the natural question of how we should then understand people's decision making process. An active area of research in behavioral economics is exploring the implications of limited cognition for how people actually make decisions.

The relevance of cognitive limitations is likely to be higher in developing country contexts. Higher levels of volatility mean that the environment is more complex to navigate. For example, as we discuss below, highly variable income and consumption shocks combine to make the consumption smoothing problem much more difficult to solve. The volatility in weather and income streams may also mean that relying on automatic or heuristic thinking—a regular feature of human decision-making (Kahneman, 2011)—may lead to larger mistakes. This coincides with the weaker institutional environment in poor countries, which forces people to navigate a broader set of challenges independently. For example, families must figure out for

themselves where to access clean water or non-counterfeit medicine, or whether a loan contract is predatory—stretching attentional resources across a much wider range of highly consequential decisions. Environmental stressors common in developing countries (e.g. noise, pollution, extreme heat) may further tax cognitive bandwidth, making it potentially harder to concentrate. Moreover, the high level of single owner-operated businesses means that firm decisions are made by a single individual rather than through formalized processes—so that cognitive constraints also have the potential to distort the productivity of firms in poor countries more so than in rich countries. Motivated by the premise that the conditions of poverty create a higher attentional burden, Banerjee and Mullainathan (2008) show theoretically that this can generate a poverty trap.

While there is a sizable body of work that establishes the relevance of cognitive constraints within developing country settings, the empirical importance of the above potential implications remains unclear. More recently, multiple studies document extremely large impacts of cognitive constraints in spheres ranging from consumption smoothing to human capital development to firm productivity—making this a growing and extremely promising area of enquiry within development.

4.1. Reminder effects. Initial work on cognitive constraints documented the relevance of salience by drawing subjects’ attention to particular information or actions through reminders.

Karlan et al. (2016) use text message reminders to test for the relevance of attentional constraints. Using a field experiment, they send text message reminders to a random subset of bank clients in Bolivia, Peru, and the Philippines, reminding them of their personal savings targets. Those who receive the reminders increase their savings rates with the bank. They interpret their findings through a model in which people intend to save, but amid day-to-day demands, other spending feels more urgent or salient, causing them to forget or procrastinate on saving. This process of other spending feeling “more urgent” in the moment is captured in qualitative accounts (e.g. Morduch and Schneider, 2017). As we discuss below, there is large scope for additional work that examines the underlying psychology behind this qualitative interpretation of consumption smoothing behavior.

Beaman et al. (2014b) document that attentional neglect can affect firms. They document that Kenyan microenterprise owners often run out of small change for customers, leading to many lost sales. The authors use two treatments to increase the salience of lost sales: weekly reminders via a survey that made owners recall missed sales, and an information arm that informed firms of how much business they lost when lacking change. Note that in both treatment arms, the information conveyed was already available to the shopkeepers—since it derived from their own recalled memory. Both interventions had a substantial effect on subjects’ likelihood of keeping small change, and consequently led to significantly fewer lost sales, boosting revenue.

4.2. Selective attention and learning. While the above studies highlight that attention can be manipulated to change behavior, an important line of work has highlighted another, potentially more pernicious implication of selective attention: the persistence of incorrect beliefs. If individuals pay attention to the features of their environment that they believe are important, they must do so at the expense of attending to other features. In his model of selective attention, Schwartzstein (2014) theoretically documents that if a person has the wrong initial beliefs about what matters, they might never pay enough attention to gather evidence to correct those beliefs—leading incorrect priors to persist indefinitely.¹⁵

Hanna et al. (2014) provide a stark demonstration of these predictions—showing that selective attention can lead to large and persistent productivity and earnings losses, among highly experienced agents. They document that, despite years of experience, farmers were not attending to (or learning about) a key input: the size of planting pods. Survey data showed farmers largely ignored pod size when assessing their yields. In experimental trials where pod sizes were systematically varied, farmers were far from the yield-maximizing pod size, indicating a significant unnoticed opportunity. Especially consistent with their model of selective attention, simply providing farmers with data from those trials did not change behavior — they still overlooked the pod-size relationship. Only when researchers presented the results in a simplified, salient way (highlighting the previously hidden pattern) did farmers adjust their practices and adopt the optimal pod size.

This example documents an instance in which cognitive constraints lead to first order earnings and productivity losses. Given that such a large fraction of low income households are self-employed—and therefore must figure out for themselves how to maximize profits—the Hanna et al. (2014) and Beaman et al. (2014b) papers indicate that these constraints could play an important role in affecting firm profits. This might explain, for example, why firms fail to experiment with or adopt other practices which are ex post better for productivity and profits (e.g. Bloom et al., 2013). In addition, for agriculture specifically, increased variance due to climate change may make the learning problem even more difficult (Patel, 2025).

Moreover, these studies suggest the importance of being able to rely on expertise is larger than has traditionally been recognized in economics. For example, a market for expertise may be important not only for credence goods (those whose quality is impossible to determine even after purchase and use), but also for search and experience goods. However, the institutional environment in developing countries makes the development of such markets more challenging. For example, medical accreditation in western countries means that medical professionals generally dispense high quality advice, whereas doubts over the expertise of formal healthcare providers leaves room for a market for medical treatment with highly heterogeneous and on

¹⁵More recently, Patel (2025) highlights that this problem is inherent to settings with a lot of noise mapping inputs to outcomes: individuals must learn about multiple features from the same set of ambiguous signals. In such a world, even a Bayesian fully rational agent may fail to learn and continue to hold incorrect priors. In the presence of selective attention, one may expect such difficulties to be amplified.

average poorer quality of expertise. Moreover, as the example of Hanna et al. (2014) indicates, individuals may not even realize they are making mistakes—depressing the willingness to pay for expertise and hindering the development of such markets organically. This suggests treating the importance of reliable markets for expertise as a public good.

4.3. Recency Bias and the Availability Heuristic. Even though annual fluctuations subject agricultural households to enormous production risk, the demand for weather insurance is remarkably low. Some of this low demand is explained by imperfections in the products (e.g. basis risk) or missing markets (e.g. liquidity constraints which may make paying up front premiums difficult). However a series of studies suggests that demand also exhibits strong recency bias: individuals are substantially more likely to demand insurance if they have suffered a negative weather event recently, have experienced an insurance payout, observe insurance payouts to others, or receive an experimentally manipulated prime that makes weather events more salient. In many of these cases, the heightened demand for insurance could be attributed to increased trust of payouts, or alternate behavioral models such as projection bias.

It is worth noting the contrast with developed countries: in many rich countries, important insurance (health, unemployment, etc.) is often automatic or provided as a default. In developing countries, however, people usually have to actively choose and pay for insurance. The evidence suggests that farmers and poor households may overreact to recent experiences and salient events. This can lead to under-insurance in good times (exposing households to risk) and possibly over-insurance or unnecessary switching costs in response to recent shocks. Since individuals must navigate the cognitive burden of managing risk, the presence of cognitive constraints means difficulty in managing the volatility that is inherent to poverty.

97.7 percent of farmers who participated in the demonstration plot program reported that they planned to use fertilizer in the following season. Only 36.4 percent of them, however, actually followed through on their plans and used fertilizer in the season in which they said they would

4.4. Overoptimism and the Planning Fallacy. Recent work documents a series of examples in which individuals are over-optimistic about whether they will make a future investment or engage in a future “virtuous” behavior. For example, Duflo et al. (2011) document that within their sample of farmers in Kenya who were exposed to demonstration plots for fertilizer use, 97.7% intend to use fertilizer in the following agricultural season, but only 36.4% actually do so. Given that fertilizer is a high return investment, this deviation from intentions has meaningful income consequences. Similarly, in their sample in rural Zambia, Augenblick et al. (2023) incentivize individuals to predict their savings level in two months, and find that 86% of people predict that they will have more savings than they actually do, and the size of the average forecast error is extremely large: about 80%. Strikingly, 65% of individuals have less savings than what they predict as their “worst case scenario”. A regular fixture of this setting

is the annual incidence of “hungry seasons”, when households run out of food in the months leading to the next harvest; these beliefs indicate that households expect to have more savings going into the hungry season than they actually do. These examples raise the possibility that people may intend to engage in “virtuous” actions that might meaningfully improve welfare or earnings, but consistently fail to do so.

In both the above examples, this over-optimism could be consistent with several behavioral biases, including self-control problems in consumption. However, Augenblick et al. (2023) document that much of this over-optimism coincides with the fact that individuals under-estimate future expenses—the vast majority of which are not “temptation” expenses, but rather items like school fees and farm input purchases. Drawing on the approach taken in psychology to correct the “planning fallacy”, they show that prompting individuals to think through their future expenses associatively in categories—without providing any external information or guidance—increases recall of future expenses by 43%. Moreover, the expenses that are retrieved through this exercise are more likely to be rare, irregular, and stochastic—consistent with what the memory literature predicts is what is most likely to be forgotten or neglected when retrieving information (Bordalo et al., 2023). Given the heightened volatility in developing country environments, this suggests that such “retrieval failures” may have additional relevance for poor individuals.

Augenblick et al. (2023) model how retrieval failures can lead to systematic consumption smoothing failures, leading individuals to make decisions as if they have more disposable income than they actually do, and consequently over-consume. Consistent with this, they find households who receive the intervention to think through their expenses sharply reduce spending, leading to 20% higher savings four months after the intervention at the start of the “hungry season”. Treated households consequently have much smoother spending profiles over the year. In addition, because they use their savings to self-finance farm investment, their yields are 9% higher at the end of the year. This example is notable because, as was the case with Hanna et al. (2014), it shows extremely large earnings impacts of cognitive constraints. In addition, it highlights an attentional failure that is perhaps more stark than failing to notice information in one’s environment: people do not retrieve and use information that they already “know”.

4.5. Mental Accounting. Another implication of limited cognition is that individuals will need to rely on cognitive shortcuts to solve decision problems (Kahneman, 2011). One prominent example is “mental accounting”, which posits that people mentally categorize their money into different “accounts” based on where it came from or what they plan to use it for Thaler (1985). This violates the economic principle that all money is fungible, and utility is maximized by spending each dollar where it has the highest marginal return across all expenditure categories. Qualitative accounts indicate that low income individuals routinely engage in mental accounting (Collins et al., 2009). For example, a woman might keep money for her children’s

school fees in a separate, hidden pouch, even if she is a few dollars short for a more urgent medical emergency.

This suggests that interventions that leverage mental accounting could be used to alter financial decision making and behavior. In this spirit, a small number of studies shows impacts of interventions which draw on principles of mental accounting. Among the savings products introduced by Dupas and Robinson (2013), discussed above, the “Safe Box”—which gave participants a box with a lock and key for keeping savings labeled for health expenses—most closely resembles a mental accounting product: it creates a separate physical space in which to store savings for a given purpose, with limited “hard commitment” features. The authors find remarkably high demand for the product, with 71% still using it to store savings balances twelve months after its provision. Those offered the product report spending 75% more on preventative health investments over the next year; however, the study did not measure impacts on overall savings. Aggarwal et al. (2023) replicate the impact of lockboxes on aggregate savings and investment among microentrepreneurs in Malawi. However, they do not find that having multiple lockboxes affects savings levels—raising questions of how to understand the way in which labeling works to improve savings. In addition, they find that mobile money accounts work similarly to lockboxes to increase savings—consistent with the prediction that a separate place to store savings can improve savings outcomes.

More recently, Wicker et al. (2025) provide a cleaner test of mental accounting, with stark results. They work with refugees in Uganda who receive unconditional cash transfers, where the cash is disbursed in envelopes. Control households receive their cash in a single unlabeled envelope, while treated households are asked to split their cash among four labeled envelopes (Education, Health, Investments, Other). 93% of treatment households opt in to receive the labeled envelopes, and have higher investments, particularly in lumpy assets, leading to higher income and savings one year after the intervention. In future work, it would be valuable to decompose how much of the effect may come from the act of forcing households to articulate a plan for spending (e.g. Augenblick et al., 2023), versus the separate labeled accounts.

Despite its perceived prevalence in qualitative accounts, the amount of empirical work on mental accounting is surprisingly limited. There is much scope for both positive and normative work exploring the implications of mental accounting. For example, although mental accounting is typically described as a behavioral bias, in the presence of cognitive constraints, it might provide a second-best solution to managing money. Work that more explicitly tests this idea—for example, by examining whether mental accounting is more likely to arise and more useful when in more complex financial environments—would be of value in both the behavioral and development literatures. In addition, there is considerable room for rigorously examining the descriptions of mental accounting that arise in qualitative reports. For example, do micro-entrepreneurs engage in mental accounting to keep business finances separate from their household finances? In a neoclassical world, in the presence of separation failures, these

individuals would maximize utility by treating their business and family finances jointly and fungibly (Benjamin, 1992). However, in a behavioral world where behavioral biases like self control mean home consumption may be mismanaged, maintaining separation may improve long-run earnings. What do individuals actually do, and what are the resultant implications for welfare and business growth? While the literature has hinted at meaningful impacts of creating and varying mental accounts, clean tests of mental accounting, positive tests of its prevalence, as well as normative applications all remain underexplored.

4.6. Biased Beliefs and Information. There are seemingly countless studies in the development literature documenting examples of incorrect beliefs. In the education domain, parents have incorrect beliefs about their children’s ability (Dizon-Ross, 2019), school characteristics and quality (Agte et al., 2024; Andrabi et al., 2017), and the likelihood of their children obtaining a lucrative public sector job (Duflo et al., 2021). In the health domain, examples include incorrect beliefs about childhood nutrition, (Fitzsimons et al., 2016), HIV risk (Dupas, 2011b; Godlonton et al., 2016), and maternal risks (Ashraf et al., 2017). Further, in many of these cases, interventions that change beliefs also change economic behavior. For example, information interventions that correct misperceptions about the returns to schooling in the Dominican Republic and Madagascar have large impacts on educational choices Jensen (2010); Nguyen (2008).

Given the rapid changes underway in developing countries, such as the increasing rates of schooling attainment across generations, improved access to health care, and changing livelihoods due to structural transformation and climate change, the learning problem may be particularly complex and consequential in LMICs. While we have a substantial body of work documenting these difficulties, along with the potential for well-designed information interventions to affect both beliefs and economic decisions, we have more limited evidence helping us understand the conceptual causes for these biased beliefs.

Behavioral economics offers many theories linked to cognitive constraints that could in principle have explanatory power in development contexts. These include those discussed above as well as bounded rationality and cognitive uncertainty (Woodford, 2012; Enke et al., 2024), salience effects and recency bias (Bordalo et al., 2012), and selective recall and memory (Mullainathan, 2002). While some papers such as Hanna et al. (2014) and Augenblick et al. (2023), discussed above, point to specific channels (i.e., limited attention and the planning fallacy) more work is needed to understand mechanisms.¹⁶ Moreover, if bounded rationality is a key constraint to unbiased belief formation, finding ways to simplify or improve the decision environment could be a fertile direction for research. A recent example is Sankar et al. (2025), who show that providing farmers with mechanistic explanations for how fertilizers work in addition to the status quo recommendations improves learning and decision-making. Also relevant is

¹⁶The empirical development literature also finds strong support for recency bias in the contexts of health and the weather (Dupas, 2011b; Karlan et al., 2014; Emerick, 2018; Patel, 2024).

Dean et al. (2025) who show that individuals have substantial aversion to physically traveling to a new place for the first time, which inhibits learning about new opportunities.¹⁷

In some contexts, individuals appear to hold systematically over-optimistic beliefs. This phenomenon is particularly evident in labor market applications, where several studies document job seekers overestimating their abilities and the likelihood of obtaining high-wage employment (Santos-Pinto and de la Rosa, 2020; Kiss et al., 2023; Caria et al., 2024). In a related experiment, Alfonsi et al. (2022) match job seekers to mentors and find that treated individuals revise their expectations downward, initially accepting lower-paying jobs; however, one year later, these individuals earn more than those in the control group. Despite this evidence, more work is needed to understand the prevalence and microfoundations of over-optimism in low- and middle-income countries (LMICs).¹⁸ A careful examination of motivated beliefs and reasoning may help explain how over-optimistic beliefs persist (Bénabou and Tirole, 2016; Köszegi, 2006). Behavioral research suggests that one mechanism sustaining such beliefs is selective, self-serving memory retrieval, whereby individuals recall information that supports their prior expectations while ignoring contradictory evidence (Amelio and Zimmermann, 2023). These ideas merit further empirical scrutiny in field settings.¹⁹

Finally, frictional social learning, which has been widely studied theoretically, can also generate incorrect beliefs (see, e.g., Chandrasekhar et al., 2020, 2018). For example, (Conlon et al., 2025) show in lab-in-field experiments in India that individuals overweight their own priors even in situations when the full signal realization of others is revealed. In field settings, many papers find limited knowledge spillovers from the adoption of new technologies (Dar et al., 2022; Duflo et al., 2023; Beaman et al., 2021). However, Chandrasekhar et al. (2022) show that developing simple technologies to facilitate communication and coordination, in their case a spoon painted blue to indicate the correct amount of fertilizer, can improve learning. Given the abundance of microfoundations for biased beliefs, we need to do more to understand the contexts in which different microfoundations emerge, as different microfoundations require different types of interventions and decision aids.

¹⁷The authors show that randomly shocking prior exposure to a new neighborhood in Nairobi increases the likelihood of taking a short-term job offer in that same place. Moreover, a single visit completely closes the take-up gap between locations with and without prior experience. They argue that their findings are most consistent with a psychic cost or overly pessimistic priors over the fixed cost of visiting a new place.

¹⁸Over-optimistic beliefs about the labor market are unlikely to arise solely from the planning fallacy, for example. Bhat et al. (2022) also find over-optimistic beliefs in the control group of their long run-study of therapy in India (see the discussion in Section ??). They find that therapy reduces the prevalence of such beliefs and argue that one interpretation is that therapy gives individuals a more robust self-image, lowering the need for overconfidence.

¹⁹While most evidence on motivated memory comes from laboratory studies, a small body of field research supports its relevance. For example, Müller (2022) study Kenyan women's recall of their desired fertility levels 10 years earlier, finding that individuals' recollections are biased toward their realized fertility. Moreover, women whose fertility exceeded their past desires were willing to forgo financial incentives to learn about their prior preferences.

5. COGNITION II: IMPACTS OF POVERTY ON COGNITION

The preceding section examined how cognitive constraints—which are common to rich and poor individuals alike—may have heightened relevance under the conditions of poverty. A more recent strand of work in the “psychology of poverty” examines whether the experience of poverty can itself affect the nature of cognition. The literature has hypothesized or focused on four broad areas: psychological stressors such as worries and anxiety, environmental stressors such as heat and noise, physiological stressors such as nutrition and in utero shocks, and factors such as low cognitive investment in childhood that may inhibit longer-run cognitive capacity. We take each of these areas in turn. As we discuss below, in some of these areas, the evidence base is extremely limited and there is much more work to be done.

5.1. Psychological stressors. A key theme in work in the “psychology of poverty” is whether the psychological experience of poverty can alter cognitive functioning—for good or bad. This is a nascent, and quite under-developed, area of research within behavioral development. For more targeted reviews of topics in this literature, see Haushofer and Fehr (2014); De Bruijn and Antonides (2022), Haushofer and Salicath (2023), and Park et al. (2025).

5.1.1. Motivation: The psychological valence of financial concerns. An important motivating idea in this line of work is the presumption that poor people spend more of their attention on financial concerns. Given the way in which the poverty line is determined, individuals in poverty are those who struggle to meet basic needs, such as food, clothing, or housing. In other words, *by definition*, the poor live below the cusp of what society deems is the line of basic survival.²⁰ The resultant implication is that people are vulnerable to dire outcomes—such as homelessness, going days with little food, or tending to a sick child for whom medical care is too expensive. Even if many poor people do not experience such extreme deprivation regularly, such outcomes may loom one shock away. For example, Banerjee and Duflo (2007) document that in 37% of extreme poor households in Udaipur, India, the adults went an entire day without eating any meals at least once in the past year. Collins et al. (2009) document that about half the households in their sample across Bangladesh, India, and South Africa faced a dire financial emergency at least once during the study year. Consequently, while both poor and rich individuals certainly face meaningful financial stresses, this literature presumes that financial concerns carry more psychological valence for the poor because their concerns are fundamentally more existential.

Given these high stakes, theories of attention would predict that financial concerns may often be top of mind for low income individuals. Suggestive survey evidence supports this view. For example, Kaur et al. (2025) survey subsistence workers employed in low-skill manufacturing tasks in India, and find that 85% say they are worried or very worried about their finances. The two most commonly reported sources of worries are daily expenses and loans, with 71% of

²⁰We borrow this framing from Park et al. (2025).

workers carrying outstanding debt. In addition, in open-ended unprompted questions asking them what they thought about while working, on a given day, 50% say that had spent time thinking about their finances. Even in the U.S., Sergeyev et al. (2024) document that the average low-income American reports spending 6.4 hours each week distracted by thoughts of their finances while at work. Motivated by these patterns, they construct a consumption life-cycle model which includes financial stress, and show that this can generate poverty trap dynamics. This matches qualitative accounts in which low income households report that financial stress often occupies their attention (Morduch and Schneider, 2017).

5.1.2. *The contrasting implications of top-down vs. bottom-up attention.* Cognitive psychology makes an important distinction between top-down vs. bottom-up attention (see, e.g., Egeth and Yantis, 1997; Chun et al., 2011; Bordalo et al., 2022). Top-down attention is goal-directed: it reflects the voluntary and deliberate allocation of cognitive resources in service of a chosen goal. Top-down control allows people to selectively process information and sustain focus toward their chosen activity. Consequently, the paradigm of “rational inattention” in behavioral economics—which assumes that individuals face an attentional constraint and therefore allocate it to where its return is highest—is most closely related to the idea of top-down attention. In contrast, bottom-up attention reflects the involuntary capture and direction of attention in response to a stimulus or threat. Threats attract attention regardless of one’s goals, and can therefore interfere with the pursuit of top-down goals. These two types of attentional processes have potentially contrasting implications for the normative consequences of heightened financial concerns: poor individuals may be more motivated to direct top-down attention toward financial decision-making; at the same time, immediate financial worries could also involuntarily capture bottom-up attention even when engaged in other activities, such as taking a school test or at the workplace.

In their book on *Scarcity*, Mullainathan and Shafir (2013) pioneer a hypothesis that seeks to combine both these forces. They posit that the involuntary capture of attention by financial concerns alters the decision-making of the poor. Specifically, they argue that the worries and concerns associated with poverty change what is “top of mind” in a given moment and alter the lens through which individuals see situations (Shah et al., 2018). This attentional capture generates two opposing forces: improved performance on tasks related to the financial concerns that are top of mind (“tunneling”), but a reduction in the cognitive resources available for tasks outside of the tunnel (“bandwidth tax”). Importantly, in their view, tunneling need not be globally maximizing. For example, a person focused on paying urgent utility bills this month may neglect the fact that pawning their jewelry might jeopardize next month’s (more urgent) rent payment. While the Scarcity hypothesis has spurred much discussion and research around these ideas, it remains nascent—both in its theoretical precision as well in its evidence base.

In our view, the most enduring contribution of Mullainathan and Shafir (2013) is not the specifics of the Scarcity hypothesis per se. Rather, it is their giving prominence to a more

general idea: experiencing financial strain may affect behavior through attentional channels, whether positively or negatively. Effects on attention could arise from a variety of mechanisms, including mental health, affect, stress, as well as worries and anxiety (see, e.g., Haushofer and Fehr, 2014).²¹ This distinction between the general idea and specific mechanisms is important to keep in mind as the literature proceeds in the early stages of exploration. Indeed, as we discuss next, most of the best evidence base to date on the psychology of poverty tests for general relationships between financial strain and cognitive performance—without necessarily getting inside the black box of what is driving these relationships.

5.1.3. *Evidence: Cash on hand and cognitive performance.* A growing number of studies examines links between cash-on-hand and cognitive performance—on both lab and field outcomes. Mani et al. (2013) exploit the fact that the harvest date for sugarcane farmers in India is essentially randomly assigned by the sugar mill. They document that sugarcane farmers exhibit higher cognitive function just after harvest (when they are cash rich) than just before harvest (when they are cash poor), where cognition is measured by a Raven’s Matrices test and a cognitive control task. Interestingly, these effects are present even among farmers who have harvested, but have not yet received their physical payment; these farmers know the amount of their harvest payment and also know that it will soon arrive from the mill, so that the effects seem to stem from the amount of actual cash-on-hand at the moment. However, we should caution the reader that, in our view, such lab-based tests of cognitive performance may not be well-suited in field settings with very poor individuals—a point we return to below. In addition, there is a debate about whether such patterns replicate in other settings, such as low-income households in the U.S. (Carvalho et al., 2016; Mani et al., 2020).²²

A small set of studies has extended this literature to examine impacts on field behaviors.²³ Kaur et al. (2025) examine effects in a 2-week field experiment with Indian contract workers who are paid piece rates for output. Because the experiment is run during the lean season when employment rates are low, worker earnings during the experiment correspond to over a month

²¹For example, in their early review, Haushofer and Fehr (2014) present laboratory evidence that manipulating resource levels during decision-making makes subjects appear to be more impatient in time discounting tasks and more risk averse in decisions—possibly by limiting attention and favoring habitual behaviors at the expense of goal-directed ones.

²²Carvalho et al. (2016) examine performance on cognitive tests among US workers in the 7 days before vs. after their paycheck and fail to find differences. Mani et al. (2020) re-examine Carvalho et al. (2016)’s data, narrowing in on the days immediately before vs. after payday, and do find differences in performance on cognitive tests. However, to the extent that effect sizes differ across contexts, it is unclear whether this is in part attributable to differences in “treatment intensity”: harvest income has much more meaningful impact on finances than a biweekly paycheck for regular workers; in addition, the level financial strain in the US may be different than that in developing country settings. Some of the studies below do point to the importance of treatment intensity.

²³Work on field behaviors is limited across settings, including in the US. Ellwood-Lowe et al. (2022) offer suggestive evidence that parents engage less with their young children (proxied with fewer back-and-forth exchanges in conversation) at the end of the month—when they are more likely to be experiencing financial hardship—than the rest of the month, and argue that this is a potential reason for the word gap between poor and rich kids.

worth of typical household earnings. The authors manipulate workers' financial circumstances by staggering the timing of when workers receive their wage payments, so that some workers are paid earlier while others are paid later—creating variation in whether workers have cash on hand, but without changing overall expected wealth. The cash infusion leads to a 7% increase in workers' productivity in a local production task (making disposable plates for retail sale). Notably, this increase in productivity is mediated by a decrease in attentional mistakes—treated workers are more strategic in how they assemble inputs, enabling them to work at a faster pace and spend less time undoing errors—consistent with improved cognition. The effects on both productivity and attentional mistakes are concentrated among the lower-income workers in the sample, for whom the cash infusion was likely more meaningful. Moreover, the authors find that increasing the piece rate, and therefore the return to cognitive effort, increases productivity but does not decrease attentional mistakes; they interpret this as consistent with some level of involuntariness in attentional channels.

This finding on worker output is, on the surface, potentially surprising since wealth effects could push in the opposite direction—leading individuals to lower labor supply. The authors construct a design to shut down this channel by mandating attendance at work during the 5 days after the cash infusion, further incentivized by a large cash bonus for attendance. Consequently, this paper should be interpreted as offering evidence for a cognition and productivity channel, but not reflecting the total impact of wealth increases (which would also incorporate income effects). This also highlights the importance of design details in isolating mechanisms in such experiments.

In complementary work, Banerjee et al. (2020) examine the overall impacts of a permanent and sizable change in wealth induced by a randomized ultra-poor graduation program in Ghana. They offer individuals the opportunity to engage in an additional income generating activity at home: manufacturing either simple or more complex bags for a piece rate. Richer households (i.e. those who received the randomized asset transfer), supply more labor and generate more income from the bag making activity—the opposite of what one would predict under standard neoclassical models. While the authors are careful to note that they cannot pin down precise mechanisms, they find that the impacts are driven by the complex, and therefore more cognitively challenging, bags. This opens the door to the possibility that the total effect of a wealth increase could improve cognition and productivity.

In addition, Larrinaga and Reyes (2025) examine impacts on educational performance. They exploit random variation in the day of the month on which different families receive cash monthly transfers in Brazil. They pair this with the performance of high school students on a high-stakes exam in Brazil which determines college admissions, scholarships, and student loans. Early cash recipients (i.e. those who had their transfer in hand before the exam date) score approximately one percent of a standard deviation higher on the exam than late recipients, with positive estimated effects across all exam subjects. Further consistent with a cognitive channel,

effects are driven by impacts on cognitive endurance (see Section 5.4 below). As in Kaur et al. (2025), the effects in this case are also concentrated among poorer households, which also receive the largest transfer amount. While the magnitude of the effects is not large, given the high-stakes nature of the exam, the effects translate into meaningful long-run impacts for students: receiving an early transfer increases college attendance rate increases by 0.7 percentage points (4.5%) and holding a formal-sector job later in life by one percentage point (or 1.7%).

The above studies implicitly or explicitly presume that having more cash-on-hand leads to lower psychological strain or worries—even when the cash was fully expected. The evidence for this, however, is quite limited. Among the studies cited above, only Kaur et al. (2025) have direct measures of such outcomes. Recall that in their study, daily expenses and loans are the most frequently cited sources of stress. In the three days after receiving their early cash payment, treated workers are 40 percentage points (222%) more likely to repay loans, and increase spending on daily household items by 70%—with the majority of these payments occurring on the very same day as the cash disbursement. In addition, after the cash infusion, treatment workers report being more focused on their work task and less likely to have thought of financial worries while at work.²⁴

This paucity of evidence on whether cash reduces financial strain is driven, in part, by the difficulty in finding robust measures of stress. Duquennois and Jagnani (2025) use sleep quality as a proxy for psychological strain, and document a link between cash on hand and sleep quality. They take advantage of the fact that the government of Indonesia announced and began disbursing a large lump-sum transfer during the administration of the 5th round of the Indonesian Family Life Survey (IFLS). Among likely eligible households, receiving the survey after cash announcement and disbursement leads the household head to report a marked 0.4 standard deviation increase in self-reported sleep quality—consistent with a reduction in worries. This also leads to improvements in some cognitive tasks that the authors argue are consistent with sleep channels: short term memory, as well as attentiveness towards the latter parts of the survey (mimicking the effects on cognitive endurance in Larrinaga and Reyes (2025)). There is no effect on Ravens Matrices performance.

Other work points to the potential for resource scarcity to *improve* decision-making around financial decisions—consistent with a top-down allocation of attention. Shah et al. (2015) present correlational evidence which shows that poor households are less susceptible than the rich to framing effects and other common biases when making financial tradeoffs. For example, participants were presented with the following scenario, which has been used in the behavioral economics literature to document the bias of proportional thinking: “Imagine that you go to the store to buy a tablet computer that costs \$X. The clerk informs you that a store thirty minutes away sells the same tablet computer for \$50 less. Would you go to the other store to buy the

²⁴This latter finding could have gone in the opposite direction, if receiving money makes a person more likely to think through how to spend it.

tablet computer or would you buy it at the current store?” Participants were randomly assigned to see $\$X = \$300, \$500, \text{ or } \$1,000$. Richer households are substantively more likely than poor ones to exhibit proportional thinking—i.e. be relatively more willing to travel for the discount when the tablet is cheaper (i.e., when the discount is proportionally higher). In addition, when explaining what they were thinking about when making their decision, rich households are much more likely to select the option “what percentage it is off the tablet’s regular price”; in contrast, poor households are much more likely to choose “other things I won’t be able to buy if I don’t save money on the tablet”. The authors emphasize the importance of trade-off thinking as the reason the poor appear more “rational”. When flush with money, \$50 is an abstract number: people don’t know what it is worth to them. In contrast, for people who are financially constrained, the opportunity cost is salient: spending \$50 more on the tablet necessitates spending less on some other item. This leads to more stable thinking about money in choices. Mullainathan and Shafir (2013) argue that the concreteness engendered by tradeoff thinking is an important difference in the way the rich vs. poor approach financial decision-making.

Fehr et al. (2022) offer causal evidence that resource scarcity leads to more stable valuations in financial decision-making—focusing specifically on the endowment effect. They find that having less cash on hand—due to seasonal timing (i.e. the hungry season vs. post-harvest) or due to a resource drop via a randomized loan during the hungry season—reduces the likelihood of exhibiting the endowment effect among Zambian farmers. They argue this is consistent with an attentional channel, where people’s valuations are more stable when they are poorer because they have higher returns from attending to the exchange value. However, as in other work reviewed above, the effects on Ravens Matrices and other cognitive tasks bounces around, with no clear pattern.

5.1.4. *Priming interventions and replication.* Much of the early work in this literature used priming manipulations to bring financial concerns top of mind. These manipulations are prompts that attempt to shift individuals’ attention to a desired topic. For example, in the original Mani et al. (2013) study, the authors randomized individuals in the US to think about how they would meet either a \$150 or \$1,500 car repair expense, and had them undertake the same cognitive tasks as the sugarcane farmers. Among poor respondents, being asked to think of the potential for the larger financial emergency markedly reduced performance on the tasks, equivalent to an 18 point IQ drop. In contrast, the amount of the expense had no impact on the performance of rich respondents.

The presumption is that having to think through how they would satisfy the larger expense triggers worries among low-income respondents, but not high-income ones. Duquenois (2022) examines this logic in a field application. She finds that in an international math test with random question order, low-income students do worse on a question if it immediately follows

a question related to money (which presumably triggers financial worries), whereas there is no such decline in performance for richer students.

However, many studies which have attempted to use priming manipulations have produced mixed evidence (O'Donnell et al., 2021; Shah et al., 2023). This reflects methodological challenges in both the early studies and in the replications. A large literature in psychology has come to recognize challenges with the replicability and interpretation of priming (e.g. Kahneman, 2012). Many of the studies in this literature also employ laboratory measures of cognitive function that have not been well validated in developing countries. Thus, both of the core pieces of research in this vein have faced challenges: how to manipulate what is top of mind for individuals (right hand side) and how to measure cognition (left hand side).

Consistent with this, while Kaur et al. (2025) find sizable effects of changing actual cash on hand on productivity, they find no discernible impact of a heavy-handed priming intervention that seeks to bring financial worries top of mind. Consequently, they recommend that work in this literature should not seek to alter attention by manipulating it on the right hand side (i.e. priming). Rather, they argue that research should examine the impact of real changes in cash on hand on precise and measurable indicators of attentional performance. This is generally the approach of the studies reviewed in Section 5.1.3 above. The literature still has a long way to go, however, in establishing how to parse mechanisms in such studies—especially which outcomes may reliably be used as indicators of cognitive performance. For example, it is unclear whether impacts on productivity or school performance will unequivocally improve with reduced financial constraints.

5.1.5. Discussion and future directions. Our read of the evidence is that there is reason to think cash on hand can have cognitive effects, and furthermore, these effects can be positive or negative. This may be consistent with top-down attentional focus as well as bottom-up interference effects. However, the number of studies is small, and publication bias may skew the available evidence. In addition, evidence for the exact mechanics of the Scarcity hypothesis, as well as the methodological approaches of the early literature, are weaker. As we discuss above, we view the main contribution of this line of work as opening the door to the general idea that feeling financially constrained can have meaningful attentional effects—creating much room for both theorizing and empirical work.

The effects in Section 5.1.3 may be consistent with a host of psychological mechanisms, from mental health and affect, to stress, anxiety, and worries. Ultimately all decision making is mediated through attention, and it is difficult to parse the exact cognitive path from financial concerns to attentional effects. It is also unclear whether distinguishing these reasons for attentional effects should ultimately be of concern to economists—especially since they are likely to be overlapping.

Rather, we suggest that the literature should focus on building more of an evidence base for whether the psychological experience of poverty does indeed have attentional effects, and

whether these are ultimately meaningful for decision-making and behavior at high stakes. How should we understand the nature of these attentional effects? Is bottom-up attention versus top-down attention the right framework through which to understand why effects could be positive or negative? If so, can this be used to generate more precise and falsifiable predictions on when each type of effect will arise?

Studies that examine the relationship between cash on hand and cognitive performance could also use richer data collection to help offer insights into what changes inside people's minds when they are financially constrained. For example, using qualitative interviews where people discuss what they are thinking over the course of the day—coupled with techniques from natural language processing—may provide a way to offer evidence on thought patterns. To examine mediators like stress, it might be interesting to examine physiological proxies such as sleep and biomarkers of stress. To understand attentional focus, lab-in-the-field studies could examine markers such as pupil dilation during tasks.

Importantly, the literature is missing guidance on how to measure cognition itself. For example, as discussed above, multiple studies fail to replicate effects on Ravens Matrices tests. There are many potential reasons for this. It could be that the test is perfectly valid, and these failures of replication indicate that there are not actually cognitive effects from changes in cash on hand. Alternately, this test may not be suitable for developing country settings where individuals have little exposure to such content—leading measurement error to swamp any signal. This might imply other measures may work better. Moreover, even if financial strain increases the incidence of thoughts about finances, bottom-up attentional processes would still predict that these thoughts will come and go. As a result, any test which is just a snapshot at one point in time may have limited power to detect changes. In contrast, outcomes that average over longer periods (such as daily worker productivity) may be better powered. Without methodological progress on this issue, research in this field will likely continue to offer very mixed findings on mechanisms—augmenting the appearance of a replication crisis.

One very consistent, and arguably surprising, finding in this literature is that effects seem to arise even upon the receipt of an *expected* cash influx. This pattern is apparent in Mani et al. (2013), Kaur et al. (2025), and implicitly Fehr et al. (2022) since post-harvest income is expected. This suggests that even if individuals know that financial constraints will be eased in the future, the actual receipt of the funds has a potentially significant psychological effect. The literature has not yet explored the channels for why this should be the case. For example, it potentially offers insight on what aspects of financial strain create psychological valence. It may also have potential implications for the design of wage structures and social protection policies—another topic that is underexplored in the literature.

Another highly intriguing, and grossly understudied, idea in this literature is the proposal that scarcity creates trade-off thinking (Mullainathan and Shafir, 2013; Shah et al., 2015). This amounts to saying that financial constraints sharpen people's understanding of the shadow value

of money (i.e. the Lagrange multiplier in the utility maximization problem). Is the prevalence of trade-off thinking truly different among the rich vs. the poor? Does it ultimately affect how people make decisions under high stakes?

The idea around trade-off thinking has a more fundamental implication: if people do not normally appreciate opportunity costs in their decision problem, then what does this imply for consumer theory? This has parallels to the discussion above about how not appreciating other upcoming potential expenses changes people's choices, even at high stakes (Augenblick et al., 2023). Is the myopia created by retrieval failures ultimately a failure to appreciate the tradeoffs that will be required from today's spending? More directly, it also potentially relates to our view that soft commitments likely work by creating salience in the specific opportunity cost of temptation spending—a form of tradeoff thinking (see Section 3.7). While completely speculative, the possibility that tradeoff thinking may offer insights into the nature of myopia is an interesting direction for potential research.

Finally, if further research does support a meaningful relationship between financial strain and cognition, this generates a host of potential implications for labor productivity, occupational choice, and interactions with missing markets. For example, improving access to credit markets or insurance markets could improve the cognition and productivity of adults through lower stress in the face of shocks. Alternately, as Kaur et al. (2025) point out, if financial strain reduces cognition, then this might push low income individuals towards having a comparative advantage in less cognitively demanding tasks or occupations—reinforcing poverty. Examining such broader economic implications is an interesting future direction in the evolution of this literature.

5.2. Environmental stressors. Developing countries are associated with adverse environmental conditions, such as heightened noise, pollution, and heat. A number of studies examines the impact of these conditions on cognition and productivity. For example, Dean (2024) conducts an experiment randomizing noise exposure with piece rate workers and finds that higher noise levels reduce productivity. Consistent with a cognitive mechanism, he finds that increased noise lowers performance on cognitive laboratory tasks but not an effort-based task.²⁵ In the context of education, using standardized test data from 58 countries, Park et al. (2021) show that more days hotter than 80 degrees F in the year prior to the exam decreases test scores. This suggests that elevated temperatures not only impair short-run cognitive performance, but may also affect skill formation.

The worse environmental conditions that accompany poverty can affect other core physiological processes, such as sleep. In their review on the sleep literature, Rao et al. (2021) document that sleep quality and duration are lower among poorer populations in the US and in developing

²⁵As discussed in the chapter on Environment and Development in this handbook, a broader set of work examines impacts of environmental stressors such as indoor air pollution on productivity (Hanna and Oliva, 2015; Adhvaryu et al., 2016; Garg et al., 2025). However, such papers typically do not focus on disentangling whether these impacts arise via cognitive or other channels such as effort.

countries. Bessone et al. (2021) conduct a field experiment in urban India, where sleep efficiency is particularly low, with individuals sleeping 5.5 hours each night despite spending more than 8 hours in bed. An intervention improving the sleep environment at home, along with information and encouragement increases night sleep by almost 30 minutes, but has no impacts on productivity or cognitive ability. In contrast, providing workers a comfortable place to nap increases productivity and cognitive ability. The authors hypothesize that the naps were more effective because the sleep environment was conducive to high sleep quality, while the quality of nighttime sleep remained low in the treatment group. In contrast, Jagnani (2024) finds that sleep quantity affects test scores of children in India by exploiting changes in sleep induced by variation in the time of sunset across the year.²⁶

Consistent with our discussion in Section 2, the concept of naivete is also present in this literature. For example, Dean (2024) finds that individuals do not anticipate the fact that increased noise will reduce their productivity. Similarly, an emerging focus of the environmental literature is how to increase adoption of adaptive technologies such as air purifiers, where individuals and firms often express a low willingness to pay and have biased beliefs about their impacts (Garg et al., 2025; Chowdhury et al., 2025).

Overall, the systematic differences between environmental conditions in poor vs. rich countries are large. These differences are exacerbated by the reduced ability of those in poverty to access or afford adaptive technologies, such as electricity or air conditioning. The evidence to date offers reason to believe that environmental conditions have cognitive impacts. One natural next steps in the literature are to further examine, for example, whether such impacts affect aggregate productivity or long run human capital—for example, through schooling.

5.3. Physiological stressors. A number of studies examine how nutritional or environmental deprivations, *in utero* or in early childhood, affect child development and outcomes later in life (Dupas and Miguel, 2017; Bouguen et al., 2019). For example, Maccini and Yang (2009) show that rainfall in the year of birth has long-run impacts on stature, health and schooling for girls in Indonesia, but not boys. They argue that these differences stem from differences in nutrition and health inputs for baby girls. Webb (2024) explores whether there is a critical window in childhood for inputs to affect long-run cognition and documents that exposure to shocks at age 2 generate the largest persistent impacts, with no detectable differences by gender.

Other evidence comes from experimental tests of nutritional interventions. A study giving high-energy protein drinks to young children in Guatemala finds that more than 20 years later, treated individuals have higher reading comprehension and cognitive test scores. Male wages are also 46% higher (Maluccio et al., 2009; Behrman et al., 2009; Hoddinott et al., 2008). Prado et al. (2017) show that an intervention adding micro-nutrients to iron and folic acid supplementation in pregnant women raises child cognition as 9-12 year olds.

²⁶While later sunsets lead to delayed bedtimes, there is no change to the time of wake-up, leading to less overall nighttime sleep. The author also shows that later sunsets are correlated with less time studying.

This evidence base offers intriguing evidence for physiological channels as a potential mechanism for the inter-generational transmission of poverty. However, the literature is currently far from being dispositive on this potential. Are these in utero and early childhood stressors truly consequential for adult outcomes such as earnings? If so, what are the mediating channels—for example, long-lived impacts on cognition that last into adulthood, lower human capital accumulation due to impacts in childhood, or some other channel? Can these adverse effects be undone through supplemental investments in childhood? For example, are such effects less likely to occur among girls in settings with school meal programs? Such questions have important relevance for both understanding inter-generational poverty traps, as well as for policy.

5.4. Endogenous cognitive capacity: Cognitive and psychosocial inputs. The overwhelming majority of the literature in behavioral economics assumes that individuals have a fixed store of inherent cognitive or attentional capacity, and this scarce resource is then allocated across tasks. This view underlies all the literature surveyed in Section 4 and Sections 5.1-5.2, which examine how conditions of poverty may affect this allocation process. However, what determines the store of capacity itself? Is it primarily determined through genetics and gene expression? Or can environmental conditions alter underlying cognitive capacity?

Much work in psychology has hypothesized that aspects of core cognitive capacity, such as attentional capacity or memory, might be malleable—capable of being increased through training (e.g. Chun et al., 2011).²⁷ This hypothesis has an intriguing implication: if the conditions of poverty may reduce underlying cognitive capacity, this would create the potential conditions for a poverty trap. While the evidence base for the possibility of malleable cognitive capacity is extremely scant in both psychology and economics, a small amount of work has begun research along these lines.

Brown et al. (2025) document across a range of field applications that low income individuals tend to exhibit cognitive fatigue more quickly than high income individuals, both among children and adults—suggesting differences in attentional capacity. They define the ability to sustain performance over time during a cognitively effortful task as “cognitive endurance”. Using time use data from teachers, they argue that the schools attended by low income children offer students fewer opportunities to practice exerting sustained focus than rich ones.

Brown et al. (2025) then test the hypothesis that changes in the schooling environment can improve cognitive endurance. Using a field experiment in Indian schools with children from grades 1-5, they randomize a change in pedagogy that leads treated students to “practice focusing” for stretches of 20 minutes at a time over a six month period, for a total of 10-20 hours of

²⁷For example, there is some work in psychology validating this hypothesis for working memory training. An important concept in this literature is that of “far transfer”: whether training a cognitive capacity within the context of a specific domain or task leads to improved performance in that capacity in other tasks as well. Overall, there is limited evidence of far transfer in most domains in psychology, with some exceptions such as working memory. However, as Brown et al. (2025) discuss in the case of sustained attention, psychology studies often employ small sample sizes, making it more difficult to have the statistical power to find far transfer. This presents an opportunity for research conducted by economists, which typically involves larger samples.

intervention time over an academic year. In doing so, they get low income schools to mimic one aspect of pedagogy employed by higher income schools. They find that this leads to improvements in cognitive reserves. Specifically, across a range of applications, treated students exhibit less cognitive fatigue over time when engaged in cognitively challenging tasks. They also offer suggestive evidence that these students are more attentive in the classroom. The effects of the intervention lead to large gains in school performance, with treated individuals having improving their grades in Hindi, English, and Math by 0.09 standard deviations—even though these subjects were not directly targeted or practiced during the intervention. They conclude that the practice of thinking itself changes the mind’s underlying capacity for cognition—highlighting a channel through which disparities in schooling could lead to differences in attentional capacity across individuals. This recasts cognitive capacity as a potential element of human capital: a malleable trait that is shaped in part through experience.

Potentially consistent with these ideas, Byambaa and Old (2026) randomize the provision of an after school chess program in Kenya. They find marked improvements in a variety of cognitive measures among treated students, and no changes in non-cognitive measures. This is accompanied by a suggestive improvement in math grades.

Another stream of work in this vein has examined whether psychosocial stimulation during early childhood can have persistent effects on cognitive development and adult economic outcomes. One of the most influential examples is the Jamaican Study, first reported by Grantham-McGregor et al. (1991), which in 1986 enrolled 129 growth-stunted toddlers. The study employed a cross-randomized design that combined psychosocial stimulation—weekly home visits by community health workers who coached mothers on responsive parenting practices such as playing, talking, and reading with their children—with nutritional supplementation consisting of one kilogram of formula per week. The interventions were intensive, lasting two years and generated short-run improvements in mental development. Longer-term follow-ups show that psychosocial stimulation led to sustained improvements in IQ at ages 17–18 and 22, as well as higher educational attainment, with no corresponding effects from nutritional supplementation (Walker et al., 2005, 2011).²⁸ Moreover, Gertler et al. (2014) find that individuals who received psychosocial stimulation earned approximately 25% more at age 22.²⁹

However, Andrew et al. (2018) find that a psychosocial stimulation intervention conducted at scale among similarly-aged children in Colombia did not lead to persistent impacts on parental investments or on cognitive ability two years post-intervention.³⁰ One interpretation raised by Attanasio et al. (2019) is that the intervention failed to change mothers’ overly-pessimistic subjective beliefs about returns to their effort.

²⁸Walker et al. (2022) document that these cognitive gains persist through age 31.

²⁹See Kagitcibasi et al. (2009) for related long-run evidence from the The Turkish Early Enrichment Project.

³⁰Andrew et al. (2020) find promising short-run impacts of a potentially scalable psychosocial stimulation intervention conducted with the NGO Pratham in Odisha, India.

The small set of studies discussed above highlight two core themes and associated open research questions. First, it is possible that, relative to individuals in rich countries, those in developing countries do not get as much cognitive stimulation—such as practice concentrating or thinking effortfully for long stretches. This may be true at home, in school, as well as in the jobs and occupations that they undertake as adults. This idea has numerous important potential implications, of which the above papers only begin to scratch the surface. For example, is it really the case that there are substantial differences in the extent to which students spend time “thinking” or otherwise engaged in effortful mental activity across richer vs. poorer contexts? Do these differences affect cognitive function? If so, what aspects of cognition are affected? Is childhood an especially sensitive period for the development of “trainable” cognitive function? It is also still largely unclear whether early childhood investments have long-lasting effects into adulthood, given the small number of studies to date. Alternately, it is possible that the impact of training is short-lived—but becomes reinforced across the lifecycle through both worse schooling and the types of occupations that are most common in poor countries (i.e. those which require manual labor rather than cognitive intensity). This would imply, for example, a way in which occupational choice could affect future productivity and earnings potential, with potential implications for understanding the determinants of job ladders.

Second, the above studies point to the idea that education is extremely multifaceted. They suggest that the ways in which schooling develops human capital are likely varied, and go well beyond teaching specific content or skills (Deming, 2022). Moreover, the pedagogical aspects that comprise “high quality” education are also varied. While there is a large and growing literature on “non-cognitive” skills, the cognitive skills side of the above implications is very under-explored. As Brown et al. (2025) argue, opening up the education black box constitutes a promising direction for future research, with important positive and normative implications. For example, understanding how specific aspects of pedagogy link to the development of specific cognitive skills offers fodder for small and low-cost changes in pedagogy which could improve not only learning, but the development of cognitive potential among students. Perhaps more fundamentally, this research agenda argues for a much broader interpretation of what “human capital” is.

6. SELF-BELIEFS AND ASPIRATIONS

A collection of growing work uses psychosocial interventions to examine ideas such as aspirations, personal initiative, self-efficacy, and locus of control. In this review, we bundle such concepts using the term “self-beliefs”: beliefs relating to one’s capabilities, aspirations, or opportunities. While neoclassical economics would think of these beliefs as being solely driven by the objective information available to a person, psychology and other social science disciplines view these beliefs as socially constructed and influenced by one’s affective state. As we discuss

below, numerous studies document that not only do such beliefs appear malleable, interventions that act upon them can have strikingly large effects on behaviors.

Perhaps the most often discussed idea in the realm of self-beliefs is that of aspirations. Arjun Appadurai popularized the idea that an important constraint to achieving poverty is the “capacity to aspire”, the ability to envision and plan for a better future (Appadurai, 2004). He argues that poor and marginalized individuals often have a less developed capacity to aspire, not because they lack desires, but because they lack the social and institutional pathways that make aspirations seem achievable. The idea that aspirations are heavily influenced by one’s social context is a strong theme in the literature kicked off by this work. Ray (2006) formalizes this idea by positing that aspirations are not fixed preferences but socially determined reference points for what individuals consider achievable. This, in turn, can generate an aspirations-based poverty trap Genicot and Ray (2017).

The domain of self-beliefs encompasses various concepts, including aspirations, self-efficacy, locus of control, growth mindset, grit, future orientation, and others. These constructs are viewed as distinct by psychologists, and measured using distinct psychometric scales. However, as we discuss below, the empirical work in behavioral development often has difficulty distinguishing among them. Interventions themselves are often bundled with multiple components, and have many overlapping elements and themes.

6.1. Motivating evidence for self-beliefs and poverty. Descriptive data indicates that low income individuals may indeed hold low self-beliefs. Kaur (2024) documents that a strikingly large share of teachers in Ethiopia and India do not believe their effort can change learning outcomes for students, especially students from disadvantaged backgrounds. As the author notes, this is particularly concerning because work in education economics suggests that teacher effort is one of the most important (if not the most important) input for students’ learning outcomes. Dalton et al. (2018) ask entrepreneurs in Indonesia to state their aspirations for growth in shop size, number of employees, number of customers, and sales. Over 50% of entrepreneurs state they had no aspirations for growth over the next year, and 16% are not able to respond to their vision for an ideal business in the long term.

Other evidence is consistent with the assumption in Ray (2006) that aspirations are driven by what one observes in one’s specific social context. Beaman et al. (2012) exploit a natural experiment based on a law that reserved leadership positions for women in randomly selected village councils in India. They find, for example, that in girls who were exposed to female leaders were 8.3% less likely to want to be a housewife or have their occupation determined by their in-laws, 8.8% more likely to want to delay marriage until after age 18, and 8.6% more likely to want a job that requires an education.

Finally, two recent studies more directly tie self-reported self-beliefs to the condition of poverty. Orkin et al. (2024) finds that after individuals in Kenya receive a randomized cash

transfer, they have higher self-reported aspirations. While only suggestive, it potentially supports the view put forth by Appadurai (2004) that when the structural barriers of poverty make it difficult for individuals to see pathways to success, this dampens their ability to aspire (Lybbert and Wydick, 2025).

More starkly, Duhon (2025) examines how parents' beliefs about their child's ability vary with socioeconomic status across Ghana, India, Kenya, and the US. In each country, conditional on children's actual academic performance, lower income parents are more likely to believe their child is less able than they actually are relative to high income parents. This reverses for high income parents, who are more likely to view their child as more able than they actually are, relative to low-income parents. Moreover, Duhon uses two sources of variation to examine how these beliefs respond to changes in transitory and permanent income. Positive rainfall shocks in India, which temporarily raise income, lead low income parents to revise their beliefs about their child's ability upward, but the effect is mild. In contrast, she examines the beliefs of those who were randomly exposed to deworming as children, and now have higher human capital and income than those who did not receive deworming (Baird et al., 2016). She finds that among those who randomly received deworming in school, as adults are less likely to have pessimistic views of their child's ability (conditional on actual performance) relative to those who did not receive deworming. These patterns suggest the possibility that a permanent change in wealth could affect parents' beliefs about their children's ability.

6.2. Impact of self-beliefs interventions. The above descriptive patterns are based solely on self-reported aspirations or beliefs in surveys, and are therefore suggestive. Spurred by the above ideas, a large number of studies attempts to manipulate self-beliefs via field experiments and many find strikingly large impacts which persist over time (e.g. 1-5 years).³¹

These papers typically have a common approach: (i) They introduce an intervention to change a particular type of self-belief (e.g. aspirations or self-efficacy). Interventions have typically been either video-based or hands-on and deliberative, requiring participation and engagement from the recipient in making plans or applying concepts to their life. (ii) They measure the effect of the intervention on real field outcomes, such as earnings, investments, or test scores. (iii) To distinguish mechanisms, they use self-reported psychometric scales to support the particular self-belief mechanism that is of interest (e.g. aspirations or self-efficacy), and attempt to distinguish from other self-belief channels by arguing for a lack of effects on the psychometric scales associated with those other channels. However, this exercise often produces somewhat mixed results, likely because many of these scales are correlated with each other.

Orkin et al. (2024) provide Kenyan women with an 80-minute workshop to encourage people set higher aspirations and make plans to achieve them. Women randomized to receive the aspirations workshop, relative to a placebo workshop, have higher self-reported aspirations, labor supply, investment, revenue, and living standards 17 months later. They cross-randomize

³¹For excellent recent reviews of this literature, see La Ferrara (2019); Lybbert and Wydick (2025).

the workshop with a large cash transfer program. They find that conditional on receiving the cash transfer, the aspirations workshop has no incremental benefit on these outcomes.

Several studies use videos of “role models”—individuals, from backgrounds similar to the recipients, who managed to attain a desirable goal such as educational achievement or business growth—in an attempt to raise aspirations. For example, Bernard et al. (2025) hold group film screenings in villages, showing videos of individuals from similar communities who escaped poverty through their own efforts, and find that treated households had higher future oriented investments in agriculture, children’s education, and assets five years later. Riley (2024) conducted a randomized trial with 1,600 Ugandan students, assigning some to watch a feature film that tells the true story of a girl from the Ugandan slums who rises to become a chess champion through determination and persistence. Exposure to the movie raised math achievement by 0.11 standard deviations, with the gains concentrated among students with weaker baseline performance and those enrolled in lower-ranked schools. However, such impacts are not universal, and multiple studies with video-based aspirations interventions find negligible or insignificant effects (e.g. Cecchi et al., 2022; Rojas Valdes et al., 2022).

While aspirations pertain to one’s ability to plan for a better future, the idea of a “growth mindset” pertains to beliefs about the returns to one’s effort. This includes growth mindset and self-efficacy (Dweck). Alan et al. (2019) conduct a field experiment in elementary schools in Turkey, in which they train teachers in a random subset of schools to view success as determined by effort rather than only ability, and encourage children to persevere through setbacks. Teachers are then encouraged to adopt these practices into their pedagogy in the classroom, in order to transfer a growth mindset onto students. Using incentivized lab-in-the-field task, they find that students exposed to the intervention are more willing to take on a more difficult but more rewarding task, are more likely to persist in the face of negative feedback. Two years after the intervention, treated students show a gain of 0.2 standard deviations on a standardized math test.

A broader literature has examined growth mindset interventions in the US, with many studies failing to find impacts from light touch one time growth mindset interventions. However, one finding that does emerge in this body of work is that heterogeneity analyses across multiple studies find that treatment effects are concentrated among lower-income students, with no evidence of benefits for higher income students (e.g. Yeager et al., 2019). While speculative, this suggests that at baseline, lower-income students may be more likely to think their effort does not matter—consistent with the correlation between poverty and more pessimistic self-beliefs documented above.

Finally, two recent studies focus on generalized self-efficacy, beliefs in one’s ability to handle situations or reach one’s goals. McKelway (2025) randomizes women in India attend a series of nine group meetings over four weeks, with content including guiding women to recognize their strengths and think about paths to recognize their goals. Women who receive the intervention

score higher on an index of economic outcomes, including employment, savings, and children's education, measured three weeks to nine months after the end of the intervention. A key outcome variable in this context is female labor force participation, since the study takes place in a part of India where there are norms against women working outside of the household. However, when treated women are offered a job opportunity, they are no more likely to take it up than untreated women.

Kaur (2024) studies self-efficacy among teachers in India. As discussed above, she motivates the need for a self-efficacy intervention because many teachers do not believe they can influence the outcomes of children from disadvantaged backgrounds. She uses a series of ten zoom sessions over five weeks with teachers in which they discuss how to recognize situations in which one does and does not have control, as well as goal setting, planning, etc. She finds treated teachers score higher on psychometric self-reported measures of self-efficacy and are also more willing to accept a performance pay contract that rewards increases in student achievement—consistent with increased beliefs among teachers that they can raise student learning. She also finds meaningfully higher teacher effort in the classroom, with students of treated teachers having 0.09 standard deviations in math achievement scores at the end of the school year.

One notable feature of both the above self-efficacy studies is that the interventions do not specifically target the domains in which the authors measure behaviors. For example, in Kaur (2024), there is no mention of teaching or education throughout the sessions. This is consistent with a change in participants' general mindset or motivation. This suggests that characteristics like self-efficacy should potentially be viewed as skills that can be “trained”, with the potential to affect various domains of individuals' actions.

6.3. Discussion and future directions. Many studies above find large effects on meaningful economic outcomes, while others targeting the same psychosocial mechanisms fail to find impacts. How should we interpret these mixed effects? We offer two potential conjectures.

First, it is possible that intensity matters. For example, Alan et al. (2019) point out that much of the prior growth mindset literature involves short one-time interventions (e.g. a 60 minute online session), whereas theirs is much more intensive. This is also true of the self-efficacy interventions, which were both also quite intensive. Similarly, workshop based interventions require a lot of active engagement with the material (rather than only passive receipt of information). While it is not universally true that intensity predicts success, there is a potential correlation there that could be examined further in a more careful meta-analysis. The importance of intensity and engagement is perhaps to be expected: participants have been exposed their entire lives to the structural constraints of poverty—which potentially play a hand in leading them to have internalized low self beliefs; it would be surprising if a single instance of a light touch intervention could change such beliefs reliably or persistently.

Second, the interventions in this literature not very well defined. There is a large amount of discretion in shaping content to convey the underlying psychosocial constructs of interest, as

well as many components to the content which likely draw on multiple mechanisms. This makes it difficult to discern what precisely the “intervention” is, and therefore how to replicate it in a different setting. For example, if the role model video developed by one researcher or NGO has an effect, but another video developed by someone else does not, how can we tell whether this is a failure of replication or whether the interventions themselves were fundamentally different? Addressing this issue is important for this literature to avoid a replication crisis. Possible steps forward to advance this stream of work include research that attempts to identify which part of the bundled interventions above are the “core” of what drives effects in order to create generalized principles, and to identify ways to measure a “first stage” that allows researchers to have an *ex ante* agreed upon yardstick for whether an intervention successfully manipulated a given mechanism.

7. MENTAL HEALTH

The study of mental health in developing countries is one of the youngest fields in global health (Patel and Prince, 2010) and has commanded a recent wave of interdisciplinary and policy interest. Data availability has steadily improved with the WHO launching globally-standardized cross-country world mental health survey initiative in the early 2000s Kessler et al. (2006), economists increasingly collecting information on subjective well being, depression and anxiety in panel surveys, and the DHS adding a mental health module in 2022. Multilateral organizations have turned their focus toward mental health as a development issue – the WHO released of the *2013–2030 Comprehensive mental health action plan*, and the UN included mental health in the 2015 Sustainable Development Goals World Health Organization (2021); Heymann and Sprague (2023).

7.1. The Relationship between Mental Health and Economic Outcomes. From an normative economics perspective, poor mental health has direct welfare consequences as it often corresponds to poor subjective well-being and human suffering (Patel et al., 2018). This alone is sufficient justification for policy intervention. However, mental health has further relevance for economists and policy-makers if it is a consequence of economic inputs or inhibits individual potential. Further, if poverty causes poor mental health, and poor mental health in turn causes worse economic outcomes, then mental health can create a vicious cycle. Ridley et al. (2020) provide an excellent review of this two-sided relationship (with a focus on anxiety and depression), including a comprehensive discussion of the potential mechanisms underlying both directions of the relationship.

Within-country, the available data indicate that the burden of poor mental health is disproportionately borne by the poor (see e.g., Angelucci and Bennett, 2024b; Case and Deaton, 2020). As Ridley et al. (2020) review, many papers find that the relationship between changes to material well-being and mental health is causal. For example, McGuire et al. (2022) analyze 45 cash transfer studies and find statistically significant positive impacts on both subjective

well-being and mental health, with effects measured on average two years post-treatment.³² Evidence from Indonesia documents that cash transfers causally lower the prevalence of suicide (Christian et al., 2019). Symmetrically, negative economic shocks lead to deterioration in mental health (Christian et al., 2019; Baranov et al., 2022).

Paradoxically, the cross-country correlation between economic vulnerability and mental health reverses relative to the within-country findings in the World Mental Health Surveys, with richer countries experiencing worse average mental health across most diagnoses. Similar reversals also appear in data on suicide prevalence from completely separate sources (Dückers et al., 2019). Whether these patterns simply reflect poor data quality in lower income countries and flawed cross-cultural standardizations of questions developed for high income populations is still unknown.³³ Ridley et al. (2020) note that a plausible mechanism is concerns over relative rather than absolute status, while others have hypothesized that there could be protective elements in societies with high economic vulnerability such as our starting point of high levels of social capital. The cross-country correlations mirror the ambiguous relationship between happiness and cross-country income dubbed the “Easterlin paradox” (Easterlin, 1974). However, work revisiting these relationships with better data have found largely monotonic correlations between happiness and GDP per capita Wolfers and Stevenson (2008).³⁴ This is a striking and multifaceted knowledge gap. More work is needed to better conceptualize how to scale survey-based measures of specific mental health disorders across different contexts and to explore the plausibility of alternate causal channels.³⁵

A smaller body of evidence explores the relationship between mental health and economic outcomes, largely through the analysis of the impacts of mental health treatment. The literature primarily focuses on two classes of outcomes, labor supply and investments in human capital. Baranov et al. (2020) show that a psychotherapy intervention to treat pre-natal depression in Pakistan led to both short and long-run improvements in maternal mental health as well as large 0.2-0.3 standard deviation increases in financial and time investments in children. A meta-analysis by Lund et al. (2024) estimates an aggregate effect size from psychotherapy interventions for depression and anxiety of 0.16 standard deviations on an index of labor market outcomes. The evidence base for severe disorders such as schizophrenia is much thinner, and treatment effect estimates are less precisely estimated. However, a challenge in this literature is a lack of standardization of outcome measures across studies.

³²The literature on multi-faceted asset transfer programs targeted to the ultra-poor also finds large positive improvements in subjective well-being (Bandiera et al., 2017; Banerjee et al., 2015).

³³Data issues are likely widespread. For example, only 60 out of 172 countries in recent WHO data on suicide rates have high quality cause of death records. Moreover, the World Mental Health Surveys suffer from low and variable response rates, with substantially higher completion rates in LMICs relative to high-income countries (Kessler and Üstün, 2008).

³⁴Also see Sacks et al. (2010); Stevenson and Wolfers (2013).

³⁵This relates to a literature in medical anthropology arguing that historical and cultural factors shape subjective experience and the expression of symptoms (see, e.g., Summerfield, 2008; Kleinman, 1988).

The clinical characteristics of common mental health disorders could help explain a negative causal relationship. Most notably, depression is associated with a decrease in motivation and goal-directed behavior (?), and the condition can also lead to pessimistic views about the future, decrease perceived rewards, and increase perceived effort costs (see, e.g., Pizzagalli, 2014; Treadway, 2012).³⁶ Consistent with these mechanisms, Angelucci and Bennett (2024a) find that providing pharmacotherapy to depressed individuals in India significantly increases the willingness to pay for a new preventative health technology (hand sanitizer). Carvalho et al. (2025) show that poor individuals in India with depression and anxiety are equally likely to take up a job that can be done from home as non-symptomatic workers. However, they are two times more likely to turn down a job that must be done outside of the home.³⁷

7.2. Cognitive Behavioral Therapy. Approximately half of the psychosocial interventions analyzed in the Lund et al. (2024) meta-study use cognitive behavioral therapy (CBT), including Baranov et al. (2020). CBT is used to treat many different disorders including depression, anxiety, and post-traumatic stress disorder (PTSD), and the method is based on the idea that thought patterns affect emotions and behaviors. Therapy sessions seek to identify unhelpful or distorted thought patterns and to disrupt them with new practiced behaviors, thus improving emotional well-being and self-regulation.³⁸ CBT has also been shown to be beneficial in populations not experiencing mental health symptoms.³⁹

The diverse applications of CBT and other therapy techniques raise an important conceptual question – do the economic benefits from therapy and related interventions derive from improvements in the participant’s underlying mental health status, or does therapy provide participants with general cognitive tools? Barker et al. (2022) study a CBT intervention conducted with a general population in Ghana and document positive improvements to both a range of self-reported health, mental health and self-perceptions along with cognitive skill. Notably, these positive impacts are found across the population, regardless of baseline mental health status, which the authors argue points to cognitive skill development playing an important role in explaining the broad-based benefits of CBT.

³⁶De Quidt and Haushofer (2019) provide an excellent economic treatment of depression and its symptoms and offer guidance on theoretical modeling.

³⁷Related work in the Netherlands shows that raising the costs of enrollment in social programs disproportionately affects take-up by populations with poor mental health (Naik, 2025). Also relevant is Bhat et al. (2022), discussed below who measure the impacts of therapy on time and risk preferences as well as beliefs.

³⁸In the case of PTSD, CBT typically involves direct processing of traumatic experiences, and a substantial literature raises concerns about its cognitive, emotional, and logistical demands. These concerns are particularly salient in low-resource or unstable settings (Miller and Rasmussen, 2010; Tol et al., 2011) and have motivated the development of lower-intensity and non-trauma-focused interventions (Dawson et al., 2015). We discuss alternate approaches in populations with PTSD below.

³⁹Blattman et al. (2017, 2023) present the results of a field experiment randomizing male at-risk youth in Freetown, Liberia to group CBT. The therapy sought to increase self-control and to change participants’ social identity. The authors find that those receiving CBT experienced reductions in antisocial behavior of approximately 0.2 standard deviations at both a one month and 10 year horizon.

Bhat et al. (2022) study the long-run impacts of two separate experiments randomizing a brief behavioral activation therapy.⁴⁰ In one of the study samples, conducted with adults screening positive for moderately-severe depression, receiving 6-8 therapy sessions led to large reductions in depression five years later. In the other study sample, pregnant women with moderate depression, there were no long run impacts on depression, potentially due to the high remission rates in the control group.⁴¹ Despite these very different impacts on long-run mental health, the authors find similar changes in self-beliefs across both samples, namely decreases in the likelihood of seeing themselves as a failure along with a decrease in overoptimistic beliefs about a work opportunity.⁴² The idea that psychotherapy can affect participants through channels other than improved mental health links to our discussion in Section 6.2. Moreover, many of the interventions discussed above share similarities with the components of CBT.

Much of the emerging development literature on mental health focuses on non-specific subjective well-being or depression and anxiety. Given that depression and anxiety are the most common mental health disorders globally, this is a sensible place for an new literature to start. As the literature grows, more work is needed on other disorders (e.g., bipolar and schizophrenia), which while much more rare, have more severe impacts, require more specialized treatment, and may be subject to greater stigma (Organization, 2025). Moreover, different pathologies likely have different profiles of interactions with the economic and social environment.

7.3. Trauma and PTSD. The mental health consequences of trauma have begun to receive attention in the development literature. Kessler et al. (2017) document in the World Mental Health Surveys that more than 70% of individuals across 26 countries have experienced lifetime trauma.⁴³ Experiencing or witnessing violence (including in conflict settings), displacement, and intimate partner violence are types of traumas with particular relevance to LMICs (Ray and Esteban, 2017; (WHO) et al., 2023). Singhal (2019) consider the long-run implications of childhood exposure to bombing during the Vietnam War and show that more intensive bombing is linked with substantially higher incidence of severe mental distress in adulthood. Frankenberg et al. (2017) show that children exposed in utero to the 2004 Indian Ocean tsunami are more likely to still have deficits at age 5 if their mothers had PTSD.

Kessler et al. (2017) show that 4% of individuals exposed to trauma experience PTSD, with much higher rates for individuals experiencing sexual violence. PTSD often includes intrusive symptoms, negative changes to cognition and mood and disturbed sleep, and the psychology literature establishes that PTSD makes it more difficult for individuals to plan for the future and learn new skills (Holmes et al., 2017). Ashraf et al. (2024) show that trauma makes it more difficult for affected individuals to fully benefit from standard anti-poverty interventions such

⁴⁰Behavioral activation is a core sub-component of CBT and is often used as a standalone intervention.

⁴¹Angelucci and Bennett (2025) also find high rates of spontaneous recovery in their study of the seven-year impacts of pharmacotherapy among depressed individuals in India.

⁴²They also document increases in reported patience and altruism.

⁴³Also see Blackmore et al. (2020).

as business training and cash transfers, which demand planning and cognitive resources. They demonstrate that business training programs can even decrease welfare for affected individuals through making it harder to see one's self as a successful entrepreneur. The authors design a guided mental experiencing (GME) intervention to help individuals mentally visualize a link between their own actions and future economic outcomes. They test the GME intervention in trauma-affected populations from both Eritrea and Colombia and find improvements in planning and future orientation. The authors also find positive impacts on labor force participation and self-assessed well-being in the Eritrea sample. In the Colombia sample, adding GME to business training offsets the negative impacts of a more standard version of the training, but does not improve overall economic outcomes relative to the control group.

7.4. Social Isolation and Mental Health. Many mental health disorders have a strong link to socialization and social capital, and numerous correlational studies establish a relationship between low social connectedness and disorders such as depression and anxiety Wickramaratne et al. (2022); Lund et al. (2018). This raises the possibility of a feedback relationship between social isolation and depression, as, depressed individuals often withdraw from friends and family at a time when supportive interactions are needed most Kupferberg et al. (2016). A related question is whether social capital has a protective mediating effect in the relationship between mental health and economic outcomes. Does social capital insulate individuals from negative shocks and protect them from poor mental health? Do improvements to social networks stimulate both improvements in mental health and economic outcomes?

A small literature in development economics considers loneliness, especially among the elderly Chen and Fang (2021). Banerjee et al. (2023) argue that depression reduces the quality of life and lifespan for elderly populations by making it harder to complete day-to-day tasks. Moreover, in a sample in Tamil Nadu, India, the authors show that depression is strongly linked to both social isolation and poverty.

Recent work by Fleischman (2025) studies low-SES women in Malawi who are socially isolated due to in-migration at marriage. She experimentally tests an intervention that reduces frictions for meal sharing, a key way that social capital is built and maintained in her setting. Facilitating invitations to a shared meal has large impacts on actual shared meals, both when invitations are exogenously directed toward high- versus low-SES women. She finds that women in the low-SES treatment experience large improvements to their mental health, while those in the high-SES treatment experience significant improvements to instrumental outcomes, namely food security.

7.5. Supply of Mental Health Care. As in the market for physical health in LMICs, access to mental health care is severely limited. Despite LMICs hosting the vast majority of the world's population, they receive only 20% of global mental health resources (Saxena et al., 2007; Consortium et al., 2004), and professional treatment of severe disorders is strongly correlated with GDP (Patel and Prince, 2010; Koenen et al., 2017). Consortium et al. (2004) argue that,

around the world, while disease severity is positively associated with treatment probability, many individuals with more mild disorders receive care, suggesting benefits of reallocating clinician time towards more severe cases, especially in the most under-resourced settings. Patel et al. (2023) argue that bringing a broader set of individuals into the diagnoses and treatment of mental illness is a necessity for a more effective global response to mental health needs. Indeed, many of the psychotherapy interventions analyzed in the Lund et al. (2024) metastudy, employed non-professionals in the delivery of therapy. A leading example is the Friendship Bench, which was developed in Zimbabwe and involves brief therapy sessions delivered by lay health workers on a bench in front of the primary health clinic. Clinical trials document the effectiveness of the model in decreasing the symptoms of common disorders such as depression (Chibanda et al., 2015).

However, how to effectively design and target such interventions is an open and fertile area for research. For example, (Nilsson and Biyong, 2025) experimentally evaluate a pilot intervention that trains hairdressers in Cote d'Ivoire to deliver mental health first aid. The authors find null effects on the mental health of the customers of the participants and negative impacts on the mental health of the hairdressers themselves. McKelway et al. (2023) find no impacts on mental health or other disability and food security outcomes from giving elderly Indians living alone access to a free a 6-week CBT intervention conducted over the phone. The question of how to design accessible and scalable mental health care is of particular relevance today in light of the many possible technological avenues for providing care, from phone or video therapy, to smartphone applications and AI chatbots.⁴⁴

7.6. Demand for Mental Health Care. Demand-side frictions also limit the take-up of mental health care and arguably bind more tightly in developing countries. Given the low rates of treatment in LMICs and the positive correlation between the severity of symptoms and treatment, the conditions for stigma from treatment-seeking to arise are particularly strong.⁴⁵ Moreover, tight-knit social dynamics may further exacerbate such forces. While social stigma has been found in other taboo or compromising health contexts (see e.g., Atre et al., 2011; Thornton, 2008), there is a surprising gap in the development economics literature quantifying the importance of stigma for reducing mental health treatment.⁴⁶ One exception is Smith (2023), who through a field experiment with Syrian refugees in Jordan, argues that concerns about stigma inhibit individual's willingness to share information about mental health resources.

Researchers also argue that pessimistic beliefs about the efficacy of therapy limit take-up and demand (Roth et al., 2024). Given that exposure to therapy is so low in developing country

⁴⁴Much of the existing evidence comes from high income countries. For example, Shreekumar and Vautrey (2022) find positive impacts of mindfulness app in US on anxiety, depression and productivity in a proof-reading task.

⁴⁵See Pescosolido et al. (2013) for survey evidence on stigma and prejudice from 16 countries.

⁴⁶Ongoing work by Bennett and Angelucci explores marriage market stigma from psychotherapy (AEARCTR-0013340).

contexts, these beliefs might be particularly difficult to overcome. Consistent with part of this mechanism, Bhat et al. (2022) show that exposure to treatment increases perceptions of efficacy.

Increasing exposure to therapy and the ubiquity of its use could help to improve both stigma (if the marginal taker of therapy has less severe symptoms) and efficacy beliefs. One workhorse approach for economists to jump-start take-up is to provide incentives. However, public health professionals have mixed views on financially incentivizing health behaviors (e.g., Giles et al., 2016). One particular concern is gaming – incentives for therapy might lead individuals with no or mild symptoms to seek care, potentially displacing those with more severe symptoms. Breza et al. (2025a) offer free therapy provided by professionally-trained counselors to college students in Chennai, India. Despite more than half of students screening positive for mild-to-severe symptoms of anxiety or depression in a combined PHQ-ADS scale, only 3% of students schedule an appointment in the status quo.⁴⁷ While a modest \$6 USD cash incentive increases appointments by 9 percentage points, with no differential effects by baseline symptoms, combining the incentive with information about the individual's PHQ-ADS leads to no detectable treatment effects for the asymptomatic and a 21 percentage point increase in take-up for the symptomatic relative to control.⁴⁸ These results suggest that incentives, if deployed with screening information can actually improve targeting of scarce mental health resources.

7.7. Discussion and Future Directions. Stepping back, two distinct, though not entirely incompatible, views emerge from the literature. The first is a focus on improving access to mental health resources in LMICs, for example, by doing more to train and deploy lay-people to provide diagnostic resources and therapy and other lower cost solutions (Patel et al., 2023). The second view is that policy makers should focus on alleviating the conditions of poverty that contribute the most to poor mental health (Oswald et al., 2024; Lund et al., 2018).⁴⁹

A small number of studies conduct a horse race between cash transfers and psychotherapy with mixed results. Blattman et al. (2017) find that their pure cash arm does not decrease anti-social behavior at any time frame, while impacts of the arms with CBT persist 10 years later. Haushofer et al. (2020) evaluate the impacts of a large cash transfer, a psychotherapy intervention, or both relative to control. The authors find large impacts of cash on psychological well being, assets, revenue and consumption 12 months post-treatment and null impacts of psychotherapy. Finally, for some types of mental health disorders, Ashraf et al. (2024) show us that in the case of trauma, there are important complementarities from combining mental health

⁴⁷PHQ-ADS is a validated composite of the commonly used PHQ9 and GAD7 scales.

⁴⁸These effects hold despite the fact that baseline self-assessed mental health is highly correlated with PHQ-ADS, suggesting that learning only about one's self is not the key driver of the results.

⁴⁹Though Ridley et al. (2020) argue, while mental health is correlated with poverty, there is no guarantee that as countries develop, we should expect a drop in the global burden of mental health disorders. As they describe, social media (Braghieri et al., 2022; Jain and Stemper, 2024), climate change, and the uncertain future of automation, digitization and AI all have the potential to contribute to poor mental health.

interventions with anti-poverty interventions.⁵⁰ More work is needed to better understand these complementarities.

8. SOCIAL NORMS, SOCIAL IMAGE AND SOCIAL COHESION

Development economics is fertile ground for examining the economic impacts of social groups. Weak formal institutions and safety nets present in many LICs create the need for communities to leverage social capital to provide risk sharing, information, and public goods. However, in outsourcing these critical functions to the network, several phenomena from social psychology naturally emerge.⁵¹

For example, the provision of material benefits by the network may activate a desire to signal one's membership, even if sending that signal is costly. Moreover, social norms, which establish guidelines for appropriate behavior, can emerge as a tool for facilitating cooperation and for buttressing informal contracts. Finally, limits to informal contracting may restrict which groups of individuals can successfully sustain cooperation with one another.⁵² This, along with other cultural and historical foundations, can contribute to a greater potential in developing countries for inter-group conflict over resources. But why is this behavioral? Our jumping off point is two core insights from social psychology: (i) individuals have a fundamental motivation to belong to social groups (Turner et al., 1987; Baumeister and Leary, 1995), and (ii) social approval and disapproval from those groups generate powerful affective responses—such as pride, shame, and changes in self-esteem—that influence behavior even in the absence of instrumental incentives (Leary and Baumeister, 2000; Tangney and Dearing, 2002; Eisenberger and Lieberman, 2004). While much of the economics literature conceptualizes social norms and social image through a rational, instrumental lens, the presence of these hedonic benefits and costs makes the study of social image and social norms relevant for behavioral economics.

Much of our review considers the role of social norms, which we define as the informal rules of behavior followed by a community or group. Norms can be descriptive, encoding simple observations of how others do behave, or injunctive, capturing perceptions of how individuals should or should not behave.⁵³ Economics largely focuses on injunctive norms, as they can serve as a vehicle for sustaining cooperation (Kandori, 1992; Ellison, 1994).

For injunctive norms to shape group behavior, two conditions are typically required. First, the community must have a common understanding of the norm, and second, there must be a mechanism to enforce compliance (Fehr and Fischbacher, 2004; Fehr and Schurtenberger, 2018).

⁵⁰See also Angelucci and Bennett (2024b) who study pharmacotherapy combined with livelihood assistance in depressed individuals in India.

⁵¹This research nexus also links to literatures in sociology and anthropology (Bourdieu, 1979; Coleman, 1990).

⁵²This directly relates to a literature on endogenous network formation and favor exchange (Jackson et al., 2012; Ambrus et al., 2014; Bloch et al., 2008).

⁵³The study of social norms has a long intellectual history across the social sciences and includes early work in developing country contexts (see, e.g., Sherif, 1936; Geertz, 1973; Akerlof, 1976; Durkheim, 1938; Coleman, 1990).

Social capital plays a direct role in the latter, as social networks can facilitate the spread of information about norm violations (Bloch et al., 2008) and provide levers for punishment, for example, by denying future network favors such as job referrals or informal loans (Jackson et al., 2012). However, we argue that, important for a behavioral interpretation, norms can also be internalized, often in moral terms. This can improve enforcement capacity, for example, by increasing the willingness to sanction norm violations or triggering negative affective responses in the violator such as shame or guilt.

Because norms need to be simple, salient, and easily interpretable to function, they are inherently coarse contracting "technologies". Moreover, they are often slow to adapt to changing economic environments, which is possibly a consequence of being internalized into preferences. As a result, norms may support second best outcomes and may persist even when they support inefficient behaviors or outdated beliefs. Empirically distinguishing between instrumental and internalized motivations—and between efficient and inefficient norms—has proven challenging. Accordingly, this chapter provides a broad overview of social image and norms in the development economics literature while highlighting key conceptual and measurement challenges that remain open for future research. [fix the tone and writing] Our view is that we have a lot of evidence that is a proof of concept that social image and social norms have economic consequences. An important opening for new research is to better understand real-world contexts where hedonic or internalized motives play a role.

Finally, we turn to inter-group bias, stereotypes, and the contact hypothesis, which emerge from salient group identities. In many settings, competition over resources or opportunities may initially give rise to group-based distinctions for instrumental reasons. However, social psychology emphasizes that these distinctions are often internalized, shaping affect, preferences and stereotypes toward ingroups and outgroups. As a result, prejudice and discriminatory behavior can persist even when immediate material incentives are weak or absent. This literature is also centrally concerned with policies aimed at reducing prejudice, rendering the determinants of prejudice of first-order importance.

Finally, we turn to inter-group bias, stereotypes, and the contact hypothesis, which also emerge from salient group identities. While competition over resources or opportunities may initially give rise to group-based distinctions for instrumental reasons, social psychology emphasizes that these distinctions are often internalized, shaping affect, preferences, and stereotypes toward ingroups and outgroups. These distinctions are relevant for normative policies for prejudice reduction, a key interest in this literature.

We begin this section by describing the social context present in many development contexts followed by a review of the link between economic decisions and social image concerns. We then turn to the active literature on how social norms impact economic outcomes and what we are learning about how norms evolve and change. We conclude with a discussion of the growing

body of work in development economics on inter-group stereotypes, bias, and strategies for improving inter-group relations.

8.1. Social Ties and Missing Markets. Social networks play a particularly central role in many developing-country settings because formal markets and institutions are incomplete or missing. As a result, economic exchange is rarely anonymous or arm's length. Households commonly obtain labor, credit, inputs, and services through repeated interactions with known individuals rather than through specialized firms or formal contracts. For example, agricultural inputs, water access, or informal credit are often provided by neighbors, relatives, or acquaintances embedded in the same village or kinship networks.

These relationships are also typically multiplex (Chandrasekhar et al., 2024). The same individual may simultaneously serve as an employer, landlord, lender, trading partner, and source of insurance, while co-workers and neighbors often overlap as sources of job referrals, marriage connections, and leisure activities. In rural settings with low geographic mobility, such ties persist over long horizons, often across generations. Economic interactions are therefore deeply embedded in social relationships, and actions taken in one domain can have consequences across many others.

These features may also make group identities more salient in developing-country contexts—not because identity motives are fundamentally different, but because missing markets, dense social networks, and limited mobility make group membership more consequential for economic outcomes. This suggests potential complementarities between instrumental incentives and internalized motives in shaping social image concerns and norm adherence.

The economic relevance of these forces is also amplified, given the presence of missing markets. When formal contracting institutions are weak, social identity, reputation, and group membership can influence both the willingness to transact and the terms of exchange. Norms are more likely to affect market behavior because informal sanctions—such as social exclusion, reputational damage, or withdrawal of cooperation—are more credible and more powerful. Coordination and cooperation within networks can also affect market power on both the supply and demand sides, with growing evidence that these mechanisms aggregate to influence equilibrium outcomes, including occupational choice, wage rigidity, and the distribution of market power.

At the same time, reliance on social networks entails important limitations. Because norms must be simple and broadly applicable to function, their coarseness and slow evolution can generate rigidities and second-best outcomes. For example, cooperation to sustain wage floors may increase worker surplus but also limit flexibility in response to short-run shocks—even in markets organized as daily spot contracts.

From a missing-markets perspective, social networks can also be understood not only as substitutes for financial and insurance markets, but also as substitutes for markets that might

otherwise provide behavioral aids. Just as informal credit arrangements emerge when formal lending markets are absent, social networks can supply discipline, monitoring, and social pressure that help individuals manage psychological constraints such as self-control or limited attention. In addition, by providing social support, belonging, and mechanisms for coping with stress and shocks, social networks may improve mental health, serving as a complementary behavioral aid in environments where formal mental health services are scarce.

8.2. Social Image Concerns. Social image concerns arise and shape economic decisions in myriad settings.⁵⁴ These social image concerns may affect behavior through a desire to signal a socially desirable trait to others, a desire to avoid being associated with stigmatized actions or traits, or individual preferences that internalize such social concerns. Moreover, social signals may deliver both hedonic utility and instrumental benefits. Bursztyn et al. (2018) experimentally isolate a demand for status in the context of platinum credit cards, which typically signal wealth.⁵⁵ Moreover, a large body of work shows that individuals are willing to incur costs to cultivate their social image, including avoiding stigmatized behaviors (e.g., Brown et al., 2011; Bloch et al., 2004; Suzuki, 2025; Moav and Neeman, 2012; Osman and Speer, 2024; Banerjee et al., 2024b). While the literature documents the widespread presence of status and signaling concerns, we have much less evidence unpacking the underlying motivations. For example, in the case of platinum credit cards, individuals may enjoy hedonic value from status – such as pride – or instrumental value – say a willingness to cosign a loan – from others observing a signal of high wealth.⁵⁶ This is an area requiring further research.

One paper that makes progress toward separating motives for social image management is Chandrasekhar et al. (2018), who conduct an experiment in India in which individuals decide whether to seek payoff-relevant information from a village advisor. When search behavior is informative about the seeker’s skill, low-skill individuals are less likely to seek, consistent with instrumental social signaling. However, individuals also reduce seeking when the advisor is directly informed of the seeker’s skill, even though search is no longer informative, consistent with shame or intrinsic image costs. More work is needed, especially in less stylized settings. This distinction is particularly relevant for normative policy design, as different motivations require different types of interventions.⁵⁷

⁵⁴See Bursztyn and Jensen (2017) for a comprehensive review.

⁵⁵Specifically, they show that Indonesian consumers have a greater demand for platinum credit cards than a status quo card with identical contract features. Consistent with the cards facilitating social signaling, platinum holders are more likely to use them in social situations such as restaurants.

⁵⁶Macchi (2023) documents instrumental returns to signaling through physical appearance in Uganda in the context of loan evaluations. Dupas et al. (2025) document both the negative instrumental consequences of sending signals of having low consumption in Cote d’Ivoire and the desire for individuals to invest in cultivating the image of individuals with higher levels of consumption.

⁵⁷Macours et al. (2024), for example, study menstrual stigma in 140 schools in Madagascar and test complementary interventions that relax constraints on sanitation inputs and deputize student leaders to try to change school norms. The inputs intervention increases learning, decreases stress and improves the school environment, and the leaders intervention enhances program impacts and reduces menstrual stigma.

Internalized Image and Stereotype Threat. A key implication of internalized social image concerns is that they can influence behavior even without social observability. (Oh, 2023) considers the context of jobs traditionally associated with specific caste groups in India, where workers indicate in surveys that taking jobs linked to other castes would trigger both social image and identity concerns. In a field experiment, workers are more than 45 percentage points less likely to take a short-term job if the task is associated with a lower-ranked caste, and over 40% forgo a ten-fold wage increase to avoid spending a short amount of time on a task traditionally associated with other castes. To investigate the role of social versus internalized image concerns, (Oh, 2023) randomizes whether job take-up is private or observable to neighbors and finds similar take-up across observability conditions, suggesting that status concerns are largely internalized. In a series of experiments in Kampala, Uganda Macchi and Stalder (2024) show that both workers and employers strongly prefer job-based assistance over cash. More than half of workers prefer a job that pays UGX 500 to a cash transfer that is six times larger. The authors present evidence that dignity and reciprocity drive these preferences, rather than instrumental signaling value.⁵⁸

One way that psychologists have conceptualized internalized image concerns is through stereotype threat, defined by Steele and Aronson (1995) as "being at risk of confirming, as self-characteristic, a negative stereotype about one's group." Experimental tests typically assign subjects to a stereotype-relevant condition—such as making identity salient or framing a task as diagnostic of ability—and examine whether performance gaps on a task or exam widen. Numerous studies document such effects in race and gender contexts in the United States (see, e.g., Steele and Aronson, 1995; Spencer et al., 1999). In experiments in India, Hoff and Pandey (2006, 2014) show that, high- and low-caste boys perform similarly solving mazes. However, when caste is announced, a caste-gap emerges, driven by worse performance by low-caste boys. Angeli et al. (2025) show that job seekers from favelas in Brazil anticipate labor market discrimination. Asking applicants to provide their address reduces interview performance for the average respondent, which the authors interpret as "choking under pressure" in a high-stakes, high-pressure environment and suggest that expected discrimination can generate a negative feedback loop.

Social Signaling as a Behavioral Aid. A small literature highlights how social signaling can be harnessed for positive behavioral change. While the signaling motives may be instrumental, these examples highlight how social forces can be deployed as a behavioral aid. In the savings monitors intervention described in Section 3, the third party monitors serve as a source of commitment to increase savings. Breza and Chandrasekhar (2019) argue that meeting a savings goal sends a desirable signal to others in the community that is amplified by the network position of the monitor. Survey evidence shows that individuals who are better able to meet their saving

⁵⁸Employers, on the other hand, use employment as a screening device for need. The dignity results also relate to Hussam et al. (2022).

goal are viewed as more responsible and better-suited to positions that require managing money (e.g., organizing a village committee).

Experimental work by Karing (2024) further highlights a potential role for social signaling in policy design. The author tests whether giving mothers in Sierra Leone a physical technology to signal the vaccination status of their children – specifically a colorful bracelet – increases vaccination rates. In this context, 92% of mothers report that others would view them as “caring” if their children completed the full five-dose series of vaccines. The field experiment randomizes the rules for distributing bracelets across communities as a function of the number of completed doses. When the bracelet conveys the administration of the final dose, timely vaccine completion rates rise by 13.3 percentage points relative to the no-bracelet control group and by 10.5 percentage points relative to a group receiving uninformative bracelets. Consistent with the signaling mechanism, the bracelets improve community knowledge of vaccination.

While these examples show that social image can be embraced for positive behavior change, the welfare consequences are far from clear. (Butera et al., 2022) argue that failure to signal a positive behavior is often equivalent to signaling a negative behavior. Thus, individuals who fail to send a positive signal may be strictly worse off. This is related to the above discussion of the welfare implications of commitment devices, where people who fail to achieve their pre-committed action experience a welfare loss. More work is needed to understand the scope and severity of such negative impacts in contexts where policy-makers may seek to use social signaling to change behavior.

Recent work is beginning to shed light on other relevant issues for designing policies using social signals. For example, Jee et al. (2024) consider how the value of sending a social signal interacts with effort cost in an experiment giving bracelets and ink markings to those taking up free deworming treatment in Kenya. They again find that individuals increase health-seeking behavior when take-up has signaling value. However, they also show that this effect is stronger when individuals need to travel farther to be treated. They consider the consequences of this finding for the optimal spatial placement of health services with and without the ability to activate social image concerns.

Discussion and Future Directions. While social image concerns likely arise in countless developing country contexts, they are by no means limited to LMICs (Bursztyn and Jensen, 2017), and we have limited evidence for how social signaling considerations interact with the conditions of under-development. A priori, the direction of such a relationship is unclear. For example, in more frictional information environments, decision makers (e.g., lenders or employers) may rely more on soft information, including signals of decision-relevant characteristics or traits.⁵⁹ Moreover, if the social network provides important benefits to individuals, incentives to cultivate a

⁵⁹This relates to the broader topics of discrimination in developing countries (Maitra and Neelim, 2025) and the relationship between discrimination and the information environment (see e.g., Agan and Starr, 2018; Doleac and Hansen, 2020; Bartoš et al., 2016), which has largely been studied in high-income countries.

positive reputation may be strong, consistent with the findings of Breza and Chandrasekhar (2019). However, contexts with strong social networks also tend to have better information transmission, suggesting less of a need to rely on soft signals of behavior. Improving our conceptualization and measurement of these potentially subtle relationships is a potentially fruitful direction for new research. There is also a question of whether the breakdown of the benefits of social signaling – between direct hedonic (e.g., pride or shame) and indirect instrumental – is related to the underlying environment.⁶⁰

Within developing country settings, more can be done on how much social image concerns affect educational investments, occupational choice, and migration.⁶¹ For example, can social image help us to understand the large sectoral wage gaps observed in rural Indian villages Emerick et al. (2023), where construction or factory labor may invoke lower social image than agricultural work? Or alternately, are there settings where self-employment generates more status than working as a laborer? Could this help to us understand the profusion of low-return, sole-proprietor firms in many LMICs or a contributing factor driving low levels of hired labor in many parts of sub-Saharan Africa?

Finally, the widespread lab-in-field evidence of internalized stigma and negative stereotypes raises important questions about their broader relevance for equilibrium behavior. For example, internalization could generate self-reinforcing cycles or poverty traps, if negative group stereotypes shape self-beliefs and aspirations and depress both expectations and outcomes. Do the patterns observed in Duhon (2025), discussed above, reflect mechanisms akin to stereotype threat? In many low-income settings there is limited documentation (by economists) of the nature of perceived stereotypes. Moving past academic ability, do stereotypes about trustworthiness or physical ability shape economic behavior? Moreover, could altering external perceptions of a group reduce stereotype-threat-driven behavior and improve outcomes?⁶²

8.3. Social Norms and Market Functioning. In many developing country contexts, market participants share strong social capital through the segmented boundaries of village markets (Emerick et al., 2023; Breza et al., 2021), occupational sorting by caste or ethnic group (Oh, 2023; Cassan et al., 2022), or through the frequent, repeated nature of many types of spot markets.⁶³ Sellers and workers in spot markets may find it in their best interest to cooperate to raise prices or wages, while workers in a firm setting may achieve lower production targets by collectively reducing output. These behaviors can be implemented through informal norms (Solow, 1990).

⁶⁰See Chandrasekhar et al. (2018) for an experimental decomposition of signaling and shame effects.

⁶¹As we discuss below, a more substantial literature investigates the relationship between social image and gender norms with women’s work outside of the home.

⁶²One example that has been studied is changing stereotypes about the leadership ability of women through exposure (Beaman et al., 2009, 2012).

⁶³Social capital is also likely to emerge in formal work-places in both high- and low-income settings.

Breza et al. (2025b) document such norms through surveys collected in numerous markets in India and Kenya representing five different types of sellers: rural casual workers, urban casual workers, taxi drivers, roti (snack) sellers, and butcher shops. More than 80% of respondents find it unacceptable to sell labor or goods below the prevailing market price. Further, respondents describe a range of sanctions used to enforce these norms. Notably, more than two-thirds of sellers predict that others would retaliate by impeding the offending seller's market prospects in some way (e.g., by badmouthing, steering customers away or by withholding future job referrals). The authors also conduct a field experiment with 183 agricultural employers and 502 workers in which they vary both the wage and the level of social observability. They find that 33% of agricultural workers take the job when offered the prevailing wage, with comparable take-up regardless of social observability. However, take-up plummets to 1.8% when the wage is 10% lower and other workers can observe the wage offer (the observability status quo). When wage offers below the prevailing wage are made in private, take-up rises to 26%. In a supplemental exercise, workers are willing to pay to punish an anonymous worker who accepted a job below the prevailing wage. These findings showcase the power of norms to potentially shape equilibrium outcomes. They indicate that under the status quo, the aggregate labor supply curve looks almost perfectly elastic at the prevailing wage. However, this masks a substantial amount of "true" underlying labor supply at wage cuts. This, in turn, could feed into outcomes such as wage floors and wage rigidity.

The joint existence of price norms and supporting enforcement mechanisms might help resolve other findings in the literature. For example, Bergquist and Dinerstein (2020) presents experimental evidence of imperfect competition between sellers in rural maize markets in Kenya. However, while an experimental treatment subsidizing entry does generate new sellers, the arrival of new entrants yields no detectable impact on prices, a pattern again consistent with informal collusion. These results contrast with those of Casaburi and Reed (2021), who randomize subsidies to agricultural traders in Sierra Leone and conclude that the market appears largely competitive. One interpretation of these differences is that physical markets have stronger social capital and observability to support collusion compared to intermediaries that operate across many villages. More generally, many market contexts in development countries have the feature of repeat interactions among individuals who know each other - like the 5 markets we collect data in. So its possible that market power is much more pervasive than has been believed.

The use of norms and the threat of social sanctions to maintain a market advantage is also consistent with the results of Cefalà et al. (2024), who show that workers in Burundi hoard information about a valuable labor market skill. In a series of field experiments, the authors show that skilled workers are less effective at training other laborers in the same labor market relative to neighboring villages, and that this hoarding keeps market wages high for those with the skill.

Despite this accumulated evidence on the presence of collusive norms, it is very hard to evaluate the full welfare consequences for those who adhere. Take the case of norms over wage cuts: a welfare calculation requires understanding the size of the deadweight loss created by a wage floor (which is also a function of market power on the demand side of the market) and the ability for those gains to be distributed across workers. Moreover, to the extent that norms are slow to change, such an exercise requires understanding the dynamic implications of changes in current wage levels on these quantities.

Banerjee et al. (2022) document the presence of collusive norms similar to Breza et al. (2025b) in a sample of fruit and vegetable markets in Kolkata, India. Collusive norms in these markets include maintaining prevailing prices, restricting supply despite having capacity, and limiting the varieties sold by any given vendor. The authors conduct a field experiment that subsidizes the entry of existing vendors into agricultural products that they previously did not stock. During the subsidy, treated vendors increase their inventories of the treated products and experience 60% higher profits net of the subsidy. However, once the subsidy ends, treated vendors revert to their previous stocking habits. This is despite the fact that total sales of treated products across the entire market increased during the subsidy period, as well as average profits net of the subsidy. These results suggest that, in their context, collusive norms are inefficient and limit market-level profits.

Discussion and Future Directions. Further understanding why norm-based collusion can lead to inefficient outcomes is a fruitful avenue for future work, and it may be helpful to return to the two requirements of social norms, described above. While we now have an increasing evidence base on social enforcement, the requirement that norms be easily communicated and understood has received much less focus in the literature. However, this requirement likely constrains the ways in which norms can shape behavior. For example, Cheema et al. (2022) find evidence consistent with norms proscribing adherence to a simple rule governing women’s mobility in rural Pakistan. The authors randomize the location of tailoring trainings and find a discontinuous drop in take-up when the location of the training is just across the village boundary. If norm simplicity limits the space of feasible contracts that can be sustained via norms, then inefficiencies relative to complete contracting could arise. This has potential relevance in developing country contexts where contracting frictions abound.

8.4. Norms over Redistribution, Risk Sharing and the Social Tax. Given the degree of market incompleteness in developing countries and the numerous difficulties agents face in accumulating savings, social networks play a key role in consumption smoothing. In many societies, there are strong established norms for helping community members in need that vary widely across settings (Mauss, 1990). For example, Maasai communities in East Africa practice “osotua,” which often involves redistributing livestock aktipis2011risk. In Meso-America, “compadrazgo” relationships between godparents and godchildren include life-long obligations

for material support (Mintz and Wolf, 1950), and in Hausa communities in Nigeria, informal loans are characterized by flexibility in the event of a negative shock (Udry, 1990). Although much of the economics literature models risk sharing relationships as decentralized implementations of the social planner's problem (Cochrane, 1991; Townsend, 1994, 1995; Mazzocco and Saini, 2012), other social science disciplines tend to conceptualize social transfers arising from norms (Sahlins, 1974; Scott, 1977; Platteau, 2015; Portes, 1998).⁶⁴

A recent literature in development economics provides direct experimental evidence that the network mediates risk sharing and social redistribution. Moscona and Seck (2024) show that the way the social network is organized has strong implications for redistribution and inequality. While many societies organize around kinship groups, age set societies in sub-Saharan Africa organize around groups of similarly-aged individuals who typically complete a coming of age ritual together. The authors show that in age set communities in Kenya, cash transfers disbursed through an RCT are redistributed to others in the same age bracket, with no such relationship in kinship villages. In contrast, an old-age pension program piloted in Uganda leads to improvements in child nutrition in kinship communities, but not in communities with age sets. The authors also show that age set societies are marked by more inequality between generations (with the oldest and youngest groups consuming the least), while kinship-oriented societies have flatter consumption profiles over the life-cycle but generate more inequality between groups. Fleischman (2025) who, as discussed above, facilitated the formation of new network relationships for low-SES women migrants in Malawi, finds that new ties to high-SES women in the village improve food security.⁶⁵

Despite the ubiquity of risk sharing and its importance for household resilience, we have remarkably little direct evidence on the practical mechanics through which it occurs. For example, how do households decide which specific shock realizations to insure? How much risk sharing is achieved through RoSCAs and other informal group structures versus bilateral transfers? What is the role of simple norms versus more complex forms of informal contracting? These open questions present opportunities for future work.

While social insurance and sharing norms improve household resilience to shocks, examples abound of individuals feeling over-burdened and taxed by these obligations (Platteau, 2014; Hoff and Sen, 2006; McNeill and Pierotti, 2023). A growing empirical literature studies the phenomenon of the “kin tax” or more generally a “social tax,” with implications for savings accumulation, labor supply, and productive investment. These consequences of redistributive norms closely map to a more theoretical and structural empirical literature on constrained risk

⁶⁴To better characterize norms for sharing versus personal wealth accumulation, Fromell et al. (2021) explicitly measure redistributive norms in a lab-in-field experiment in rural Kenya. They find that the majority of households adhere to a norm of partial sharing, with substantial variation across households.

⁶⁵Also see Angelucci and De Giorgi (2009), who document indirect network spillovers from Mexico's Progresa cash transfer program and Jack and Suri (2014), who explore how access to a digital payments technology expands and diversifies the risk sharing network, improving resilience to shocks. Rosenzweig and Stark (1989) show that marriage markets respond to the need to provide insurance across space.

sharing under hidden savings, hidden income, or moral hazard (see, e.g., Cole and Kocherlakota, 2001; Kinnan, 2022; Ligon, 1998).⁶⁶ In one of the first social tax papers in development, Jakiela and Ozier (2016) show that subjects in rural Kenya distort investments in lab games to obfuscate their earnings from other participants. This behavior is particularly pronounced among women who have relatives attending the same lab session.⁶⁷

The presence of a social tax implies that affected individuals will have difficulty saving and may engage in costly behavior to protect the savings they do accumulate (Jakiela and Ozier, 2016; Dupas and Robinson, 2013; Baland et al., 2007). Goldberg (2017) finds that farmers in Malawi spend cash windfalls faster when they are observable to others. These results present an important contrast with the literature documenting positive effects of group observability on savings, for example, in the context of RoSCAs or VSLAs (Breza and Chandrasekhar, 2019; Dupas and Robinson, 2013; Beaman et al., 2014a).⁶⁸ An important distinction is that savings groups are often endogenously selected and typically include unrelated individuals who can help protect resources from household members (Anderson and Baland, 2002).

As in models of risk sharing with moral hazard, agents may also decrease effort in response to informal income sharing. This may look like reducing labor supply or investing less in a household enterprise. (Carranza et al., 2022) study impacts of redistributive pressures on the labor supply of workers in Code D'Ivoire. In their setting 74% agree that, "If someone in the community starts working in a factory or another formal job, people would start asking that person more often for financial help." In a field experiment, the authors randomly give workers access to a savings account that shields their earnings from others. Treated workers increase attendance and earnings by 10% and 11%, respectively. However, such accounts are only taken up when their existence is hidden from the network.

The desire for workers to hide their incomes in order to avoid redistributive pressures can lead to other types of distortions, notably in terms of social learning and investments in profitable technologies. Baseler (2023) finds that family members of migrants in Kenya underestimate the earnings of the urban worker by almost 50%. When the author experimentally provides information about true earnings in cities, migration rises by 40% over two years. Squires (2024) investigates the kin tax faced by entrepreneurs in rural Kenya in similar lab-in-field elicitation to Jakiela and Ozier (2016) and argues that demands from the network attenuate the returns to capital using evidence from a prior cash transfer RCT.

⁶⁶Note that conceptually, it is very difficult to differentiate an inefficient "social tax" from second best risk sharing arrangements under information asymmetries. While ex ante, individuals may prefer to enter into full risk sharing contracts, once they receive a positive shock realization, they may have private incentives to shield their resources from others or to shade on effort.

⁶⁷Jakiela and Ozier (2016) also find that approximately 30% of participants are willing to pay to hide their earnings from others. Similarly, Boltz et al. (2019) estimate a 9% social tax in lab-in-field experiments in Senegal.

⁶⁸Dupas and Robinson (2013), who document costs of kin tax on savings, find that a group savings vehicle leads to large increases in savings.

Norms also shape the form that redistribution takes. Macchi and Stalder (2024), discussed above, documents norms for redistribution in Uganda through employment, rather than cash, and describe how those norms are internalized into moral terms. Swanson (2024) provides experimental evidence that firms in Zambia face high implied social costs from hiring non-relatives. He randomizes both hiring subsidies and a source of plausible deniability entrepreneurs can use to rationalize outside hires to and finds that the plausibility deniability condition increases the likelihood of hiring a non-family member by 20%. He also shows that family employees are more likely to shirk: rural workers produce 7% less output in a maize shelling task when they work for a relative compared to a non-relative. These findings have bearing for understanding the high prevalence of family firms in developing countries. They offer an alternative (and not mutually exclusive) view to the dominant narrative that family members are more trust-worthy and reduce the need for monitoring (Bloom et al., 2013). Finally, Alby et al. (2020) argue that the need for local entrepreneurs to hire family reduces the returns from starting a business, reducing entry and giving outsiders a market advantage.

Discussion and Future Directions. Given that the need for social insurance often arises from incompleteness in financial and labor markets, more work is needed to understand the implications of changes to the market environment—for example, from market deepening or expansions to formal social safety nets—both on social capital and on the potential distortions arising from redistributive norms. A related question is how changes to the nature of risks faced by households, for example, from climate change, affect redistributive norms.

Two recent papers show that financial market expansions can crowd out network relationships. Banerjee et al. (2024a) show that in two different contexts, microfinance expansions reduce relationships not only involving individuals with high suitability for microfinance, but also among groups of individuals with low propensity to borrow, suggesting a global spillover in network crowd-out. Moreover, low propensity borrowers experience an increase in the covariance of consumption and income, which is consistent with a decreased ability to smooth consumption. Binzel et al. (2025) similarly find a decrease in social network links following the expansion of a full-service microfinance bank and a corresponding decrease in the ability for households to borrow informally to smooth shocks. They further document that these network effects correspond to lower cooperation as measured through public goods contributions. These findings suggest that partial market completions can have uneven distributional implications. However, changes in financial access need not crowd out social insurance. For example, Dupas et al. (2019) find that access to savings accounts crowds in reciprocal relationships, while Jack and Suri (2014) show that mobile money technologies permit risk sharing across larger spatial distances.⁶⁹

⁶⁹Moreover, in the case of index insurance products, uninsured basis risk can crowd-in risk sharing (Takahashi et al., 2019; Dercon et al., 2014; Mobarak and Rosenzweig, 2012, 2013; ?).

8.5. Norm Evolution and the Case Study of Harmful Norms. As we discuss above, many fruitful areas for new research involve better understanding how norms are determined, especially when they are being used as a tool for informal contracting or social insurance, and how they change over time. The origins and evolution of social norms have started to receive greater attention across the social sciences. Gelfand et al. (2024) provide an interdisciplinary review of the literature on norm emergence and change, reviewing cultural-evolutionary foundations from economics and anthropology as well as the cognitive and neural underpinnings of norm psychology. We outline recent work in economics on the origins and evolution of norms and present the literature on harmful norms as a case study.

8.5.1. Norm Evolution and Change. Unsurprisingly, the development economics literature has largely focused on the economic and political underpinnings of norm evolution and persistence, with a sizable body of work focusing on gender norms in particular. Early work by Boserup (1970) and revisited by Alesina et al. (2013) argues that historical gender roles were determined by the relative productivity of women's labor, and those historical conditions shape contemporary norms over women's work.⁷⁰ Despite the long persistence of some norms, adherence to cultural norms can also be sensitive to current economic conditions. For example, Corno et al. (2020) show that in regions that follow the cultural institution of bride price, the age of marriage falls in response to negative shocks. This is consistent with families marrying off their daughters earlier to generate needed financial resources.

In India, many communities adhere to restrictive gender norms that limit women's work (Jayachandran, 2015). While these norms have roots in purity prescriptions from ancient Hindu texts, it is argued that the 19th- and 20th-century process of *Sanskritization* led to lower-status castes adopting purity practices traditionally observed by high-status castes as a signaling strategy. Agte and Bernhardt (2023) show that exposure to tribal communities with independent political and economic power reduces adherence to purity rules around food and women's work, as households face less pressure to maintain these costly norms.

In their review, Gelfand et al. (2024) argue that analyzing norm dynamics through an evolutionary lens can generate the observed patterns of incremental evolution and long persistence of historical pre-conditions. To the extent that norms were beneficial in historical conditions, this can lead to norms outliving their cultural or economic benefits, which the authors call "norm mismatch" (Gelfand, 2021; Nunn, 2022). The authors illustrate this view with examples from Indian migrants who continue to eat more expensive foods imported from their home regions at the cost of total food expenditures and calories (Atkin, 2016) and historical episodes of coercive medical practices shaping contemporary norms of mistrust and low demand for healthcare (Lowes and Montero, 2021; Ramos-Toro, 2023; Alsan and Wanamaker, 2018; Martinez-Bravo

⁷⁰Alesina et al. (2021) further document the relationship between pre-colonial customs and economic conditions on gender norms in the domains of living arrangements, marriage, and women's work but also on the prevalence of violence toward women.

and Stegmann, 2022). However, these examples could be interpreted as individual preferences or beliefs, suggesting more work is needed to test the empirical validity of these theories.

This norm mismatch view suggests that norm change may require an external shock to facilitate the alignment of norms with contemporary conditions or individual preferences. One type of mismatch is *pluralistic ignorance*, which refers to situations in which individuals privately reject a norm but mistakenly assume that others in the community endorse it (Katz et al., 1931). In such a context, directly correcting misperceived norms can be that external shock. (Bursztyn et al., 2020) show that this can be an effective strategy for changing beliefs and behavior in the context of male perceptions about norms pertaining to women working outside the home in Saudi Arabia. While 87% married men report personal support for women's work, the majority underestimate the ubiquity of this belief. Experimentally correcting these second order beliefs increases women's job search.⁷¹

Field et al. (2021) show how shocks to private incentives for women's work in rural India can ultimately lead to changes in community perceptions of its acceptability. The authors conduct a field experiment giving women individual bank accounts, training and direct deposit of wages for a government workfare program into those accounts. The full intervention (randomized at the village level) increased women's work at the community level and changed men's perceptions of its appropriateness. Burde and Linden (2013) argue that a similar social acceptability mechanism drives the high 50% enrollment effect of girls in response to the opening of primary schools in rural Afghan villages. Media represents another well-studied external impetus for norm change (Paluck, 2009; Blair et al., 2021; DellaVigna and La Ferrara, 2015). For example, Ferrara et al. (2012) show that exposure to telenovelas in Brazil in the second half of the 20th century lowered fertility.

8.5.2. Harmful and "Anti"-Social Norms. The literature on harmful norms in developing countries highlights both their persistence and capacity to evolve, and female genital cutting (FGC) is a central case study. The practice, common in 29 countries, marks a rite of passage for girls but carries serious short- and long-run health risks, especially in childbirth, and is internationally recognized as a human rights violation (Klein et al., 2018). Although 24 countries have outlawed FGC, compliance and enforcement remain limited given its deep normative significance within practicing communities.⁷²

⁷¹In representative data from 60 countries, (Bursztyn et al., 2023) find widespread evidence of strong individual support for women's work outside the home accompanied by more pessimistic beliefs about the extent of community support, suggesting the potential for targeted policies that correct misperceptions to unlock women's labor supply. One issue that might complicate diagnosing pluralistic ignorance is that uncertainty about the beliefs of others could lead respondents to shade their estimates toward a more neutral prior (e.g., 50%) (see e.g., Enke and Graeber, 2023). Moreover, policies that attempt to correct biased second order beliefs could be less effective or even backfire if they trigger other responses such as increased salience or improved knowledge about the prevalence of behavioral externalities (Osman and Speer, 2024; Allen IV et al., 2024; ?).

⁷²Khalifa (2022) argues that FGC has positive marriage market returns.

Corno et al. (2025) trace the historical roots of FGC to regions more exposed to the Red Sea route of the Arab slave trade, arguing that the practice helped ensure the “purity” of concubines and was later internalized by non-slave populations. While FGC has persisted for centuries in the Horn of Africa, Gulesci et al. (2025) document a recent, rapid shift in Somalia away from the most severe forms.⁷³ They offer a theoretical framework for norm change when a less costly alternative exists and show—using survey data—that although such an option could in principle serve as a stepping stone toward abandonment, in their context it is likely to become an absorbing state. Recognizing that norm evolution may stall in such intermediate equilibria, Ferreira et al. (2024) examine whether harmful norms can be replaced by alternative rituals that preserve the social meaning of womanhood without inflicting physical harm. Studying FGC in Sierra Leone, where cutting is tied to joining women’s *Bondo* societies, they evaluate a local NGO program that convenes communities to discuss health risks and adopt a “Bondo without cutting” ritual. The intervention reduces cutting by more than 30

The literature also documents the presence of “anti”-social norms, which do not cause physical harm but may inhibit cooperation. Fergusson et al. (2024) design a series of lab experiments around the prevalent “don’t be a toad norm” in Colombia, which dictates that people should “mind their own business,” potentially neutralizing the scope for social punishment of non-cooperative behavior. Subjects play a series of fairness games with third party punishment, and show that the ability to call upon the norm undermines the benefits of social punishment. Interestingly, in this context, 80% of individuals personally disagree with the norm but correctly predict that the majority individuals will, nonetheless, adhere to it.⁷⁴

Discussion and Future Directions. Similar to our discussion of redistributive norms above, a natural question is how norms, more broadly, are changing as markets become more complete, new technologies upend traditional modes of exchange or hiring, society becomes more educated, and climate change threatens traditional livelihoods. For example, does the rise of digital technologies for banking and job search affect norms about elders? Will the demographic transition underway in India affect norms over marriage and women working outside the home? In the context of all of these changes, finding creative ways to test the evolutionary models of (Gelfand, 2021; Nunn, 2022) could be a productive direction for future work.

8.6. Inter-group Bias, Stereotypes, and the Contact Hypothesis. A substantial literature documents important relationships between resource competition, ethnic divisions, and conflict, especially in LMICs (Ray and Esteban, 2017; Easterly and Levine, 1997). Ethnic divisions have also been shown to hinder cooperation and weaken the provision of public goods

⁷³This transition coincided with increased global scrutiny and evolving interpretations of acceptable practice in Islam.

⁷⁴The authors also provide suggestive evidence that norm adherence is stronger for students with greater familial exposure to areas experiencing acute political violence in the 1950s, when payoffs from following to the norm would have been high.

Alesina and La Ferrara (2005); Miguel (2004); Ferrara (2003); Habyarimana et al. (2007). Further, Hjort (2014) documents that inter-group tensions can lead to productivity costs at work. Using data from a flower plant in Kenya that frequently reshuffles workers into teams of three, Hjort finds that multi-ethnic teams produce less and earn lower wages than ethnically homogeneous teams, consistent with taste-based discrimination. During a period of ethnic conflict following the 2007 Kenyan election, the productivity gap widens, highlighting that norms of inter-group interaction can vary with the political climate.

8.6.1. *Allport's Contact Hypothesis.* Given the economic costs of inter-group conflict, an important question is whether anything can be done to mitigate its effects. The Contact Hypothesis (Allport, 1954) offers one framework: positive interaction between groups can reduce prejudice and foster cooperation. Allport hypothesized four conditions under which contact is most effective – equal status, common goals, the absence of competition, and institutional support. A large psychology literature has tested this hypothesis and related approaches (Paluck et al., 2019), but as Paluck et al. (2021) note, many interventions are “light touch,” and evidence on their long-run effects remains limited.

Recent experimental and quasi-experimental evidence from developing countries finds further support for the contact hypothesis. For example, Rao (2019) shows that inter-class contact among Indian children can reduce prejudice towards lower-SES peers. Corno et al. (2022) exploit exogenous roommate assignments in South Africa and find that cross-racial contact lowers white students' stereotypes about Black peers and improves Black students' subsequent educational outcomes. Lowe (2021) conducts a field experiment in which men are assigned to homogeneous or mixed-caste cricket teams in India. In order to explore Allport's original conditions, the caste composition of the opponent is also randomized. Consistent with Allport's theory, collaborative contact improves outcomes and makes cross-group friendships more likely.⁷⁵ Mousa (2020) further study mixed religion soccer teams in Iraq. They find similar improvements to attitudes within the domain of soccer, but not in other domains. Ghosh (2025) revisits the negative productivity effects of inter-group production teams of Hjort (2014) through the lens of the contact hypothesis. Ghosh conducts a field experiment randomizing the composition of with Hindu and Muslim workers on assembly lines in a factory in India. While in the short run, mixed-religious teams produce less than homogeneous teams, these differences diminish over the subsequent six months and Hindu workers' attitudes toward Muslims improve. Notably the impacts on productivity and prejudice reduction are smaller for work tasks that require more coordination.

⁷⁵Allport's contact hypothesis is also relevant for understanding the impacts of the Indonesian government's historical ethnic integration policies during the process of nation-building (Bazzi et al., 2019). Also see Ghosh et al. (2025) for evidence from youth camps for stimulating contact between Hindu and Muslim adolescents in India. Both studies find evidence consistent with non-linear impacts of contact, with Ghosh et al. (2025) finding evidence of backlash on the part of majority-Hindus assigned to the most intensive dosage of contact.

Lowe (2024) conducts a meta-analysis of 41 pre-registered contact experiments and finds modest average effect sizes of approximately 0.1 standard deviations. Moreover, the impacts on relationships with the specific individuals in the intervention tend to be larger than prejudice reductions toward the broader group. Chakraborty et al. (2024) further investigates whether broad contact that exposes individuals to a larger number of out-group members, but through more limited interactions with each, can better stimulate changes to generalized attitudes than deep contact. The authors randomize work interactions between Hindus and Muslims to be either deep – each Hindu works with the same Muslim partner for six days – or broad – each Hindu works with different Muslim partners each of the six days. They find that subjects prefer the deep treatment, which generates meaningful ties between workers. In contrast, the broad treatment improves generalized beliefs.

While deep contact fails to generate changes to generalized beliefs, there is emerging evidence that the benefits from out-group members successfully forming ties with the in-group through deep contact can spill over to the out-group member's network. Srivastava (2025) conducts an experiment in a large factory in India that randomly increases the representation of workers from historically disadvantaged *scheduled castes* (SCs) through targeted referrals. He finds that, counter to the fears of factory management, the intervention has no deleterious impacts on caste cohesion or productivity in the short run and leads to productivity gains by the end of the intervention. These gains are driven by SC workers – who have worse outside options – remaining in their positions longer. Supplemental experiments suggest that the role of the referrer, who is an incumbent worker on the same production line, is crucial for integrating the new SC worker into the team.

Discussion and Future Directions. While the literature supports the empirical validity of Allport's original hypothesis, it also underscores important limitations—both in the extent of bias reduction across domains and in the distinction between reducing bias toward specific individuals versus generalized groups. Moreover, other evidence suggests that inter-group contact alone may have limited impact. For example, Hjort (2014) document productivity losses in mixed-ethnicity teams despite frequent reshuffling that exposes workers to many different out-group members. This pattern implies that the broad, routine contact generated by the personnel policy is insufficient to mitigate underlying frictions.

A broader question, then, is how insights from tests of the contact hypothesis should inform organizational and policy design. Many policies intended to reduce economic inequality—such as affirmative action and explicit integration efforts—embed a contact component, yet the literature provides limited guidance for their design. Notably, most work emphasizes bias reduction within the in-group while paying less attention to the potential integration costs

likely disproportionately borne by out-groups.⁷⁶ Moreover, the nature of the selection into inter-group contact is likely to be of first order relevance (Blattner and Rasocha, 2025). At the same time, emerging evidence points to potentially complementary approaches to contact-based interventions, including perspective-taking (Alan et al., 2021), empathy-enhancing strategies, and cash incentives for both relatively advantaged in-groups and more disadvantaged out-groups to reduce integration frictions (Baseler et al., 2025).

Finally, a more complete understanding of contact-based approaches requires integrating insights about social image, norms, and inter-group bias with the broader formation of group identities themselves. As Shayo (2020) argues, identity is in part a choice: individuals actively decide which groups to affiliate with and which norms to adopt. This perspective highlights the need to study the structural and historical forces that shape those choices, including the origins of group boundaries and hierarchies—for example, those forged through the colonial project (Dirks, 2002; Mamdani, 1972; Quijano, 2000).⁷⁷ It also raises important questions about how the conditions of poverty and the strong reliance on the in-group influence identity formation and salience, and consequently affect the effectiveness and equity of integration-oriented policies.

9. CONCLUSION

We conclude that the literature on psychology and development has produced a rich and dynamic body of work illustrating that psychological constraints are meaningful for the lives of the poor. However, this literature is still young, and has only begun to scratch the surface in exploring the impacts of various mechanisms for decision-making and behaviors. While much of the literature remains at the proof of concept phase, there are now a range of studies that show meaningful impacts of addressing psychological constraints on outcomes like education, investment, and earnings.

The approach of much of the work to date has followed the approach in the behavioral economics literature: taking particular psychological mechanisms, and constructing clean tests for them — with important contributions coming from moving these tests into the field. While this approach has a lot of value, we argue for an additional complementary approach in tandem. Specifically, work in behavioral development should take broad stylized facts as the starting point, and use behavioral tools to unpack these. Some of these are discussed above. For example, the prevalence of ROSCAs, the reliance on high interest debt to finance predictable expenditures, systematically over-optimistic beliefs of job-seekers, etc. Casaburi and Macchiavello (2019) is one example of a paper that takes this approach. Such an approach will undoubtedly be messier, and lead to papers with less precise accounting of mechanisms.

⁷⁶One exception is Anisfeld and Pandiloscki (2025), who study social learning among ethnically mixed students in Macedonia. They find that integration can enhance learning when inter-group bias is low but can suppress it when bias is high.

⁷⁷Representation, exposure to media, and exposure to political movements are also potential mechanisms for strengthening identification with certain identities (e.g., Adukia et al., 2023; Ahmed et al., 2025; Assouad, 2023).

However, they are likely to produce insights that are relevant for understanding how low income people actually think, choose, and behave. For this reason, these two approaches are complementary, and to make progress, the development literature must be willing to embrace this latter, messier approach, rooted in observe behavior in the world. With both these approaches working in tandem, there is large and exciting scope to make progress on the core question of whether psychological forces hinder the ability of the poor to escape poverty.

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