Poor Psychology:

Poverty, Shame, and Decision Making

Arnoud Plantinga

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PROEFSCHRIFT

ter verkrijging van de graad van doctor aan Tilburg University
op gezag van de rector magnificus,
prof. dr. E.H.L. Aarts,

in het openbaar te verdedigen
ten overstaan van een door het college
voor promoties aangewezen commissie
in de aula van de Universiteit
op vrijdag 1 februari 2019 om 13.30 uur

door Arnoud Plantinga,
geboren te Rheden.

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Chapter 1

Introduction

> "All too often, the economics of poverty gets mistaken for poor economics: Because the poor possess very little, it is assumed that there is nothing interesting about their economic existence. [...] To progress, we have to abandon the habit of reducing the poor to cartoon characters and take the time to really understand their lives, in all their complexity and richness." – Abhijit Banerjee & Esther Duflo in *Poor economics* (2011, pp. x–xi)

> "Poverty, or poor, or working class—whatever level of not enough you're at—you feel it in a million tiny ways." – Linda Tirado in *Hand to mouth: The truth about being poor in a wealthy world* (2014, p. 71)

Poverty is more than a lack of money. Being poor affects what people think (e.g., Mani, Mullainathan, Shafir, & Zhao, 2013) and how they feel (e.g., Kahneman & Deaton, 2010). In turn, these psychological effects of poverty also affect what people do (e.g., Haushofer & Fehr, 2014). This means that if we want to understand poverty, or if we want to create policies to alleviate poverty, an exclusively financial approach is not enough. We need to study the psychology of poverty. Fortunately, in the last decennia much progress has been made in research on psychological factors in poverty. Most research focuses on the effects of poverty on behavior (e.g., effects on risk taking and time discounting; Haushofer & Fehr, 2014) and cognition (e.g., research on the effects of poverty on mental capacity; Mani et al., 2013). There is some research on the emotional effects of poverty, such as its effects on happiness (Kahneman & Deaton, 2010), stress (Haushofer & Shapiro, 2016), and trust (Hamamura, 2012). However, there is little to no research on the specific emotions that people struggling financially have to deal with. Studying the role of discrete emotions can help us better understand poverty: emotion research has shown that specific emotions have specific effects on cognition and behavior (e.g., Frijda, 1988; Zeelenberg, Nelissen, Breugelmans, & Pieters, 2008). Especially the effects of shame, an emotion that often seems to be a part the poor's lives, deserves more attention. A psychology of poverty that does not consider the emotional lives of the poor, is a poor psychology.

In this dissertation I will examine a cognitive effect of poverty, consideration of opportunity costs, and an emotional effect of poverty, shame. In this PhD project, I started out studying cognitive effects of poverty by manipulating experiences of scarcity. These manipulations, however, did not seem to be effective, as I found no effects in pretests and on manipulation checks (for details, see the Discussion section). Then, I tested an important prediction of Mullainathan and Shafir's

(2013) theory on the effect of poverty on mental capacity. Their work predicts that people in poverty should be more likely to take opportunity costs into account when making financial decisions. However, across five experiments I find no evidence for this prediction. I then turned to studying *financial shame:* feeling ashamed of one's financial situation. Although qualitative research suggests that this phenomenon plays a role in poverty around the world (Walker et al., 2013), there is no evidence on the prevalence and behavioral consequences of financial shame. Before discussing earlier research and theory on the psychological factors in poverty, let us examine definitions of poverty.

What is poverty?

There are many different ways to define poverty (for an overview, see Ravallion, 2016). In light of this dissertation, the two most important factors are (1) absolute versus relative poverty (i.e., not having enough to cover basic needs versus having less than people around you) and (2) objective versus subjective poverty (i.e., living below a certain income threshold versus feeling that you do not have enough). Each combination of these two factors implies a different perspective on what it means to be poor, and a different way of measuring who is poor and who is not poor.

From a psychological perspective, the subjective experience of poverty is more relevant than whether someone is economically poor: psychological factors in poverty are more likely to correlate with a subjective measure of poverty than an objective one. For example, when thinking about the role of shame in poverty, whether someone feels poor should be more predictive of whether they are ashamed of their financial situation, than whether they are poor by some objective standard. Although objective and subjective measures of poverty tend to correlate, the correlations are not as strong as one might expect ($.28 < r < .52$; Gasiorowska, 2014). In other words: there are many people who are poor by some objective standard but do not feel poor, and there are many people who are not labeled as poor but do have trouble making ends meet. People at the same income levels might differ greatly in spending habits, financial history, et cetera. Because using objective measures has the advantage of making research outcomes easier to compare to other research, in the following chapters I will always show results with both an objective and a relative measure of poverty. Finally, note that I will tend to use continuous measures instead of binary measures of "poor" versus "not poor", as they allow a more fine-grained view of differences between different levels of wealth, and increase statistical power.

Regarding absolute versus relative poverty, my focus will be on relative poverty. Specifically, I will focus on poverty in the Western world, with participants from the United States, the Netherlands, and the United Kingdom. Even in wealthy countries such as these, a substantial number of people still have trouble making ends meet (see below). Furthermore, when relating poverty to shame, financial shame is inherently relative. As Adam Smith (1776, p. 676) argued, if most people happen to wear leather shoes, the "poorest creditable person of either sex would be ashamed to appear in public without them". The same holds true in modern societies: although having a smartphone might be considered a luxury in one society, not having one could be a source of shame in another. This means that financial shame plays a role in both more and less economically developed countries. Some authors have even argued that shame is becoming more important in the Western world (De Botton, 2004). This has to do with people's believe that social mobility is high (Kraus & Tan, 2015). This implies that people at the bottom either did not try hard enough or are not competent enough to rise the social ladder and are somehow responsible for their own financial position. In turn, when people feel others see them as lazy or incompetent, they likely to experience shame. Finally, note that relative poverty is different from relative deprivation. Relative deprivation refers specifically to feeling resentment or dissatisfaction from being deprived relative to others (Callan, Shead, & Olson, 2011, p. 955; see also Crosby, 1976), whereas relative poverty refers to not being able to afford an acceptable standard of living in a particular society. In other words, relative poverty is being worse off than others around you, relative deprivation is feeling worse off than others around you.

Using these definitions, how many people live in poverty? Objectively, we can compare relatively poverty levels in different countries with the OECD poverty threshold (OECD, 2018). This is the number of people whose income falls below half of the median household income of that country's population. Using this measure, 8.3% of the Dutch are poor, whereas 11.1% of the British and 17.8% of U.S. Americans live in poverty. However, subjective measures show that a much larger group has trouble managing their financial situation. For example, 43% of people living in the U.S. (Consumer Financial Protection Bureau, 2017b) and 45% of people living in the Netherlands (Van der Schors, Van der Werf, & Boer, 2016) report having difficulty making ends meet.

Poverty and Decision Making

Does poverty influence how people make decisions? There have been different answers to this question, each of which reflects a different perspective on decision making in poverty. The first perspective is that people living in poverty are fully rational, just like everyone else. This implies that whenever the poor's decisions differ from the wealthy's, this is because their circumstances make a different decision the optimal one. For example, people in poverty tend to be more risk averse (see, Haushofer & Fehr, 2014). One reason for this difference is that people in poverty could face more "background", uncontrollable risk. To end up at the same overall risk level, they need to be more risk averse for controllable risks. Evidence from the social sciences shows that this is only part of the picture; people are also influenced by other, non-rational factors. However, it is important to keep in mind that not all differences in decision making between the poor and non-poor are a result of behavioral factors.

The second perspective is that decisions by the poor are influenced by a "culture of poverty" (Lewis, 1966, 1975). This now controversial idea implies that people in poverty 'inherit' a set of values that causes an inability to make good financial decisions, which reinforces poverty. However, note that when people use this as an explanation for the behavior of people at the bottom of the social hierarchy, this idea can contribute to the stigma of poverty. It implies that people are responsible for their own predicament.

Finally, recent research examines poverty from a behavioral economics viewpoint: people in poverty deal with cognitive limitations and biases, which can sometimes cause their decisions to be suboptimal (Bertrand, Mullainathan, & Shafir, 2004, 2006). There exist two variations on this behavioral view on poverty. Some authors argue that the poor deal with exactly the same mental shortcomings as the non-poor, but the effects of errors are simply bigger for the poor (Bertrand et al., 2004). In other words, the poor have "narrow margins of error", causing the same mistakes to have bigger consequences. For example, missing a payment might be just a hassle, or could be the start of a downward spiral of debt. Other work argues that the poor deal with unique behavioral effects and constraints. For example, the idea that poverty limits available mental capacity (Mani et al., 2013), fits better with a unique effect of poverty on decision making. Also note that the behavioral view does not (necessarily) blame the poor for their situation. Quite the opposite: it shows that the effect of poverty on decision making could explain why decisions under poverty are more difficult.

This dissertation takes a psychological perspective. Like the behavioral

economics view, it examines psychological effects of poverty that influence decision making. However, next to cognitive limitations and biases, we are interested in the effects of poverty on specific emotions and, in turn, the effects of these emotions on subsequent behavior. So far, most research in this direction as focused on broad concepts such as happiness and negative effect. Studying specific emotions has an important advantage: specific emotions are associated with specific motivations ("feeling is for doing"; Zeelenberg, Nelissen, Breugelmans, & Pieters, 2008; Frijda, 1988; Van Dijk, 2016). Instead of only focusing on broad dimensions as valence and arousal, studying discrete emotions provides a better explanation of the psychological effects of poverty, and a better prediction of the effects of these psychological factors on behavior.

In the past, several authors have tried to come up with the one, all-encompassing theory on the psychological effects of poverty. However, I believe there is no strong evidence for such a theory, and there might never be. As we argued in response to Pepper and Nettle's (2017) article on the *behavioral constellation of deprivation* (Breugelmans, Plantinga, Zeelenberg, Poluektova, & Efremova, 2017), poverty is a complex phenomenon with multiple causes and multiple effects. It has also been called a *wicked problem*: complex, multidimensional, unclear, and changeable (Spicker, 2016; see also Peters, 2017). Its multidimensionality is illustrated by Pampel, Krueger, and Denney (2010): They find that the relationship between socioeconomic status and healthy behaviors can be explained by nine different groups of mechanisms. Furthermore, as illustrated below, poverty is associated with a host of psychological factors and behaviors. It is unlikely that all these effects can be described as or explained by one behavioral constellation. This also implies that there are no one-size-fits-all solutions for problems related to the psychology of poverty. Instead, empirical research is needed to test which intervention works in a particular context (A. Banerjee & Duflo, 2011).

Studying the effects of poverty on psychology and decision making is important for two reasons. First, it shows that poverty is more than just an economic problem: Being poor has strong negative effects on people's wellbeing. For policy makers, this means they can achieve an increase in wellbeing by either reducing poverty, or by focusing policy measures on people in poverty. A second reason for studying psychological factors in poverty is that these factors can contribute to *poverty traps*: situations in which poverty is self-reinforcing, causing people who are poor to stay poor (Azariadis & Stachurski, 2005). In short: a situation in which poverty begets poverty. A simple example of a person in a poverty trap is someone who is so poor that they cannot afford a nutritious meal, which causes a lack of energy to work, making it impossible to escape poverty.

Psychological Effects of Poverty

Psychological effects of poverty can create similar vicious cycles, which are termed *behavioral poverty traps*: situations in which poverty is self-reinforcing because it affects the way people make decisions (Kraay & McKenzie, 2014). For example, people in poverty tend to experience more stress (Lupie, King, Meaney, & McEwen, 2001). In turn, when people are stressed they tend to become more risk averse and focused on short-term gains as opposed to long-term outcomes, which makes it harder to escape from poverty (see Haushofer & Fehr, 2014). Stress is only one of many psychological factors that can create behavioral poverty traps.

Mullainathan and Shafir (2013) argue that poverty reduces mental capacity (Mani et al., 2013; Shah, Mullainathan, & Shafir, 2012, for a partially successful replication, see Shah, Mullainathan, & Shafir, 2017). Specifically, they argue that whenever people experience scarcity (of money, time, or something else), they must engage in trade-off thinking: making decisions in which you must give up one thing to get something else. Making these kind of decisions taxes people's limited mental capacity, which means there is less capacity left for other tasks. In Chapter 2, I will come back to this theory by testing whether people with lower incomes are indeed more likely to engage in trade-off thinking.

Haushofer and Fehr (2014) review studies which show that poverty leads to more risk aversion and short-sightedness. Specifically, they argue that poverty causes more stress and negative effect which, in turn, leads to more risk averse and short-sighted decisions. Other studies show that people with lower incomes are more likely to either have an external locus of control (believing that important outcomes are likely to be caused by external, uncontrollable factors as opposed to internal, controllable factors) or experience less control in general (Furnham, 1986; Kraus, Piff, Mendoza-Denton, Rheinschmidt, & Keltner, 2012; Pepper & Nettle, 2017). In turn, this is related to, for example, short-term orientation (Pepper & Nettle, 2017) and longer unemployment (Infurna et al., 2016). Finally, some recent work suggests that there are also positive cognitive effects: people with lower incomes are less influenced by the context in which a decision is made (Shah, Shafir, & Mullainathan, 2015). The authors argue that an upside of engaging in a lot of trade-off thinking (i.e., being forced to consider opportunity costs), creates a more stable perception of value. In turn, this causes their decisions to be influenced less by information provided by the particular context in which a decision is made.

Next to these cognitive effects, poverty also affects how people feel. Specifically, it has emotional and motivational effects that can in turn influence behavior. For example, although money does not always make people happier, poverty is strongly

related to unhappiness (Ahuvia, 2008; Kahneman & Deaton, 2010). There is also evidence for a causal effect of poverty on happiness: unconditional cash transfers in rural Kenya strongly affected wellbeing (Haushofer & Shapiro, 2016; see also Haushofer & Fehr, 2014). Poverty is also associated with more stress (Lupie et al., 2001) and higher cortisol levels (Cohen, Doyle, & Baum, 2006). Again, there is evidence for a causal effect: low levels of rain increased cortisol levels of Kenyan farmers (Chemin, De Laat, & Haushofer, 2013), and cash transfers can reduce stress (Baird, Hoop, & Özler, 2013; Haushofer & Shapiro, 2016). Finally, people in poverty tend to show less generalized trust (at least in wealthy societies; Delhey & Newton, 2003; Hamamura, 2012; Whiteley, 1999). They also tend to show less trust in the government (Schoon & Cheng, 2011). These emotional effects of poverty on wellbeing, stress, and trust are important, as they show that poverty strongly affects how people feel.

But they are also important to study for another reason: they can also contribute to behavioral poverty traps. Students who were happier when they started their education had higher incomes 19 years later (Diener, Nickerson, Lucas, & Sandvik, 2002). Unhappy people save less, spend more, have less control of their spending, take less time for their decisions, and are less focused on the future and more on short term outcomes (Guven, 2012). Experimental research shows that when people feel sad, they are more likely to choose smaller, sooner rewards over larger, later rewards (Lerner, Li, & Weber, 2013). Anxiety is associated with risk aversion—even in situations in which it is better to take some risk (Cohn, Engelmann, Fehr, & Maréchal, 2015; Guiso, Sapienza, & Zingales, 2013). Finally, a lack of trust is associated with less knowledge transfer (Levin & Cross, 2004) and short term thinking (Jachimowicz, Chafik, Munrat, Prabhu, & Weber, 2017). In sum, there is already some evidence that not only cognitive, but also emotional effects of poverty can create behavioral poverty traps. One of these emotions is shame.

Financial Shame

Most of this dissertation revolves around *financial shame*. This new concept is not meant to signify a new discrete emotion. Instead, we define it as "shame that is caused by or related to one's financial situation". In other words, it is still shame, but shame that is related to a particular subject. Also note that we are not necessarily interested in the phenomenological content of financial shame. Instead, we are mostly interested in its motivational and behavioral consequences. In our conceptualization of financial shame, we base ourselves on the existing literature

on shame. Earlier work describes shame as an "overwhelmingly powerful emotion that is associated with feelings of worthlessness, inferiority, and damaged self-image" (De Hooge, Zeelenberg, & Breugelmans, 2010, p. 112; see also Ausubel, 1955; De Hooge, Zeelenberg, & Breugelmans, 2011; Tangney & Dearing, 2002; Tangney, Wagner, & Gramzow, 1992). People feel ashamed when either they themselves or other people think they did something wrong—showing incompetent or immoral behavior. In case of poverty, people can feel ashamed because they feel negative themselves about their financial situation, or because they feel others look down upon them and see them as lazy or incompetent. In reality, these two types of shame are often closely intertwined: shame is often a combination of an internal judgment, actual external judgments by others, and expectations about these external judgments (Chase & Walker, 2012).

Financial shame seems to be a widespread phenomenon. In interviews with poor people in India, Uganda, China, Pakistan, South-Korea, Great Britain, and Norway, poverty was associated with feelings of shame across all countries (Walker, 2014; Walker et al., 2013). Anecdotal evidence from talking with people who live or lived in poverty and professionals also suggests people in vulnerable financial situations must deal with shame on a daily basis. However, the exact prevalence of financial shame is unclear. Is it just something experienced by the people at the very bottom, or is it more widespread? Like the other emotional effects of poverty, studying shame is important because of its strong negative psychological impact. Furthermore, previous research on shame predicts that experiencing shame is accompanied by specific motivations and behavior.

Specifically, earlier research on shame predicts that people will cope with shame by either trying to restore their damaged self-image by showing approach behavior, or by protecting their self-image from further harm by showing withdrawal behavior (De Hooge et al., 2010, 2011). In a context of poverty, manifestations of these behaviors could include buying status products (Chapter 3) or withdrawing from social situations (Chapter 4). These effects are more difficult to explain from a rational perspective on decision making by the poor, and a shame explanation is more parsimonious than an explanation involving the cognitive effects of poverty. The chapters on financial shame provide a more in-depth discussion on the consequences of financial shame.

Overview of This Dissertation

Chapter 2 tests an important prediction that follows from Mullainathan and Shafir's work (2013) on the effects of scarcity: The poor should be more likely to take opportunity costs into account when making financial decisions. This prediction was but forward by several authors (Frederick, Novemsky, Wang, Dhar, & Nowlis, 2009; Mullainathan & Shafir, 2013; Shah et al., 2015; Spiller, 2011; Thaler, 2015), but the research in Chapter 2 fails to find evidence for it. Chapter 3 examines how financial shame is related to status consumption. It shows evidence for approach behavior following financial shame: the more people experience shame of their financial situation, the more interest they show in status and status products. Chapter 4 builds on this and finds that shame can also be associated with withdrawal behavior. Furthermore, this research finds that a worse financial situation is associated with more social withdrawal, both between persons and within persons over time. Chapter 5 explores the role of financial shame in the Netherlands using three different data sets, and the psychological factors and behaviors that correlate with financial shame. In the last chapter I integrate and discuss the findings reported in the empirical chapters of this dissertation. I also discuss the theoretical implications of these findings and place them in a broader theoretical framework. Finally, I related these findings to poverty in real life, and provide directions for further research that my help us to better understand the psychology of poverty and ideally contribute to solving the poverty problem.

Please note that the chapters are presented in chronological order. Furthermore, they are written as research articles. As such, they can be read independently and there is some overlap in theory and reviews of previous literature.

Chapter 2

Evidence for Opportunity Cost Neglect in the Poor

I thank Renée van Gorp and Bas Schoots for their help in coding the data.

Data, materials and analyses for all experiments are available online at *https://osf.io/qab34/*.

This chapter is based on Plantinga, A., Krijnen, J. M. T., Zeelenberg, M., & Breugelmans, S. M. (2017). Evidence for opportunity cost neglect in the poor. *Journal of Behavioral Decision Making*, *31*, 65–73. *https://doi.org/10.1002/bdm.2041*

Abstract

People often neglect opportunity costs: They do not fully take into account forgone alternatives outside of a particular choice set. Several scholars have suggested that poor people should be more likely to spontaneously consider opportunity costs, because budget constraints should lead to an increased focus on trade-offs. We did not find support for this hypothesis in five high-powered experiments (total N = 2325). The experiments used different products (both material and experiential) with both high and low prices (from $8.50 to $249.99) and different methods of reminding participants of opportunity costs. High-income and low-income participants showed an equally strong decrease in willingness-to-buy when reminded of opportunity costs, implying that both the rich and the poor neglect opportunity costs.

Do the poor and the rich make financial decisions differently? Several studies show that they do. For example, the poor have been reported to discount the future more strongly (Green, Myerson, Lichtman, Rosen, & Fry, 1996; Lawrance, 1991) and to be more risk averse (Dohmen et al., 2011). An important related question is whether the financial behavior displayed by the poor further contributes to a suboptimal financial position, leading to a vicious cycle of poverty (a poverty trap; Azariadis & Stachurski, 2005). Some research does suggest that this is the case; poverty was found to be related to decreases in cognitive functioning (Mani et al., 2013) and self-control (Spears, 2011). However, there is also research suggesting that poverty can increase decision quality: The poor seem to be less susceptible to context effects and better able to judge the value of money (Shah et al., 2012). For example, in studies on the classic jacket and calculator problem, participants are usually willing to travel to a different store for a discount on a cheap product, but not for the same absolute discount on an expensive product (Tversky & Kahneman, 1981). However, in Shah et al. participants with lower incomes were not influenced by the price of the product, showing that they were less influenced by the decision context. Other studies find no differences between poor and rich in financial decision making. For example, Carvalho, Meier, and Wang (2016) found no differences in performance on cognitive tasks, heuristic judgements, or the consistency of intertemporal and risky choices between before-payday and after-payday groups. Bertrand, Mullainathan and Shafir (2006, p. 8) argue that "the poor may exhibit basic weaknesses and biases that are similar to those of people from other walks of life, except that in poverty, there are narrow margins for error, and the same behaviors often manifest themselves in more pronounced ways and can lead to worse outcomes". Taken together, these different findings strongly suggest that ideas about differences in financial decision making between the poor and the rich should not be taken at face value, but rather be empirically tested. In the current paper, we present five experiments testing whether poor and rich people differ in how they deal with opportunity costs.

Several scholars have predicted that the poor are less likely to suffer from opportunity cost neglect—failing to consider alternatives outside of a choice-set which may result in suboptimal choices (Frederick et al., 2009; Jones, Frisch, Yurak, & Kim, 1998; Legrenzi, Girotto, & Johnson-Laird, 1993; Northcraft, 1986). In the words of Thaler (2015): "the one group of people that come closest to thinking this way [i.e., as described by normative theory] about opportunity costs is the poor [...] simply because opportunity costs are highly salient for them" (p. 58). Thinking about opportunity costs is important because money can only be spent once. The decision whether to buy something should not be based solely

on a good's attributes, but also on potential alternative uses of people's money. Furthermore, opportunity costs should be especially important for the poor because their budget constraints leave only narrow margins of error (Bertrand et al., 2006); the same mistake can have more relative financial impact for the poor than for the rich. Thus, there are good reasons to believe that the poor should show opportunity cost neglect to a lesser extent.

To our knowledge, this idea that poor people are less susceptible to opportunity cost neglect has not yet been tested empirically. We report a series of five (quasi-) experiments that examine whether the poor and the rich differ in how they deal with opportunity costs. In our studies, we tried to stay as close as possible to existing research on both opportunity cost neglect and research on the effects of poverty on decision making, in order to ensure comparability of our findings to the published research. The studies that we conducted used an established paradigm (Frederick et al., 2009) and a population previously used in research comparing the decisions of the poor and the rich (e.g., Callan, Kim, Gheorghiu, & Matthews, 2017; Shah et al., 2015).

In contrast to what was predicted, we find that reminding participants with low incomes of opportunity costs strongly decreases willingness-to-buy, implying that they neglect opportunity costs when they are not reminded (cf. Frederick et al., 2009). This effect is equally strong for participants with low incomes compared to participants with higher incomes. Furthermore, the effect is robust across measures of poverty; it is found using both objective and subjective measures of poverty. These results suggest a simple and parsimonious account of consideration of opportunity costs: Both the rich and the poor show opportunity cost neglect.

Before discussing the studies and results in detail, we first explain what opportunity costs are, why they are often neglected, and why scholars have predicted that the poor should be less susceptible to opportunity cost neglect.

Opportunity Costs

Opportunity costs reflect the potential benefits of the best non-chosen option. For example, when buying a movie ticket for $8.50, that same $8.50 cannot be used for other purchases. In this case, the opportunity costs reflect the best alternative use of the $8.50, which could be a different product or service, but could also be simply keeping the money for later. In neoclassical economics, consumers are assumed to take opportunity costs into account when evaluating a potential purchase, requiring them to consider all possible options. Experimental research, however, suggests that people often fail to fully take into account non-presented

alternatives, resulting in opportunity cost neglect (Frederick et al., 2009; Jones et al., 1998).

Frederick et al. (2009) found that reminding participants of opportunity costs led to a lower willingness to buy a particular product, which implies that participants neglected opportunity costs unless these were explicitly pointed out. For example, when choosing between a cheaper and more expensive coffee mug, participants were less likely to purchase the more expensive mug when the description of the cheaper option included the phrase "leaving you with an extra $6.01 in cash to spend on something else" (Frederick et al., 2009, p. 556). Frederick et al. argue that people focus on explicit and salient information (i.e., the opportunity under consideration) and tend to ignore implicitly presented information (i.e., the non-presented options: opportunity costs). The importance of considering opportunity costs was further demonstrated by Bartels and Urminsky (2015). They found that valuing future outcomes highly is only related to decreased spending when people consider opportunity costs. In their experiments, participants who felt highly connected to their future selves or discounted the future weakly spent less only when they were reminded of opportunity costs.

Other studies provide direct or indirect evidence for the existence of opportunity cost neglect. For example, Jones et al. (1998) found that the same decision is made differently when framed as an opportunity ("Should I move to New York?") compared to when it is framed as a choice ("Should I move to New York or stay in Chicago?"). Specifically, given that an option is perceived as at least mildly attractive, people are more likely to pursue it when it is presented as an opportunity instead of as a choice. Because people change their decisions when the option not to move is made explicit, these results support the idea that people tend to neglect opportunity costs. Other evidence comes from the observation that people tend to ignore the hidden zero in interpersonal and intertemporal choice (Handgraaf, van Dijk, Wilke, & Vermunt, 2003; Magen, Dweck, & Gross, 2008). When it was made explicit that choosing a smaller, sooner option meant that participants would receive $0 later and that choosing a larger, later option meant that they would receive $0 now, participants were more likely to choose the larger, later option. Again, participants' choices were influenced by reminders of opportunity costs, in this case making them more patient. More recent research has shown that this effect is driven specifically by reminding participants of the future consequences—receiving $0 later (Read, Olivola, & Hardisty, 2016). Together, this research suggests that people tend to focus on information that is described and tend to neglect information that is not described. Because in practice opportunity costs are typically left implicit, they are often neglected.

Opportunity Cost Neglect in the Poor

People may be especially likely to ignore implicit alternatives when the decision involves low-cost products and when decision makers have considerable "slack" in their budgets (Zauberman & Lynch, 2005). In other words, when the impact of the trade-offs that have to be made is limited, people are more likely to ignore opportunity costs. By the same reasoning, when trade-offs are significant (i.e., when the decision involves high-cost products or the decision-maker's budget lacks "slack") people should weigh opportunity costs more heavily in their decisions. In those situations, we should observe less pronounced opportunity cost neglect. In the words of Frederick et al. (2009, p. 559): "very poor individuals or those on fixed incomes may be keenly aware of opportunity costs in many decisions because their binding budget constraints may frequently necessitate a careful comparison of mutually exclusive options". The idea that the poor may be less susceptible to opportunity cost neglect fits with a broader perspective on poverty forwarded by Mullainathan and Shafir (2013), which posits that resource scarcity promotes trade-off thinking: pressing needs make trade-offs (and therefore opportunity costs) highly accessible.

Diminished sensitivity to opportunity cost neglect among the poor has not yet been directly studied, even though it fits closely with research showing that the poor are less susceptible to classic context effects (Shah et al., 2015). For example, Shah et al. presented participants with Thaler's (1985) classical beer-on-the-beach scenario, where participants are asked to name their maximum willingness-to-pay for a beer that would be consumed on the beach, but would be bought in either a fancy resort or a run-down grocery store. Poorer participants more often mentioned trade-offs as the main consideration in their decision, and their willingness-to-pay was not influenced by where the beer was bought.

In research strongly related to the current studies, Spiller (2011) found that participants were more likely to consider opportunity costs when they were made to feel budget constrained by being paid in short pay cycles. Participants encountered a sequence of products of which they could buy some but not all, and had the option to consider products available in the future (i.e., they could consider opportunity costs). Those on a "weekly" instead of "monthly" pay cycle—those who faced more constraint—were more likely to look ahead. Finally, Fernbach, Kan, and Lynch (2015) found that budget constraint made people more likely to use priority planning instead of efficiency planning. As priority planning involves explicit consideration of opportunity costs, this provides additional evidence for the effect of feeling financial constraint on considering opportunity costs.

In sum, researchers have forwarded both theoretical and empirical reasons to expect that poor people are less susceptible to opportunity cost neglect. In research studying the situational effects of inducing scarcity (e.g., Spiller, 2011), participants who were manipulated to feel more budget constrained, weighted opportunity costs more heavily. However, the claim that people who are structurally poor are more likely to spontaneously consider opportunity costs has not yet been tested. Being poor often involves experiencing scarcity, but it is nonetheless important to distinguish the effects of situational scarcity from the effects of structural poverty. People in poverty do not always experience budget constraint, and poverty has many other effects besides budget constraint. The finding that budget constraint reduces opportunity cost neglect does therefore not imply that people in poverty neglect opportunity costs to a lesser extent.

Current Research

We tested whether people with low incomes show opportunity cost neglect to a lesser extent than people with higher incomes. In all experiments, participants in the control condition were simply asked to make a choice, whereas participants in the experimental condition made the same choice after being reminded of opportunity costs. It is important to note for our present focus on decision-making by the poor, that previous experiments using similar manipulations mostly used student samples (Frederick et al., 2009; Jones et al., 1998), which tend to be from a more privileged background than the average population (e.g., Henrich, Heine, & Norenzayan, 2010). For this reason, we expected to replicate Frederick et al.'s findings that reminding of opportunity costs leads to lower willingness to buy for the richer participants. However, if the poor indeed spontaneously consider opportunity costs, the poorer participants should not be influenced by this manipulation to the same extent. Thus, we hypothesized that reminding participants of opportunity costs causes a decrease in willingness to buy for the rich but not (or to a lesser extent) for the poor.

Before we turn to the experiments, we would like to note that there are many definitions of poverty. To make sure we do not miss the effect of a particular type of poverty, we test our hypotheses using multiple poverty measures. First, we use *effective income*, calculated by dividing recoded household income by the square root of the number of people in the household (cf. Buhmann & Rainwater, 1988). Second, we test for differences between people below and above the U.S. *Federal Poverty Guideline* (Office of the Secretary, 2015), and people in the lowest income quintile versus those in other quintiles. Finally, we use two subjective measures

in which we ask people to rate their own financial situation and subjective social status (*subjective wealth* and the *MacArthur ladder*). Thus, we will examine whether opportunity cost neglect is moderated by effective income, by living below the poverty line, by being in the first income quintile, and by subjective wealth and subjective social status.

Experiments

All experiments used a similar paradigm: Participants read a scenario about encountering an attractive product and were asked whether they would buy the product. We varied between participants whether they were reminded of opportunity costs before making the decision or not. Experiments 1–4 used the same manipulation as Frederick et al.'s (2009) Study 1: The non-buying option was phrased as "not buying the product" in the control conditions and as "keeping the money for other purchases" in the experimental conditions. In Experiment 5, one group of participants was asked to list what other things they would be able to buy if they would not buy the product (in this case a tablet), another group was asked to list what they would not be able to buy if they would buy the product, and the control group simply made the decision to buy the product or not (similar to Jones et al., 1998). Because the results did not differ significantly between the two experimental conditions, they are discussed together (data on all conditions is available online). In order to examine the influence of the price of the product and the nature of the product (material or experiential; Van Boven & Gilovich, 2003), we used four different products (DVD, tablet, movie ticket, and concert ticket, see Table 1). To further test the idea that the poor are more likely to spontaneously consider opportunity costs, after making the buying decision in Experiments 3 and 4 participants were asked to list alternative things they would do with the money. In Experiments 3–5, participants also rated how difficult it was to come up with alternatives (except for participants in the control condition of Experiment 5). After the scenario, we asked for income and other demographic information.

In all five experiments, we hypothesized an interaction effect between condition and income: the effect of reminding participants of opportunity costs should be smaller for participants with lower incomes than for those with higher incomes. Furthermore, we expected that participants with lower incomes think it is easier to come up with alternative uses of the money and spend less time per generated alternative.

Table 1. Descriptive statistics, χ2 tests and logistic regressions for Experiments 1-5

	Descriptive statistics					χ² tests condition		Logistic regressions		
Exp.	*N*	Product	Price	Percentage choosing to buy (control condition)	Percentage choosing to buy (opp. costs condition)	χ^2	p	Condition (0 = control, 1 = opp. costs)	Effective income (centered, in $ 10,000)	Condition * Effective income
1	320	DVD	$ 14.99	43.83%	37.97%	0.904	.342	-0.24 (0.23)	-0.08 (0.08)	0.19 (0.10)
2	328	Tablet	$ 249.99	62.28%	53.42%	2.289	.130	-0.40 (0.23)	-0.05 (0.06)	0.26 (0.10)**
3	642	Movie ticket	$ 8.50	71.97%	55.18%	18.775	<.001	-0.82 (0.18)***	0.12 (0.06)	-0.12 (0.08)
4	637	Concert ticket	$ 50.00	60.06%	49.69%	6.502	.011	-0.45 (0.17)**	0.03 (0.05)	0.03 (0.07)
5	511	Tablet	$ 249.99	68.89%	40.48%	36.507	<.001	-1.16 (0.20)***	0.08 (0.07)	0.08 (0.09)

*Note: *: p < .05, **: p < .01, ***: p<.001*

Method

Participants

U.S. participants were recruited online (Total N = 2438, 54.1% male, M_{age} = 31.12, SD_{age} = 13.03) via Amazon's Mechanical Turk (MTurk, see Buhrmester, Kwang, & Gosling, 2011; Paolacci & Chandler, 2014), limited to people who had not participated in one the previous experiments. For the first experiment, sample size was based on Shah et al.'s (2015) Study 1B, who found an interaction effect between condition and socioeconomic status on willingness-to-pay at η_p^2 = .0315. A power analysis (with α = .05, 1 - β = .80) indicated that a minimum of 244 participants would be needed to detect this effect size. For Experiments 2–5 we determined the number of participants using similar power analyses based on effect sizes from the previous experiments (N_1 = 320, N_2 = 328, N_3 = 642, N_4 = 637, and N_5 = 511).

To examine whether the poor and rich differ in their decisions, heterogeneity with respect to income is necessary. In our samples, there was substantial variation in the household income of the participants, although income was in general lower than the average of the U.S. population (DeNavas-Walt & Proctor, 2015). In terms of household income, across the 5 experiments 31.90% of the participants were in the lowest income quintile of the U.S. population, and 25.05%, 23.98%, 14.16%, and 4.91% were in the second, third, fourth, and fifth quintiles, respectively. Approximately 15.44% of the sample fell below the U.S. Federal Poverty Guideline (Office of the Secretary, 2015).

Procedure

In all experiments, participants were presented with a scenario describing an attractive product (adapted from Frederick et al., 2009). For example, Experiment 1 used the following scenario:

> *Imagine that on your most recent visit to the video store you come across a special sale on a new DVD. This DVD is one with your favorite actor or actress, and your favorite type of movie (such as a comedy, drama, thriller, etc.). This particular video that you are considering is one you have been thinking about buying a long time. It is available at a special sale price of $14.99.*

Experiments 2-5 used different products (a tablet for $249.99, a movie ticket for $8.50, and a concert ticket for $50.00) with a similar description (see Table 1 for an overview of the set-up and results of all experiments, and Appendix 2.1 for all scenarios). Next, participants in the control condition were asked whether they would buy the product or not. Participants in the opportunity costs condition in Experiments 1–4 were asked whether they would buy the product or keep the

$X for other purchases. In Experiment 5, participants in the opportunity costs conditions were first asked (1) what other things they would buy with the $249.99 if they would not buy the tablet, or (2) what other things they would not be able to buy, if they bought the tablet for $249.99. Then they were asked whether they would buy or not buy the tablet. Participants in the control condition were simply asked whether they would buy the tablet. In Experiments 3 and 4, after making the buying decision participants were asked to list other things they would consider doing with the money instead of buying the product. We also measured the time it took them to come up with the alternatives. In Experiments 3–5 participants were asked how hard they thought it was to come up with alternatives, on a scale of 1 (Very easy) to 7 (Very hard).

Finally, participants were asked their household's income, the number of persons in their household, and their education level, gender, and age. Household income was asked in income brackets of $10,000, with a highest category of $150,000 and above. For the analyses, income was recoded following Ravallion (1992): income was estimated as the midpoint of each income bracket, except for the lowest bracket (80% of the upper bound) and the highest income bracket (130% of the lower bound). We also asked participants to position themselves on the MacArthur ladder (N. Adler & Stewart, 2007), a measure of perceived relative social status, and to rate three subjective wealth items measuring perceived personal financial situation (on scales of 1–7 with different anchors, e.g., "How would you describe your current financial situation?"; Gasiorowska, 2014).

Results

Approach to the analyses. For each experiment, we ran a logistic regression with buying decision as dependent variable and condition, centered effective income and their interaction as predictors. In all analyses, condition was recoded to a dummy variable (0 = control, 1 = opportunity costs reminder). The results for each experiment are summarized in Table 1, and described in the next sections. Before testing the hypothesized interaction effects, we tested for effects of reminding of opportunity costs and income on choice; we found evidence for both these main effects. In order to test the hypotheses across the 5 Experiments, we also report several meta-analyses, which all use random-effects models in the metafor package 1.9-9 with R 3.3.3 (R Core Team, 2016; Viechtbauer, 2010). The results of the meta-analyses are shown in Figures 1 and 2.

Effect of condition. In all experiments, the proportion of participants indicating that they would buy the product was lower in the opportunity costs condition than in the control condition (the difference ranged from 5.8 to 16.8 percentage points),

but this difference was significant only in Experiments 3–5 (see Table 1). When controlling for effective income and the interaction effect in a logistic regression, willingness-to-buy was still lower in the opportunity costs condition across all experiments (and statistically significant in Experiments 3–5). In a meta-analysis across the five experiments (see Figure 1), the effect of condition after controlling for effective income and the interaction effect was significant and substantial, *OR* = 0.54, z = -3.81, p < .001, 95% CI [0.39, 0.74] (test for heterogeneity: $Q(4)$ = 13.25, p = .010). On average, in the control conditions 62.8% of the participants indicated buying the product, whereas only 47.8% did so in the opportunity cost conditions. In sum, we find strong evidence for opportunity cost neglect across our experiments, replicating Frederick et al. (2009).

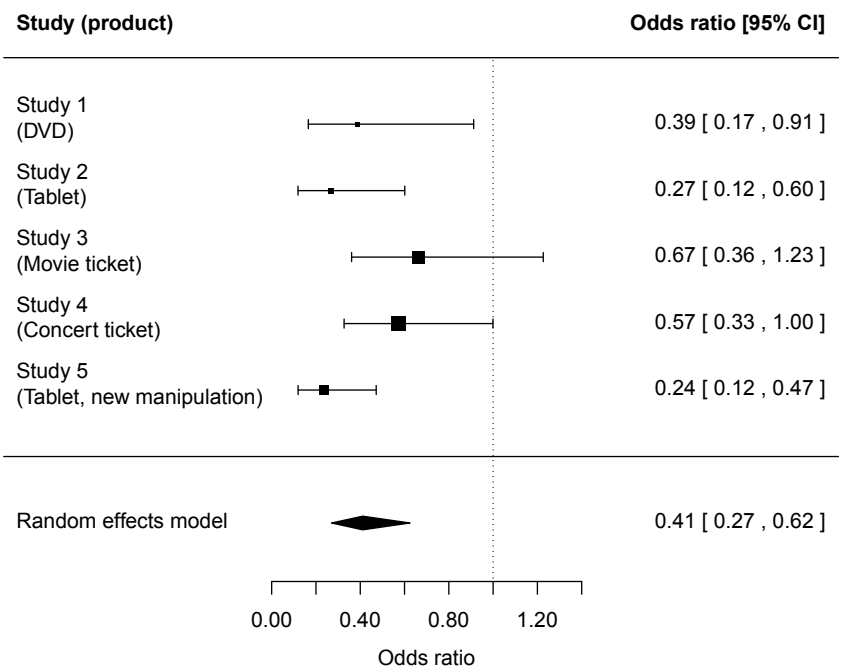

Figure 1. Forest plot for the meta-analysis of the effect of condition (Control vs. Opportunity cost reminder) on buying decision after controlling for effective income and an interaction effect between condition and effective income for Experiments 1–5. An odds ratio smaller than 1 means that participants were less likely to buy the product when the opportunity cost reminder was present than when it was not present.

Effects of income and subjective wealth. In all experiments, effective income was positively related to willingness-to-buy, but this correlation was only statistically significant in Experiment 5 (it ranged from $r(315) = .04$, $p = .511$, 95% CI [-0.07, 0.15] in Experiment 1 to $r(499) = .14$, $p = .002$, 95% CI [0.05, 0.22] in Experiment 5). A meta-analysis of the correlations between effective income and buying decision shows a small but statistically significant correlation, $r = .07$, $z = 3.59$, $p = < .001$, 95% CI [0.03, 0.11] ($Q(4) = 2.82$, $p = .588$). In another meta-analysis, subjective wealth was also positively related to buying decision, $r = .13$, $z = 6.41$, $p < .001$, 95% CI [0.09, 0.17] ($Q(4) = 2.99$, $p = .560$).

Interaction condition and income. Contrary to the hypothesis that the poor show opportunity cost neglect to a lesser extent than the rich, none of the studies showed a statistically significant negative interaction effect between effective income and condition (see Table 1). Experiment 2 even found a significant positive interaction effect, $b = 0.26$, $t(317) = 2.62$, $p = .009$, meaning that reminding participants of opportunity costs led to a greater decrease in willingness to buy for participants with lower incomes than for participants with higher incomes, which is opposite to what was predicted. In a meta-analysis, we also found no significant interaction effect between condition and effective income, $b = 0.08$, $z = 1.22$, $p = .222$, 95% CI [-0.05, 0.21] ($Q(4) = 11.03$, $p = .026$; effective income in $10,000, see Figure 2). The natural logarithm of this coefficient, $\ln(b) = 1.08$, 95% CI [0.95, 1.23]) indicates the ratio of the odds ratios in the sample for the different conditions. The lower bound of its 95% confidence interval is close to 1, which means that the data suggest that even if a negative interaction effect exists, it would be small. Furthermore, the data show more support for a positive interaction effect; in the sample the effect of opportunity costs was bigger (more negative) for participants with lower incomes.

As a robustness check, we also tested whether the effect of condition on buying decision was moderated by any of the other wealth measures. In logistic regressions with subjective wealth instead of effective income, none of the interaction effects were statistically significant (p-values ranged from .139 to .724). A meta-analysis on these interaction effects also showed no significant effect, $b = 0.11$, $z = 1.38$, $p = .169$, 95% CI [-0.04, 0.26] ($Q(4) = 5.23$, $p = .264$). Similarly, using the MacArthur ladder in a similar meta-analysis also yielded no significant interaction effect, $b = 0.05$, $z = 0.64$, $p = .522$, 95% CI [-0.11, 0.21] ($Q(4) = 9.62$, $p = .047$), as did meta-analyses using five effective income brackets (i.e., equally sized groups of participants divided by effective income), $b = 0.09$, $z = 0.79$, $p = .431$, 95% CI [-0.13, 0.31] ($Q(4) = 12.35$, $p = .015$), or analyses that divided participants into those in the first income bracket versus other income brackets, $b = 0.18$, $z = 0.78$, $p = .434$, 95% CI [-0.27, 0.62] ($Q(4) = 5.46$, $p = .243$), first income quintile versus

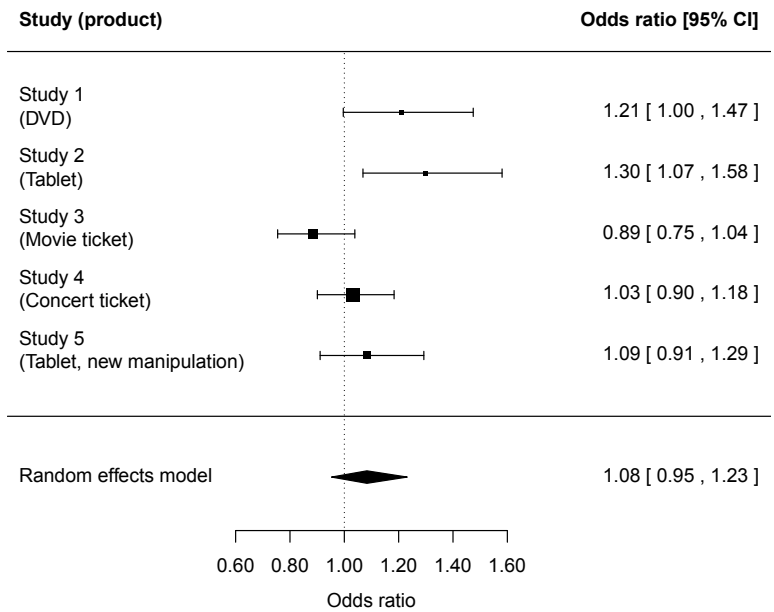

Figure 2. Forest plot for the meta-analysis of the interaction effect of condition (Control vs. Opportunity cost reminder) and income on buying decision, after controlling for the main effects of condition and effective income for Experiments 1–5. The coefficients represent differences in *log*(Odds Ratio). A positive interaction effect means that the effect of the opportunity cost reminder was larger for participants with lower incomes.

other quintiles, $b = 0.41$, $z = 1.85$, $p = .064$, 95% CI [-0.02, 0.84] ($Q(4) = 5.39$, $p = .250$), or below the poverty line versus above the poverty line, $b = 0.05$, $z = 0.19$, $p = .848$, 95% CI [-0.43, 0.53] ($Q(4) = 4.95$, $p = .293$).

Because there was significant heterogeneity in the effect size of the interaction effect between condition and effective income on buying decision, we conducted some exploratory analyses to test whether the size of this effect was moderated by any study-level moderators (see Supplement B). The effect was not significantly moderated by the price of the product nor the manipulation used. However, the interaction effect was significantly more positive for material than for experiential products. Furthermore, a meta-analysis on only the experiments with material products found a significant positive interaction effect. This means that, for material products, the effect of reminding of opportunity costs was stronger (more negative) for the poor than for the rich. Note that this effect is opposite to that we had hypothesized.

In sum, these results do not support the prediction that the poor show less or no opportunity cost neglect. Overall, the data indicate that the poor are as likely as

the rich to fail to take opportunity costs into account. If anything, our exploratory analyses indicate that under some conditions the poor may be *more* likely than the rich to show opportunity cost neglect.

Generating alternatives. If the poor are more likely to spontaneously consider opportunity costs, they should find it easier to generate alternative uses of the money. To test that, participants in Experiments 3–5 were asked to list alternative ways to use the money. Participants with lower incomes reported that they found it easier to come up with alternatives, although the correlation between effective income and perceived difficulty was only statistically significant in Experiment 3, $r(594) = .09$, $p = .035$, 95% CI [0.01, 0.17]. In a meta-analysis across the three experiments, the correlation was small but statistically significant, $r = .07$, $z = 2.93$, $p = .003$, 95% CI [0.02, 0.12] ($Q(2) = 0.32$, $p = .851$).

The number of generated alternatives correlated positively with income in Experiment 4, $r(582) = .11$, $p = .006$, 95% CI [0.03, 0.19] and non-significantly in Experiment 3, $r(594) = .05$, $p = .244$, 95% CI [-0.03, 0.13], and Experiment 5, $r(499) = .07$, $p = .120$, 95% CI [-0.02, 0.16]. A meta-analysis on these correlations showed a small but significant positive correlation between effective income and the number of alternatives generated, $r = .08$, $z = 3.33$, $p < .001$, 95% CI [0.03, 0.12] ($Q(2) = 1.50$, $p = .472$). After controlling for the number of alternatives generated, there was no statistically significant effect of effective income on time spent per generated alternative in any of Experiments 3–5 (p-values ranged from .313 to .928), nor in a meta-analysis across the three Experiments, $OR = 0.74$, $z = -1.03$, $p = .302$, 95% CI [0.41, 1.32] ($Q(2) = 0.70$, $p = .706$)[1].

In sum, there is no clear evidence that alternatives come more easily to mind for participants with lower incomes. We find some evidence that people with lower incomes find it easier to come up wither alternative uses of their money. However, people with lower incomes generated *fewer* alternatives than participants with higher incomes. We found no differences in the time spent per generated alternative, after controlling for the number of generated alternatives.

1 As described in the supplemental materials, we also coded the alternatives on whether they were material versus experiential products and necessities versus luxurious products. We found no effect of income on listing material versus experiential products. Participants with higher incomes were somewhat more likely to list luxurious products rather than necessities compared to participants with lower incomes.

General Discussion

Across five experiments, we replicate the finding by Frederick et al. (2009) that reminding people of opportunity costs decreases willingness-to-buy. However, this effect was equally strong for participants with low and high incomes: Both showed a decrease in willingness-to-buy in response to the reminder. In other words, we found no evidence for an interaction effect between income and condition: both the rich and the poor showed opportunity cost neglect.

These findings contribute additional evidence for the robustness of opportunity cost neglect as described by Frederick et al. (2009). People appear to fail to fully consider opportunity costs in buying decisions. The findings contradict the idea, proposed by several authors (Frederick et al., 2009; Mullainathan & Shafir, 2013; Shah et al., 2015; Spiller, 2011), that opportunity costs are more salient for the poor. Although previous research did find an effect of budget constraint on opportunity cost consideration (Spiller, 2011), we did not find evidence of a similar effect of poverty. This may imply that the poor do not continuously experience resource scarcity, even though they may be more likely to encounter situations of scarcity. Our data suggest that people only think about opportunity costs when they are relevant or salient.

One potential alternative explanation for our findings could be that the poorest participants in our studies were not poor enough. We do not consider this a viable explanation. In line with previous work on MTurk samples (Buhrmester et al., 2011; Paolacci & Chandler, 2014), our samples display substantial variation in income. On average, about 15.44% of the participants in our experiments lived below the U.S. Federal Poverty Guideline (Office of the Secretary, 2015). This is corroborated by the fact that both effective income and subjective wealth did affect willingness-to-buy in a meta-analysis across the experiments, suggesting at least a substantial amount of variance in income. Furthermore, studies by Shah et al. (2015) used MTurk samples in similar paradigms and did find interaction effects between experimental condition and income on financial decisions. Therefore, we do not think that our findings can be explained by inadequate sampling. Of course, we cannot fully exclude the possibility that people living in extreme poverty would not show opportunity cost neglect. However, even if this were true, this would confine the idea that opportunity costs are more salient for the poor to a very small subsample of the total population of people generally seen as “poor” in studies of poverty and decision-making.

We tested only a restricted set of poverty measures and products. For instance did not include a measure of childhood socioeconomic status, which only modestly correlates with current socioeconomic status but also impacts financial decisions made later in life (Griskevicius et al., 2013)[2]. Future research could test whether growing up in a budget constrained environment leads to less opportunity cost neglect later in life. We also only used scenarios with hedonic, as opposed to utilitarian, products. We chose these products because opportunity costs should be higher for hedonic than for utilitarian products. When thinking about whether or not to buy a movie ticket, it is more likely that there are useful alternative uses of the money than when thinking about spending money on groceries. Especially for people with low incomes, opportunity costs should be more pressing and therefore come to mind more easily for hedonic goods. Therefore, we feel this is the strongest test of the hypothesis.

It is also possible that the hypothesized difference was not found because participants did not think deeply about their decision, because the decisions were hypothetical. Again, we do not think this to be a likely explanation, because it is hard to reconcile with the effects of income on hypothetical choices in studies by Shah et al. (2015). In addition, this explanation has trouble explaining why willingness-to-buy would be influenced by effective income (although this effect was small) and by reminding of opportunity costs. If participants are not thinking deeply or not paying attention, their decisions should not be influenced by any of these variables. Finally, Frederick et al. (2009) replicated the effect of reminding of opportunity costs on willingness-to-buy in a study using consequential choices, suggesting that people behave similarly when the choices are consequential.

Another alternative explanation is that the reminder of opportunity costs had no effect on most of the poor participants, but a strong effect on some. In other words, whereas most poor participants were already considering opportunity costs, the reminder was particularly effective for the minority who were not. Under the assumption that people who spontaneously consider opportunity costs find it easier to generate alternative uses for their money, we can test this explanation by examining whether there is a three-way interaction between condition, income, and reported difficulty of generating alternatives: The effect of the opportunity costs reminder should interact with the difficulty variable for people with low incomes, but not for those with high incomes. We do not find such an effect in Experiments 3 and 4 (p-values > .230), nor in a meta-analysis across the two studies, b = 0.03, z = 0.94, p = .347, 95% CI [-0.04, 0.10] (Q(1) = 0.57, p = .451).

2 We thank an anonymous reviewer for suggesting this alternative explanation.

A further possibility is that the poor are more likely to think about opportunity costs, but not more likely to act on them. The opportunity costs reminder might exert more normative pressure for participants with lower incomes than for participants with higher incomes. However, we think that this is a less parsimonious explanation of our data, and we have no reason to believe that for lower-income individuals the link between cognition and behavior is weaker. Furthermore, we think it is unlikely that the fairly subtle reminder of opportunity costs exerts a strong normative pressure.

Finally, it is possible that a third variable, intelligence, has an effect on both income and the consideration of opportunity costs, negating the effect of income. However, even if intelligence were to affect both income and opportunity cost neglect, our data would still contradict the claim that the poor are more likely to think about opportunity costs. Furthermore, we do not find strong evidence of an effect of education in our studies; a meta-analysis of the effect of condition and education and their interaction on buying decision, showed no significant interaction effect, $OR = 1.13$, $z = 1.91$, $p = .056$, 95% CI [1.00, 1.27] ($Q(4) = 4.78$, $p = .311$).When education was added to the meta-analysis of the effect of condition, effective income, and their interaction on buying decision, the interaction effect was still not significant, $OR = 1.08$, $z = 1.25$, $p = .211$, 95% CI [0.96, 1.23] ($Q(4) = 10.62$, $p = 0.31$). Our findings propose a number of suggestions for future studies. First, the difference between our findings and those by Spiller (2011), who found that opportunity cost neglect was affected by budget constraint, raise questions about the different effects of structural poverty and situational budget constraint on financial decision making. Studies on poverty and decision making typically make use of either quasi-experimental designs using existing groups of people who live under different conditions, or of experimental designs using situational inductions of scarcity. Our findings and those by Spiller suggest that the results obtained with one design do not necessarily generalize to other designs. It would be interesting to see whether similar differences occur with other dependent variables studied in a context of scarcity or poverty. For example, the poor are less likely to be affected by a decision's context (Shah et al., 2015), but does experiencing scarcity also reduce the impact of context? Second, our exploratory analyses suggest that there might be a difference between material products and experiences: We found that the opportunity costs reminder had a stronger effect on low-income individuals than high-income individuals for material but not for experiential products. Previous research found that facing financial constraints increases interest in material over experiential products (Tully, Hershfield, & Meyvis, 2015). Possibly, this change in preferences is associated with more opportunity cost neglect for material products.

Third, the replication of findings by Frederick et al. (2009) in a socioeconomically diverse sample suggests that a simple reminder of opportunity costs might be a useful way to help both poor and rich consumers make choices that are more in line with their long-term goals. Finally, the finding of evidence for opportunity cost neglect in the poor may mean that more attention should be paid to this factor when trying to alleviate poverty. After all, neglecting opportunity costs might have more harmful consequences for the poor because of their narrow margins of error (Bertrand et al., 2006).

To conclude, our data suggests that poor and rich alike are susceptible to opportunity cost neglect. Opportunity costs do not seem to be on the top of the minds of people, regardless of their income. These findings are unlikely to be explained by sampling, methodology, or unobserved variables. Thus, the most parsimonious interpretation is that opportunity cost neglect is a robust and general phenomenon.

Appendix 2.1

Scenarios used in the experiments

These are the different scenarios presented to participants in all experiments. For Experiments 1–4, the only change across conditions was the wording of the second option: either "Not buy this [DVD]" or "Keep the [$14.99] for other purchases". For experiment 5, participants were asked (1) what other things they would buy with the $249.99 if they would not buy the tablet, (2) what other things they would not be able to buy, if they bought the tablet for $249.99, or (3) not asked anything, and then made the buying decision.

Experiment 1

Imagine that on your most recent visit to the video store you come across a special sale on a new DVD. This DVD is one with your favorite actor or actress, and your favorite type of movie (such as a comedy, drama, thriller, etc.). This particular video that you are considering is one you have been thinking about buying a long time. It is available at a special sale price of $14.99.

What would you do in this situation?

- Buy this DVD
- Not buy this DVD [Keep the $14.99 for other purchases]

Experiment 2

Imagine that you have been saving some extra money on the side to make some purchases, and on your most recent visit to the mall you come across a special sale on a tablet. This tablet is one of your favorite brand with good specifications. This particular tablet that you are considering is one you have been thinking about buying a long time. It is available at a special sale price of $249.99.

What would you do in this situation?

- Buy this tablet
- Not buy this tablet [Keep the $249.99 for other purchases]

Experiment 3

Imagine that a new movie came out that is showing tonight. This movie is your preferred genre, with your favorite actor/actress. A movie ticket costs $8.50.

What would you do in this situation?

- Buy a movie ticket
- Not buy a movie ticket [Keep the $8.50 for other purchases]

Experiment 4

Imagine: Tonight a concert is scheduled close to where you live. You have been thinking about going to this concert for a long time. Tickets are available at $50.
What would you do in this situation?

- Buy a concert ticket
- Not buy a concert ticket [Keep the $50 for other purchases]

Experiment 5

Imagine that you have been saving some extra money on the side to make some purchases, and on your most recent visit to the mall you come across a special sale on a tablet. This tablet is one of your favorite brand with good specifications. This particular tablet that you are considering is one you have been thinking about buying a long time. It is available at a special sale price of $249.99.
[What other things would you buy with the $249.99 if you wouldn't buy the tablet? Please list the things you would consider buying with the money below. You can list multiple things, use a separate line for each thing.]
[If you would buy the tablet for $249.99, what other things would you not be able to buy? Please list the things you would not be able to buy below. You can list multiple things, use a separate line for each thing.]
What would you do in this situation?

- Buy this tablet
- Not buy this tablet

Appendix 2.2

Exploratory analyses

Meta-regression interaction condition and income

Because there was significant heterogeneity in the effect sizes of the interaction effects across the studies ($\tau^2 = 0.014$, $Q(4) = 11.03$, $p = .026$), we conducted an exploratory meta-regression and several meta-analyses to test for potential study-level moderators. Specifically, we regressed the interaction effect between condition and effective income on buying decision on the potential moderators product price (high vs. low), product type (material vs. experiential), and the manipulation used (i.e., the paradigm used by Frederick et al., 2009 versus the new manipulation in Experiment 5). The interaction effect was not significantly moderated by the price of the product, $OR = 1.13$, $z = 1.44$, $p = .150$, 95% CI [0.96, 1.34], nor the manipulation

used, *OR* = 0.81, *z* = -1.70, *p* = .089, 95% CI [0.64, 1.03]. However, the interaction effect was significantly more positive for material than for experiential products, *OR* = 1.31, *z* = 3.05, *p* = .002, 95% CI [0.10, 0.44]. In an exploratory meta-analysis with only the experiential products, the interaction effect was not significant, *OR* = 0.96, *z* = -0.51, *p* = .610, 95% CI [0.83, 1.12]. However, a meta-analysis on only the experiments with material products found a significant positive interaction effect, *OR* = 1.19, *z* = 3.09, *p* = .002, 95% CI [1.06, 1.32], which means that the effect of reminding of opportunity costs for material products was stronger (more negative) for the poor than the rich.

Coding of alternatives

In a further exploration of the data, the alternatives participants listed in Experiment 3 and 5 were rated as necessity versus luxury and as material versus experiential (on scales of 1–9) and coded into categories. The alternatives participants listed in were coded and rated as follows: First, the responses were shortened to one or a few words. Then, these items were recoded into overarching categories. As the number of categories was still large, these categories were again recoded into broader categories, leaving 17 different categories (see Table S1). A second coder then assigned all listed alternatives to these categories and rated whether a listed alternative could be classified as necessity versus luxury, and as material versus experiential (on scales of 1–9).

In general, participants mostly mentioned considering buying food and groceries, (16.8% of all named alternatives), entertainment products (14.2%), clothing (10.9%), or using it for transportation (e.g., buying gas, 8.0%). Effective income did not affect whether participants generated more products rated as luxuries versus necessities in Experiment 3, $r(554) = 0.00$, $p = .922$, 95% CI [-0.08, 0.09], but did in Experiment 5, $r(318) = .18$, $p < .001$, 95% CI [0.08, 0.29]. A meta-analysis across these two studies shows no significant correlation between effective income and listing items rated as luxuries, $r = .09$, $z = 1.04$, $p = .299$, 95% CI [-0.08, 0.27]. Effective income did not affect whether participants generated more products rated as experiential versus material products in Experiment 3, $r(555) = -.01$, $p = .731$, 95% CI [-0.10, 0.07], but did in Experiment 5, $r(318) = .13$, $p = .022$, 95% CI [0.02, 0.23]. In a meta-analysis, the correlation was not significant, $r = .06$, $z = 0.78$, $p = .436$, 95% CI [-0.08, 0.20]. Thus, poorer participants did not seem to think of more material or experiential products, but there is some evidence that they are more likely to think of more necessities over luxurious products.

Table S1. Categories of coded alternatives, Experiment 3 and 5

Category	Frequency	Percentage of total responses
food/groceries	489	16.8%
entertainment products	414	14.2%
clothing	318	10.9%
transportation	232	8.0%
go out to eat	209	7.2%
saving	203	7.0%
household	171	5.9%
bills	153	5.3%
rent or buy a movie/online subscription	133	4.6%
activity/hobby	127	4.4%
alcohol/tobacco	120	4.1%
miscellaneous	119	4.1%
snacks	106	3.6%
gift/donation	58	2.0%
pay off debt	34	1.2%
none	26	0.9%

Chapter 3

How Shame in Poverty Relates to Status Consumption

Data, materials, and analyses for all studies are available online at https://osf.io/b95df/.

This chapter is based on Plantinga, A., Breugelmans, S., & Zeelenberg, M. (2018). *How shame in poverty relates to status consumption*. Manuscript submitted for publication.

Abstract

Shame is associated with a threatened self-image and a decrease in status. We examined whether shame in poverty predicts interest in status and status products, as a potential means of restoring the self-image and regaining status. Three preregistered survey studies found that financial shame was highly prevalent in both U.S. and U.K. participants: 34.2% reported feeling at least somewhat ashamed of their financial situation. A structural equation model pointed to two separate effects of income on status consumption: a direct, positive effect, and an indirect, negative effect through financial shame, which increases the motivation to attain status.

All over the world, people in poverty report feeling ashamed (Walker et al., 2013). People experience shame when they or others feel they are incompetent or transgressed a moral boundary (De Hooge et al., 2010). This creates a threat to people's self-image, to which they can respond in two ways (see also Gausel, Vignoles, & Leach, 2015). If possible, people try to restore their self-image through approach behavior. Only when people believe restoring their self-image is not possible or too risky do they switch to protecting their self-image from further damage, by showing withdrawal behavior. We examined whether people deal with feelings of shame about their financial situation ("financial shame") by showing restore behavior in the form of status consumption. Surprisingly little is known about the behavioral consequences of financial shame. Most extant research is qualitative, and suggests several negative consequences such as attempts to keep up appearances, social withdrawal, and derogation of others (Walker et al., 2013). We expect that financial shame is related to an interest in status, for two reasons. First, people might strive for status to compensate for their damaged reputation (Charles, Hurst, & Roussanov, 2009). Second, it can help to repair a threatened self-image (Isaksen & Roper, 2008). The idea that feeling ashamed increases interest in status products is supported by research showing that people whose self-image is threatened or who feel powerless are more interested in status products (Rucker & Galinsky, 2008, 2009; Sivanathan & Pettit, 2010). There is also evidence that even people with very little to spend consume status products. For example, poor people are willing to pay more for exactly the same product if the packaging has a well-known brand logo (Van Kempen, 2004) and extremely poor Indian farmers spend about 10% of their year income on festivals (A. V. Banerjee & Duflo, 2007).

Status consumption also has its downsides, especially for those on a tight budget. Each dollar spent on attaining status is not spent on other, perhaps more pressing needs (A. V. Banerjee & Duflo, 2007). Buying status products can contribute to the emergence of poverty traps (Moav & Neeman, 2008). Furthermore, conspicuous consumption is associated with lower subjective well- being (Linssen, Van Kempen, & Kraaykamp, 2010). Finally, status consumption is risky, because what constitutes as a status good in one group might be frowned upon by other groups (Han, Nunes, & Drèze, 2010).

Current research

In this paper, we test whether people experience financial shame, and whether this leads to a stronger interest in status and status consumption (see Figure 3). We predicted[3] that people with lower incomes would be more likely to report financial shame than people with higher incomes, as it is more likely that they or others think they are financially incompetent. We expected that these feelings of shame would be associated with a stronger interest in status (*status orientation*) and, in turn, status consumption, for the reasons outlined above. We tested this prediction in three studies using Structural Equation Modeling (SEM), as this allows us to test the hypothesized relationships in one statistical model. In Study 2 we test the structural equation model from Study 1 with a newly constructed status consumption scale. In Study 3, we use the exact same materials and model as in Study 2, but in a U.K. sample. In addition, in all studies we tested the same structural equation models using a subjective measure of financial situation (*subjective wealth*) instead of income. Although objective and subjective wealth are related, previous research finds that the relation is only modest and that the two variables can have different effects (e.g., Gasiorowska, 2014).

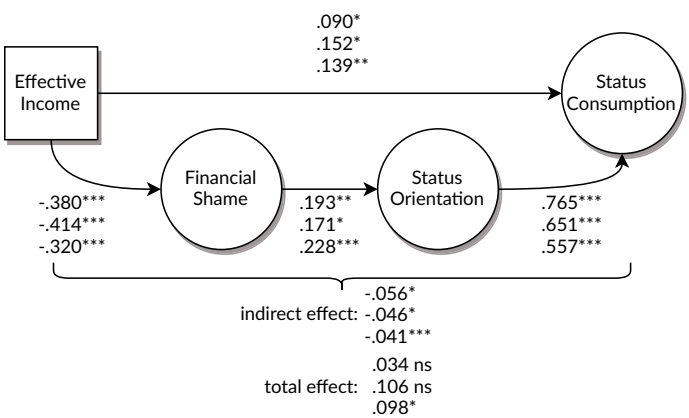

Figure 3. Standardized coefficients for the Structural Equation Models (top: Study 1, middle: Study 2, bottom: Study 3). The latent variables are indicated by their scale items. *Indirect effect* is the effect of effective income on status consumption via financial shame and status orientation, whereas *total effect* is the total effect of effective income on status consumption.

3 For Study 1 and Study 2, we did not preregister the specific structural equation models, but we did preregister the following hypothesis: "Shame for financial situation positively predicts status orientation and status consumption over and above effects of objective income and subjective income". For Study 3, we preregistered to use the exact same structural equation model as in Study 2. See *https://osf.io/g4dpy/register/565fb3678c5e4a66b5582f67* and *https://aspredicted.org/ra8hw.pdf*

Method

Participants

We recruited U.S. participants via Amazon Mechanical Turk (Study 1: N = 299, 45.8% female, M_{age} = 36.6, SD = 11.4; Study 2: N = 304, 47.0% female, M_{age} = 36.6, SD = 11.4) and U.K. participants via Prolific Academic (Study 3: N = 536, 72.6% female, M_{age} = 37.2, SD = 12.1). For Study 1, we based sample size on Onderwater (2016), who found that status orientation and financial shame correlated $r(204)$ = .22 (α = .05; 1–β = .8; N_{min} = 253). We used this correlation because it comes close to our research question, but also note that this sample size should give enough power for a structural equation model (> .87 with df > 100; MacCallum, Browne, & Sugawara, 1996). For Study 2, we used the correlation from Study 1 ($r(297)$ = .16, N_{min} = 301). Finally, for Study 3, we simulated data based on the structural equation model for Study 2 (see Appendix 3.3; N_{min} = 530).

Procedure

In Study 1, participants either first answered the questions about their financial situation and financial shame and then questions about status orientation and status consumption, or vice versa. In Studies 2 and 3, the order of these scales was fully randomized. In all studies, participants then answered questions about household income, the number of persons in their household, age and gender. *Subjective wealth* was measured with three questions (1–7 rating scales with different anchors, e.g., "How would you describe your current financial situation?", reliability[4]: ω_t > .89; Gasiorowska, 2014). All other scales used a Likert format (1 = Strongly disagree, 7 = Strongly agree). For *financial shame,* we constructed a new 7-item scale (ω_t > .92, all new scales are in Appendix 4.1).

4 ω_t is a more accurate estimate of reliability than Cronbach's α, which makes assumptions that are often unrealistic, causing underestimation of reliability (McNeish, 2017). These values have the same interpretation as Cronbach's α. We report Cronbach's α for all scales in Appendix 3.1).

Items used from the different LISS panel study units

Study unit	Variable	Item
Does stigmatization "explain" why low socioeconomic status is related to poor health?	Financial shame	1. I feel strange or abnormal on account of my financial situation, education level or occupation. 2. There have been times that I felt ashamed of my financial situation, education level or occupation. 3. I never feel ashamed because of my financial situation, education level or occupation. 4. I feel that others look down on me because of my financial situation, education level or occupation. 5. People treat me differently because of my financial situation, education level or occupation. 6. It has happened that people said negative or unpleasant things about me behind my back because of my financial situation, education level or occupation. 7. I have sometimes been excluded from work, education or family life because of my financial situation, education level or occupation.
Social Integration and Leisure	Satisfaction with social contacts	How satisfied are you with your social contacts?
	De Jong Gierveld Loneliness Scale	1. I have a sense of emptiness around me 2. there are enough people I can count on in case of a misfortune 3. I know a lot of people that I can fully rely on 4. there are enough people to whom I feel closely connected 5. I miss having people around me 6. I often feel deserted
	Number of social gatherings (*not used in the final social withdrawal index*)	1. Spend an evening with family (other than members of your own household) 2. Spend an evening with someone from the neighborhood 3. Spend an evening with friends outside your neighborhood 4. Visit a bar or café

Status orientation was measured using a new 5-item scale (e.g., "I think status is an important indicator of how people are doing in life", $\omega_t > .82$). In Study 1, *status consumption* was measured with a scale by Eastman, Goldsmith, and Flynn (1999), replacing the item "A product is more valuable to me if it has some snob appeal" with "If I think about it, I spend quite a lot of money on products that provide status", because we think the concept "snob appeal" is not closely related to our notion of status consumption (5 items, $\omega_t = .92$). In Studies 2 and 3, we used a new 6-item scale ($\omega_t > 0.82$, see Appendix A). All answers for this scale were standardized. For the U.S. samples, we asked *household income* in brackets

of $10,000, with a highest category of $150,000 and above. For the U.K. sample, we multiplied these numbers by 0.75 to get approximately the same numbers in pounds. Income was estimated by taking the midpoint of every income bracket, except for the highest income bracket, where we used a robust Pareto midpoint estimator (ca. $196,000 in the U.S. samples and £156,000 in the U.K. sample; von Hippel, Scarpino, & Holas, 2016). In all analyses we corrected for household size by using effective income: household income divided by the square root of the number of people in the household (Buhmann & Rainwater, 1988)[5].

Table 2. Pearson correlations, means, standard deviations, and ωt Studies 1-3

Study	Variable (scale, reliability)	*M (SD)*	Status orientation	Status consumption	Subjective wealth	Effective income
1	Financial shame (1–7, ω_t = .93)	3.86 (1.53)	.163**	.035	-.750***	-.367***
	Status orientation (1–7, ω_t = .89)	3.97 (1.36)		.684***	-.044	-.032
	Status consumption (1–7, ω_t = .92)	2.88 (1.36)			.066	.064
	Subjective wealth (1–7, ω_t = .93)	3.97 (1.42)				.464***
	Effective income	$36,024 ($23,970)				
2	Financial shame (1–7, ω_t = .92)	3.76 (1.54)	.139*	.041	-.620***	-.394***
	Status orientation (1–7, ω_t = .89)	3.64 (1.46)		.604***	.173**	.095
	Status consumption (standardized, ω_t = .88)	-0.01 (0.79)			.307***	.177**
	Subjective wealth (1–7, ω_t = .92)	4.01 (1.40)				.521***
	Effective income	$34,776 ($23,518)				
3	Financial shame (1–7, ω_t = .93)	4.06 (1.58)	.218***	.083	-.682***	-.311***
	Status orientation (1–7, ω_t = .83)	3.79 (1.19)		.482***	.002	.064
	Status consumption (1–7, ω_t = .83)	0.00 (0.74)			.072	.119**
	Subjective wealth (1–7, ω_t = .90)	3.93 (1.35)				.400***
	Effective income	£20,345 (£13,396)				

Note: M = mean, *SD* = standard deviation. *: $p < .05$, **: $p < .01$, ***: $p < .001$. $N_1 = 299$, $N_2 = 304$, $N_3 = 536$.

5 We did not measure ethnicity, which might affect both income, status consumption, and shame. Future research is needed to test the effects of ethnicity and whether shame causally affects status consumption.

Results

For means, standard deviations, and correlations of the main variables see Table 2.

Order effects and missing values

In Study 1, scores on subjective wealth, financial shame, status orientation, and status consumption did not depend on order (*p*-values ranging from .267 to .820, Cohen's *d* ranging from -0.07 to 0.13). In Study 2, we regressed each of the scores on dummy variables for position. Some of these order effects were significant but adding them to our SEM model did not increase model fit (see Appendix 3.2). Therefore, we did not take into account order effects in any of the studies. As the number of missing values was small, we used list-wise deletion in all analyses.

Structural equation models

Analyses were conducted with the *lavaan* package, version 0.6-1.1189, for *R*, version 3.4.3 (R Core Team, 2016; Rosseel, 2012). We used the following target values for fit indices (Mueller & Hancock, 2008): SRMR ≤ 0.08, RMSEA ≤ .06, and CFI ≥ 0.95. The variables showed only modest skewness (< 1.9) and kurtosis (< 4.8); Mardia's test for multivariate kurtosis was significant in all studies ($z > 22.07$, $p < .001$). Therefore, we decided to use robust maximum likelihood estimation with the Satorra-Bentler statistic (Satorra & Bentler, 2001). We did not delete any outliers[6].

Measurement model. Following Mueller and Hancock's recommendations (2008) we started with a two-phase analysis, first focusing on the measurement model, and then adding a structural part. The measurement phase consisted of a series of confirmatory factor analyses (for details, see Appendix 3.2). The variables *financial shame*, *status orientation*, and *status consumption* were modeled as latent variables with their respective scale items as indicators. For Study 1, fit for our first model was not acceptable. Based on inspection of the standardized residuals and modification indices, we decided to allow the residual variance to covary for items 2 and 7 of the financial shame scale, and for items 4 and 5 of the status orientation scale. Now, model fit was acceptable, *S-B correction* = 1.218, $\chi^2(114) = 217.94$, $p < .001$; SRMR = .042; RMSEA = .044, 90% CI [.032, .054]; CFI = .979; average variance extracted > .62 (AVE, > .50 recommended by Fornell & Larcker,

6 The pattern of results was the same when we removed multivariate outliers (Filzmoser, Maronna, & Werner, 2008): 57 cases in Study 1, 69 in Study 2, and 109 in Study 3.

1981); maximal reliability > .90 (MR, > .70 recommended by Hancock & Mueller, 2001). For Study 2, we again allowed these covariances, but model fit was not yet acceptable. Therefore, we additionally allowed the residual covariances of items 1 and 2 and items 3 and 4 of the new status consumption scale to covary, after which model fit was acceptable, *S-B correction* = 1.260, $\chi^2(112) = 256.20$, $p < .001$; SRMR = .042; RMSEA = .052, 90% CI [.042, .062]; CFI = .968; AVE > .53; MR > .87. We used the same specification for the measurement model of Study 3, for which model fit was also acceptable (but note that AVE was low), *S-B correction* = 1.148, $\chi^2(128) = 279.96$, $p < .001$; SRMR = .047; RMSEA = .041, 90% CI [.034, .048]; CFI = .976, AVE > .40, MR > .84. We used the same measurement models for the analyses with subjective wealth instead of effective income (see Appendix 3.2).

Structural model. For the structural model with effective income, we used the same specifications as for the final measurement model but added paths between the latent variables as in Figure 3. The model fit the data well, and all measurement indices met the pre-specified thresholds (see Table 3). The total effect of effective income on status consumption was not significant in Studies 1 and 2, but was significantly positive in Study 3, $\beta_1 = 0.034$, $\beta_2 = 0.106$, $\beta_3 = 0.098$. This suggests that participants with higher incomes were somewhat more interested in status consumption. However, the effect of income was composed of two different effects with opposite signs. In all SEM models, effective income had a small positive direct effect on status consumption, $\beta_1 = 0.090$, $\beta_2 = 0.152$, $\beta_3 = 0.139$. Income also affected status consumption negatively through shame and status orientation: Effective income was negatively related to financial shame, $\beta_1 = -0.380$, $\beta_2 = -0.414$, $\beta_3 = -0.320$, which was positively related to status orientation, $\beta_1 = 0.193$, $\beta_2 = 0.171$, $\beta_3 = 0.228$, which was, finally, positively related to status consumption $\beta_1 = 0.765$, $\beta_2 = 0.651$, $\beta_3 = 0.557$. The indirect effect of income via shame and status consumption was significantly negative, $\beta_1 = -0.056$, $\beta_2 = -0.046$, $\beta_3 = -0.041$.

The pattern of results is the same when we replace effective income with subjective wealth in the structural equation model (see Table 4), even though the correlations between effective income and subjective wealth are not very high ($.40 < r < .52$). The total effect of subjective wealth on status consumption was only significant in Study 2 ($-0.02 < \beta < 0.13$). Again, in all studies there was a significant positive direct effect of subjective wealth on status consumption ($0.10 < \beta < 0.21$), and a negative indirect effect via shame and status orientation ($-0.12 < \beta < -0.07$). The effects of subjective wealth on shame were also all significant ($-0.82 < \beta < -0.68$), as were the effects of shame on status orientation ($0.15 < \beta < 0.24$) and the effects of status orientation on status consumption ($0.63 < \beta < 0.79$).

Table 3. Parameter estimates and model fit for the structural equation models with effective income in Studies 1–3

	Study 1 (*N* = 299)				Study 2 (*N* = 304)				Study 3 (*N* = 536)			
Parameter	***b (SE)***	**β**	***p***	***R²***	***b (SE)***	**β**	***p***	***R²***	***b (SE)***	**β**	***p***	***R²***
Income → status consumption	0.059 (0.025)	0.090	.020	.583	0.085 (0.030)	0.152	.003	.433	0.125 (0.044)	0.139	.005	.319
Income → shame	-0.173 (0.040)	-0.380	< .001	.145	-0.193 (0.030)	-0.414	< .001	.171	-0.252 (0.040)	-0.320	< .001	.102
Shame → status orientation	0.182 (0.065)	0.193	.004	.037	0.158 (0.064)	0.171	.011	.029	0.222 (0.052)	0.228	< .001	.052
Status orientation → status consumption	1.162 (0.134)	0.765	< .001	.583	0.852 (0.105)	0.651	< .001	.433	0.658 (0.077)	0.557	< .001	.319
Income → status consumption (via shame and status orientation)	-0.037 (0.015)	-0.056	.016		-0.026 (0.011)	-0.046	.014		-0.037 (0.010)	-0.041	< .001	
Income → status consumption (total)	0.022 (0.028)	0.034	.429		0.059 (0.032)	0.106	.055		0.089 (0.045)	0.098	.049	
Model fit	*S-B correction* = 1.184, $\chi^2(130)$ = 232.52, $p < .001$; SRMR = .043; RMSEA = .042, 90% CI [.030, .052]; CFI = .980				*S-B correction* = 1.213, $\chi^2(145)$ = 357.05, $p < .001$; SRMR = .065; RMSEA = .059, 90% CI [.050, .068]; CFI = .952				*S-B correction* = 1.146, $\chi^2(145)$ = 295.74, $p < .001$; SRMR = .049; RMSEA = .039, 90% CI [.032, .047]; CFI = .976			

Note: For each latent variable, the mean was fixed to 0 and the variance to 1.

Table 4. Parameter estimates and model fit for the structural equation models with subjective wealth in Studies 1-3

	Study 1 (*N* = 299)				Study 2 (*N* = 304)				Study 3 (*N* = 536)			
Parameter	***b (SE)***	**β**	***p***	***R²***	***b (SE)***	**β**	***p***	***R²***	***b (SE)***	**β**	***p***	***R²***
Subj. wealth → status consumption	0.163 (0.072)	0.105	.024	.583	0.340 (0.096)	0.209	< .001	.621	0.146 (0.066)	0.114	.021	.387
Subj. wealth → shame	-1.416 (0.138)	-0.817	< .001	.667	-0.911 (0.105)	-0.673	< .001	.453	-1.188 (0.086)	-0.765	< .001	.585
Shame → status orientation	0.108 (0.041)	0.184	.006	.034	0.113 (0.053)	0.151	.023	.023	0.155 (0.035)	0.233	< .001	.054
Status orientation → status consumption	1.175 (0.130)	0.772	< .001	.583	1.255 (0.152)	0.781	< .001	.621	0.785 (0.094)	0.632	< .001	.387
Subj. wealth → status consumption (via shame and status orientation)	-0.180 (0.066)	-0.116	.006		-0.129 (0.057)	-0.079	.022		-0.144 (0.036)	-0.113	< .001	
Subj. wealth → status consumption (total)	-0.017 (0.092)	-0.011	.854		0.211 (0.102)	0.130	.029		0.002 (0.064)	0.001	.978	
Model fit	*S-B correction* = 1.209, $\chi^2(164)$ = 295.68, $p < .001$; SRMR = .048; RMSEA = .041, 90% CI [.031, .050]; CFI = .980				*S-B correction* = 1.262, $\chi^2(162)$ = 385.65, $p < .001$; SRMR = .083; RMSEA = .054, 90% CI [.046, .062]; CFI = .960				*S-B correction* = 1.154, $\chi^2(162)$ = 362.19, $p < .001$; SRMR = .048; RMSEA = .042, 90% CI [.035, .048]; CFI = .974			

Note: For each latent variable, the mean was fixed to 0 and the variance to 1.

General Discussion

The results of three studies suggest that income has two opposite effects on status consumption. On the one hand, there is a positive direct effect of income on status consumption; a higher income allows for more opportunities to buy status products. On the other hand, income has a negative indirect effect on status consumption; people with lower incomes are more likely to feel ashamed of their financial situation, which is related to higher interest in status, which is finally related to more reported status consumption. In other words, when we take out the effect of income or subjective wealth, people who feel ashamed of their financial situation are more likely to be interested in status and status consumption.

Future research should test whether shame causally affects status consumption by, for example, manipulating financial shame and measuring actual status consumption instead of self-reported consumption. Importantly, the current data support two important ideas. First, the data are in line with the idea that poverty, through financial shame, may induce people to engage in status consumption. Second, direct comparisons of the level of status consumption between more and less wealthy people may not show this effect because of the two, opposite effects of income: more wealthy people may engage more in status consumption because they have more discretionary income, while less wealthy people may engage more in status consumption because of financial shame. In other words, among different income groups there may be different pathways towards status consumption.

Appendix 3.1

Scales used and Cronbach's alphas

Subjective wealth (α_1 = .92, α_2 = .92, α_3 = .89; Gasiorowska, 2014)

1. How would you describe your current financial situation?
2. How would you describe your ability to make ends meet?
3. Do you feel your income adequately fulfills your needs and wants?

Financial shame (α_1 = .93, α_2 = .92, α_3 = .92)

1. I'm ashamed of my financial situation
2. I prefer others not to know about my financial situation
3. I feel that others look down on me because of my financial situation
4. I feel bad about myself for not having a better financial situation
5. When I think about my financial situation, I feel as if I have failed
6. I want to avoid thinking about my financial situation
7. I try to hide my financial situation from the people around me

Status orientation (α_1 = .89, α_2 = .89, α_3 = .83)

1. I think status is an important indicator of how people are doing in life
2. I am willing to spend much time and effort to acquiring high status
3. I admire people who have a lot of prestige
4. I find it important that others hold me in high regard
5. I care about the reputation that I have in the eyes of others

Status consumption (α_1 = .88; Eastman et al., 1999)

1. I would buy a product just because it has status
2. I am interested in new products with status
3. I would pay more for a product if it had status
4. The status of a product is irrelevant to me
5. If I think about it, I spend quite a lot of money on products that provide status

Status consumption (new scale, α_2 = .88, α_3 = .83)

1. I buy products to impress others
2. When buying a product, it is important to consider what other people will think of it
3. I prefer to buy well-known brands, even though they are sometimes more expensive
4. I am willing to pay more for brand name products
5. In general, what is the maximum you'd be willing to pay extra for a brand name product compared to a similar non-brand product?
6. What percentage of your purchases are premium brands?

Appendix 3.2

Measurement phases Study 1 and Study 2

Models with effective income

Study 1. We created a measurement model with a confirmatory factor analysis on the factors *financial shame*, *status orientation*, and *status consumption*, indicated by their respective scale items. The model fit did not yet meet our target values, *S-B correction* = 1.230, $\chi^2(116) = 328.52$, $p < .001$; SRMR = .047; RMSEA = .066, 90% CI [.057, .075]; CFI = .952. Inspection of the standardized residuals and the modification indices revealed that restrictions on the relationship between the second and seventh items of the financial shame scale, and on the fourth and fifth items of the status orientation scale were problematic. Inspection of the standardized residuals and modification indices showed there were three problematic scales: financial shame and status orientation scales. We decided to allow the residual variance of each of the pairs of problematic items to covary. The new model showed significantly improved fit, $\chi^2(2) = 57.40$, $p < .001$; Fit indices: *S-B correction* = 1.218, $\chi^2(114) = 217.94$, $p < .001$; SRMR = .042; RMSEA = .044, 90% CI [.032, .054]; CFI = .979; average variance extracted > .62 (> .50 recommended by Fornell & Larcker, 1981); maximal reliability > .90 (> .70 recommended by Hancock & Mueller, 2001).

Study 2. For the latent variables for financial shame and status orientation we used the same specification as in Study 1: Every scale item was an indicator for its latent variable, and we allowed the allowed the residual variance to covary for the second and seventh item of the financial shame scale and for the fourth and fifth item of the status orientation scale. As the latent variable for status consumption now used different indicators, we did investigate whether the measurement model for this variable was adequate. A first CFA showed poor model fit, *S-B correction* = 1.234, $\chi^2(130) = 540.43$, $p < .001$; SRMR = .065; RMSEA = .089, 90% CI [.081, .097]; CFI = .900. After inspection of the standardized residuals and modification indices we found that the restrictions on relations between the first two items and the third and fourth item of the status consumption scale were problematic. We decided to allow the residual variances of these two pairs of items to covary. Model fit significantly improved, $\chi^2(2) = 859.61$, $p < .001$, and fit was now adequate, *S-B correction* = 1.260, $\chi^2(112) = 256.20$, $p < .001$; SRMR = .042; RMSEA = .052, 90% CI [.042, .062]; CFI = .968; average variance extracted > .53; maximal reliability > .87.

Study 3. As specified in our preregistration for this Study, we did not make any changes to the measurement model. Fit for the measurement model was good: *S-B correction* = 1.148, $\chi^2(128) = 279.96$, $p < .001$; SRMR = .047; RMSEA = .041, 90% CI [.034, .048]; CFI = .976.

Models with subjective wealth

Study 1. We started with the same measurement model as we ended with in Study 1, in which we allowed the residual variance to covary for items 2 and 7 of the financial shame scale, and items 4 and 5 of the status orientation scale. In addition, we added a latent factor for subjective wealth, indicated by all subjective wealth items. As the model fit well, *S-B correction* = 1.210, $\chi^2(162) = 287.17$, $p < .001$; SRMR = .041; RMSEA = .039, 90% CI [.029, .049]; CFI = .981, we did not make any further changes.

Study 2. In Study 2, we used the same measurement model, which again showed good fit, *S-B correction* = 1.262, $\chi^2(162) = 385.65$, $p < .001$; SRMR = .083; RMSEA = .054, 90% CI [.046, .062]; CFI = .960.

Study 3. As for the model with effective income, we preregistered to not make any changes to the measurement model for Study 3. Again, fit was good, *S-B correction* = 1.156, $\chi^2(160) = 338.59$, $p < .001$; SRMR = .036; RMSEA = .039, 90% CI [.033, .046]; CFI = .977.

Order effects in Study 2

Because we found significant order effects for status orientation and status consumption in Study 2, we repeated the measurement phase and structural phase with order variables. Specifically, we added dummy variables for the position of the status orientation and status consumption scales, with first place as the reference category. The latent variables for status orientation and status consumption were regressed on these dummy variables. In the measurement phase, adding these dummy variables did not improve fit,; original model: S-B correction = 1.214, $\chi^2(145) = 357.36$, $p < .001$; SRMR = .068; RMSEA = .059, 90% CI [.050, .068]; CFI = .952; new model: *S-B correction* = 1.123, $\chi^2(253) = 482.83$, $p < .001$; SRMR = .064; RMSEA = .049, 90% CI [.041, .056]; CFI = .953. Model comparison also showed that fit did not improve, $\chi^2(108) = 125.44$, $p = .120$; Original model: AIC = 20,488, BIC = 20,650; new model: AIC = 22,156, BIC = 22,418.

Appendix 3.3

Power analysis Study 3

To get a more accurate power analysis for Study 3, we used Study 2's data to simulate new datasets. With the *simsem* package, version 0.5-14.904, we simulated 1,000 datasets based on the data from Study 2 and analyzed them using the structural equation model with effective income as in Study 2. We tested various sample sizes, in steps of $N = 10$, until we achieved 95% power to detect all four structural paths in the model. At $N = 530$, power was .979 to detect the income → status consumption effect, > .999 for income → shame, .963 for shame → status orientation, and > .999 for status orientation → status consumption. Power for the structural equation model with subjective wealth was also high: > .999 for subjective wealth → status consumption, > .999 for subjective wealth → shame, .901 for shame → status orientation, and > .999 for status orientation → status consumption.

Chapter 4

Shame in Poverty and Social Withdrawal

The authors thank Loes Keijsers for her help with the longitudinal analyses.

Code for all analyses is available online at *https://osf.io/g5aqe/*. In this paper we make use of data of the LISS (Longitudinal Internet Studies for the Social sciences) panel administered by CentERdata (Tilburg University, The Netherlands).

This chapter is based on Plantinga, A., Breugelmans, S., & Zeelenberg, M. (2018). *Shame in poverty and social withdrawal*. Manuscript submitted for publication.

Abstract

We examine whether a poor financial situation is related to social withdrawal, and whether this is mediated by feelings of shame. We analyze existing data from a Dutch representative sample using a combination of cross-sectional and longitudinal analyses. Cross-sectionally, we find that people who are less satisfied with their financial situation are more socially withdrawn than people who are satisfied with their financial situation. This effect is partially mediated by feelings of shame. At a between-person level, people who score their financial situation lower tend to be more socially withdrawn. At a within-person level, these two variables also negatively influence each other over time: when someone's financial situation was worse than their personal average in a certain year, they tended to score higher on social withdrawal in the next year. Similarly, more than average social withdrawal in one year predicted a worse than average financial situation in the next year.

People living in poverty often feel shame over their financial situation (Chase & Walker, 2012). Qualitative research into these experiences suggests that poor people might deal with their shame by withdrawing themselves from social situations; they shy away from interacting with others (Walker et al., 2013). In this article, we analyze quantitative data taken from a Dutch representative sample in order to test whether people who feel ashamed of their socioeconomic situation are indeed more likely to show social withdrawal. We additionally test how people's financial situation and social withdrawal predict one another over time by using a Random-Intercept Cross-Lagged Panel Model (RICLPM). We find that shame partially mediates the relationship between financial situation and social withdrawal. We also find evidence for a vicious cycle, with a worse financial situation predicting social withdrawal in the following year and vice versa.

Poverty and Shame

All over the world, people living in poverty report feelings of shame (Walker et al., 2013). We refer to the feeling of shame due to a lack of financial resources as *financial shame*. From research on emotions, we know that shame is associated with a specific experience (i.e., a threat to one's self-image) and with a specific set of behaviors, notably attempts to restore one's threatened self-image and social withdrawal (De Hooge et al., 2010; Tangney & Dearing, 2002). These two behaviors are related: People wish to restore their self-image and if this is not possible they engage in social withdrawal (De Hooge et al. 2010; Gausel, Vignoles, & Leach, 2015). These behaviors can also be observed in reaction to financial shame. For example, we found that, after controlling for income, people who experienced shame of their finances were more likely to be interested in status and status products that could restore their self-image (Chapter 3). However, for many people living in poverty such strategies are too risky or simply unavailable, leaving only social withdrawal.

Walker et al. (2013) interviewed poor people, asking, among other things, how they cope with financial shame. Strategies included trying to escape poverty, trying to keep up appearances, derogating others, and withdrawing from social situations. Another study by Reutter et al. (2009) found that many low-income residents of two large, Canadian cities reported they isolated themselves in order to avoid being judged or stigmatized by other members of society. Sutton, Pemberton, Fahmy, and Tamiya (2014) cite several Japanese studies showing that public welfare recipients are often reluctant "to 'show their face in public' (*seken*) due to intense feelings of shame, or because they were afraid of 'welfare-bashing'" (p. 149).

The tendency towards social withdrawal in response to financial shame is not without risks and may relate to potentially dysfunctional behavior. For example, previous research has shown that stigmatization can prevent people from claiming benefits (Baumberg, 2016; Grogger & Currie, 2001; Stuber & Schlesinger, 2006) or from receiving aid such as going to a food bank (Hoogland & Berg, 2016; Purdam, Garratt, & Esmail, 2016; Van der Horst, Pascucci, & Bol, 2014). Such behaviors could deepen poverty, leading to a behavioral poverty trap: a situation in which poverty reinforces itself through its effects on decision making (Dalton, Ghosal, & Mani, 2016; Kraay & McKenzie, 2014).

Although the idea that poverty is related to financial shame and behavioral withdrawal is compelling and potentially important to policy makers, the empirical evidence at this moment is mostly anecdotal. There is no direct evidence on the effect of shame and financial problems on social withdrawal. This is what we address in the current paper. Using quantitative data from a large panel that is representative of the Dutch population, we tested on a between-person level whether people who feel their financial situation is worse are more likely to show social withdrawal, and whether this effect is mediated by financial shame (cross-sectional analysis). Next, we test this hypothesis the within-person level, that is, whether feeling more dissatisfied with your own financial situation (compared to other years) predicts more social withdrawal over time for that same person, and vice versa (longitudinal analysis). Teasing apart between-person effect from within-person effects is important, because one effect cannot automatically be generalized to the other (see, e.g., Fisher, Medaglia, & Jeronimus, 2018).

Cross-Sectional Analysis

Data

Study units. We used data collected via the LISS panel (Longitudinal Internet Studies for the Social sciences, see *www.lissdata.nl*), administered by CentERdata (Tilburg University, the Netherlands). This is an internet panel consisting of 4,500 households that are representative of the Dutch population, comprising 7,000 individuals. If necessary, participants are provided with a computer and internet connection.

For the cross-sectional analysis, we combined four different study units. First, we used wave 6 from *Economic Situation: Income* (henceforth *income*), collected in June–July 2013, which contains questions on people's income and

their perception of their financial situation. The second unit, *Social Integration and Leisure* (henceforth *social integration*), contains questions on people's social contacts and on how they spend their free time. For this analysis we use wave 6, collected in February–March 2013. Third, the study unit *Does stigmatization "explain" why low socioeconomic status is related to poor health?* (henceforth *stigmatization*) contains questions on perceived stigmatization, general shame, and social embarrassment. Data were collected in February–March 2013. Finally, we used the *Background Variables* data from February 2013 determine participants' demographics. A total of 5,015; 5,759; and 2,096 people participated in the study units *income*, *social integration*, and *stigmatization*, respectively. Of these participants, 53.7% were female and age ranged from 16 to 89 (M_{age} = 51.6, *SD* = 17.1). A total of 1,739 participated in all four study units, which should yield 95% power to detect $r > .086$. All available data were used in the analyses.

Measures.

Financial satisfaction. To measure people's subjective perception of their financial situation, we use the following question from the *income* study unit: "How satisfied are you with your financial situation?". Participants answered on a scale of 0 (not at all) to 10 (entirely). For all items used, see Appendix A.

Financial shame. The *stigmatization* study unit contains a "perceived classism" scale, which we use as a proxy for financial shame. It measures whether people feel ashamed of their financial situation, education level, or occupation, on a 1–5 Likert scale. We used all items except item 3, "I never feel shy when I am among other people", because it does not reflect the concept of financial shame.

Social withdrawal. Three scales from the *social integration* study were candidates for inclusion in a social withdrawal index: a measure of *social satisfaction* ("How satisfied are you with your social contacts?", 1 = not at all satisfied to 10 = completely satisfied); the De Jong Gierveld Loneliness scale to measure *loneliness* 6 questions rated on a scale of 1 = yes, 2 = more or less, 3 = no; De Jong Gierveld & Tilburg, 2006); and a measure of the number of *social gatherings*, where participants indicated how often they spend time with family, people from the neighborhood, or with friends, and how often they visit a bar or café (1 = almost every day to 7 = never). For each scale, we recoded its items so a higher score means more social withdrawal.

An exploratory factor analysis of all items revealed that a unidimensional solution explained a lot of variance (Eigenvalue = 2.89, R^2 = .82). The factor loadings and communalities of the *social satisfaction* and *loneliness* items were all high (loadings > .57, $h^2 > .33$), but those of the *social contacts* items were all

low (loadings < .32, h^2 < .11). Combining into one index measure, reliability of all the items from wave 1 was fairly low (ω_t = .61[7], Cronbach's α = .67). Reliability was much higher and acceptable when combining only *social satisfaction* and *loneliness* (ω_t = .77, α = .73; for the other combinations: ω_t < .61, α < .64). Therefore, we calculated the mean scores for the *social satisfaction* and *loneliness* scales, rescaled the means so they ranged from 0 to 1, and averaged across them to create the *social withdrawal* variable[8].

Results

Descriptive statistics and correlations. A substantial group of participants reported feeling ashamed of their financial situation, education level or occupation. On a 1–5 scale, 7.9% of the participants scored on average at least 3, and 0.6% scored at least 4. Slightly more people were dissatisfied with their social contacts: 10.5% scored 5 or lower on a 10-point scale. Similarly, 10.6% scored at least or higher than the midpoint of the loneliness scale. Across the whole sample, we found a moderate, negative correlation between financial satisfaction and social withdrawal, $r(4525) = -.32$, $p < .001$, 95% CI [-0.35, -0.30], and a moderate, positive correlation between shame and social withdrawal, $r(2057) = .36$, $p < .001$, 95% CI [0.32, 0.39] (see Table 5 for all correlations).

Mediation analysis. We tested whether the effect of financial satisfaction on social withdrawal was mediated by financial shame using a Structural Equation Model (SEM), using the *lavaan* package, version 0.6-1.1189 (Rosseel, 2012), for *R*, version 3.4.3 (R Core Team, 2016). We tested a model in which financial satisfaction has both a direct effect on social withdrawal and an indirect effect via financial shame (see Figure 4). Standard errors were estimated using bootstrapping with 10,000 samples. In this model, there was a significant negative direct effect of financial satisfaction on social withdrawal, β = -0.179, $z = -6.03$, $p < .001$, 95% CI [-0.236, -0.123]. In addition, financial satisfaction had a negative effect on financial shame, β = -0.393, $z = -13.52$, $p < .001$, 95% CI [-0.443, -0.343], which in turn positively affected social withdrawal, β = 0.292, $z = 10.46$, $p < .001$, 95% CI [0.240, 0.343]. The pattern of results was identical when we used the social withdrawal components separately (loneliness or social satisfaction).

7 ω_t is a more accurate estimate of reliability than Cronbach's α (McNeish, 2017). The values are interpreted in the same way as Cronbach's α.

8 The pattern of results is the same when we include the *social contacts* variable.

Table 5. Pearson correlations, means, and standard deviations for the cross-sectional analysis

	M (SD)	2	3	4	5	6	7	8
1. Financial satisfaction	6.646 (1.809)	**-.398*****	**-.322*****	**.144*****	**.151*****	**.136*****	**.036***	**-.109*****
2. Shame	1.717 (0.681)		**.356*****	**-.232*****	**-.235*****	-.035	.025	**.084*****
3. Social withdrawal	0.006 (0.760)			**-.078*****	**-.083*****	**-.031***	.012	**.109*****
4. Age	40.991 (22.085)				**.966*****	**.255*****	.001	**.071*****
5. Age2	2167.966 (1841.050)					**.142*****	.010	**.062*****
6. Education	3.151 (1.641)						**.045*****	**.032****
7. Gender (1 = Male)	0.491 (0.500)							**-.055*****
8. Single (1 = Yes)	0.203 (0.402)							

Note: M = mean, *SD* = standard deviation. *: $p < .05$, **: $p < .01$, ***: $p < .001$

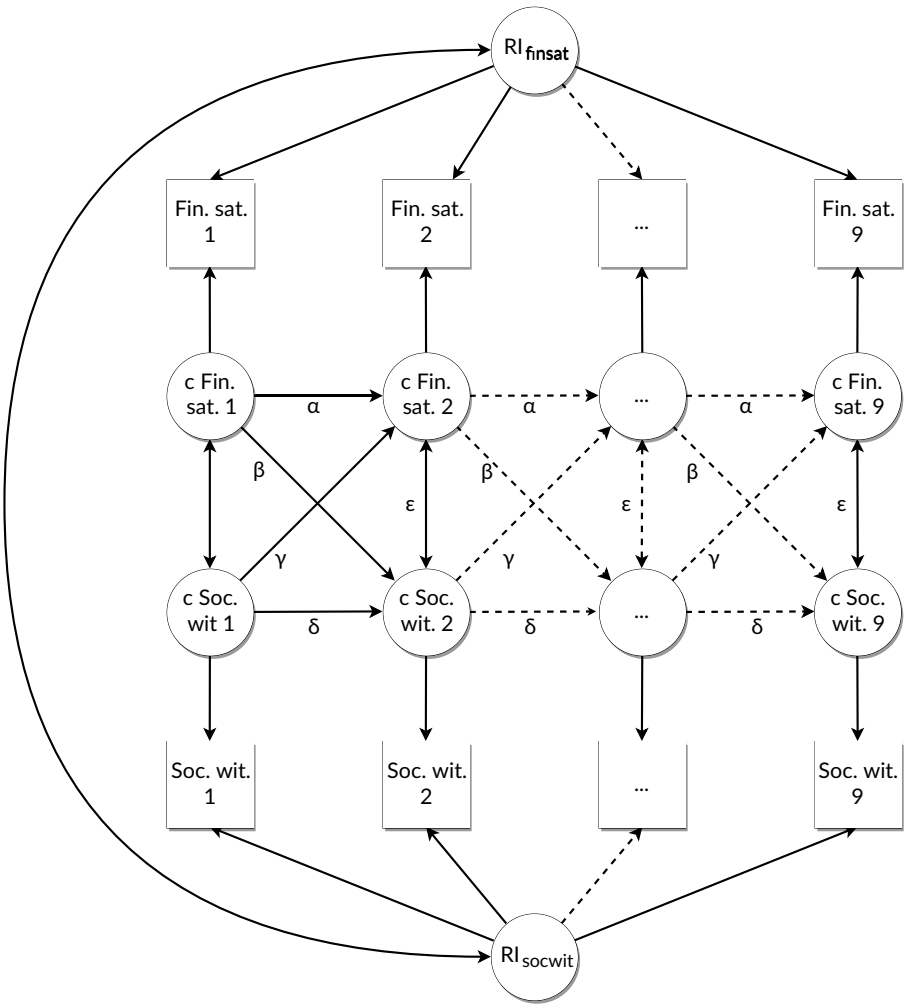

Figure 4. Random Intercept Cross-Lagged Panel Model

Longitudinal Analysis

Data

Study units. We used the *income* and *social integration* study units as in the cross-sectional analyses but added more waves. From *income,* we used waves 1–9, collected between June 2008 and June 2016. From *social integration,* we also used waves 1–9, collected between February 2008 and October 2013. A total of 13,243

people participated in at least one of the waves; we had data for social withdrawal or financial situation for 10,876 participants. Across the waves, the percentage of females ranged from 53.5 to 53.9%, and mean age ranged from 45.3 (*SD* = 15.9) in wave 1 to 50.3 (*SD* = 18.2) in wave 9. The number of participants for which we had data for both financial situation and social withdrawal ranged from 4,527 to 5,677 per wave, and for 8,255 participants we had data on both these variables for at least two waves. Simulation studies by Berry and Willoughby (2017) suggest that these sample sizes should be sufficient to detect small effects (β = .10), especially for within-subjects effects.

Results

Descriptive statistics. On average, people rated their financial situation a 6.66 (*SD* = 1.83) out of 10, and their social contacts a 7.31 out of 10 (*SD* = 1.59). They scored an average of 1.35 out of 3 on the loneliness scale (*SD* = 0.40). Linear mixed models with random intercepts and random slopes showed no evidence of a linear change over time for both financial satisfaction and social withdrawal (financial satisfaction: b = -0.002, $F(1, 37553) = 0.46$, p = .498; social withdrawal: b = -0.0001, $F(1, 42098) = 0.33$, p = .563). In all waves, financial satisfaction correlated negatively with social withdrawal (-.33 < r < -.24, p-values < .0001).

Random Intercept Cross-Lagged Panel Model. An RICLPM allowed us to separate within-person variance from between-person variance. Specifically, we could test whether financial satisfaction and social withdrawal affected each other over time after controlling for stable between-person differences. The intra-class correlations showed that 64.7% of the variance in financial satisfaction and 63.7% of the variance in social withdrawal could be explained by between-person differences; the remainder was explained by within-person differences. This means that a substantial part of the variance for these variables can be explained by within-person fluctuations over time.

Assumptions. In all waves, the variables showed only modest skewness (< 1.23) and kurtosis (< 2.78). However, Mardia's test for multivariate normality was significant in all waves (skewness coefficients > 1950.65, kurtosis coefficients > 44.05). Therefore, we decided to apply robust maximum likelihood estimation with the Yuan-Bentler statistic (Yuan & Bentler, 2000).

Model specification. Following Hamaker, Kuiper, and Grasman (2015), we constructed a RICLPM by creating separate latent variables for within-person and between-person variance, for both financial satisfaction and social withdrawal (see Figure 4). The random intercepts (RI) describe stable between-person differences

in their financial satisfaction and social withdrawal. At the within-person level, the latent variables reflect scoring higher or lower than that person's average in a particular wave. We can examine stability effects (α and δ; so-called carry-over stability), cross-lagged effects (β and γ), and correlated change effects (ε). The stability effects describe whether scoring higher than expected on a variable in a particular wave, predicts scoring higher than expected on that variable in the next wave for the same person. The cross-lagged effects show whether a person's higher than expected score in a wave, predicts a higher score on a different variable in the next wave. Finally, the correlated change effects show whether a person's change in a variable from one wave to the next is related to that person's change in a different variable across the same time span. We again fit the models with the *lavaan* package, using Huber-White robust standard errors.

Model results. The model fits the data well, Yuan-Bentler correction = 1.68, $\chi^2(144) = 1167.82$, $p < .001$; SRMR = .060; RMSEA = .023, 90% CI [.022, .024]; CFI = .972; TLI = .970. Results are presented in Table 6. Following Keijsers (2016), we compared the RICLPM to a Cross-Lagged Panel Model (CLPM) without random intercepts. The CLPM does not fit the data well, Yuan-Bentler correction = 1.71, $\chi^2(140) = 5588.52$, $p < .001$; SRMR = .180; RMSEA = .054, 90% CI [.053, .055]; CFI = .849; TLI = .835. Inspection of information criteria confirms that the RICLPM provides a better fit than the CLPM (RICLPM: AIC = 87,983, BIC = 88,320; CLPM: AIC = 95,563, BIC = 95,929).

When we look at standardized effects, the strongest effect is between persons; there is a significant, negative relationship between the random intercepts for financial satisfaction and social withdrawal (β = -0.433). This means that people who are generally less satisfied with their financial situation are on average more socially withdrawn. At the within-person level, all effects are significant. (Note that the standardized estimates show variation across the waves as the variance also varies per wave). First, there are fairly strong stability paths for both financial satisfaction (β = 0.224 – 0.283) and social withdrawal (β = 0.186 – 0.271). Thus, in years in which people score higher than expected on financial satisfaction or social withdrawal, they tend to also score higher than expected on that variable in the following year. The cross-lagged effects, although smaller, are also significant. First, when people are less financially satisfied in a particular year, they tend to be more socially withdrawn in the following year (β = -0.050 – -0.031). Second, a person's social withdrawal in a particular year is also related to less financial satisfaction in the following year (β = -0.043 – -0.035). The significantly negative correlated change effect between financial satisfaction and social withdrawal (β = -0.070 – -0.051) shows that when people become less financially satisfied from one

Table 6. RICLPM on the relationship between financial satisfaction and social withdrawal

Parameters	*B*	*SE*	*p*	CI_B	β
Correlations					
Wave 1 within-person	-0.006	0.003	.044	[-0.011, -0.000]	-0.042
Between-person	-0.077	0.003	< .001	[-0.083, -0.071]	-0.433
Cross-lagged effects					
Fin. sat. t_k → Soc. wit. t_{k+1}	-0.004	0.001	< .001	[-0.005, -0.002]	-0.050 to -0.041
Soc. wit. t_k → Fin. sat. t_{k+1}	-0.477	0.101	< .001	[-0.675, -0.278]	-0.043 to -0.035
Stability paths					
Fin. sat. t_k → Fin. sat. t_{k+1}	0.250	0.012	< .001	[0.225, 0.274]	0.224 to 0.283
Soc. wit t_k → Soc. wit. t_{k+1}	0.226	0.012	< .001	[0.203, 0.250]	0.186 to 0.271
Correlated change					
Fin sat. t_k ↔ Soc. wit t_k	-0.006	0.001	< .001	[-0.008, -0.004]	-0.070 to -0.051

Note: Fin. sat. = financial satisfaction, soc. wit. = social withdrawal, *B* = regression coefficient, *SE* = standard error, CI_B = 95% confidence interval around the regression coefficient, β = standardized regression coefficient, based on the variances of both observed and latent variables. Note that the standardized estimates slow variation across the waves as the variances also vary per wave. *: $p < .05$, **: $p < .01$, ***: $p < .001$

year to the next, they tend to become more socially withdrawn as well. In sum, we find evidence that financial satisfaction and social withdrawal are related on both explain between-person variation, and within-person variation across different time points.

General Discussion

Poverty is a wicked problem (Rittel & Webber, 1973). In the past decades, scientists have studied the situations and processes underlying poverty, in order to inform effective interventions. In this article, we tested an important idea, namely that there exists a vicious cycle between the state of poverty, feelings of shame and social withdrawal using data from a representative sample of people from the Netherlands. We tested two models. The first, a structural equation model for a cross-sectional analysis, revealed that a worse financial situation was related to more social withdrawal, and that this relationship was mediated by feelings of shame. These results are in line with the idea that financial problems are related to

shame, which can prompt people to withdraw themselves from social situations.

To explore the relationships between poverty and withdrawal over time, we analyzed longitudinal data across nine waves. The results from a Random Intercept Cross-Lagged Panel Model (RICLPM) are in line with relationships between one's financial situation and withdrawal at both a between-person and a within-person level. Comparing individuals at the between-person level, people who were generally less satisfied with their financial situation tended to be more socially withdrawn than people who were more satisfied. Within the same person, financial problems and social withdrawal influenced one another over time: when someone scored lower than their personal average on financial satisfaction in a certain year, they tended to score higher on social withdrawal in the next year. This also held the other way around: when people scored higher on social withdrawal in the next year, they were less satisfied with their financial satisfaction the next year.

These findings are important because they corroborate ideas from qualitative research on how poverty may affect decision making. Furthermore, they are important to policy makers because they may shed light on the question why poor people frequently do not make use of the possibilities and projects that are offered to assist them (see Currie, 2006). This means that, to reach poor people, more has to be offered than just monetary aid; poverty clearly also is a social issue. In fact, research on shame suggests that there are clear opportunities in situations of financial shame. Social withdrawal is often only the second preferred coping strategy in shame, with approach and repair behaviors being first (De Hooge et al., 2010). So, if people could be approached in early stages of financial hardship, shame might actually motivate them to look for constructive ways to get out of their situation and avoid a vicious cycle of withdrawal, shame, and more financial problems.

In this article, we were able to draw upon data from a large, representative sample of the Dutch population. This has some clear advantages, but also some limitations. The advantage of working with a representative sample for issues of generalizability and validity are clear. The data also allowed us to use state-of-the-art techniques, such as RICLPM, which enabled us tease apart between-person and within-person effects (Hamaker et al., 2015; Keijsers, 2016). So, we found not only that financial problems predict social withdrawal when analyzed across participants, but also that a particular person's financial situation in one year predicts their level of social withdrawal in the next year. One of the limitations of working with existing data is that we had no control over the design of data collection and the measurement of various constructs. For example, with regard to financial shame we would use a more detailed measure in future research and use

experimental manipulations to test its causal effect on social withdrawal.

All in all, our analyses suggest that financial problems have important consequences for people's social lives, which could be caused by an increase in shame over their poor financial situation. These factors seem to be locked in a vicious cycle, with financial problems and shame leading to social withdrawal and vice versa. This might create a poverty trap that is hard to escape, even when policy measures or other types of aid are available to alleviate one's financial problems. These findings are not only interesting from a theoretical perspective, teaching us about the role of shame in financial behavior, but also from a practical perspective, emphasizing the need to address people's feelings about financial problems in addition to the financial problems themselves to help them get out of poverty.

Appendix 4.1

Items used from the different LISS panel study units

Study unit	Variable	Item
Does stigmatization "explain" why low socioeconomic status is related to poor health?	Financial shame	1 I feel strange or abnormal on account of my financial situation, education level or occupation. 2 There have been times that I felt ashamed of my financial situation, education level or occupation. 3 I never feel ashamed because of my financial situation, education level or occupation. 4 I feel that others look down on me because of my financial situation, education level or occupation. 5 People treat me differently because of my financial situation, education level or occupation. 6 It has happened that people said negative or unpleasant things about me behind my back because of my financial situation, education level or occupation. 7 I have sometimes been excluded from work, education or family life because of my financial situation, education level or occupation.
Social Integration and Leisure	Satisfaction with social contacts	How satisfied are you with your social contacts?
	De Jong Gierveld Loneliness Scale	1 I have a sense of emptiness around me 2 there are enough people I can count on in case of a misfortune 3 I know a lot of people that I can fully rely on 4 there are enough people to whom I feel closely connected 5 I miss having people around me 6 I often feel deserted
	Number of social gatherings (*not used in the final social withdrawal index*)	1 Spend an evening with family (other than members of your own household) 2 Spend an evening with someone from the neighborhood 3 Spend an evening with friends outside your neighborhood 4 Visit a bar or café

4

Chapter 5

Poverty and Shame in the Netherlands

The authors thank Tamara Madern, Wilte Zijlstra, and Nicolette van Poppel for their help in collecting the data.

Code for all analyses and data for Study 2 and Study 3 is available online at *https://osf.io/uw3ks/*.

This chapter is based on Plantinga, A., Breugelmans, S., & Zeelenberg, M. (2018). *Poverty and shame in the Netherlands*. Manuscript submitted for publication.

Abstract

In three exploratory studies we examine the role of financial shame in the Netherlands. In Study 1, about 1 in 7 Dutch adults aged 18–65 report feeling this type of shame. Experiencing shame is related to different psychological factors, such as feeling less in control of one's financial situation, ruminating about one's finances, and feeling stress. Furthermore, shame is related to negative financial events, such as missing bills, and negative attitudes towards different financial behaviors. Study 2 shows similar results for shame related to having a loan, and we find a negative correlation between this type of shame and self-reported responsible borrowing behavior. Finally, Study 3 shows that financial shame is much more prevalent among people in a vulnerable financial situation. In sum, financial shame is experienced by a substantial number of Dutch people, and is related to many different psychological and behavioral outcomes.

In this article we examine the prevalence and correlates of *financial shame* in the Netherlands. Financial shame is shame related to one's financial situation. It is found in both poor and rich countries because it is inherently relative. Whereas not being able to afford linen shirts and leather shoes was a cause of shame in Adam Smith's society (1776), not being able to afford a smartphone could be a source of shame in many of today's societies. Poor people reported feeling ashamed in countries as different as India, Uganda, China, Pakistan, South-Korea, Great Britain, and Norway (Chase & Walker, 2012). In order to cope with financial shame, people reported attempting to appear "normal" and keep up appearances, withdrawing from social situations, and derogating others. In the present article, we study the occurrence and impact of financial shame in the Netherlands. Specifically, we examine how many people in the Netherlands experience financial shame, which other psychological factors are associated with feeling ashamed, and whether this type of shame is related to particular financial behaviors.

Many people believe they live in a meritocratic society: those who are successful are in that position because they worked hard, not because they were lucky, had a good genetic make-up, or because they were born into a rich family (Kraus & Tan, 2015). Believing that we live in such a society does have its downsides: it implies that people who didn't succeed are lazy or incompetent (De Botton, 2004). For the people at the bottom, this feeling that other people are looking down on them is likely to cause feelings of shame. This shame over one's financial situation, which we refer to as *financial shame,* is the topic of this article. Is this type of shame also part of living in poverty in the Netherlands?

First, let us briefly discuss the Dutch context. In 2017, about 6.7% of the Dutch officially lived in poverty—or, to be more precise, were at risk of being poor because they lived below the disposable income threshold set in 1979 by *Statistics Netherlands* (Centraal Bureau voor de Statistiek, 2018a). This means that over 1 million people were at risk of not being able to pay for their basic needs. However, objective measures only tell part of the story: in a 2016 study, 45% of Dutch participants said they had trouble making ends meet (Van der Schors et al., 2016). Qualitative evidence suggests that poverty in the Netherlands is associated with shame. In interviews among visitors of a Dutch food bank, shame was the most often mentioned emotion (Van der Horst et al., 2014). Interviewees not only reported shame because they received products beyond the expiration date and because of the treatment they received from volunteers, but also because they felt they were at the very bottom of the social hierarchy (see, Hoogland & Berg, 2016; Kromhout & Van Doorn, 2013). In a quantitative study among Dutch people

aged 59–94 on general feelings of shame, participants with lower incomes and education levels were more likely to experience shame in their daily life than those with higher incomes or education levels (Bosma, Brandts, Simons, Groffen, & Van den Akker, 2015). What is the impact of financial shame in the Netherlands, one of the wealthiest countries in the world? Previous research suggests that it could be large.

Shame is a powerful negative emotion that people feel when they or others think they are incompetent or immoral (De Hooge, Breugelmans, & Zeelenberg, 2008; Tangney & Dearing, 2002). When people feel ashamed, they tend to feel worthless or inferior to others. Financial shame is likely to have a similar psychological impact. Previous research suggests that financial shame may lead to counterproductive behavior. In an online correlational study among U.S. and U.K. participants, we found that people who felt ashamed of their financial situation were more likely to be interested in status, and report spending more money on status products relative to their income level (Chapter 3). In an analysis of a large representative Dutch sample, we found that financial shame was associated with social withdrawal (Chapter 4). Other research shows that feeling ashamed could create a barrier to food bank use: in the interviews with Dutch food bank clients, many participants reported intense feelings of shame when visiting the food bank for the first time (Van der Horst et al., 2014). Clients of debt collection agencies also often report that feeling shame prevented them from contacting the agency (Keizer, 2016).

Studying the role of shame in poverty is interesting from a theoretical perspective, as it shows that poverty is more than an economic problem. Furthermore, if poverty is associated with feelings of shame, and feeling ashamed leads to counterproductive behavior, this would create a *behavioral poverty trap*: poverty reinforcing itself because of its detrimental effects on behavior (Kraay & McKenzie, 2014). In other words, there could be a vicious cycle of poverty and shame. Studying financial shame is also relevant from a practical perspective. Knowledge of the prevalence and effects of financial shame can help in more effective programs aimed to relief poverty, as these programs should consider the behavioral effects of poverty. For example, if shame indeed prevents people from contacting their debt collection agency, this could have strong detrimental consequences. Interventions informed by psychological insights are more likely to be effective than those based purely on economic grounds (Anand & Lea, 2011).

Current Research

In this article, we explore three data sets containing information on Dutch citizens' feelings of financial shame, their financial situation and behavior, and different psychological characteristics. Note that most of the variables in these data sets were not selected by the authors, making the analyses are of a descriptive and exploratory nature. In Study 1, we examine a large sample of Dutch people between 18 and 65 (N = 1,559), including measures of their financial situation, experienced negative financial events, and (financial) stress. In Study 2, we examine data from a study on consumer credit (N = 455), containing measures related to people's attitudes toward their loan, including a measure related to financial shame. Finally, Study 3 examined an income supporting program in a major city in the Netherlands (N = 51). This small sample consists of low-income citizens.

In all studies, we focus on three research questions. First, we are interested in the prevalence of financial shame among the different samples, and whether shame differs as an effect of demographics. We expected shame to be negatively related to both objective and subjective measures of wealth. Second, we are interested in the psychological characteristics of people who feel ashamed of their financial situation. Here, we expected financial shame to correlate with mostly negative psychological factors. For example, we expected that participants who reported feeling shame to experience more stress and to feel less in control of their financial situation. Finally, we examine whether financial shame is associated with behavior. We expected it to be related to behavior that can have a negative effect on people's financial situation. One objection could be that the effects of shame on other variables are spurious, and due to the effects of financial well-being on both variables. For example, it is possible that being in a problematic financial situation is related to both financial shame and stress. To test this alternative explanation, we will also examine the effect of shame on other variables after controlling for the effect of financial well-being.

Study 1: Shame in the Netherlands

In this study, we explored a large data set of Dutch participants aged 18–65. We were able to measure *financial shame*, demographic variables, *subjective wealth* (using several measures), *financial rumination*, *financial short-term thinking*, and (financial) stress. In addition, the survey contained questions on behavior: participants were asked which negative financial events they experienced, and what they thought of a list of financial behaviors.

Method

Participants. A total of 1,559 people between 18 and 65 years old were recruited via a survey panel (50.5% female, M_{age} = 42.3, SD_{age} = 13.6), which yields 95% power to detect $|r| > .092$. Mean net household income was about €2256 per month, median net household income was €2000 per month. This is substantially lower than the median net income in Dutch households, which was €2775 per month in 2016 (Centraal Bureau voor de Statistiek, 2018c).

Materials. The survey started with questions on demographics (gender, age, living alone or together, and renting vs. owning a house and the source of their income (e.g., salary, own company, pension, etc.). We calculated *effective income* by summing personal and partner income, and dividing that number by the square root of the estimated number of persons in the household (Buhmann & Rainwater, 1988). Participants were asked to estimate their own and their partner's net monthly income, and, if they could not answer this, were asked to estimate it in income brackets. Because we only had data on whether someone lived alone, with children, with a partner, with a partner and children, or something else, we estimated the number of people in the household using national averages for these household types (Centraal Bureau voor de Statistiek, 2018b). For the income brackets, we estimated income as the midpoint of the chosen bracket, except for the last bracket (more than €6,000), for which we used a robust Pareto midpoint estimator (€7,300; von Hippel et al., 2016).

The survey included a number of variables related to participants' financial situation. Participants were asked whether they were able to make ends meet (1 = very easily to 6 = with great difficulty) and they answered the *financial well-being* scale (Consumer Financial Protection Bureau, 2017a), which measures the

extent to which people feel security and freedom of choice due to their financial situation (5-point Likert scale, ω_t = .90[9]). Participants were asked whether they encountered a series of negative financial events in the last two months, such as failing to pay the rent or mortgage for at least 10 days, or having energy cut off because of a failure to pay (answer options were "Yes", "No", "I do not know"). Next, participants were shown a list of financial behaviors, and asked which of these they performed in the last two years (see Table 8). For each behavior they said they performed, participants were asked how easy or difficult they thought it was, how fun or annoying, and whether it was a little work or a lot of work (on scales of 0–10). For a subset of the behaviors, participants were asked which they most often tended to postpone, which they disliked most, and for which they were most afraid to be wrong (participants selected 1 or more items). Finally, the survey included four subscales of the *scarcity scale* (4 items per subscale measured on a 5-point Likert scale; Van der Werf, Van Dijk, & Van Dillen, 2018): *perceived scarcity* (e.g., "I often don't have enough money", ω_t = .88), *financial rumination* (e.g., "I often worry about money", ω_t = .89), *financial short-term thinking* (e.g., "I only think about what I have to pay now. I'll think about the rest later", ω_t = .74), and *financial control* (e.g., "I feel I have little control over my financial situation", ω_t = .75).

Participants answered three stress scales: *chronic financial stress* (e.g., "How often are you physically tense due to your financial situation?", 1 = never to 5 = always (every day), ω_t = .90; De Bruijn & Antonides, 2018), *financial event-related stress* (e.g., "How much stress did you experience the last time you received a bill?", 1 = no stress to 5 = a lot of stress, ω_t = .92; De Bruijn & Antonides, 2018), and the short version of the *Perceived Stress Scale* (e.g., "In the last month, how often have you felt that you were unable to control the important things in your life?", 1 = never to 5 = very often, ωt = .68; Cohen, Kamarck, & Mermelstein, 1983). The survey included four questions of our *financial shame* scale (5-point Likert scale, ω_t = .90, Chapter 3): "I'm ashamed of my financial situation", "I prefer others not to know about my financial situation", "I feel bad about myself for not having a better financial situation", and "I want to avoid thinking about my financial situation". The original items were translated into Dutch and checked for understanding at B1 level of the CEFR (Council of Europe, 2001).

9 ω_t is a more accurate estimate of reliability than Cronbach's α, and has the same interpretation (McNeish, 2017).

Results

A total of 14.8% of the participants agreed or strongly agreed (i.e., scored 4 or 5 on a 5-point scale) with the statement "I am ashamed of my financial situation". More than double this number, 38.7%, said agreed or strongly agreed that they would rather not have others know about their financial situation. Finally, 14.2% of participants felt bad about themselves because of their financial situation, and 18.5% would rather not think about their finances. A regression of the financial shame scale (the previous four questions combined) on gender, age, and education level, showed that shame did not depend on gender, b = 0.05, $t(1548)$ = 1.08, p = .281, 95% CI [-0.04, 0.14], ω^2 = -.00021, financial shame was more prevalent among younger participants, b = -0.01, $t(1548)$ = -3.53, p < .001, 95% CI [-0.010, -0.003], ω^2 = .0030, and among more lowly educated participants, b = -0.07, $t(1548)$ = -4.70, p < .001, 95% CI [-0.11, -0.04], ω^2 = .013.

Shame and financial situation. Financial shame correlatly negatively with effective income, $r(1297)$ = -.21, p < .001, 95% CI [-0.26, -0.16], as well as with all variables related to participants' perceived financial situation (for all correlations, see Table 7). People who felt ashamed of their financial situation were less able to make ends meet, scored lower on financial well-being, and experienced more scarcity.

Psychological characteristics. People who reported financial shame experienced less financial control, ruminated more about financial issues, and focused more on short-term than long-term issues (see Table 7). We conducted three separate regressions of control, rumination, and short-term thinking on mean-centered financial shame and financial well-being, and their interaction effect. The interaction effects were significant in none of the regressions. Financial shame significantly predicted on control, b = -0.29, $t(1555)$ = -16.14, p < .001, 95% CI [-0.33, -0.26], ω^2 = .41, rumination, b = 0.30, $t(1555)$ = 13.92, p < .001, 95% CI [0.26, 0.34] , ω^2 = .40, and short-term thinking, b = 0.23, $t(1555)$ = 11.03, p < .001, 95% CI [0.19, 0.27] , ω^2 = .26. Financial shame explained more variance than financial well-being in all regressions (financial well-being: .10 < ω^2 < .24).

Stress. Financial shame correlated with stress related to financial issues, chronic financial stress, stress related to financial events, and perceived stress in general. We ran separate regressions of each variable on mean-centered shame and financial well-being and their interaction effect. For financial, chronic, and general

Table 7. Pearson's correlations for Study 1 (N =1,559)

Variable	*M (SD)*	2	3	4	5	6	7	8	9	10	11	12
1. Financial shame	2.43 (0.93)	-.22	-.47	-.59	.64	-.64	.63	.51	.55	.60	.62	.54
2. Effective income	1645.21 (883.15)		.48	.42	-.31	.26	-.30	-.22	-.23	-.26	-.26	-.23
3. Ability to make ends meet	3.76 (1.21)			.76	-.64	.54	-.62	-.44	-.52	-.55	-.52	-.44
4. Financial well-being	3.27 (0.80)				-.78	.70	-.77	-.56	-.62	-.66	-.61	-.58
5. Scarcity	2.45 (1.00)					-.72	.81	.63	.62	.69	.63	.58
6. Financial control	3.60 (0.80)						-.70	-.64	-.58	-.65	-.61	-.64
7. Rumination	2.69 (1.03)							.51	.68	.72	.67	.58
8. Short-term thinking	2.47 (0.75)								.42	.49	.45	.48
9. Financial stress	1.87 (0.97)									.75	.68	.55
10. Chronic financial stress	2.12 (0.84)										.71	.60
11. Stress due to financial events	2.46 (1.06)											.57
12. Perceived stress												

Note: For all correlations in this table, $p < .001$

stress we found significant interaction effects (-0.17 < b < -0.05, p-values < .002); the effect of shame was stronger for participants who scored lower on financial well-being. However, all interaction effects were ordinal; the effect of shame was weaker but never negative for people scoring high on financial wellbeing. In all regressions, the effect of shame was significant. Shame affected financial stress, b = 0.26, $t(1555)$ = 10.56, p < .001, 95% CI [0.21, 0.31] , ω^2 = .30, chronic financial stress, b = 0.27, $t(1555)$ = 13.16, p < .001, 95% CI [0.23, 0.31] , ω^2 = .36, financial event related stress, b = 0.46, $t(1497)$ = 17.02, p < .001, 95% CI [0.40, 0.51] , ω^2 = .39, and general stress, b = 0.24, $t(1555)$ = 11.79, p < .001, 95% CI [0.20, 0.28] , ω^2 = .29. Again, financial shame explained more variance in all regressions (financial well-being: .08 < ω^2 < .15).

Financial events. Because the negative financial events variable is a count variable, we tested models with different distributions (Zeileis, Kleiber, & Jackman, 2008). A model in which the variable was assumed to follow a negative binomial distribution showed the best fit in terms of log-likelihood. A regression model was fitted using the *glm.nb* function from the *MASS* package, version 7.3–49, for *R*, version 3.5.0 (R Core Team, 2016; Venables & Ripley, 2002).

In a regression of the number of experienced events on financial shame, shame's effect was significant, b = 0.72, z = 16.59, p < .001, R^2_{KL} = .17[10]. Next, we added financial well-being and an interaction term as predictors, R^2_{KL} = .31. The interaction effect was significant and positive, b = 0.30, z = 5.62, p < .001. This means that the effect of financial shame was stronger for participants who scored high on financial well-being. This interaction effect was again ordinal. The overall effect of financial shame was positive: people who experienced shame reported more negative financial events, b = 0.45, z = 8.65, p < .001. The effect of financial well-being was strongly negative, b = -0.95, z = -15.74, p < .001. In sum, as expected, financial shame is positively related to reporting more negative financial events, even after controlling for the effect of financial well-being. This effect is somewhat stronger for participants who score higher on financial well-being.

Perception of financial behaviors. To test whether financial shame predicts what people think of financial behaviors, we used mixed modeling. In the survey, participants were asked different items (e.g., this behavior is Easy–Hard, Fun–Annoying, etc.) about different categories of financial behavior (e.g., paying bills, opening a bank account, etc.). Note that participants only answered these questions if they first indicated that they performed the behavior in the last two

10 With R^2_{KL} we refer to the goodness-of-fit measure estimated using Kullback-Leibler divergence by Cameron and Windmeijer, (1997).

years. For each item, we fit a separate mixed model. In these models, we enter mean-centered shame, mean-centered financial well-being, and their interaction as fixed effects, and we enter participant number and category as random effects (see Judd, Westfall, & Kenny, 2012). We allow the intercepts to vary randomly across participants and categories[11]. The intraclass-correlations ranged from .16 to .37 for the random variance across participants, and from .01 to .17 for the categories, which indicates that a large part of the variance cannot be explained by these factors.

In all mixed models, shame had a significant effect on the dependent variable. People who felt ashamed thought the behaviors were more difficult, b = 0.84, $t(1310) = 16.30$, $p < .001$, $R^2_M = .08$[12], more work, $b = .69$, $t(1313) = 12.70$, $p < .001$, $R^2_M = .05$, and more annoying, $b = .58$, $t(1312) = 9.90$, $p < .001$, $R^2_M = .04$. They also reported to report postponing them, $b = 0.45$, $OR = 1.57$, $z = 7.20$, $p < .001$, $R^2_M = .02$, and being afraid that they were wrong, $b = 0.67$, $OR = 1.94$, $z = 10.70$, $p < .001$, $R^2_M = .05$.

Next, we again added financial well-being and an interaction term as predictors. After controlling for financial well-being and an interaction effect, shame still affected thinking that the financial behaviors were more difficult, $b = -0.46$, $t(1331) = -7.31$, $p < .001$, $R^2_M = .12$, more work, $b = -0.49$, $t(1323) = -7.22$, $p < .001$, $R^2_M = .06$, and less fun, $b = -0.41$, $t(1318) = -5.62$, $p < .001$, $R^2_M = .05$. In addition, shame was affected postponing the behaviors, $b = 0.52$, $OR = 1.68$, $z = 6.57$, $p < .001$, $R^2_M = .02$, and being afraid to make a mistake, $b = 0.48$, $OR = 1.61$, $z = 6.70$, $p < .001$, $R^2_M = .06$. The effect of financial well-being was significantly negative for all variables except for postponing. Only one of the interaction effects was significant: there was a positive interaction effect of financial well-being and financial shame on being afraid to be wrong, $b = 0.16$, $OR = 1.18$, $z = 2.46$, $p = .014$. Again, financial shame had a larger effect on people scoring high on financial well-being than people scoring low on financial well-being.

11 The pattern of results is exactly the same when we allow the effect of shame or financial well-being to vary across categories.

12 R^2_M represents the marginal explained variance: the variance explained by fixed factors (Nakagawa, Johnson, & Schielzeth, 2017; Nakagawa & Schielzeth, 2013).

Table 8. Frequency of and attitudes towards financial behaviors

Category	Percentage who performed it in last 2 years	Difficult	Annoying	A lot of work	Postpone	Dislike	Afraid wrong
Paying bills	73.8	2.81 (2.61)	6.06 (2.52)	3.02 (2.29)	0.13 (0.34)	0.14 (0.34)	0.14 (0.34)
Bookkeeping	63.4	2.96 (2.30)	5.12 (2.63)	4.22 (2.60)	0.26 (0.44)	0.24 (0.43)	0.24 (0.43)
Switching energy provider	22.8	2.70 (2.40)	4.39 (2.67)	3.64 (2.68)	-	-	-
Opening a bank account	25.3	4.56 (2.62)	5.75 (2.49)	5.49 (2.61)	0.19 (0.40)	0.26 (0.44)	0.26 (0.44)
Submitting a tax return	37.5	2.10 (1.83)	3.46 (2.27)	2.71 (2.15)	-	-	-
Apply for tax benefits	19.1	4.23 (2.92)	5.81 (2.81)	4.93 (2.81)	0.20 (0.40)	0.30 (0.46)	0.30 (0.46)
Looking up information, submitting for, or stopping an insurance	65.4	4.28 (2.81)	5.61 (2.57)	5.04 (2.75)	0.14 (0.34)	0.23 (0.42)	0.23 (0.42)
Repaying extra on a loan, study loan, or mortgage	13.6	3.60 (2.70)	3.95 (2.62)	3.35 (2.37)	-	-	-
Making a payment arrangement	12.6	4.73 (2.73)	7.35 (2.33)	5.00 (2.62)	0.23 (0.42)	0.48 (0.50)	0.48 (0.50)
Applying for a loan	6.1	4.66 (2.83)	6.85 (2.62)	5.29 (2.79)	-	-	-
Applying for benefits at my community council	9.6	5.89 (2.85)	6.88 (2.68)	6.93 (2.70)	0.21 (0.41)	0.43 (0.50)	0.43 (0.50)

Note: The variables *difficult, annoying,* and *a lot of work* were measured on 11-point scales ranging from 0 to 10. The value for *postpone, dislike,* and *afraid wrong* represents the proportion of participants who said they postpone, dislike, or were afraid to be wrong for a behavior, respectively.

Discussion

In total, 14.8% of participants reported feeling ashamed of their financial situation. This means that about 1 in 7 Dutch adults experiences financial shame. It was especially prevalent among young and lower educated participants. As expected, shame was also more prevalent among participants with lower incomes and among participants who rated their financial situation poorly. Participants who experienced shame also felt less in control of their financial situation, ruminated about it more, and focused more on short-term than long-term financial issues. Shame also correlated fairly strongly with both measures of financial stress, and with perceived stress in general. Finally, shame predicted experiencing more negative financial events in the last two months and thinking more negatively about different financial behaviors. For psychological characteristics, stress, events, and perceptions of financial behaviors, the effect of shame remained significant even after controlling for effects of financial well-being and an interaction effect.

Study 2: Consumer credit and shame

In this study, we examine a specific type of shame: feeling ashamed of having a loan. In a survey among people with consumer credit, we measured whether people felt ashamed of having that loan. In addition, we use variables on income, subjective wealth, perception of the loan, and items on responsible borrowing behavior.

Method

Participants. A research agency recruited 455 people who indicated they had some kind of consumer credit (62.9% female, M_{age} = 41.5, SD_{age} = 16.1). A total of 16.0% reported earning an average gross yearly income (between €34.500 and €41.200), 34.5% of participants reported earning less and 49.5% reported earning more.

Materials. We had information on gender, age, education level, household size, and gross yearly household income. We again corrected for household size by calculating effective income: household income divided by the square root of the number of people in the household. Because the answer options for the number of people in the household were 1, 2, 3, 4, or 5 or more, we estimated the number for the last option using a robust Pareto midpoint estimator (5.9; von Hippel, Scarpino, & Holas, 2016). Participants were also asked questions about the loans

they had (for example, the type of loans, the balance of their loans, etc.), questions on whether they had bought a product on installment, and on the extent to which they were able to make ends meet on a scale 1 (with great difficulty) to 6 (very easily). For the current study, we focused on a series of 5–point Likert items about people's loans, and grouped questions together to measure the constructs we were interested in. We measured *financial shame* using one item ("I feel ashamed for having a loan"), and attitudes toward the loan with two items ("I experience my loan(s) as a burden" and "I would rather have borrowed less"). Finally, to measure self-reported *responsible borrowing behavior*, we used seven self-reported items: whether people reported checking whether they could pay off the loan before applying for it, whether they knew the exact amount of interest they were paying, whether they thought their borrowing behavior was responsible, whether they thought one should pay off a loan as quickly as possible, whether a low monthly payment is more important than quickly paying off a loan (reverse coded), whether they talk to their partner about their loans, and the number of times they were behind in their payments (measured on a scale of "Never", 1, 2–3, 4–5, 6–10, or more than 10 times; reverse coded). Reliability of this scale was low (ω_t = .56), so the findings should be interpreted with caution.

Results

In total, 13.2% of participants agreed or strongly agreed with the statement "I feel ashamed for having a loan". We regressed shame on gender (with female as the reference category), education level ("Low" as a reference category, with dummy variables for "Medium" and "High"), and age. Shame was more common among women than among men, b = -0.25, $t(449)$ = -2.36, p = .019, 95% CI [-0.45, -0.04], ω^2 = .017, but was not affected by age, b = -0.004, $t(449)$ = -1.31, p = .191, 95% CI [-0.01, 0.002], ω^2 = -0.0003, or by education level, b = -0.07, $t(449)$ = -1.96, p = .050, 95% CI [-0.14, 0.0001], ω^2 = .006.

Financial situation. As expected, feeling ashamed about one's loan was negatively related to ability to make ends meet, $r(449)$ = -.33, p < .001, 95% CI [-0.41, -0.24]. There was no significant correlation between shame and effective income, although the effect was in the expected direction, $r(381)$ = -.10, p = .053, 95% CI [-0.20, 0.00].

Perception of the loan. Confirming our expectations, feeling ashamed is related to seeing the loan as a burden, $r(449)$ = .49, p < .001, 95% CI [0.41, 0.55], and preferring to have loaned a smaller amount, $r(441)$ = .38, p < .001, 95% CI [0.30, 0.46]. After controlling for the effect of making ends meet, the effect of shame was

still significant for seeing the loan as a burden, b = 0.48, $t(445)$ = 9.63, p < .001, 95% CI [0.38, 0.58], ω^2 = .23, and preferring to have loaned a smaller amount, b = 0.40, $t(437)$ = 7.46, p < .001, 95% CI [0.29, 0.50], ω^2 = .14. In both regressions, financial shame explained substantially more variance than being able to make ends meet (seeing the loan as a burden: ω^2 = .06; prefer to have loaned less: ω^2 = .01).

Responsible borrowing behavior. Shame was negatively related to responsible borrowing behavior, $r(413)$ = -.28, p < .001, 95% CI [-0.37, -0.19]. After mean centering shame and being able to make ends meet, we regressed responsible borrowing behavior on shame, the ability to make ends meet, and their interaction. The interaction effect was not significant, b = -0.00, $t(409)$ = -0.25, p = .803, 95% CI [-0.04, 0.03], ω^2 = -.002, but there was a significant negative effect of shame, b = -0.10, $t(409)$ = -3.93, p < .001, 95% CI [-0.15, -0.05], ω^2 = .07, and a significant positive effect of being able to make ends meet, b = 0.11, $t(409)$ = 5.46, p < .001, 95% CI [0.07, 0.16], ω^2 = .06. In separate regression for each of the variables making up the index for responsible borrowing behavior, the effect of shame was in the expected direction for all variables except for the item that you should pay off a loan as quickly as possible, which was significantly positively related to shame, b = 0.10, $t(444)$ = 2.17, p = .030, 95% CI [0.01, 0.19], ω^2 = .006. The strongest relationship was with the item "My borrowing behavior is completely responsible", b = -0.29, $t(444)$ = -7.38, p < .001, 95% CI [-0.37, -0.22], ω^2 = .16.

Discussion

The percentage of people who felt ashamed of their loan among borrowers was very similar to the number of people we previously found to be ashamed of their financial situation (14.1% vs. 14.8%). Shame was again more prevalent among people who reported having trouble making ends meet, but in this study, there was no significant effect of income. Shame was correlated with negative perceptions of borrowing: People who felt ashamed were also more likely to see their loan as a burden and were more likely to say they would prefer to have loaned a smaller amount. Finally, even after controlling for the effect of being able to make ends meet, participants who reported feeling ashamed scored lower on our index for responsible borrowing behavior.

Study 3: Use of an income-supporting program

Finally, we report a study in which we collaborated with the community council of a large Dutch city. Policy makers were interested in why many people did not use a particular income-supporting program. This program allows people with low incomes to spend a yearly budget on things like sports clubs, the cinema, or bus tickets. In the questionnaire, we asked participants different questions on what they thought about the program. We also included several scales measuring individual characteristics: whether people felt in control of their financial situation, whether they were more focused on short-term than long-term financial issues, and whether they felt ashamed of their financial situation. Because the program is only available to people living in this municipality with income below a certain threshold, we aimed to recruit from this population. However, due to difficulties recruiting participants from the target group, (1) the sample size is low, so statistical power is limited, and (2) the participants are likely not representative of this population. Therefore, the results reported should not be considered as strong evidence.

Method

Participants. Participants were recruited in three ways. First, people were approached at a meeting for people living in poverty (N = 19, M_{age} = 52.4, SD_{age} = 11.80, 12 females, 21% male, 16% not disclosed). Second, people who visited an organization for debt assistance were asked to fill out a survey at the end of an appointment (N = 19, M_{age} = 41.2, SD_{age} = 13.1, 79% female, 21% male). Finally, people in a Facebook group that was specifically about this income supporting program were asked to participate in an online survey (N = 13, M_{age} = 42.8, SD_{age} = 6.8, 85% female, 15% not disclosed). Although we planned to collect a larger sample, due to practical constraints the total sample was limited (total N = 51), which allows us to detect $|r| > .38$ with $\alpha = .05$ and $1 - \beta = .8$.

Materials. After informed consent, participants were asked about the program, with answer options (1) know and use the program, (2) know the program but do not use it, because they (a) do not qualify, (b) do not know how to apply, or do not want to, or (3) do not know it. Additionally, they were asked an open question "If you don't use the participation program, what is the most important reason for not using it?". They then answered six Likert scale items on what they thought of the participation program, to measure possible reasons for non-use (see Appendix 5.1 for all items used). Next, participants answered three Likert-scale items each on *financial control* (e.g., "I have little control over my financial situation", $\omega_t = .76$;

Van der Werf et al., 2018), *short-term thinking* (e.g., "I only think about what I have to pay now. I'll think about the rest later", ω_t undefined; van der Werf et al., 2018), and *financial shame* (e.g., "I am ashamed of my financial situation", ω_t = .72; Chapter 3). Reliability for the short-term thinking items was very low, possibly due to response bias: the third item was reverse coded but correlated positively with the other two items. Therefore, we decided to analyze only the first two items of this scale. Note that reliability was still very low (ω_t = .38), so results for this variable should be interpreted with caution.

Results

Financial shame. In this sample, 29.2% of participants agreed or strongly agreed with the statement "I am ashamed of my financial situation", which was notably higher than in Study 1 (14.8%). The mean score on this item was significantly higher than among the participants from Study 1 in a one-sided *t*-test, $M_{Study\ 3}$ = 2.58, $M_{Study\ 1}$ = 2.14, $t(49.30) = -2.37$, $p = .011$, $d = -0.34$, 95% CI [-∞, -0.13]. As could be expected, many participants felt negatively about their situation; 41.7% agreed with the statement "I feel bad about myself because of my financial situation". Only a much smaller number of participants, 16.7%, said they tried to hide their financial situation from others.

Correlations. Although all correlations were in the expected directions, there was no evidence for a correlation between financial shame and income, $r(44) = -.01$, $p = .954$, 95% CI [-0.30, 0.28], between financial shame and financial control, $r(45) = -.24$, $p = .108$, 95% CI [-0.49, 0.05], or between financial shame and short-term thinking, $r(46) = .15$, $p = .308$, 95% CI [-0.14, 0.42]. Note that the variation in income was much lower in this sample (*SD* = €413) than in Study 3 (*SD* = €1452).
Differences between users and non-users. Unfortunately, because most participants indicated they knew and used the participation program (46 out of 51 participants, 90.2%), we cannot make any meaningful comparisons between users and non-users.

Discussion

As expected, financial shame was more prevalent among a sample of individuals in a vulnerable financial situation than among a more representative sample: in the current study almost 1 in 3 participants experienced financial shame. More than 1 in 3 participants experienced negative effects of their financial situation on their self-image, but only 1 in 6 wanted to hide their situation from others. Although the

correlations with income, financial control, and short-term thinking were in the expected directions, none of them were significant. This could be caused by a lack of statistical power, both due to the small sample size and the low variation in some of the variables.

General Discussion

We used three data sets to study the prevalence and correlates of financial shame. We found the prevalence of shame to be around 14 to 15%, although at 29% it was substantially higher in a sample of people in a vulnerable financial situation. These numbers show that financial shame is not just something experienced by a small minority of extremely poor people. Even among people from one of the wealthiest nations in the world, about 1 in 7 feel ashamed of their financial situation. As expected, financial shame correlated negatively with both objective and subjective measures of wealth.

Furthermore, shame was related to a host of other, mostly negative, psychological outcomes. In Study 1, people who experienced financial shame reported feeling less in control of their financial situation, ruminating more about their finances, thinking more about short-term rather than long-term financial issues, and experiencing more financial and general stress. Similarly, participants in Study 2 who felt ashamed of having a loan also had more negative perceptions of their loan: they were more likely to see it as a burden and to prefer having borrowed a smaller sum. Although the relations with financial control and short-term thinking did not replicate in Study 3, they were in the expected direction. These correlations show that shame is not an isolated aspect of the psychology of poverty but is often accompanied by other psychological factors. Many of these factors can influence decision making, which could further weaken people's financial situation.

Indeed, financial shame was also related negative financial outcomes and to possibly dysfunctional behavior. In Study 1, shame was related to a higher number of experienced negative financial events, such as failing to pay the rent or mortgage for at least 10 days, or having energy cut off because of a failure to pay. People who felt ashamed were also more negative about financial behaviors such as paying bills or applying for a loan: they found them more difficult, more work, and less fun. Additionally, they were more likely to report postponing these behaviors and being afraid to be wrong. All these effects of shame were significant even after controlling for the effect of financial well-being, financial shame often explained more variance than financial well-being. In Study 2, we again found evidence for

negative effects of shame on behavior: Participants who reported feeling ashamed of having a loan, scored lower on responsible borrowing behavior. Unfortunately, we could not compare users and non-users of an income supporting program in Study 3, due to a low number of non-users in the sample.

In sum, we find that a substantial number of people in the Netherlands feels ashamed of their financial situation. Feeling ashamed is correlated with many other negative psychological outcomes. Furthermore, financial shame was also related to possibly dysfunctional behavior. This strengthens findings from earlier research, which showed that financial shame is associated with other behavior that is likely to have a negative effect on people's financial situation: status consumption (Chapter 3) and social withdrawal (Chapter 4). These findings and the current research are in line with the idea that financial shame can create a behavioral poverty trap (Kraay & McKenzie, 2014), in which poverty leads to shame, which reinforces poverty by its effects on behavior.

All data presented in this article was correlational, so the causal role of financial shame is not yet clear. Future research could manipulate shame to test its causal effects. A second issue in the current research is bias in self-reported shame: social desirability could both lead to underreporting feelings of shame, because people do not want to admit feeling ashamed, or to overreporting feelings of shame, because of demand effects. It is also possible that people who feel ashamed are less likely to participate in surveys (i.e., volunteer bias).

The Impact of Shame

Shame is a functional emotion: it motivates people to restore a damaged self-image, or to protect it from further harm (De Hooge et al., 2010). In the financial domain anticipated shame could, for example, discourage people from applying for a loan they will not be able to bear. The current studies and previous research suggest, however, that shame can come with emotional and behavioral costs. Although more research is needed on the exact role of financial shame, we would like to make some suggestions on how policy makers can deal with the possible impact of shame.

First, they can try to minimize shame, especially in situations where shame is unlikely to have a positive effect on behavior. For example, clients of a Dutch food bank said they did not want to be recognized as such (Hoogland & Berg, 2016). This issue can be addressed by allowing people to stay anonymous when using these kinds of products. Changing the way people are addressed can also help to minimize feelings of shame (see Daminger, Hayes, Barrows, & Wright, 2015).

Finally, the most ambitious, but ultimately most effective solution, is to take away the stigma of financial problems altogether. This requires a change in societal norms which could, for example, be triggered by politics or organizations. If it is not possible to take away feelings of shame, policy makers can make sure its negative effects are minimized. Self-affirmation—asking people to think about what makes them feel proud or self-worthy—could be one way to deal with the negative effects of stigmatization (Hall, Zhao, & Shafir, 2013).

Conclusion

We have found that, even in a wealthy country as the Netherlands, a substantial number of people feel ashamed of their financial situation. This shame is related to how people feel, think, and act. We believe that this important aspect of the psychology of poverty deserves more attention.

Appendix 5.1

Items used in Study 3

The program

Which choice fits you best?

- I know and use the program.
- I know the program, but don't use it because…
  - o I don't qualify
  - o I don't know how to apply for it
  - o I don't want to
- I don't know the program

If you don't use the program, what is the most important reason for not using it?

Likert-scale items

- It is easy to apply for the program
- It is easy to use the program
- The program's offer is good
- It is worth my while to apply for the program
- I need the program
- I am afraid that if I use the program now, I'll have to repay the money later

Financial situation

Financial control.

- I am able to take care of my financial situation by myself
- I have little control over my financial situation*
- If I think about my financial situation, I feel powerless*

Short-term thinking

- I only think about what I have to pay now. I'll think about the rest later
- Because of my financial situation, I live from day to daI already think about things I will have to pay later*

Financial shame

- I don't feel good about myself because of my financial situation
- I try to hide my financial situation
- I am ashamed of my financial situation

General questions

- Year of birth
- Gender
- Monthly household income

Chapter 6

Discussion

In this dissertation I examined cognitive and emotional effects of poverty. The goal of these studies was to take a psychological perspective on the effects of poverty, focusing specifically on the role of shame. Let me briefly summarize the main findings.

In Chapter 2, I found that people with lower incomes were equally likely to neglect opportunity costs as people with higher incomes. In contrast to predictions made in earlier work on the effects of scarcity on decision making (Frederick et al., 2009; Mullainathan & Shafir, 2013; Shah et al., 2015; Spiller, 2011), I did not find any evidence that the effect of reminding people of opportunity costs was smaller for people with lower incomes. Instead, across both low- and high-income groups, people seemed to neglect opportunity costs, as they responded to an opportunity costs reminder with an equal decrease in their willingness to buy a product. This is an important finding for several reasons. First, it contrasts with predictions from earlier theoretical work on the cognitive effects of poverty. Second, it shows that opportunity cost neglect is a robust effect, affecting both the rich and the poor. Finally, as I will further discuss below, it demonstrates the importance of carefully selecting the way to measure poverty: whereas experimentally manipulating budget constraint does affect opportunity cost neglect (Spiller, 2011), subjective or objective measures of wealth do not.

In Chapters 3–5, I examined the role of shame in poverty, labeled *financial shame*. Previous research suggests that shame is an important part of the lives of the poor around the world (Walker et al., 2013), but it is unclear how prevalent this emotion is. Does it affect only a small minority of the extremely poor, or is it more widespread? In addition, very little is known about the psychological and behavioral correlates of financial shame. In interviews, people in poverty mentioned instrumental coping strategies (i.e., changing their circumstances for the better), but also more detrimental strategies such as trying to keep up appearances, withdrawing from social life, contrasting their situation with others seen as 'undeserving poor', and giving up trying to improve their situation (Walker et al., 2013). Studying these correlates of financial shame is important, because it may help us understand decision making under poverty. In addition, many of these behaviors associated with financial shame could have detrimental effects on people's financial situation, creating vicious cycles of poverty: behavioral poverty traps. Understanding the effects of financial shame can also help create better policies aimed at alleviating poverty. The next paragraphs discuss my findings on the prevalence of financial shame. Then I will turn to its relationship to psychological characteristics and its impact on behavior.

A substantial number of people, in both the United States and the Netherlands,

feel ashamed of their financial situation. In Chapter 3, 35.2% of U.S. participants and 41.0% of U.K. participants in online studies reported feeling financial shame (Chapter 3). When U.S. participants were asked to come up with a situation in which they felt ashamed of their financial situation, only 4.1% of them said they could not think of such a situation. In Chapter 5, 14.8% of participants in a large sample of Dutch adults recruited via a survey panel (N = 1559) reported experiencing this emotion. Furthermore, among 455 Dutch individuals with consumer credit, 13.2% felt ashamed for having such a loan. These findings suggest that financial shame is not limited to a small minority of extremely poor people.

Previous research argued that feelings of shame have a strong negative psychological impact (Tangney & Dearing, 2002). This has been confirmed by the empirical findings reported in Chapter 5, in which I find that among Dutch adults, financial shame is related to a host of negative psychological outcomes. People who experienced financial shame felt less in control of their financial situation, ruminated more about it, were more short-term oriented, and experienced more financial and general stress. Among people with consumer credit, those who felt ashamed of their loan were more likely to see their loan as a burden and were more likely to say that would prefer to have loaned a smaller amount. These findings show that financial shame is not an isolated phenomenon, but often goes hand in hand with other negative psychological outcomes.

Next to financial shame's psychological impact, I also found that shame was associated with different financial behaviors, many of which are likely to be detrimental to people's financial situation in the long term. In Chapter 3, I found that income has a positive direct effect on status consumption, such that wealthier people purchased more status products. However, I also found that income had an indirect negative effect on status consumption: people with lower incomes were more likely to experience financial shame. In turn, financial shame was related to a higher interest in status and status consumption. In Chapter 4, I found that people who rated their financial situation poorly were more likely to feel lonely and be less satisfied with their social contacts, and that this relationship was partially mediated by feelings of shame. In a longitudinal analysis, I found evidence for a vicious cycle of a worsening financial situation and social withdrawal. Finally, in Chapter 5, I found that financial shame was associated with other financial behaviors that are likely to be detrimental to people's financial situation. Participants who felt ashamed of their financial situation were more likely to report having experienced negative financial events such as failing to pay the rent, had more negative attitudes toward different financial behaviors and were more likely to procrastinate them, and scored lower on responsible borrowing behavior. The finding that shame is

associated with detrimental behavior suggests that there is a vicious cycle in which poverty causes shame, which in turn reinforces poverty.

Together, these findings illustrate the claim I made in the introduction: to fully understand poverty and its effects on decision making, we should study the psychology of poverty. This means not only studying poverty's cognitive effects, but also its emotional consequences. Specifically, the role of shame in poverty deserves more attention, as (1) its prevalence suggests that shame is inextricably related to poverty, and (2) it relates to behaviors that are likely to further reinforce poverty. Of course, other emotions are also likely to be part of living in poverty, such as guilt, regret, frustration, anger and sadness. In this dissertation we have focused on shame because it seems to play a large role in poverty: it often comes up in interview studies or when talking with people in poverty (Reutter et al., 2009; Sutton et al., 2014; Walker, 2014; Walker et al., 2013). Future research could examine whether poverty is associated with other emotions, and how these emotions affect behavior.

Poverty and decision making

I have taken a psychological view on decision making in poverty, specifically focusing on the emotional consequences of poverty. I believe this view can make an important contribution to our understanding of poverty, not instead of but rather in addition to existing perspectives. The psychological view contrasts with work on a "culture of poverty" (Lewis, 1966, 1975) because it does not assume that the effects of poverty on decision making are due to cultural, intergenerational effects, but are rather due to situational, contextual effects. In contrast to the rational model of human behavior, a psychological view assumes that people are boundedly rational (Simon, 1955). For example, whereas a fully rational decision maker always fully takes opportunity costs into account, participants in Chapter 2 tended to neglect opportunity costs. Research in behavioral economics shares this assumption, but the view taken in this dissertation departs from that research in its focus on the role of emotions. Specific emotions lead to specific motivations and behavior (Frijda, 1988; Van Dijk, 2016; Zeelenberg et al., 2008). In case of shame, theoretical work on the psychology of shame predicts that people will respond to shame by either trying to restore their self-image or protecting it by withdrawing themselves. This is in line with my findings that financial shame is associated with status consumption and social withdrawal.

The findings in this dissertation speak to a number of major issues in the poverty

literature: the existence of poverty traps, rationality of decision making in poverty, and categorical versus continuous measures of wealth. Earlier research on the effects of poverty on decision making found evidence for behavioral poverty traps: effects of poverty on behavior that in turn reinforce poverty, creating a vicious cycle (Kraay & McKenzie, 2014). For example, poverty has been found to increase stress, which in turn negatively affects decision making, creating a vicious cycle keeping people in poverty. Does the research in this dissertation point to other behavioral poverty traps?

First, I find that the poor and the rich are equally likely to neglect opportunity costs. These results do not seem to point to a behavioral poverty trap. It is still possible, however, that opportunity cost neglect has larger consequences for people living in poverty, as their situation comes with narrow margins of error (Bertrand et al., 2004). So, the effects of opportunity cost neglect can still contribute to reinforcing poverty, but do not seem to create a behavioral poverty trap. The studies on shame reported in Chapters 3, 4 and 5 more strongly suggest the existence of a behavioral poverty trap. The relationship between financial shame and status consumption could create a vicious cycle, because status consumption is likely to negatively affect the poor's financial situation. Money that is spent on status products is not spent on other, perhaps more pressing needs (A. V. Banerjee & Duflo, 2007; Moav & Neeman, 2008). In Chapter 4, I find that a bad financial situation in one year is related to social withdrawal in the next. There is also evidence for a reverse effect: social withdrawal in one year is related to a worse financial situation in the next. This is in line with a behavioral poverty trap: the effects of social withdrawal and financial problems seem to create a vicious cycle. Finally, the relationship between shame and financial behaviors in Chapter 5 is in line with the idea that the effects of shame can reinforce poverty. The behaviors that were associated with financial shame are likely to negatively affect people's financial situation, creating another vicious cycle. Finally, shame could lead to other negative psychological outcomes, such as stress, which in turn could also negatively affect decision making and therefore reinforce poverty (Haushofer & Fehr, 2014).

The fact that opportunity cost neglect and the effects of shame can reinforce poverty does not imply that this behavior is irrational, in the sense that it is illogical or foolish. It is cognitively and practically impossible to consider all possible opportunity costs. Consuming status products and showing withdrawal can help people to cope with feelings of shame, and status products can also have positive effects—for example, people who wear brand products are often treated better (Nelissen & Meijers, 2011) and people in more expensive cars are less likely to be honked at (Doob & Gross, 1968). Although these behaviors could be detrimental in

the long term, they can provide benefits in the short term. Studying the psychology of poverty helps us to understand people's motivations behind these behaviors.

The finding that the poverty influences decision making also does not imply that the poor and the rich are different people, with different preferences or personalities. My findings on opportunity costs demonstrate that the poor and the rich often behave remarkably similar, when faced with a similar situation. Financial shame does seem to play a unique role in the lives of the poor. Studying the role of shame can explain *why* people show certain behavior, without having to retort to interindividual differences: when facing shame, people respond to it with specific coping mechanisms aimed at dealing with a damaged self-threat. At least in theory, people in a better financial situation would react the same way to feeling shame.

For the sake of brevity, I often talk about 'poverty' and 'the poor'. However, I think that for most purposes we should not see the poor and the rich as two distinct groups. When examining measures of subjective wealth, for example, I have seen no evidence for a bimodal distribution. Rather, there seems to be a continuum with many different possibilities between being extremely poor and being extremely rich. In addition, it is likely that measures of subjective wealth are susceptible to context effects, such that one and the same person can feel poor when surrounded by richer people and feel rich when surrounded by poorer people. Similarly, although financial shame can be completely absent in some people's lives, there are likely different levels of financial shame with different effects on psychology and behavior. Studying a continuous phenomenon using binary variables leads to a loss of information and statistical power, and makes it impossible to study non-linear relationships (Royston, Altman, & Sauerbrei, 2006). For these reasons, I have used only continuous variables, and I would recommend future research to do the same.

Financial Shame in Policy

I have argued that we should pay more attention to the emotional consequences of poverty, and specifically to shame. The work in the present thesis is of an academic nature, examining quantitative relationships and not directly studying the effects policy. However, I do believe that policy could benefit from taking into account the psychology of poverty (for an overview [in Dutch], see Plantinga, Zeelenberg, & Breugelmans, 2018). Evidence-based policy is likely to make fighting poverty and its negative consequences more effective (Anand & Lea, 2011; Rousseau & Gunia,

2016). As a starting point for policy interventions, let us consider some ways in which the findings on the effects of shame could inform policy.

Because shame is inextricably linked to poverty and has a strong effect on well-being, it could provide an outcome measure of policy interventions. If after an intervention that tried to alleviate poverty people are objective better off, but still feel equally ashamed of their situation as before, was the intervention really successful? And vice versa, an intervention that did not have any effect on people's objective situation could still have decreased feelings of shame. Several people have argued that the effects of policy should not only be measured objectively, but also taking subjective experiences into account (e.g., Diener & Seligman, 2004; Sen, 1999). Because of shame's strong psychological impact, policy can aim to not only improve people's financial situation and make them objectively better off, but also take away financial shame and improve subjective well-being.

Shame is also interesting for policy makers because of its possibly detrimental effects on behavior. I think there are at least three ways policy could minimize the negative effects of financial shame: fighting poverty, fighting shame, or fighting the negative consequences of shame. First, effective poverty reduction should also reduce feelings of shame. Although poverty might not ever go truly extinct, combating it directly should be chosen over combating its effects. In other words, behavioral solutions should not be chosen instead of economic and political solutions, but alongside them (Loewenstein & Chater, 2017).

A second way to reduce the negative effects of financial shame, is to fight the shame of poverty itself. In this dissertation I did not study the antecedents of financial shame, because I focused more on shame's consequences. What does feeling ashamed mean? Previous research describes shame's core as a self-threat (De Hooge et al., 2010; Tangney & Dearing, 2002). It is a signal that the self is viewed negatively by oneself or others and motivates people to show behavior to deal with this threat. When it comes to poverty, the source is clear: people feel ashamed or are shamed by others because their financial situation is seen as lacking compared to what is seen as 'normal' in the society they live in. So, if policy makers want to prevent people from feeling ashamed of their financial situation, they should take away these feeling of deviating from the norm. One way of doing that is by showing people that many others are in a similar situation as they are, one of the goals of *Quiet 500*. This Dutch organization published a magazine is aimed at exposing hidden poverty, and now also organizes meet-ups for people in poverty to share their experiences. A different organization, *ideas42,* recommends policy programs to use intentional language (e.g., "member" instead of "recipient") and stress positive parts of people's identities (Daminger et al., 2015). Taking away

the shame of poverty is an ambitious goal but has the benefit that it could reduce both the psychological and behavioral effects of financial shame.

A third approach to dealing with the negative effects of financial shame is to address its behavioral effects. For example, there is some preliminary evidence that the negative effects of stigma can be reduced by *self-affirmation* (Hall et al., 2013). After people were asked to reflect on important self-aspects, they performed better on Raven's Matrices and a cognitive control task and were more likely to take a flier about a benefit program. More generally, we can address the consequences of shame on decision making by changing the choice architecture of important decisions. Insights from the social sciences can be used to 'nudge' people into making decisions that are more in line with their long-term goals (Bertrand et al., 2006; Bryan et al., 2017; Gandy, King, Hurle, Bustin, & Glazebrook, 2016). In general, behavioral research recommends removing behavioral barriers to better choices. For example, simply prefilling a form with all known information can increase participation in a program (Bettinger, Long, Oreopoulos, & Sanbonmatsu, 2012), and a smart default option can have relatively strong effects on behavior (Madrian & Shea, 2001). Note, however, that the effect of these interventions is limited. For example, in a study on a default effect for saving a tax refund, an default saving option had no effect because participants had strong intentions to spend the money (Bronchetti, Dee, Huffman, & Magenheim, 2013).

Finally, I would like to note that the robust finding of opportunity cost neglect might also be harnessed to influence people's behavior. In situations where neglecting opportunity costs tends to lead to worse outcomes, a simple reminder of other ways the money could be spent (or saved) might be a cheap and simple way to nudge people. However, note that Frederick and colleagues (2009) warn that highlighting opportunity costs can also dissuade people from choosing an expensive, high quality option over a cheaper low quality option. Future research should identify under which conditions opportunity costs reminders can promote responsible financial behavior, and under which they do not.

Outstanding Questions

Before ending, let me point to some of the challenges that the current findings bring for future research. First, the research presented in this dissertation has been mostly correlational. There are several reasons for the focus on correlational studies.

First, manipulating scarcity and feelings of financial shame, or similar factors has proven to be difficult. To illustrate the difficulty of manipulating scarcity, I would like to shortly describe some studies that are not reported in this dissertation from the early stages of my PhD project[13]. In a first study, we manipulated the response scale for a question on savings (cf. Nelson & Morrison, 2005), which caused most people to answer either on the very low end or on the very high end of the scale. The manipulation check showed no effect: the two groups did not differ on subjective wealth. In a different study, we gave participants false feedback about their financial situation (cf. Callan, Ellard, Shead, & Hodgins, 2008), but again found no effect on a measure of subjective wealth. Next, we created a new manipulation, in which we asked participants to rate a series of products on whether they could afford them or not. We manipulated the prices of the products to be either high or low, again causing participants to answer mostly on the low or high end of the scale, but again found no effect on subjective wealth. Finally, in an online setting we tried to replicate Study 1 from Mani and colleagues' article on the cognitive effects of poverty (Mani et al., 2013). In contrast to their findings, we did not find any evidence that when people with a low income are asked to think about difficult financial problems, they perform worse on a cognitive control task and an intelligence test. After these findings on trying to induce the experience of scarcity, I decided to focus on other aspects of poverty, and this dissertation is the result.

Even if we would be able to successfully manipulate the experience of scarcity, the question remains what this would tell us about the causal effects of poverty. Momentarily being reminded of scarcity is not the same as living in poverty, and is likely to differentially affect cognitions, emotions, and behavior. This fact is illustrated by the difference between our work on opportunity costs in Chapter 2, and Spiller's (2011) work. Whereas we found no effect of income or subjective wealth on consideration of opportunity costs, Spiller found that people were more likely to consider opportunity costs when they were experimentally given a budget constraint.

Because experiments using induced scarcity and quasi-experimental studies measuring income show different results, I believe theory and research should be more precise than merely talking about effects of 'scarcity'. Our findings on opportunity costs and those on shame and status consumption illustrate that it can sometimes be worthwhile to examine both the effects of experimental manipulations and quasi-experimental effects of measured variables. In addition, the difficulties we had with scarcity manipulations suggests that replicability of

13 Details of these studies can be found at *https://osf.io/wdxrj/*

previous findings in the literature might be low, or at least hard to generalize across different samples.

In the introduction, I have argued that from a psychological perspective the subjective experience is more important than people's objective situation. On the other hand, objective measures have the advantage of being easier to compare across studies, as there is no consensus on a particular subjective measure. Although we did not find strong differences between the effects of subjective versus objective measures, I think we should be careful in the selection of one measure over the other. First, previous research did find different effects on psychology and behavior. For example, subjective wealth has been shown to be a better predictor of physical and mental health than objective wealth (N. E. Adler, Epel, Castellazzo, & Ickovics, 2000; Singh-Manoux, Marmot, & Adler, 2005). More importantly, each of them implies a different idea of what it means to be poor, and it is impossible to say which is the "real" poverty. Because each variable has its advantages and disadvantages and can be measures relatively quickly, I tend to measure both in the studies and would recommend future research to do the same.

There are also some open questions on the role of shame in poverty. The findings from Chapter 3 do not provide a definitive answer on the causal effects of financial shame on status consumption. An experimental or longitudinal design could shed more light on the causal role of financial shame. A longitudinal design has the advantages that (1) it can measure more longer-term financial shame instead of situationally induced shame, and (2) provide more stronger evidence for a causal effect of shame than a cross-sectional design.

More broadly, future research can test *when* people feel ashamed of their financial situation. Who are the most likely to feel ashamed of their financial situation? We already found that, as can be expected, shame is more prevalent among people with lower incomes or among those who judge their financial situation to be poor, but there could be other interesting predictors of shame. For example, a clear limitation of our studies is that we have only studied Western, affluent countries. Although emotions seem to be strongly similar across cultures, there are cross-cultural differences in the experience, expression, and behavioral effects of emotions (e.g., J. W. Berry, Poortinga, Breugelmans, Chasiotis, & Sam, 2011). Cross-cultural comparisons could yield new insights on the role of financial shame in different contexts.

A final important question is the type of behavior that people show when they feel ashamed. This dissertation has shown that financial shame is associated with both behavior aimed at restoring a damaged self-threat (status consumption) *and* behavior aimed at protecting one's self-image from further harm (social

withdrawal). When are people most likely to show one behavior over the other? In this dissertation, I have focused on the negative effects of financial shame on behavior. Can the experience of financial shame also lead to positive outcomes? The literature on shame predicts that when people feel ashamed, they will show a restore motivation, and try to restore their self-image by showing approach behavior (De Hooge et al., 2010) However, when people think this is impossible or too risky, they will show a protect motivation, and withdraw themselves to protect their self-image from further harm. In a context of poverty, it is not yet clear which of these types of motivations will lead to positive outcomes. A restore motivation could also cause people to take action to improve their financial situation, and a protect motivation could keep people from buying products they do not really need.

Conclusion

Poverty is a lack of money, making it difficult to make ends meet. But poverty is much more than that. It influences the way people look at themselves and at the world, the way they feel, and the way the make decisions. This means that if one wants to understand what people living in poverty think, feel and do, we should study the psychological effects of poverty. Specifically, studying specific emotions that are linked to poverty, such as shame, allows us to better understand decision making under poverty, and create more effective policies. A psychology of poverty that does not consider the emotional impact of poverty, is a poor psychology.

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