Journal of Experimental Psychology: General

ISSN: 0096-3445

2023, Vol. 152, No. 7, 1887–1906
https://doi.org/10.1037/xge0001355

Does Resource Scarcity Increase Self-Serving Dishonesty? Most People Wrongly Believe So

Lau Lilleholt[1, 2, 3], Karolina Aleksandra Ścigała[4], and Ingo Zettler[1, 2]
[1] Department of Psychology, University of Copenhagen
[2] Copenhagen Center for Social Data Science (SODAS), University of Copenhagen
[3] Center for the Experimental-Philosophical Study of Discrimination, Department of Political Science, Aarhus University
[4] Department of Psychology and Behavioral Sciences, Aarhus University

Does resource scarcity increase people's inclination to engage in self-serving dishonesty? Whereas some theories suggest so, we found no evidence for this across four studies, but a fifth study revealed that most people (wrongly) believe that it does. More precisely, based on three well-powered preregistered online experiments (overall $N = 4{,}193$), complemented by two pilot studies ($N = 51$ and $N = 49$, respectively) and one manipulation check study ($N = 424$), we provide evidence that neither exogenously induced resource scarcity nor priming people into a scarcity mindset influences people's inclination to engage in self-serving dishonesty. Furthermore, by linking country-level poverty data to a country-level indicator of self-serving dishonesty based on a recent meta-analysis comprising 47 countries and more than 44,000 participants, we found that people living in poorer countries are no more inclined to engage in self-serving dishonesty than people living in richer countries. Finally, we found that most people—and especially men and people low in Agreeableness versus Anger—wrongly believe that people living in poorer countries are more willing to engage in self-serving dishonesty ($N = 658$). Overall, our investigation adds new evidence to the burgeoning literature on the link between resource scarcity (in the form of poverty) and unethical behavior (in the form of self-serving dishonesty).

Keywords: resource scarcity, poverty, scarcity, self-serving dishonesty, dishonesty

Supplemental materials: https://doi.org/10.1037/xge0001355.supp

Almost half of the world's population can be considered poor, finding themselves in a state of resource scarcity. More precisely, according to the World Bank (2020), 43.60% of the world's population live on less than $5.50 a day and 9.20% live in "extreme poverty" on less than $1.90 a day. Even in developed countries, a sizeable proportion of the population suffers from poverty and lacks basic resources. In the United States, for instance, no less than 10.50% of all households were estimated to have experienced food insecurity in 2019, meaning that they at times were unable to acquire enough food for one or several household members (Coleman-Jensen et al., 2020). And as if these numbers were not disheartening enough, both food insecurity in the United States (Gundersen et al., 2021) and global poverty (World Bank, 2020) have been projected to rise for the first time in many years due to the economic impact of the COVID-19 pandemic.

Resource Scarcity and Poverty

Resource scarcity may be experienced in many different contexts and forms (Mullainathan & Shafir, 2013). For instance, people might experience time scarcity in the face of a deadline, space scarcity given their living arrangements, or social scarcity in the case of loneliness. Another, particularly prominent and in many regards very serious form of resource scarcity is poverty. According to the *Merriam-Webster dictionary* (2021), poverty is "the state of one who lacks a usual or socially acceptable amount of money or material possessions." Poverty thus is a special form of resource scarcity in which the resource one is lacking is material or financial in nature. Because poverty represents a clear form of resource scarcity, there is arguably much to learn

This article was published Online First May 11, 2023.
Lau Lilleholt https://orcid.org/0000-0002-7257-2636
This research project was funded by grants from the Lundbeck Foundation (R349-2020-592), the Faculty of Social Sciences, University of Copenhagen (Denmark), and a Sapere Aude Starting Grant (7024-00057B) from the Independent Research Fund Denmark to Ingo Zettler.

The authors have no conflict of interest to disclose.

Links to preregistrations: https://osf.io/frvnh/ (Study 1); https://osf.io/8fn9r/ (Study 2); https://osf.io/7crsx/ (Study 3).

Link to scripts and data: https://osf.io/3m2dg/

Lau Lilleholt served as lead for conceptualization, data curation, formal analysis, investigation, methodology, project administration, resources, software, validation, visualization, writing–original draft, writing–review and editing. Karolina Aleksandra Ścigała served in a supporting role for conceptualization, data curation, formal analysis, investigation, methodology, project administration, resources, software, validation, visualization, writing–original draft, writing–review and editing. Ingo Zettler served as lead for funding acquisition, supervision and served in a supporting role for conceptualization, data curation, formal analysis, investigation, methodology, project administration, resources, software, validation, visualization, writing–original draft, writing–review and editing.

Correspondence concerning this article should be addressed to Lau Lilleholt, Department of Psychology, University of Copenhagen, Øster Farimagsgade 2A, 1353 Copenhagen, Denmark. Email: llj@psy.ku.dk

about the psychological impact of living in poverty from studying the psychological impact of being in a state of resource scarcity, and vice versa. Building upon and crucially extending previous research, this is at the heart of this investigation. Specifically, in several studies we delve into the link between resource scarcity (both conceptually and in the form of poverty) and self-serving dishonesty, that is, dishonest behavior that is intended to benefit oneself.

Poverty as a Form of Resource Scarcity and Its Links to (Un)Ethical Behavior

In addition to malnutrition (Roser & Ritchie, 2019; Siddiqui et al., 2020), poor health (Roser & Ortiz-Ospina, 2013; Wagstaff, 2002), and lower life satisfaction (Haushofer & Fehr, 2014; Ortiz-Ospina & Roser, 2013), poverty as a form of resource scarcity has been linked to higher levels of conflict (Braithwaite et al., 2016; Jakobsen et al., 2013; Tollefsen, 2020), corruption (Gundlach & Paldam, 2009; Gupta et al., 2002; Paldam, 2002; Treisman, 2000), and crime (Bjerk, 2007; Hsieh & Pugh, 1993; Pare & Felson, 2014; Patterson, 1991). In particular, previous research has shown that poverty is related to higher levels of local conflict (Tollefsen, 2020) and that it increases the risk of civil wars (Braithwaite et al., 2016; Jakobsen et al., 2013). Moreover, various country-level poverty indicators have consistently been linked to various country-level corruption indices (Gupta et al., 2002; Paldam, 2002; Treisman, 2000), and poverty has been found to causally increase the perceived level of corruption across countries based on instrumental variable estimation (Gundlach & Paldam, 2009). Poorer communities, cities, and countries have further been found to have higher rates of violent crimes (e.g., assault, homicide, and rape; Hsieh & Pugh, 1993; Pare & Felson, 2014; Patterson, 1991), and low household income has been found to be a strong predictor of youth participation in serious criminal activities (e.g., assault, drug dealing, and illegal possession of firearms; Bjerk, 2007).

Based on quasi-experimental research, poverty as a form of resource scarcity has also been found to reduce cooperation (Agneman et al., 2020), depress enforcement of sharing norms (Bartoš, 2021), as well as increase antisocial behavior (Prediger et al., 2014). For instance, Agneman et al. (2020) found poor farmers in Tanzania to cooperate less in a framed investment game before harvest (when experiencing relative food scarcity) as compared to after harvest (when experiencing relative food availability). Similarly, Bartoš (2021) found poor farmers in Afghanistan to spend less on costly norm enforcing third-party punishment in a one-shot dictator game during the pre-harvest season as compared to the post-harvest season. As another example, Prediger et al. (2014) reported that pastoralists from southern Namibia living in scarce areas with low-quality pastures and biomass production were almost twice as likely to destroy their partners' endowment in the joy-of-destruction game (see Abbink & Sadrieh, 2009) than pastoralists living in more prosperous areas with high-quality pastures and biomass production. Taken together, these findings suggest that poverty as a form of resource scarcity not only affects people's physical and mental well-being but also their ethical behavior.

Self-Serving Dishonesty and Its Links to Resource Scarcity

A prevalent and costly form of unethical behavior is self-serving dishonesty. For instance, the global costs of tax evasion and fraud combined amount to $8.127 trillion a year (Gee & Button, 2019; United Nations, 2016). Self-serving dishonesty has received considerable research attention in the last years (Abeler et al., 2019; Gerlach et al., 2019; Jacobsen et al., 2018). One reason for this has been the introduction of incentivized cheating tasks, such as the Die Roll Task (Fischbacher & Föllmi-Heusi, 2013), in which participants can profit from lying under the cover of full anonymity (Gerlach et al., 2019; Jacobsen et al., 2018). Based on such incentivized cheating tasks, researchers have shown that people exhibit a relatively strong preference for honesty in general (Abeler et al., 2019; Dufwenberg & Dufwenberg, 2018; Gneezy et al., 2018), that some people are more willing to lie than others (Heck, Thielmann, et al., 2018; Moshagen et al., 2018), and that situational factors, such as monitoring (Laske et al., 2018; Lilleholt et al., 2020; Schild et al., 2019), potential sanctions (Laske et al., 2018; Thielmann & Hilbig, 2018), and social norms (Fosgaard et al., 2013; Gächter & Schulz, 2016), influence people's inclination to engage in self-serving dishonesty. While most incentivized cheating tasks have primarily been used to study self-serving dishonesty in the laboratory, first studies have indicated that people who lie in these tasks also are more likely to engage in self-serving dishonesty (or related forms of unethical behavior) in the real world. In an artefactual field experiment, Dai et al. (2018), for instance, observed fare-dodgers to lie more in the Die Roll Task as compared to ticket holders. Relatedly, Kröll and Rustagi (2017) found that Indian milkmen who overreported beneficial outcomes in the Die Roll Task added significantly more water to the milk they were selling, and Hanna and Wang (2017) observed that nurses who reported beneficial outcomes in the Die Roll Task were more often absent from work.

Whereas there is increasing evidence linking poverty as a form of resource scarcity to unethical and antisocial behavior (as showcased above), only a small number of studies has investigated the link between resource scarcity and self-serving dishonesty, so far—and these studies provided mixed empirical findings (Aksoy & Palma, 2019; Boonmanunt et al., 2020; Sharma et al., 2014). More specifically, across three rather low-powered studies ($50 \leq N \leq 201$), Sharma et al. (2014) found experimentally induced financial deprivation (i.e., a psychological state in which people feel financially deprived) to substantially increase people's inclination to engage in self-serving dishonesty. Relying on quasi-experimental variations in actual resource scarcity among poor coffee farmers in Guatemala, Aksoy and Palma (2019), on the other hand, found no effect of resource scarcity on self-serving dishonesty, and Boonmanunt et al. (2020) found similar results for poor rice farmers in Thailand (i.e., no relation between resource scarcity and self-serving dishonesty). More precisely, Aksoy and Palma (2019) as well as Boonmanunt et al. (2020) found poor coffee and rice farmers in Guatemala and Thailand, respectively, to engage as much in self-serving dishonesty before as compared to after harvest. An important caveat of these studies might be order effects, however. That is, it might be that some coffee and rice farmers in these studies decided to engage in self-serving dishonesty before harvest because they were in dire need of additional resources and simply continued to lie after harvest because they had experienced the benefit of doing so before. As such, in the light of the potential problem of order effects in previous quasi-experimental research (Aksoy & Palma, 2019; Boonmanunt et al., 2020) as well as the rather low statistical power of previous experiments (Sharma et al., 2014), the question

of whether resource scarcity affects people's inclination to engage in self-serving dishonesty remains open.

Theories Suggesting a Link Between Resource Scarcity and Self-Serving Dishonesty

From a theoretical point of view, there are good reasons to expect that being in a state of resource scarcity might increase people's inclination to engage in self-serving dishonesty; especially based on standard economic models of criminal and unethical behavior as well as Scarcity Theory.

Standard Economic Models of Criminal and Unethical Behavior

Building on Expected Utility Theory (von Neumann & Morgenstern, 1947), standard economic models of criminal and unethical behavior predict that people will engage in self-serving dishonesty whenever the expected utility of doing so exceeds the expected utility of being honest (Allingham & Sandmo, 1972; Becker, 1968). According to this perspective, the decision to engage in self-serving dishonesty is the product of a process in which people compare the expected benefits and costs of being dishonest to the expected benefits and costs of being honest (Thielmann & Hilbig, 2018). To give an example, if provided with an opportunity to gain $1,000 from misreporting their taxes (i.e., committing tax fraud), people would consider the expected utility of acquiring $1,000 versus nothing at all (i.e., $0). Furthermore, they would consider the expected disutility of getting caught and being punished. That is, they would consider the probability of getting caught as well as the severity of the punishment they might face for committing tax fraud. Finally, they would consider the amount of effort required to honestly earn $1,000 as compared to simply misreporting their taxes, or put differently, the amount of effort-related disutility they might experience from acting honestly as compared to dishonestly. Considering these aspects, they would perform a cost–benefit analysis and misreport their taxes if the overall expected utility of doing so outweighs the expected utility of acquiring $1,000 through honest means or not gaining anything at all.

Notably, in line with the law of diminishing marginal utility—an additional assumption of Expected Utility Theory which states that the marginal utility of wealth is declining with each additional unit added to one's cumulative wealth (Fox et al., 2016)—the standard economic models of criminal and unethical behavior further predict that people who find themselves in a state of resource scarcity should be more inclined to engage in self-serving dishonesty as compared to when this is not the case. The simple reason for this is that all else being equal, people experiencing resource scarcity have a greater incentive to engage in self-serving dishonesty, because the marginal utility of acquiring any additional resource, in this situation, is larger for them as compared to a situation in which they are not finding themselves in a state of resource scarcity (Boonmanunt et al., 2020).

To give an example, imagine that an individual, with a current wealth of either $10 or $100,000, is provided with an opportunity to gain $1,000 from committing tax fraud and that the chance of getting caught and sent to prison for 6 months is 50%. In this case, the prospect of gaining $1,000 by committing tax fraud is clearly much more attractive for the individual, when that person's current wealth is $10 than when it is $100,000. In sum, standard economic models of criminal and unethical behavior suggest that people finding themselves in a state of resource scarcity should be more inclined to engage in self-serving dishonesty, not because their motivations or morals generally differ from those who are not in a state of resource scarcity, but rather because they are likely to perceive the expected utility of doing so differently (Aksoy & Palma, 2019).

While there is strong evidence that the standard economic models of criminal and unethical behavior provide a limited account of when and why people engage in self-serving dishonesty (e.g., Abeler et al., 2019; Gerlach et al., 2019; Jacobsen et al., 2018), they still provide important insights into some of the underlying mechanisms that drive and shape self-serving dishonesty (e.g., Hilbig & Thielmann, 2017; Laske et al., 2018; Thielmann & Hilbig, 2018; Yaniv & Siniver, 2016) and should thus not be disregarded.

Scarcity Theory

Moving from an economic to a psychological perspective, Scarcity Theory (Mullainathan & Shafir, 2013) provides another explanation for why being in a state of resource scarcity might increase people's inclination to engage in self-serving dishonesty. Building on cognitive psychology, Scarcity Theory posits that the immediate stress people experience from being in a state of resource scarcity induces what has been termed a scarcity mindset (de Bruijn & Antonides, 2022). Broadly speaking, a scarcity mindset can be described as a psychological state in which people feel that they have less than they need, be that money, time, space, food, or any other type of resource (Mullainathan & Shafir, 2013). Indeed, previous research has shown that a scarcity mindset might be induced by simply asking people to imagine a situation in which they would struggle financially (Mani et al., 2013), not have enough resources more generally (Roux et al., 2015), or suffer from a lack of basic resources such as water and electricity (Ren et al., 2022). Similarly, other research has shown that a scarcity mindset can be induced by putting people in a situation in which they have insufficient experimental resources (e.g., attempts, guesses, time) to solve some experimental task (Shah et al., 2012, 2019). According to Scarcity Theory, a scarcity mindset influences people's decisions and behaviors via two core psychological mechanisms: tunneling and cognitive load (de Bruijn & Antonides, 2022). First, a scarcity mindset increases people's attentional focus on how to get by with the few resources they have, leading them to neglect other less pressing, yet sometimes important issues (Mullainathan & Shafir, 2013; Shah et al., 2012, 2019). In other words, a scarcity mindset causes people to tunnel and single-mindedly focus on managing the resource scarcity at hand. As an example of this, several studies have shown that poorer people worry more about their financial future and dwell more upon their financial problems such as how to juggle current and upcoming expenditures and make meets end (de Bruijn & Antonides, 2020; Johar et al., 2015; Shah et al., 2018). Second, it has been suggested that a scarcity mindset grabs people's attentional resources, and, in turn, taxes their mental capacity, leaving less mental bandwidth for other higher-order cognitive functions, such as the ability to exert self-control (Mani et al., 2013; Mullainathan & Shafir, 2013; Spears, 2011). In other words, a scarcity mindset imposes a high cognitive load on people's mental capacity and impedes their executive function. As an example, Mani et al. (2013) found poor sugarcane farmers to perform significantly worse on tests of fluid intelligence (i.e., Raven's Progressive Matrices; Raven, 2000) and cognitive self-control (i.e., the Stroop

Task; Duckworth & Kern, 2011; Stroop, 1935) before as compared to after harvest. In line with research suggesting that honesty often requires self-control (Köbis et al., 2019; Kouchaki & Smith, 2014; Mead et al., 2009), it thus follows that being in a state of resource scarcity should increase people's inclination to engage in self-serving dishonesty by inducing them into a scarcity mindset and impeding their ability to exert self-control. In sum, Scarcity Theory suggests that people who find themselves in a state of resource scarcity should be more inclined to engage in self-serving dishonesty as a consequence of the way in which resource scarcity influences their cognitive capacity and self-regulatory capabilities.

Methods for Studying the Impact of Resource Scarcity on Self-Serving Dishonesty

Research exploring the impact of resource scarcity on people's decisions and behaviors, including self-serving dishonesty, has relied on three complementary methodological approaches (de Bruijn & Antonides, 2022).

As a first approach, research has relied on laboratory/online experiments in which either resource scarcity is exogenously induced by varying the level of resources available to solve an experimental task, such as the number of attempts or the amount of time to solve the task (e.g., Huijsmans et al., 2019; Shah et al., 2019, 2012), or participants are primed into a scarcity mindset by asking them to think about different financial challenges and/or resource demands (e.g., Mani et al., 2013; Roux et al., 2015; Schofield & Venkataramani, 2021; Sharma et al., 2014). While these experimental paradigms do not mimic the actual experience of living in poverty, they do create a situation that is conceptually similar. That is, exogenously varying the level of resources available to solve an experimental task—such that some participants have less than what is typically needed to solve it—mirrors a key aspect of being poor, namely, that of having less than what is typically needed to get by or resolve daily challenges. In a similar vein, asking people to think about different financial challenges and/or resource demands mirrors another key aspect of being poor, namely, that of having to worry about having less than what is typically needed or seen as socially acceptable. Notably, in support of the ecological validity of these two experimental paradigms, the former has been shown to increase the tendency of otherwise prosperous people to engage in excessive borrowing (Shah et al., 2012, 2019)—a behavior commonly observed among poorer people (Mullainathan & Shafir, 2013)—while the latter has been shown to increase temporal discounting (Bickel et al., 2016)—another behavior commonly observed among poorer people (Haushofer & Fehr, 2014).

As a second approach, research has relied on observational data in terms of income and/or wealth to explore the link between poverty as a form of resource scarcity and various psychological and behavioral phenomena, such as trade-off thinking (Shah et al., 2015), risk aversion (Dohmen et al., 2011; Guiso & Paiella, 2008), and temporal discounting (Lawrance, 1991; Tanaka et al., 2010).

Finally, as a third approach, research has relied on quasi-experimental approaches to explore the psychological and behavioral impact of naturally occurring variations in income, wealth, and material resources, such as food availability before and after harvest (e.g., Aksoy & Palma, 2019; Boonmanunt et al., 2020; Carvalho et al., 2016; Mani et al., 2013; Ong et al., 2019).

Complementing the already existing literature on the link between resource scarcity and self-serving dishonesty, which has primarily relied on quasi-experimental approaches (Aksoy & Palma, 2019; Boonmanunt et al., 2020) and rather low-powered laboratory experiments (Sharma et al., 2014), we herein rely on a mixture of well-powered preregistered online experiments and observational data to tackle the question of whether resource scarcity increases self-serving dishonesty. Specifically, we first rely on online experiments to conceptually explore the causal relation between resource scarcity and self-serving dishonesty, and then use observational data to study the relation between poverty as a form of resource scarcity and self-serving dishonesty as it occurs in the real world.

Beliefs About the Link Between Poverty as a Form of Resource Scarcity and Self-Serving Dishonesty

Notwithstanding the question of whether resource scarcity actually increases self-serving dishonesty, people might have strong beliefs about the extent to which poorer people are more likely to engage in self-serving dishonesty. Indeed, people seem to hold strong beliefs about the poor including that they are lazy, unmotivated, and have low moral standards (Cozzarelli et al., 2001; Hunt & Bullock, 2016; Lichter & Crowley, 2002). Irrespective of whether such beliefs are accurate or not, they might have important implications for the lives of the poor (Bullock et al., 2003; Hunt & Bullock, 2016; Sainz et al., 2020; Tagler & Cozzarelli, 2013). For instance, if people generally believe that poorer people are more likely to engage in self-serving dishonesty, they might be reluctant to trade with them, invest in their business, hire them, or loan them money, which, in turn, could make it even more difficult for people stricken with poverty to accumulate income and wealth. Put differently, a widespread belief that poorer people are more likely to engage in self-serving dishonesty could potentially create a poverty trap; that is, a self-reinforcing mechanism such that individuals who are poor likely remain poor (Kraay & McKenzie, 2014).

Consequently, the degree to which the beliefs people hold about the link between poverty as a form of resource scarcity and self-serving dishonesty is accurate or not has important implications for how to prevent such a poverty trap. Generally, interventions should aim to reduce poverty in the first place as well as ensure that poorer people are not subjected to unfair and discriminatory practices from businesses, public institutions, and society at large. But if poorer people are, in fact, no more inclined to engage in self-serving dishonesty than others, this knowledge should probably play a major role in corresponding interventions. If, on the other hand, poorer people are, in fact, more inclined to engage in self-serving dishonesty, reducing poverty as well as the prevalence of self-serving dishonesty among those living in poverty should probably become even more important. Assessing the accuracy of the beliefs people hold about the link between poverty as a form of resource scarcity and self-serving dishonesty is thus of utmost importance. To the best of our knowledge, no single study has provided corresponding evidence yet, however. Consequently, in addition to exploring the relation between resource scarcity and self-serving dishonesty, we test the accuracy of the beliefs people hold about the link between poverty as a form of resource scarcity and self-serving dishonesty.

Overview of Studies

We conducted six studies to investigate the relation between resource scarcity and self-serving dishonesty and to assess the accuracy of the beliefs people hold about the link between poverty as a form of resource scarcity and self-serving dishonesty. More specifically, by exogenously varying the number of guesses available to solve an incentivized letter identification task, we tested whether being in a state of resource scarcity affects people's inclination to engage in self-serving dishonesty (Study 1, $N = 1{,}219$) as well as the size of the lies people are willing to tell in order to acquire additional resources for themselves (Study 2, $N = 1{,}482$). To further validate the findings from Studies 1 and 2, we conducted a Manipulation Check Study to ensure that the experimental manipulation used therein not only manipulated participants into an actual state of resource scarcity (i.e., having too few guesses to solve the letter identification task) but also induced them into a scarcity mindset ($N = 424$).[1] We also performed a more direct test of whether priming people into a scarcity mindset influences their inclination to engage in self-serving dishonesty (Study 3, $N = 1{,}492$), and extended the results obtained in Studies 1–3 beyond an experimental setting by linking country-level poverty data to a country-level indicator of self-serving dishonesty based on a recent meta-analysis comprising 47 countries and more than 44,000 participants (Study 4). Finally, using a sample of Danish adult citizens, we tested if the beliefs people hold about the link between poverty as a form of resource scarcity and self-serving dishonesty are accurate and align with the results from Study 4 of this investigation (Study 5, $N = 658$).

Ethics and Open Practices Statement

Studies 1–3 were approved by the institutional review board at the Department of Psychology, University of Copenhagen (IP-IRB/03102019), and Study 5 obtained ethical clearance from the Faculty of Social Sciences, University of Copenhagen's institutional review board (#514-0136/20-2000). Because the materials used in the Manipulation Check Study were similar to the materials used in Studies 1 and 2, a separate ethical approval for this study was deemed unnecessary and therefore not obtained. Participation in all studies was voluntary, based on informed consent, and there was no deception of participants. Studies 1–3 were preregistered prior to data collection.[2] Instructions for Studies 1–3 and the Manipulation Check Study are provided in the online supplemental materials. The data and analysis scripts for all studies are accessible via the Open Science Framework (OSF): https://osf.io/3m2dg/

Study 1

In Study 1, we experimentally tested whether being in a state of resource scarcity increases people's inclination to engage in self-serving dishonesty by exogenously varying the number of guesses available to solve an incentivized letter identification task. In line with the basic tenets of standard economic models of criminal and unethical behavior (Allingham & Sandmo, 1972; Becker, 1968) and Scarcity Theory (Mullainathan & Shafir, 2013), we hypothesized that being in a state of resource scarcity would increase people's inclination to engage in self-serving dishonesty by altering the perceived expected utility of doing so, and/or by inducing a scarcity mindset and impeding their self-regulatory capabilities to resist the temptation of lying for their own material benefit.

Method

Procedure

We conducted an online experiment with two between-subject conditions—Scarcity and Non-Scarcity—using formr (Arslan et al., 2020). The experiment took approximately 10 min to complete, and participants were paid a basic participation fee of £0.80. In both the Scarcity and the Non-Scarcity condition, participants were asked to solve an incentivized letter identification task, in which they had to guess all the letters in an unknown 10-letter isogram (i.e., a word without repeating letters, e.g., "background"). For each guess participants had to pick a letter that they thought was included in the unknown isogram. If the chosen letter was included in the isogram, the letter was displayed at its correct position in the isogram. If the chosen letter was not included in the isogram, no letter was displayed. The letter identification task ended once all letters were identified or as soon as a participant ran out of guesses. Participants who were able to identify all the letters in the unknown isogram (such that they were displayed) were awarded with a bonus incentive of £0.50.

In the Scarcity condition, participants were given 12 guesses to solve the letter identification task, whereas in the Non-Scarcity condition participants were given 18 guesses. The allocation of guesses was based on two pilot studies, with the same target isogram as in the full study, suggesting that people on average needed 17 guesses to solve the letter identification task (Pilot Study 1, $N = 51$) and that people believed they needed 16 guesses to solve it (Pilot Study 2, $N = 49$), respectively. Participants in the Scarcity condition thus had a scarcity of guesses. That is, they had just enough guesses to be able to solve the letter identification task, but fewer than what was believed to be sufficient (i.e., felt scarcity) and fewer than what was typically needed to succeed (i.e., actual scarcity). Conversely, participants in the Non-Scarcity condition had more guesses than what was typically needed to solve the letter identification task as well as more guesses than what was believed to be sufficient.

After having read the instructions for the letter identification task, participants were given an opportunity to win five additional guesses in an adapted version of the Mind Game (Schild et al., 2019). Herein, participants were asked to write down a number between one and eight in private. Next, a random number between one and eight was displayed on the screen, and participants were asked to indicate whether the number they wrote down and the displayed number matched. If a match was reported, participants received five additional guesses to solve the letter identification task. As such, participants had an opportunity to lie (i.e., report a match even if they did not observe one) to acquire more guesses. Because participants were given an opportunity to lie by misreporting some privately held information, we were not able to infer who cheated on an individual level. Given that only one out of eight participants should report a match under the assumption of full honesty, it is possible to infer

[1] This study was added in the revision process.

[2] Preregistrations for Studies 1–3 can be accessed via the following links: https://osf.io/frvnh/ (Study 1); https://osf.io/8fn9r/ (Study 2); https://osf.io/7crsx/ (Study 3).

if, and to what extent, participants were dishonest on the aggregate level. By comparing the proportion of reported matches in the Scarcity condition to that in the Non-Scarcity condition it is thus possible to conceptually test the causal effect of resource scarcity on people's inclination to engage in self-serving dishonesty.

Analytical Framework

An important feature of the Mind Game is that the proportion of claimed matches is conflated with actual matches, prohibiting the immediate interpretation of reported matches as an indicator of self-serving dishonesty (Moshagen & Hilbig, 2017). Because the baseline probability p for actual matches is known, it is possible to estimate the proportion of dishonest individuals assuming that: (a) dishonest respondents always report a match, (b) honest respondents only report a match if they observed one, and (c) respondents never lie to their disadvantage by not reporting a match when they observed one. Given these assumptions, the likelihood of observing a match report is a function of the proportion of dishonest and honest respondents and the baseline probability p, such that:

$$p(\text{match}) = d + (1 - d) \cdot p, \tag{1}$$

where d represents the proportion of dishonest individuals (Moshagen & Hilbig, 2017). Solving for d,

$$d = \frac{p(\text{match}) - p}{(1 - p)}, \tag{2}$$

it is possible to derive an unbiased estimate of the proportion of dishonest respondents by substituting p(match) with the observed proportion of reported matches. In order to estimate d along with its standard error as well as to compare the proportion of dishonest individuals between conditions, we relied on multinomial processing tree models (Erdfelder et al., 2009).[3] To fit the multinomial processing tree models we used multiTree (Moshagen, 2010), MPTinR (Singmann & Kellen, 2013), and TreeBUGS (Heck, Arnold, & Arnold, 2018).

Power Analysis

In line with our analytical framework, we conducted an a priori power analysis to determine an appropriate sample size for testing our hypothesis in multiTree Version 0.46 (Moshagen, 2010). Based on previous studies, we expected the proportion of dishonest individuals, d, to be at least 0.23 in the Scarcity condition. Conservatively expecting a small effect size (Cohen's $\omega = 0.10$ corresponding to a decrease in d of 0.10), we anticipated the proportion of dishonest individuals, d, to be 0.13 or lower in the Non-Scarcity condition. Aiming for high statistical power (i.e., $1-\beta = 0.90$ with $\alpha = 0.05$), the a priori power analysis indicated that a total sample of 1,110 participants would be appropriate. Oversampling slightly, we aimed to recruit a total of 1,200 participants (i.e., 600 per condition).

Participants

A total of 1,478 participants from the United Kingdom with an approval rating of minimum 90 (see Schild et al., 2021) were recruited via Prolific (https://www.prolific.co). We recruited more participants than originally planned because formr's server crashed during the experiment leading several participants to report problems with their connection to the internet. All participants experiencing technical difficulties during the experiment were excluded ($n = 259$), resulting in a final sample of 1,219 participants (66.28% female, 33.14% male, 0.57% other; $M_{age} = 34.76$, $SD_{age} = 11.92$ years).

Results

On average, participants in the Non-Scarcity condition ($M = 9.57$, $SD = 1.02$) were able to correctly identify more letters in the letter identification task than participants in the Scarcity condition ($M = 7.46$, $SD = 2.04$), $t(929.72) = 23.00$, $p < .001$, Cohen's $d = 1.30$. Relatedly, in the Non-Scarcity condition, 81.25% of the participants were able to solve the letter identification task whereas only 28.07% of the participants in the Scarcity condition managed to solve it. Evidently, participants in the Scarcity condition were thus much less likely to solve the letter identification task ($OR = 0.09$, 95% CI [0.07, 0.12], $p < .001$). Results from two separate regression analyses further show that participants in the Scarcity condition gained more from reporting a match in the Mind Game in terms of the number of letters they were able to identify ($\beta = 2.38$, [2.09, 2.67], $p < .001$) as well as in terms of improving their chances of solving the letter identification task ($OR = 9.27$, [4.11, 21.13], $p < .001$). Combined, these results show that participants in the Scarcity condition indeed had a scarcity of guesses to solve the letter identification task, and that they had relatively more to gain from reporting dishonestly in the Mind Game. This indicates that our experimental manipulation of resource scarcity was successful.

As shown in Figure 1, the proportion of dishonest individuals, d, was estimated to be 0.33 for the Scarcity condition and 0.30 for the Non-Scarcity condition. Self-serving dishonesty was thus observed in both conditions with estimates of d significantly differing from zero (all $ps < .001$). No significant difference was observed between the Scarcity and the Non-Scarcity conditions, $\Delta G^2(1) = 0.78$, $p = .377$, Cohen's $\omega = 0.03$. To quantify the relative evidence in favor of the null hypothesis, we performed an exploratory Bayesian reanalysis and estimated Bayes factor following the procedure outlined by Heck et al. (2022). BF_{01} was estimated to 8.44 providing moderate evidence in favor of the null hypothesis (Lee & Wagenmakers, 2014).

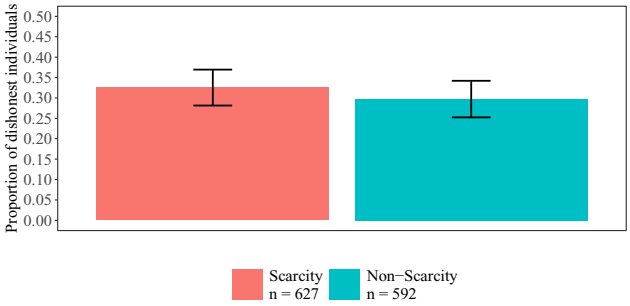
Discussion

Overall, and contrary to our preregistered hypothesis, the results from Study 1 provide no evidence that being in a state of resource scarcity increases people's inclinations to engage in self-serving dishonesty. As opposed to the predictions of standard economic models of criminal and unethical behavior (Allingham & Sandmo, 1972; Becker, 1968) and Scarcity Theory (Mullainathan & Shafir, 2013), being in state of resource scarcity might thus not substantially alter the perceived expected utility of engaging in self-serving dishonesty and/or impede people's self-regulatory capabilities too such an extent that they are unable to resist the temptation of lying. Importantly, the experimental setup precludes concluding that resource scarcity has no influence on self-serving dishonesty at all.

[3] See Lilleholt et al. (2020) and Thielmann and Hilbig (2018) for a similar approach.

Figure 1

Proportion of Dishonest Individuals Per Condition (Study 1)



Note. Error bars represent 95% confidence intervals. See the online article for the color version of this figure.

That is, a binary measure of self-serving dishonesty was used, so that the results cannot speak to whether resource scarcity influences people's inclination to tell bigger lies for their own material benefit. We tested this idea in Study 2.

Study 2

To test the possibility that being in a state of resource scarcity influences the size of the lies people are willing to tell for their own material benefit, we conducted another online experiment in which we again exogenously varied the number of guesses available to solve an incentivized letter identification task. In contrast to Study 1 in which participants had the opportunity to dishonestly obtain five versus zero additional guesses to solve the incentivized letter identification task, we provided participants the opportunity to obtain between one and six additional guesses depending on the size of the lie they were willing to tell. In line with the basic tenets of standard economic models of criminal and unethical behavior (Allingham & Sandmo, 1972; Becker, 1968) and Scarcity Theory (Mullainathan & Shafir, 2013), we hypothesized that being in a state of resource scarcity would increase people's inclination to tell bigger lies.

Method

Procedure

We conducted an online experiment with two between-subject conditions—Scarcity and Non-Scarcity—using formr (Arslan et al., 2020). The experiment took approximately 10 min to complete, and participants were paid a flat participation fee of £0.90. The experiment followed the same procedure as in Study 1, but with two important changes.

First, after reading the instructions for the letter identification task participants did not play the Mind Game but were instead given an opportunity to win between one and six additional guesses in the Die Roll Task (Fischbacher & Föllmi-Heusi, 2013). In particular, participants were first asked to roll a virtual die via an external website (https://www.random.org/dice/?num=1), and then prompted to report the outcome of the die roll in order to determine how many additional guesses they would receive to solve the letter identification task. Participants received the same number of additional guesses as the outcome of the die roll they reported. That is, if they reported rolling a one, they got one additional guess, if they reported rolling a two, they got two additional guesses, and so on. As in the Mind Game, participants thus had an opportunity to lie (i.e., reporting a higher outcome than they actually observed) to acquire additional guesses to solve the letter identification task. Because the outcome distribution of a fair six-sided die is conclusively known (i.e., each outcome should be reported 1/6 of the time), however, it is possible to infer if, and to what extent, participants on the aggregate level engaged in overreporting, claiming to have obtained higher outcomes than they actually did. Because the Die Roll Task allows for more or less overreporting (e.g., reporting a six vs. a three instead of a one), it is well suited for testing whether being in a state of resource scarcity increases people's inclination to tell bigger lies (i.e., reporting more maximal or near maximal outcomes; Fischbacher & Föllmi-Heusi, 2013).

The second difference to Study 1 is that participants in the Scarcity condition started out with 11 guesses to solve the letter identification task, whereas participants in the Non-Scarcity condition started out with 17 guesses to ensure that the total number of guesses allocated across conditions was the same as in Study 1 (because participants were guaranteed to win at least one additional guess in the Die Roll Task).

Power Analysis

To determine an appropriate sample size to test our hypothesis, we conducted an a priori power analysis for a two-tailed Mann–Whitney U test using G*Power Version 3.1 (Faul et al., 2007). Expecting a small effect size (Cohen's $d = 0.20$) and aiming for high statistical power ($1-\beta = 0.95$ with $\alpha = 0.05$), the a priori power analysis indicated that a total sample of 1,364 participants would be appropriate. Oversampling slightly, we aimed to recruit a total of 1,500 participants (i.e., 750 per condition).

Participants

A total of 1,502 participants from the United Kingdom with an approval rating of minimum 90 and who did not participate in Study 1 were recruited via Prolific (https://www.prolific.co). Of these, 20 participants were excluded because they experienced technical difficulties during the experiment, resulting in a final sample of 1,482 participants (57.89% female, 41.09% male, 1.01% other; $M_{age} = 35.76$, $SD_{age} = 13.35$ years).

Results

As in Study 1, participants in the Non-Scarcity condition ($M = 9.82$, $SD = 0.68$) were on average able to correctly identify more letters in the letter identification task than participants in the Non-Scarcity condition ($M = 8.05$, $SD = 1.83$), $t(993.22) = 24.99$, $p < .001$, Cohen's $d = 1.26$. Furthermore, in the Non-Scarcity condition, 91.27% of the participants were able to solve the letter identification task, while only 36.53% of the participants in the Scarcity condition were able to solve it. Once again, participants in the Scarcity condition were thus much less likely to solve the letter identification task ($OR = 0.06$, 95% CI [0.04, 0.07], $p < .001$). Results from two separate regression analyses further show that participants in the Scarcity condition gained more from reporting higher outcomes in the Die Roll Task in terms of the number of letters they were able to identify ($\beta = 0.48$, [0.41, 0.56], $p < .001$) as well as

in terms of improving their chances of solving the letter identification task ($OR = 1.30$, [1.07, 1.58], $p = .008$). Overall, these results suggest that our experimental manipulation of resource scarcity was successful, and that participants in the Scarcity condition indeed experienced an actual scarcity of guesses to solve the letter identification task and had relatively more to gain from untruthfully reporting higher outcomes in the Die Roll Task.

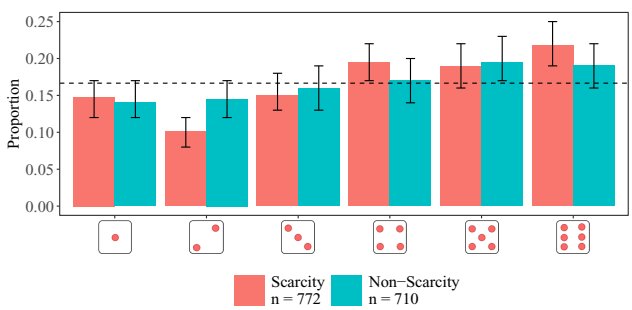
As shown in Figure 2, overreporting of higher outcomes in the Die Roll Task was clearly observed in the Scarcity Condition, $\chi^2(5, N = 772) = 40.77$, $p < .001$, as well as vaguely so in the Non-Scarcity condition, $\chi^2(5, N = 710) = 10.74$, $p = .057$. In particular, results from a two-sided exact binomial test show that participants in the Scarcity condition overreported sixes ($p < .001$) and fours ($p = .042$), whereas participants in the Non-Scarcity condition overreported fives ($p = .049$). Notably, participants in the Scarcity condition ($Mdn = 4$) did not report significantly higher outcomes in the Die Roll Task as compared to the participants in the Non-Scarcity condition ($Mdn = 4$; $W = 262{,}210$, $Z = -1.46$, $p = .144$, $r_{\text{rank-biserial}} = .04$). Again, to quantify the relative evidence in favor of the null hypothesis, we performed an exploratory Bayesian reanalysis and estimated Bayes factor following the procedures outlined by van Doorn et al. (2020). BF_{01} was estimated to 7.75 providing moderate evidence in favor of the null hypothesis (Lee & Wagenmakers, 2014).

Discussion

Overall, and again contrary to our preregistered hypothesis, the results from Study 2 provide no evidence that being in a state of resource scarcity increases people's inclination to tell bigger lies. In contrast to the predictions of standard economic models of criminal and unethical behavior (Allingham & Sandmo, 1972; Becker, 1968) and Scarcity Theory (Mullainathan & Shafir, 2013), Study 2 thus provides further evidence that being in state of resource scarcity might not substantially alter the perceived expected utility of engaging in self-serving dishonesty and/or impede people's self-regulatory capabilities too such an extent that they are unable to resist the temptation of lying. While this interpretation of the results seems reasonable, it should be acknowledged that it is only one of two possible interpretations. An alternative interpretation of the results is that the experimental manipulation used in Studies 1 and 2 did not induce a scarcity mindset. To rule out this possibility, we conducted a manipulation check study.

Figure 2

Proportion of Reported Die Roll Outcomes Per Condition (Study 2)



Note. Error bars represent 95% confidence intervals. See the online article for the color version of this figure.

Manipulation Check Study

To check the validity of the experimental manipulation used in Studies 1 and 2, we conducted an online experiment in which we asked people to indicate to what extent they would find 12 and 18 guesses less or more than sufficient to solve the letter identification task used in Studies 1 and 2. That is, we tested if having 12/18 guesses to solve the letter identification task is perceived as less/more than sufficient to solve it. We further tested whether having 12 as compared to 18 guesses is perceived as less sufficient to solve the letter identification task—or, put differently, whether having 12 as compared to 18 guesses is more likely to foster a scarcity mindset (i.e., a feeling of having less than one needs).

Method

Procedure

We conducted an online experiment with two between-subject conditions—12 versus 18 Guesses and 18 versus 12 Guesses—using formr (Arslan et al., 2020). The experiment took approximately 5 min to complete, and participants were paid a basic participation fee of £0.75. In both the 12 versus 18 Guesses and the 18 versus 12 Guesses condition, participants were, after having read a thorough description of the letter identification task used in Studies 1 and 2, asked to indicate to what extent they would find 12 and 18 guesses less or more than sufficient to solve the task. Importantly, in the 12 versus 18 Guesses condition participants were first asked to indicate to what extent they would find 12 guesses less or more than sufficient to solve the letter identification task, and then to what extent they would find 18 guesses less or more than sufficient. In contrast, participants in the 18 versus 12 Guesses condition were first asked to indicate to what extent they would find 18 guesses less or more than sufficient to solve the letter identification task, and then to what extent they would find 12 guesses less or more than sufficient. Participants' perceptions of the extent to which 12 and 18 guesses were sufficient to solve the letter identification task was assessed on a 7-point rating scale ranging from 1 = *less than sufficient* to 7 = *more than sufficient*.

By asking participants in the 12 versus 18 Guesses and in the 18 versus 12 Guesses condition to indicate, in opposite sequences, to what extent they would find both 12 and 18 guesses less or more than sufficient to solve the letter identification task, we can answer two key questions. First, we can answer the question of whether 12/18 guesses are generally perceived as less/more than sufficient to solve the letter identification task by testing if the sufficiency rating of having 12/18 guesses to solve it, across conditions and ratings, falls significantly below/above the midpoint of the rating scale (complementing the pilot studies sketched above). Second, we can answer the question of whether having 12 as compared to 18 guesses is perceived as less sufficient to solve the letter identification tasks by testing if the sufficiency rating of having 12 as compared to 18 guesses to solve it is significantly lower, both between and within the 12 versus 18 Guesses and the 18 versus 12 Guesses conditions.

Power Analysis

To determine an appropriate sample size for the Manipulation Check Study, we conducted an a priori power analysis for a one-tailed independent-samples *t* test using G*Power Version 3.1 (Faul et al., 2007). Setting the smallest effect size of interest to Cohen's $d = 0.35$, corresponding to a small to medium effect, and aiming for high statistical power ($1-\beta = 0.95$ with $\alpha = 0.05$), the a priori power analysis indicated that a total sample of 356 participants would be appropriate. Oversampling slightly, we aimed to recruit a total of 430 participants (i.e., 215 per condition). We conducted an a priori power analysis for a one-tailed rather than a two-tailed independent-samples *t* test because we did not expect 18 guesses to be perceived as less sufficient to solve the letter identification task than 12 guesses. Moreover, we conducted an a priori power analysis for an independent-samples *t* test rather than for a dependent-samples *t* test or a one-sample *t* test because the sample size needed to detect a given effect size with the same level of power is generally smaller for these tests than for an independent-samples *t* test.

Participants

A total of 429 participants from the United Kingdom with an approval rating of minimum 90 and who did not participate in Studies 1 and 2 were recruited via Prolific (https://www.prolific.co). Of these, five participants were excluded because they experienced technical difficulties during the experiment, resulting in a final sample of 424 participants (62.50% female, 37.26% male, 0.24% other; $M_{age} = 41.89$, $SD_{age} = 13.58$ years).

Results

In both the 12 versus 18 Guesses condition ($M = 3.78$, $SD = 1.92$), $t(215) = -1.70$, $p_{one\text{-}tailed} = .044$, Cohen's $d = 0.12$, and the 18 versus 12 Guesses condition ($M = 3.30$, $SD = 1.66$), $t(207) = -6.11$, $p_{one\text{-}tailed} < .001$, Cohen's $d = 0.42$, we found the sufficiency rating of having 12 guesses to solve the letter identification task to fall significantly below the midpoint of the rating scale used (i.e., a 7-point rating scale with a midpoint of four). Similarly, in both the 12 versus 18 Guesses condition ($M = 5.83$, $SD = 1.26$), $t(215) = 21.28$, $p_{one\text{-}tailed} < .001$, Cohen's $d = 1.45$, and the 18 versus 12 Guesses condition ($M = 5.40$, $SD = 1.38$) $t(207) = 14.64$, $p_{one\text{-}tailed} < .001$, Cohen's $d = 1.01$, we found the sufficiency rating of having 18 guesses to solve the letter identification task to fall significantly above the midpoint of the rating scale used. Combined, these results suggest that having 12 guesses to solve the letter identification task is generally perceived as less than sufficient to solve it, whereas having 18 guesses is generally perceived as more than sufficient.

Comparing the sufficiency ratings of having 12 as compared to 18 guesses between the 12 versus 18 Guesses condition and the 18 versus 12 Guesses condition, we further find that having 12 as compared to 18 guesses is perceived as less sufficient to solve the letter identification task across the first, $t(391.57) = -10.05$, $p_{one\text{-}tailed} < .001$, Cohen's $d = 0.97$, and the second rating, $t(386.89) = -17.65$, $p_{one\text{-}tailed} < .001$, Cohen's $d = 1.73$. Moreover, within both the 12 versus 18 Guesses condition, $t(215) = -20.12$, $p_{one\text{-}tailed} < .001$, Cohen's $d = 1.37$, and the 18 versus 12 Guesses condition, $t(207) = -22.19$, $p_{one\text{-}tailed} < .001$, Cohen's $d = 1.54$, we found that having 12 as compared to 18 guesses is perceived as less sufficient to solve the letter identification task. Taken together, these results consistently show that having 12 as compared to 18 guesses is perceived as less sufficient to solve the letter identification task.

Discussion

Overall, the results from the Manipulation Check Study further validate the findings of Studies 1 and 2 by showing that the experimental manipulation used therein is likely to have induced a scarcity mindset in terms of having less than one needs (an interpretation further corroborated by the pilot studies). But although the results from Studies 1 and 2 provide fairly strong evidence that being in a state of resource scarcity does not increase people's inclination to engage in self-serving dishonesty, nor the size of the lies they are willing to tell for their own material benefit, it still seems too early to conclude that there is no direct link between resource scarcity and self-serving dishonesty. In particular, given that Studies 1 and 2 relied on the same experimental manipulation of resource scarcity, it cannot be ruled out that the results from these studies are nothing but experimental artifacts. Indeed, in a recent review and empirical audit of the scarcity literature, O'Donnell et al. (2021) found that not all experimental manipulations of resource scarcity seem to function equally.[4] More specifically, O'Donnell et al. (2021) observed that experimental manipulations designed to prime people into a scarcity mindset by asking them to think about different financial challenges and/or resource demands yield stronger and more robust effects than other types of scarcity manipulations, such as those employed in Studies 1 and 2. We thus employed such a scarcity mindset manipulation in Study 3.

Study 3

To mitigate the possibility that the findings from Studies 1 and 2 are experimental artifacts, we conducted another online experiment in which we relied on a different experimental manipulation—namely, one that was specifically designed to prime people into a scarcity mindset. Based on the results from Studies 1 and 2, we refrained from stating a directional hypothesis.

Method

Procedure

Again, we conducted an online experiment with two between-subject conditions—Scarcity Mindset and Non-Scarcity Mindset—using formr (Arslan et al., 2020). The experiment took approximately 10 min to complete, and participants were paid a flat participation fee of £1.25. To prime participants into a scarcity mindset, we used the same experimental approach as in Mani et al. (2013). More precisely, we presented participants with four hypothetical scenarios describing a financial problem and asked them to answer a number of questions on how they would deal with it. For example, "Imagine that an unforeseen event requires of you an immediate £X expense. Are there ways in which you may be able to come up with

[4] For a critical appraisal of the empirical audit conducted by O'Donnell et al. (2021), see Shah et al. (2022).

that amount of money on a very short notice? How would you go about it? Would it cause you long-lasting financial hardship? Would it require you to make sacrifices that have long-term consequences? If so, what kind of sacrifices?" For participants in the Scarcity Mindset condition, the costs of the financial problems were relatively high (e.g., the unforeseen event would require an £2,000 expense), and thus likely to induce a scarcity mindset by priming participants to think about their own financial challenges and demands. For participants in the Non-Scarcity Mindset condition, the costs of the financial problems were relatively low (e.g., the unforeseen event would require an £100 expense), by contrast, and thus unlikely to induce a scarcity mindset.

After having read and answered the questions pertaining to each of the four hypothetical scenarios, participants were given an opportunity to win a bonus incentive of £0.50 by playing the same adapted version of the Mind Game as in Study 1. More specifically, participants were instructed that they would receive a bonus incentive of £0.50 if they reported having obtained a match between the number they had written down in private and the random number that was displayed on the screen. As in Study 1, participants thus had an opportunity to lie to ensure that they would get the bonus incentive (i.e., report a match even if they did not observe one), making it possible to assess the effect of priming people into a scarcity mindset on their inclination to engage in self-serving dishonesty.

Power Analysis

To determine an appropriate sample size for Study 3, we conducted an a priori power analysis in multiTree Version 0.46 (Moshagen, 2010). Based on the results from Study 1, we expected the proportion of dishonest individuals, *d*, to be around 0.30 in the Non-Scarcity Mindset condition. Setting the smallest effect size of interest to Cohen's $\omega = 0.09$, corresponding to an increase or decrease in *d* of 0.10, we anticipated the proportion of dishonest individuals, *d*, to be between 0.20 and 0.40 in the Scarcity Mindset condition. Aiming for high statistical power (i.e., $1-\beta = 0.90$ with $\alpha = 0.05$) the a priori power analysis indicated that a total sample of 1,345 participants would be appropriate. Oversampling slightly, we aimed to recruit a total of 1,500 participants (i.e., 750 per condition).

Participants

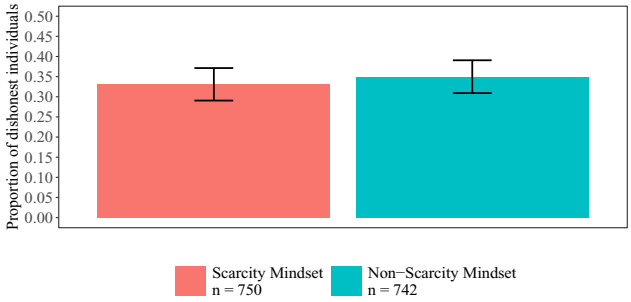
A total of 1,511 participants from the United Kingdom with an approval rating of minimum 90 and who did not participate in Studies 1 or 2 were recruited via Prolific (https://www.prolific.co). In line with our preregistered analysis plan, 19 of these were excluded either because they experienced technical difficulties during the experiment ($n = 16$) or wrote fewer than 100 characters including spaces in response to the four financial scenarios ($n = 3$), resulting in a final sample of 1,492 participants (60.92% female, 37.53% male, 1.54% other; $M_{age} = 36.27$, $SD_{age} = 13.07$ years).

Results

As shown in Figure 3, the proportion of dishonest individuals, *d*, was estimated to be 0.33 for the Scarcity Mindset condition and 0.35 for the Non-Scarcity Mindset condition. Dishonesty was thus observed in both conditions with estimates of *d* significantly differing from zero (all $ps < .001$). No significant difference was observed between the Scarcity Mindset condition and the Non-Scarcity Mindset condition, $\Delta G^2(1) = 0.42$, $p = .516$, Cohen's $\omega = 0.02$. To quantify the relative evidence in favor of the null hypothesis, we again performed an exploratory Bayesian reanalysis and estimated Bayes factor following the same procedure as in Study 1. BF_{01} was estimated to 11.06 providing strong evidence in favor of the null hypothesis (Lee & Wagenmakers, 2014). Adding to this, results from two modified logistic regression analyses (Heck & Moshagen, 2018; Moshagen & Hilbig, 2017), based on income data from Prolific's export function, further revealed no significant relations between participants' personal income level nor their household income level after tax and the likelihood of them having reported a match in the Mind Game (see Tables 1 and 2, Model 1). Similarly, we found no evidence to suggest that participants' personal income level nor their household income level after tax moderated the effect of the experimental manipulation (see Tables 1 and 2, Model 2). That is, we found no evidence to suggest that participants from the lower part of the income distribution assigned to the Scarcity Mindset condition lied more, even though these participants arguably were the ones most likely to fall into a scarcity mindset as a result of the experimental manipulation (see Mani et al., 2013).

Figure 3

Proportion of Dishonest Individuals Per Condition (Study 3)



Note. Error bars represent 95% confidence intervals. See the online article for the color version of this figure.

Discussion

Overall, the results from Study 3 provide no evidence that priming people into a scarcity mindset influences their inclination to engage in self-serving dishonesty. Consequently, the results suggest that the results from Studies 1 and 2 are not experimental artifacts of the scarcity manipulation used therein. In support of this conclusion, results from several modified logistic regression analyses revealed no significant relations between people's personal income level nor their household income level after tax and their inclination to engage in self-serving dishonesty. Although Study 3 clearly corroborates the results from Studies 1 and 2, we continued to test the robustness and generalizability of these results at a different level of analysis, namely, at the country level.

Study 4

To explore the robustness and generalizability of the results obtained in Studies 1–3, we investigated via observational data whether people living in poorer countries are more, less, or equally inclined to engage in self-serving dishonesty, as compared to people

Table 1
Modified Logistic Regression Predicting Dishonesty Based on Personal Income (Study 3)

Variable	Model 1 *OR* [95% CI]	Model 2 *OR* [95% CI]
Intercept	2.05** [1.25, 3.35]	1.92* [1.12, 3.27]
Condition (scarcity mindset)	0.92 [0.71, 1.20]	1.06 [0.66, 1.70]
Personal income (£10,000–£19,999)	0.87 [0.61, 1.24]	0.84 [0.51, 1.39]
Personal income (£20,000–£29,999)	0.82 [0.57, 1.20]	0.88 [0.52, 1.50]
Personal income (more than £30,000)	0.81 [0.54, 1.22]	1.12 [0.65, 1.91]
Condition (Scarcity Mindset) × Personal income (£10,000–£19,999)	—	1.10 [0.54, 2.24]
Condition (Scarcity Mindset) × Personal income (£20,000–£29,999)	—	0.88 [0.43, 1.81]
Condition (Scarcity Mindset) × Personal income (more than £30,000)	—	0.49 [0.22, 1.07]
Age	0.96*** [0.95, 0.98]	0.96*** [0.95, 0.97]
Gender (male)	1.22 [0.92, 1.61]	1.23 [0.93, 1.63]
University degree (yes)	1.06 [0.80, 1.41]	1.07 [0.80, 1.41]
n	1,467	1,467
Log-likelihood	−973.97	−971.75

Note. Personal income was treated as a factor with "less than £10,000" being the lowest level.
*$p < .05$. **$p < .01$. ***$p < .001$.

living in richer countries. That is, we investigated whether poverty as a form of resource scarcity is linked to self-serving dishonesty at the country level.

Method

To investigate the link between poverty as a form of resource scarcity and self-serving dishonesty at the country level, we relied on data from two different sources. In particular, we linked country-level poverty data from the World Bank (2020) in terms of gross domestic product (GDP) per capita, poverty headcount ratio at $1.90, $3.20, and $5.50 a day, and poverty gap at $1.90, $3.20, and $5.50 a day, to a country-level indicator of self-serving dishonesty based on a recent meta-study (i.e., Abeler et al., 2019). GDP per capita is defined by the World Bank as a country's GDP divided by its midyear population and is often considered to reflect the country's overall standard of living. The poverty headcount ratio at $1.90, $3.20, and $5.50 a day is the percentage of a country's population living on less than $1.90, $3.20, and $5.50 a day, respectively, and is a measure of the number of people living in poverty. The poverty gap at $1.90, $3.20, and $5.50 a day, on the other hand, is the mean shortfall in income or consumption from poverty lines of $1.90, $3.20, and $5.50 a day, respectively, and marks both the depth of poverty as well as its incidence. Note that in all cases we used the most recent purchasing power parity (PPP) adjusted poverty data available from the Word Bank as of April 29, 2021.

The meta-study conducted by Abeler et al. (2019) covers 90 experimental studies published between 2008 and 2018, comprising 44,390 participants from 47 countries. Across all experiments, participants were given an opportunity to lie in order to acquire some financial benefit by misreporting a privately observed random state, such as the outcome of a die roll, coin flip, or draw from an urn. To ensure comparability between studies using different privately observed random states, the meta-study maps all reports into a "standardized report" with the following three properties: (a) when the reported state leads to the lowest possible payoff the standardized report is −1, (b) when it leads to the highest possible payoff the standardized report is +1, and (c) when it leads to the same payoff as one would expect from honest reporting the standardized report is 0. In brief, the standardized report reflects to what

Table 2
Modified Logistic Regression Predicting Dishonesty Based on Household Income (Study 3)

Variable	Model 1 *OR* [95% CI]	Model 2 *OR* [95% CI]
Intercept	2.28** [1.34, 3.90]	2.09* [1.15, 3.80]
Condition (scarcity mindset)	0.93 [0.71, 1.21]	1.12 [0.62, 2.02]
Household income (£20,000–£39,999)	0.79 [0.54, 1.15]	0.75 [0.43, 1.30]
Household income (£40,000–£59,999)	0.87 [0.59, 1.30]	1.07 [0.61, 1.86]
Household income (more than £60,000)	0.72 [0.48, 1.09]	0.95 [0.53, 1.68]
Condition (Scarcity Mindset) × Household income (£20,000–£39,999)	—	1.12 [0.53, 2.37]
Condition (Scarcity Mindset) × Household income (£40,000–£59,999)	—	0.66 [0.30, 1.47]
Condition (Scarcity Mindset) × Household income (more than £60,000)	—	0.56 [0.25, 1.30]
Age	0.96*** [0.95, 0.97]	0.96*** [0.95, 0.97]
Gender (male)	1.19 [0.90, 1.56]	1.19 [0.91, 1.56]
University degree (yes)	1.04 [0.79, 1.37]	1.03 [0.78, 1.36]
n	1,468	1,468
Log-likelihood	−973.95	−971.77

Note. Household income was treated as a factor with "less than £20,000" being the lowest level.
*$p < .05$. **$p < .01$. ***$p < .001$.

extent people on the aggregate reported truthfully and can be used to create an overall index of self-serving dishonesty for each of the 47 countries involved in the meta-study by pooling the data from all experiments conducted within the same country. The average number of participants per country was 918.

Results

As shown in Table 3, we found no significant associations between the standardized report from Abeler et al. (2019) and any of the country-level indicators of poverty considered herein (all $ps > .05$). To quantify the relative evidence in favor of the null hypothesis we performed a Bayesian reanalysis and estimated Bayes factor for each of the pairwise correlations following the procedures outlined by Wagenmakers et al. (2016). BF_{01} ranged from 3.87 to 5.44 providing moderate evidence in favor of the null hypothesis (see Table 4; Lee & Wagenmakers, 2014).

Discussion

Overall, the results from Study 4 provide no evidence that people living in poorer countries are more or less inclined to engage in self-serving dishonesty as compared to people living in richer countries. This further substantiates the results obtained in Studies 1–3, and the conclusion that there is no direct link between poverty as a form of resource scarcity and self-serving dishonesty.

Study 5

Having found no evidence that resource scarcity is directly linked to self-serving dishonesty, we investigated the accuracy of the beliefs people hold about the link between poverty as a form of resource scarcity and self-serving dishonesty. More specifically, we investigated whether people wrongly believe that people living in poorer countries are more willing to engage in self-serving dishonesty as compared to people living in richer countries. To this end, we asked Danish adult citizens whether they generally believe that people living in poorer countries are less, equally, or more willing to lie in order to secure a financial gain compared to people living in richer countries. Moreover, we further explored if the beliefs people hold about the link between poverty as a form of resource scarcity and self-serving dishonesty are related to personality in terms of the HEXACO personality traits—that is, Honesty-Humility, Emotionality, Extraversion, Agreeableness versus Anger, Conscientiousness, and Openness to Experience (Ashton & Lee, 2007; Zettler et al., 2020)—as well as age, gender, educational background, and perceived financial security. We explored these questions for two reasons: First, knowing if—and if so, to what extent—people generally believe that poverty as a form of resource scarcity is related to self-serving dishonesty has important implications for which and how educational efforts and/or policies should be put in place to ensure that poorer people are not subjected to unfair and discriminatory practices from businesses, public institutions, and/or society at large. Second, gaining knowledge about whether people with certain characteristics are more likely to believe that poverty as a form of resource scarcity is related to self-serving dishonesty might help to determine at whom such educational efforts and/or policies should be targeted in particular.

Method

Procedure and Participants

The data used in Study 5 were collected as part of a large study assessing Danish citizens' perceptions and behavioral responses to the COVID-19 pandemic; namely, the COVID-19 Snapshot Monitoring (COSMO) Denmark (see Zettler et al., 2021). In particular, data for Study 5 stem from Wave 29 of a repeated cross-sectional online survey (March 8–14, 2021). The survey was set up in formr (Arslan et al., 2020) and invitations were sent via the official digital mail system in Denmark, called e-Boks (https://www.e-boks.com/danmark/en/). In total, 5,000 Danish citizens were invited to Wave 29 of the repeated cross-sectional survey, of whom 674 responded (13.48% response rate). Of these, 16 participants were excluded because they experienced technical difficulties during the survey, resulting in a final sample of 658 participants (55.47% female, 44.38% male, 0.15% other; $M_{age} = 56.13$, $SD_{age} = 16.15$ years).

Measures

We assessed participants' beliefs about the link between poverty as a form of resource scarcity and self-serving dishonesty using a single item presented at the end of the survey (i.e., "Do you believe that people who live in poorer countries generally are less willing, equally willing, or more willing to lie in order to gain a financial benefit, compared to people who live in richer countries?"). The item was answered on a scale ranging from 0 = *much less willing to lie* to 10 = *much more willing to lie*. Participants' personality traits were assessed using the Brief HEXACO Inventory (BHI; De

Table 3
Correlations Between Country-Level Poverty Data and Dishonesty (Study 4)

Variable	1	2	3	4	5	6	7	8
1. Standardized report	—	0.395	0.907	0.936	0.917	0.930	0.971	0.950
2. GDP per capita	−0.127	—	<0.001	<0.001	<0.001	0.001	<0.001	<0.001
3. PHR $1.90 a day	0.018	−0.571	—	<0.001	<0.001	<0.001	<0.001	<0.001
4. PHR $3.20 a day	0.012	−0.685	0.951	—	<0.001	<0.001	<0.001	<0.001
5. PHR $5.50 a day	0.016	−0.802	0.847	0.960	—	<0.001	<0.001	<0.001
6. PG $1.90 a day	−0.013	−0.493	0.975	0.871	0.748	—	<0.001	<0.001
7. PG $3.20 a day	0.005	−0.598	0.998	0.966	0.875	0.968	—	<0.001
8. PG $5.50 a day	0.009	−0.704	0.957	0.998	0.963	0.887	0.972	—

Note. GDP = gross domestic product; PHR = poverty headcount ratio; PG = poverty gap. Pearson's correlation coefficients are presented below the diagonal and *p* values are presented above the diagonal.

Table 4
Bayes Factors for the Correlations Between Country-Level Poverty Data and Self-Serving Dishonesty (Study 4)

Variable	1	2	3	4	5	6	7	8
1. Standardized report	—	0.258	0.185	0.184	0.185	0.184	0.184	0.184
2. GDP per capita	3.874	—	>100	>1000	>1000	64.27	>1000	>1000
3. PHR $1.90 a day	5.405	0.001	—	>1000	>1000	>1000	>1000	>1000
4. PHR $3.20 a day	5.424	<0.001	<0.001	—	>1000	>1000	>1000	>1000
5. PHR $5.50 a day	5.412	<0.001	<0.001	<0.001	—	>1000	>1000	>1000
6. PG $1.90 a day	5.421	0.0156	<0.001	<0.001	<0.001	—	>1000	>1000
7. PG $3.20 a day	5.438	<0.001	<0.001	<0.001	<0.001	<0.001	—	>1000
8. PG $5.50 a day	5.431	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	—

Note. GDP = gross domestic product; PHR = poverty headcount ratio; PG = poverty gap. BF_{01} are presented below the diagonal and BF_{10} are presented above the diagonal.

Vries, 2013), and their perceived financial security was measured using a five-item scale introduced by Munyon et al. (2020). Mean scores, standard deviations, and Cronbach's α for all measures used in Study 5 can be found in Table S1 in the online supplemental materials. A full overview of all variables assessed in Wave 29 of the repeated cross-sectional survey is available at: https://osf.io/3m2dg/

Results

As shown in Figure 4, most participants believed that people living in poorer countries, as compared to people living in richer countries, are more willing to lie in order to acquire a financial benefit ($M = 6.23$, $SD = 1.97$), $t(657) = 16.00$, $p < .001$, Cohen's $d = 0.62$. Results from an ordinary least square regression analysis further indicate that this belief is more pronounced among men as well as people low in Agreeableness versus Anger (see Table 5).

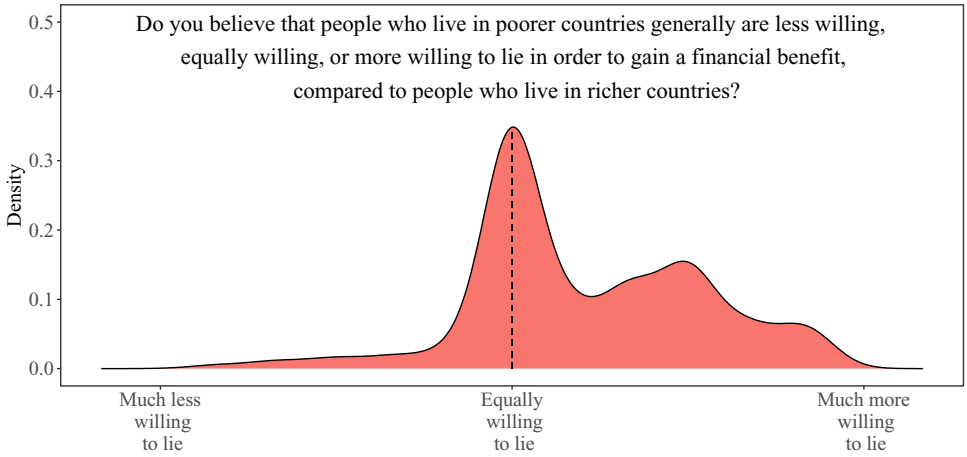
Discussion

Overall, the results from Study 5 provide evidence that most people—or, more precisely, most Danish adults—wrongly believe that people living in poorer countries are more willing to engage in self-serving dishonesty. The results thus provide initial evidence that most people—and especially men and people low in Agreeableness versus Anger—hold false beliefs about the relation between poverty as a form of resource scarcity and self-serving dishonesty. From a practical perspective, this is an important finding as it suggests that interventions aimed at ensuring that poorer people are not subjected to unfair and discriminatory practices from businesses, public institutions, and/or society at large could and probably should focus on counteracting such false beliefs.

General Discussion

Does resource scarcity increase people's inclination to engage in self-serving dishonesty? We critically investigated this question across four studies and found no evidence that it does, even though some theories suggest otherwise, and, as indicated in a fifth study, most people wrongly believe that resource scarcity (in the form of poverty) increases self-serving dishonesty. More precisely, as opposed to the predictions of standard economic models of criminal and unethical behavior (Allingham & Sandmo, 1972; Becker, 1968) and Scarcity Theory (Mullainathan & Shafir, 2013)—and, in turn, our respective preregistrations—Studies 1 and 2, supported by the Manipulation Check Study, suggested that being in a state of resource scarcity does not influence people's inclination to engage in self-serving dishonesty, nor the size of the lies people are willing

Figure 4
Distribution of People's Beliefs About the Link Between Poverty as a Form of Resource Scarcity and Self-Serving Dishonesty (Study 5)



Note. See the online article for the color version of this figure.

Table 5
Ordinary Least Square Regression Predicting People's Beliefs About the Link Between Poverty as a Form of Resource Scarcity and Self-Serving Dishonesty (Study 5)

Variable	Model 1 β [95% CI]	Model 2 β [95% CI]
Intercept	0.16 [−0.16, 0.47]	0.15 [−0.17, 0.47]
Age	−0.01 [−0.10, 0.07]	−0.01 [−0.10, 0.07]
Gender (male)	0.20* [0.05, 0.36]	0.17* [0.00, 0.34]
Education (more than 10 years)	−0.25 [−0.54, 0.05]	−0.24 [−0.53, 0.06]
Employed (no)	−0.04 [−0.21, 0.13]	−0.02 [−0.19, 0.15]
Financial security	−0.01 [−0.09, 0.06]	−0.01 [−0.09, 0.06]
Honesty-humility	—	0.02 [−0.06, 0.11]
Emotionality	—	−0.03 [−0.11, 0.05]
Extraversion	—	0.03 [−0.06, 0.11]
Agreeableness versus Anger	—	−0.09* [−0.17, −0.01]
Conscientiousness	—	−0.04 [−0.12, 0.05]
Openness to experience	—	−0.07 [−0.15, 0.01]
n	657	657
R^2	.02	.03

Note. All continuous predictors are mean-centered and scaled by 1 *SD*.
*$p < .05$.

to tell for their own material benefit. Corroborating these findings, Study 3 revealed evidence that priming people into a scarcity mindset does not influence their inclinations to engage in self-serving dishonesty, as well as initial evidence that poorer people are no more inclined to engage in self-serving dishonesty than richer people. Exploring the robustness and generalizability of these results, Study 4 provided no evidence that poverty as a form of resource scarcity influences people's inclination to engage in self-serving dishonesty at the country level. Finally, Study 5 revealed that most (Danish) people—and especially men and people low in Agreeableness versus Anger—wrongly believe that people living in poorer countries are more willing to engage in self-serving dishonesty as compared to people living in richer countries. Through a unique combination of well-powered preregistered online experiments and large-scale observational data spanning more than 40 countries, the present investigation thus crucially extends current knowledge on the link between resource scarcity (in the form of poverty) and unethical behavior (in the form of self-serving dishonesty).

Theoretical and Practical Implications

The present investigation adds to the burgeoning literature on the link between resource scarcity and unethical behavior. Whereas previous research indicated that poverty as form of resource scarcity is linked to higher levels of antisociality (Prediger et al., 2014), conflict (Braithwaite et al., 2016; Jakobsen et al., 2013; Tollefsen, 2020), corruption (Gundlach & Paldam, 2009; Gupta et al., 2002; Paldam, 2002; Treisman, 2000), and crime (Bjerk, 2007; Hsieh & Pugh, 1993; Pare & Felson, 2014; Patterson, 1991), as well as reduced cooperation (Agneman et al., 2020) and enforcement of sharing norms (Bartoš, 2021), we found no evidence that such links extend to self-serving dishonesty.

Conceptually in line with the latter, previous research relying on quasi-experimental variations in actual resource scarcity among poor coffee and rice farmers, respectively, also found no relation between resource scarcity and self-serving dishonesty (Aksoy & Palma, 2019; Boonmanunt et al., 2020). Combined, these findings stand in contrast to other experimental work relying on much smaller sample sizes (Sharma et al., 2014) as well as the predictions of standard economic models of criminal and unethical behavior (Allingham & Sandmo, 1972; Becker, 1968) as well as of Scarcity Theory (Mullainathan & Shafir, 2013). Considering the consistency of the results presented herein, there is thus not much evidence that being in state of resource scarcity substantially alters the perceived expected utility of engaging in self-serving dishonesty and/or impedes people's self-regulatory capabilities too such an extent that they are unable to resist the temptation of lying for their own material benefit. Although the lack of support for a positive relation between resource scarcity and self-serving dishonesty might seem puzzling at first, we see at least three potential explanations for this.

A first potential explanation builds on Self-Concept Maintenance Theory (Mazar et al., 2008), which suggests that most people tend to value honesty very highly, and for this reason only engage in self-serving dishonesty to the extent that they can continue to view themselves as being honest (i.e., maintain an honest self-concept). From this perspective, it might thus be that people are, generally speaking, no more inclined to engage in self-serving dishonesty when finding themselves in a state of resource scarcity as compared to when they do not, because in both cases they are very concerned about maintaining an honest self-concept. In other words, it might be that the psychological costs (or disutility) that most people experience from having to negatively update their self-concept from being honest to dishonest is so large that they generally refrain from engaging in self-serving dishonesty irrespective of how many or few resources they have. In support of this explanation, several studies have shown that most people place a high value on honesty (Lippa, 2007; Liu et al., 2018; Thielmann et al., 2020), and tend to have a strong preference for truth-telling (Abeler et al., 2019; Gerlach et al., 2019; Jacobsen et al., 2018; Rosenbaum et al., 2014).

A second potential explanation is that falling into a scarcity mindset is less consequential than what Scarcity Theory posits. More specifically, it might be that falling into a scarcity mindset does not impede people's cognitive capacity and decrease their ability to exert self-control and resist the temptation of engaging in self-serving dishonesty. In support of this explanation, a number of recent studies have failed to find support for the idea that being in state of resource scarcity negatively impacts people's cognitive performance and reduces their self-regulatory capabilities (Carvalho et al., 2016; Dalton et al., 2020; Fehr et al., 2019; González-Arango et al., 2022; O'Donnell et al., 2021). More generally, in a recent review and empirical audit of the resource scarcity literature, O'Donnell et al. (2021) were able to replicate only 4 out of 20 seminal scarcity studies, indicating that the psychological consequences of being in a state of resource scarcity might be much less pronounced than what previous research (e.g., Mani et al., 2013; Roux et al., 2015; Shah et al., 2012, 2018) suggests.

A third potential explanation is that being in a state of resource scarcity does not influence people's inclination to engage in self-serving dishonesty uniformly. That is, it might be that being in a state of resource scarcity makes some people more inclined to engage in self-serving dishonesty and others less inclined to engage in self-serving dishonesty, making it appear as if being in a state of

resource scarcity has no direct influence on people's inclination to engage in self-serving dishonesty. Whereas future research might delve into this possibility, we would like to note that it implies similarly strong opposing tendencies for people with different characteristics, given the complete lack of support for a direct link between resource scarcity and self-serving dishonesty overall.

Next to the literature on the link between resource scarcity and unethical behavior, the present investigation adds to the literature on people's beliefs about and attitudes toward people living in poverty. In line with previous research showing that people tend to hold strong critical beliefs about poorer people (Cozzarelli et al., 2001; Hunt & Bullock, 2016; Lichter & Crowley, 2002), we found that most (Danish) people—and especially men and people low in Agreeableness versus Anger—wrongly believe that people living in poorer countries are more willing to engage in self-serving dishonesty than people living in richer countries. Practically speaking, this is an important finding as it suggests that interventions aimed at counteracting such false beliefs should focus on people low in Agreeableness versus Anger and perhaps more importantly men, who in most countries control more wealth (Ortiz-Ospina & Roser, 2018; Schneebaum et al., 2018; Sierminska et al., 2010) and hold more prominent positions in politics, business, and society at large (Folke & Rickne, 2016; Lyness & Grotto, 2018; World Economic Forum, 2021).

Although the present investigation cannot speak to why most (Danish) people wrongly believe that people in poorer countries are more willing to engage in self-serving dishonesty, we suspect that this finding might be partially driven by availability bias (see Tversky & Kahneman, 1973). That is, when asking people to judge whether people living in poorer countries are more willing to engage in self-serving dishonesty than people living in richer countries, we suspect that information pointing in this direction is more readily available than information going in the opposite direction. To give just a few examples, it is widely known that poorer countries tend to be more corrupt (Gupta et al., 2002; Paldam, 2002; Treisman, 2000), less peaceful (Braithwaite et al., 2016; Jakobsen et al., 2013; Tollefsen, 2020), and more troubled by crime (Hsieh & Pugh, 1993; Pare & Felson, 2014). Moreover, some Danish people might have heard stories of people visiting poorer countries who got swindled and/or robbed, or perhaps experienced something similar themselves. Notably, it might even be that people from richer countries are more likely to get swindled and/or robbed when visiting poorer countries, because they are viewed as more attractive targets for those few who are willing to commit such crimes.

Next to availability bias, another potential explanation for the wrong beliefs people seem to hold about the link between poverty as a form of resource scarcity and self-serving dishonesty could be that the lay theories people hold about this relation align with the basic tenets of standard economic models of criminal and unethical behavior (Allingham & Sandmo, 1972; Becker, 1968) and/or Scarcity Theory (Mullainathan & Shafir, 2013). In other words, people might think that being in state of resource scarcity makes it more attractive to engage in self-serving dishonesty and/or negatively affects people's self-regulatory capabilities to resist the temptation of lying for their own material benefit.

Furthermore, it could also be that people, in line with previous research (Mazar et al., 2008), widely underestimate how much others—and in particular those who find themselves in a state of resource scarcity—care about maintaining an honest self-concept and/or value honesty in general.

Limitations and Future Directions

Discussing our findings, some limitations should be acknowledged. First, Studies 1–3 represent online experiments with high internal, but arguably low external validity. That is, while the experimental paradigms used in Studies 1–3 may be well suited for conceptually exploring the causal relation between resource scarcity and self-serving dishonesty, they hardly capture the full complexity of this relation as it plays out in the real world. Indeed, while the experimental manipulations used in Studies 1–3 conceptually mirror two key aspects of living in poverty—namely, that of having less money or material possessions than what is typically needed to get by—they disregard other important aspects. Most pertinently, they disregard the fact that poverty more often than not is a permanent form of resource scarcity that might not immediately, but perhaps progressively influence people's tendency to engage in self-serving dishonesty. Addressing this issue, the results from Study 4, however, suggest that not even people living in poorer countries with all that this entails (e.g., lower standard of living, limited mobility, reduced access to valuable goods) are more likely to engage in self-serving dishonesty. On a minor note, we also found no evidence that people from the lower part of the income distribution were more likely to lie in Study 3.

Besides the fact that the experimental manipulations used in Studies 1–3 do not conceptually mirror all aspects of living in poverty, there are also a number of limitations with regard to how self-serving dishonesty was captured in these studies. More precisely, while both the Mind Game (Schild et al., 2019) and the Die Roll Task (Fischbacher & Föllmi-Heusi, 2013) provide a clear and unambiguous measure of self-serving dishonesty, they do not account for all of the factors that might influence people's inclination to lie, and thus potentially moderate the link between resource scarcity and self-serving dishonesty. To give a few examples, neither the Mind Game nor the Die Roll Task used in Studies 1–3 properly account for the potential influence of social norms (Fosgaard et al., 2013; Gächter & Schulz, 2016), perceived externalities (i.e., the harm that lying causes others; Gerlach et al., 2019; Gneezy, 2005; Gneezy & Kajackaite, 2020), or the probability of being caught and punished for lying (Laske et al., 2018; Thielmann & Hilbig, 2018)—factors that all seem to matter for people's inclination to engage in self-serving dishonesty and which potentially could moderate the relation between resource scarcity and self-serving dishonesty. To explore this possibility, future research might aim to investigate the link between resource scarcity and self-serving dishonesty using more complex and sophisticated experimental designs and/or field experiments that account for the influence of these and other relevant factors.

In light of the relatively low replicability of the resource scarcity literature in general (see O'Donnell et al., 2021), another and arguably more serious concern about the experimental paradigms used in Studies 1–3 is that they might not be able to mirror the experience of being in a state of resource scarcity at all. In other words, one might be concerned that the observed null findings from Studies 1–3 simply reflect that the experimental paradigms did not work as intended. While this concern may not be completely ruled out, we do not think it is warranted for a number of reasons. First and foremost, it is

important to note that the results from Studies 1–3 are in line with previous research showing no link between quasi-experimental variations in actual resource scarcity and self-serving dishonesty among poor coffee and rice farmers, respectively (Aksoy & Palma, 2019; Boonmanunt et al., 2020). Second, as indicated by the results from the Manipulation Check Study, we found strong support for the internal validity of the experimental manipulation used in Studies 1 and 2, such that it successfully induced participants in the Scarcity conditions into a scarcity mindset. Third, even though some types of resource scarcity manipulations might not work particularly well, the type of resource scarcity manipulations used in Study 3 has recently been shown in a large replication project to yield both significant and fairly robust results (O'Donnell et al., 2021). Specifically, among the four studies that O'Donnell et al. (2021) were able to replicate in their recent empirical audit of the scarcity literature, three used similar types of resource scarcity manipulations to that of Study 3 herein. Last but not least, the fact that we found no evidence that people with lower personal/household income, nor people from poorer countries were more inclined to engage in self-serving dishonesty provides additional support for the generalizability of the experimental results in Studies 1–3 to people's 'real life.'

Notwithstanding this, it should be acknowledged that the findings presented herein might not generalize to all forms of resource scarcity and/or all imaginable real-world contexts. For instance, it might be that more extreme forms of resource scarcity, such as not having enough resources for clothes or a place to live, would indeed increase people's inclination to engage in self-serving dishonesty for their own material benefit. Moreover, it could also be that experienced resource scarcity only increases people's tendency to engage in self-serving dishonesty when the resources they are lacking are directly linked to their most basic needs, such as their need for food and water. In other words, it might be that feelings of hunger or thirst increase people's inclination to engage in self-serving dishonesty to acquire food and water. Importantly, though, only one rather low-powered study has found evidence to support this proposition (Williams et al., 2016), whereas another more well-powered and preregistered study recently failed to find converging evidence (Elbæk et al., 2022). Moreover, Häusser et al. (2019) also found no evidence that acute hunger increases people's tendency to act selfishly. Finally, it could be that experienced resource scarcity does not increase people's tendency to engage in self-serving dishonesty, but instead increases their willingness to lie for the material benefit of (close) others they care about. For instance, it might be that being in a state of resource scarcity increases people's willingness to lie for the material benefit of their family. Consequently, to both extend and further explore the robustness of the findings presented herein, future research might seek to investigate the influence of more extreme forms of resource scarcity (e.g., a sudden loss of all income) on people's willingness to engage in self-serving dishonesty, as well as whether being in state of resource scarcity increases people's willingness to lie for the material benefit of others they care about.

A further limitation worth mentioning is that the stakes in Studies 1–3 were relatively low (i.e., £0.50). This is an important limitation as it naturally begs the question of whether the results from Studies 1–3 would have been different had the stakes been higher. While this is ultimately an empirical question that future research might aim to investigate, we do not suspect this to be the case for the following reasons. First, and perhaps most importantly, there is strong evidence that people generally, although not unequivocally (see Hilbig & Thielmann, 2017), are largely insensitive to the size of the stakes involved when it comes to self-serving dishonesty (for meta-analytic evidence, see Abeler et al., 2019; Gerlach et al., 2019). In other words, people are by and large no more inclined to engage in self-serving dishonesty when the stakes are higher. Second, while the stakes in Studies 1–3 were relatively low, we still observed similarly high rates of self-serving dishonesty as compared to other studies with much higher stakes (e.g., $1–$50; Kajackaite & Gneezy, 2017). Third, even if higher stakes would have made it more attractive for participants in Studies 1–3 to engage in self-serving dishonesty, it seems plausible that participants in both the Scarcity and the Non-Scarcity conditions would have lied more, thus increasing the overall rate, but not the observed differences in self-serving dishonesty between the two conditions.

We would also like to mention some limitations with regard to the data from the meta-study conducted by Abeler et al. (2019). First, the data only covered a limited number of countries and did not allow to explore the link between poverty as a form of resource scarcity and self-serving dishonesty within each of the 47 countries involved. Thus, we cannot be sure that the results from Study 4 extend to a larger and more diverse set of countries nor rule out the possibility that poorer people in some countries, but not in others, are more inclined to engage in self-serving dishonesty. Second, for some countries, the number of participants was relatively low. In Iceland, for instance, the data only contained 24 observations. Third, the data largely consist of student and highly specific nonrepresentative samples (e.g., bankers), making it difficult to rule out the possibility that the observed null findings in Study 4 simply reflect insufficient variation in wealth among the participants involved. Despite these and potential other limitations, such as the fact that different experimental procedures were used to assess self-serving dishonesty across countries, the data from Abeler et al. (2019) are arguably the strongest and most comprehensive data currently available for the purpose of exploring the link between poverty as a form of resource scarcity and self-serving dishonesty on a global scale. That being said, future research might aim to obtain even larger and more comprehensive datasets that make it possible to explore the link between poverty as a form of resource scarcity and self-serving dishonesty both within and across countries.

Finally, it is important to note that while the participants in Study 5 were invited based on a quota-representative sample, they only represent a very small and specific part of the world's population overall, making it possible that other groups of people hold very different beliefs about the link between poverty as a form of resource scarcity and self-serving dishonesty. To explore this possibility, future research might aim to test the beliefs people hold about the link between poverty as a form of resource scarcity and self-serving dishonesty across other groups.

Conclusion

Building on previous research showing mixed findings regarding the relation between resource scarcity and self-serving dishonesty, the present investigation provides consistent and more comprehensive evidence that being in a state of resource scarcity does not influence people's inclination to engage in self-serving dishonesty, but that most people wrongly believe so. Together, these findings expand the burgeoning literature on the link between resource

scarcity (in the form of poverty) and unethical behavior (and self-serving dishonesty in particular) and further provide insights into the beliefs people hold about this link.

References

Abbink, K., & Sadrieh, A. (2009). The pleasure of being nasty. *Economics Letters*, *105*(3), 306–308. https://doi.org/10.1016/j.econlet.2009.08.024

Abeler, J., Nosenzo, D., & Raymond, C. (2019). Preferences for truth-telling. *Econometrica*, *87*(4), 1115–1153. https://doi.org/10.3982/ECTA14673

Agneman, G., Falco, P., Selejio, O., & Joel, E. (2020). Does scarcity reduce cooperation? Experimental evidence from rural Tanzania. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3724369

Aksoy, B., & Palma, M. A. (2019). The effects of scarcity on cheating and in-group favoritism. *Journal of Economic Behavior & Organization*, *165*, 100–117. https://doi.org/10.1016/j.jebo.2019.06.024

Allingham, M. G., & Sandmo, A. (1972). Income tax evasion: A theoretical analysis. *Journal of Public Economics*, *1*(3–4), 323–338. https://doi.org/10.1016/0047-2727(72)90010-2

Arslan, R. C., Walther, M. P., & Tata, C. S. (2020). formr: A study framework allowing for automated feedback generation and complex longitudinal experience-sampling studies using R. *Behavior Research Methods*, *52*(1), 376–387. https://doi.org/10.3758/s13428-019-01236-y

Ashton, M. C., & Lee, K. (2007). Empirical, theoretical, and practical advantages of the HEXACO model of personality structure. *Personality and Social Psychology Review*, *11*(2), 150–166. https://doi.org/10.1177/1088868306294907

Bartoš, V. (2021). Seasonal scarcity and sharing norms. *Journal of Economic Behavior & Organization*, *185*, 303–316. https://doi.org/10.1016/j.jebo.2021.02.019

Becker, G. S. (1968). Crime and punishment: An economic approach. *Journal of Political Economy*, *76*(2), 169–217. https://doi.org/10.1086/259394

Bickel, W. K., Wilson, A. G., Chen, C., Koffarnus, M. N., Franck, C. T., & Roma, P. G. (2016). Stuck in time: Negative income shock constricts the temporal window of valuation spanning the future and the past. *PLOS ONE*, *11*(9), Article e0163051. https://doi.org/10.1371/journal.pone.0163051

Bjerk, D. (2007). Measuring the relationship between youth criminal participation and household economic resources. *Journal of Quantitative Criminology*, *23*(1), 23–39. https://doi.org/10.1007/s10940-006-9017-8

Boonmanunt, S., Kajackaite, A., & Meier, S. (2020). Does poverty negate the impact of social norms on cheating? *Games and Economic Behavior*, *124*, 569–578. https://doi.org/10.1016/j.geb.2020.09.009

Braithwaite, A., Dasandi, N., & Hudson, D. (2016). Does poverty cause conflict? Isolating the causal origins of the conflict trap. *Conflict Management and Peace Science*, *33*(1), 45–66. https://doi.org/10.1177/0738894214559673

Bullock, H. E., Williams, W. R., & Limbert, W. M. (2003). Predicting support for welfare policies: The impact of attributions and beliefs about inequality. *Journal of Poverty*, *7*(3), 35–56. https://doi.org/10.1300/J134v07n03_03

Carvalho, L. S., Meier, S., & Wang, S. W. (2016). Poverty and economic decision-making: Evidence from changes in financial resources at payday. *American Economic Review*, *106*(2), 260–284. https://doi.org/10.1257/aer.20140481

Coleman-Jensen, A., Rabbitt, M. P., Gregory, C. A., & Singh, A. (2020). *Household Food Security in the United States in 2019* (Agricultural Economic Reports, Issue 305691). United States Department of Agriculture, Economic Research Service. https://doi.org/10.22004/ag.econ.305691

Cozzarelli, C., Wilkinson, A. V., & Tagler, M. J. (2001). Attitudes toward the poor and attributions for poverty. *Journal of Social Issues*, *57*(2), 207–227. https://doi.org/10.1111/0022-4537.00209

Dai, Z., Galeotti, F., & Villeval, M. C. (2018). Cheating in the lab predicts fraud in the field: An experiment in public transportation. *Management Science*, *64*(3), 1081–1100. https://doi.org/10.1287/mnsc.2016.2616

Dalton, P. S., Nhung, N., & Rüschenpöhler, J. (2020). Worries of the poor: The impact of financial burden on the risk attitudes of micro-entrepreneurs. *Journal of Economic Psychology*, *79*, Article 102198. https://doi.org/10.1016/j.joep.2019.102198

de Bruijn, E.-J., & Antonides, G. (2020). Determinants of financial worry and rumination. *Journal of Economic Psychology*, *76*, Article 102233. https://doi.org/10.1016/j.joep.2019.102233

de Bruijn, E.-J., & Antonides, G. (2022). Poverty and economic decision making: A review of scarcity theory. *Theory and Decision*, *92*(1), 5–37. https://doi.org/10.1007/s11238-021-09802-7

de Vries, R. E. (2013). The 24-item Brief HEXACO Inventory (BHI). *Journal of Research in Personality*, *47*(6), 871–880. https://doi.org/10.1016/j.jrp.2013.09.003

Dohmen, T., Falk, A., Huffman, D., Sunde, U., Schupp, J., & Wagner, G. G. (2011). Individual risk attitudes: Measurement, determinants, and behavioral consequences. *Journal of the European Economic Association*, *9*(3), 522–550. https://doi.org/10.1111/j.1542-4774.2011.01015.x

Duckworth, A. L., & Kern, M. L. (2011). A meta-analysis of the convergent validity of self-control measures. *Journal of Research in Personality*, *45*(3), 259–268. https://doi.org/10.1016/j.jrp.2011.02.004

Dufwenberg, M., & Dufwenberg, M. A. (2018). Lies in disguise—A theoretical analysis of cheating. *Journal of Economic Theory*, *175*, 248–264. https://doi.org/10.1016/j.jet.2018.01.013

Elbæk, C. T., Mitkidis, P., Aarøe, L., & Otterbring, T. (2022). Honestly hungry: Acute hunger does not increase unethical economic behaviour. *Journal of Experimental Social Psychology*, *101*, Article 104312. https://doi.org/10.1016/j.jesp.2022.104312

Erdfelder, E., Auer, T.-S., Hilbig, B. E., Aßfalg, A., Moshagen, M., & Nadarevic, L. (2009). Multinomial processing tree models: A review of the literature. *Journal of Psychology*, *217*(3), 108–124. https://doi.org/10.1027/0044-3409.217.3.108

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, *39*(2), 175–191. https://doi.org/10.3758/BF03193146

Fehr, D., Fink, G., & Jack, K. (2019). *Poverty, seasonal scarcity and exchange asymmetries*. National Bureau of Economic Research.

Fischbacher, U., & Föllmi-Heusi, F. (2013). Lies in disguise—An experimental study on cheating. *Journal of the European Economic Association*, *11*(3), 525–547. https://doi.org/10.1111/jeea.12014

Folke, O., & Rickne, J. (2016). The glass ceiling in politics. *Comparative Political Studies*, *49*(5), 567–599. https://doi.org/10.1177/0010414015621073

Fosgaard, T. R., Hansen, L. G., & Piovesan, M. (2013). Separating will from grace: An experiment on conformity and awareness in cheating. *Journal of Economic Behavior & Organization*, *93*, 279–284. https://doi.org/10.1016/j.jebo.2013.03.027

Fox, C. R., Erner, C., & Walters, D. J. (2016). Decision under risk: From the field to the laboratory and back. In G. Keren & G. Wu (Eds.), *The Wiley Blackwell handbook of judgment and decision making* (Vol. 1, pp. 43–88). Wiley Blackwell.

Gächter, S., & Schulz, J. F. (2016). Intrinsic honesty and the prevalence of rule violations across societies. *Nature*, *531*(7595), 496–499. https://doi.org/10.1038/nature17160

Gee, J., & Button, M. (2019). *The financial cost of fraud 2019: The latest data from around the world*. University of Portsmouth.

Gerlach, P., Teodorescu, K., & Hertwig, R. (2019). The truth about lies: A meta-analysis on dishonest behavior. *Psychological Bulletin*, *145*(1), 1–44. https://doi.org/10.1037/bul0000174

Gneezy, U. (2005). Deception: The role of consequences. *American Economic Review*, *95*(1), 384–394. https://doi.org/10.1257/0002828053828662

Gneezy, U., & Kajackaite, A. (2020). Externalities, stakes, and lying. *Journal of Economic Behavior & Organization*, *178*, 629–643. https://doi.org/10.1016/j.jebo.2020.08.020

Gneezy, U., Kajackaite, A., & Sobel, J. (2018). Lying aversion and the size of the lie. *American Economic Review*, *108*(2), 419–453. https://doi.org/10.1257/aer.20161553

González-Arango, F., Corredor, J., López-Ardila, M. A., Contreras-González, M. C., Herrera-Santofimio, J., & González, J. J. (2022). The duality of poverty: A replication of Mani et al. (2013) in Colombia. *Theory and Decision*, *92*(1), 39–73. https://doi.org/10.1007/s11238-021-09836-x

Guiso, L., & Paiella, M. (2008). Risk aversion, wealth, and background risk. *Journal of the European Economic Association*, *6*(6), 1109–1150. https://doi.org/10.1162/JEEA.2008.6.6.1109

Gundersen, C., Hake, M., Dewey, A., & Engelhard, E. (2021). Food insecurity during COVID-19. *Applied Economic Perspectives and Policy*, *43*(1), 153–161. https://doi.org/10.1002/aepp.13100

Gundlach, E., & Paldam, M. (2009). The transition of corruption: From poverty to honesty. *Economics Letters*, *103*(3), 146–148. https://doi.org/10.1016/j.econlet.2009.03.002

Gupta, S., Davoodi, H., & Alonso-Terme, R. (2002). Does corruption affect income inequality and poverty? *Economics of Governance*, *3*(1), 23–45. https://doi.org/10.1007/s101010100039

Hanna, R., & Wang, S.-Y. (2017). Dishonesty and selection into public service: Evidence from India. *American Economic Journal: Economic Policy*, *9*(3), 262–290. https://doi.org/10.1257/pol.20150029

Haushofer, J., & Fehr, E. (2014). On the psychology of poverty. *Science*, *344*(6186), 862–867. https://doi.org/10.1126/science.1232491

Häusser, J. A., Stahlecker, C., Mojzisch, A., Leder, J., Van Lange, P. A. M., & Faber, N. S. (2019). Acute hunger does not always undermine prosociality. *Nature Communications*, *10*(1), 1663. https://doi.org/10.1038/s41467-019-12579-7

Heck, D. W., Arnold, N. R., & Arnold, D. (2018). TreeBUGS: An R package for hierarchical multinomial-processing-tree modeling. *Behavior Research Methods*, *50*(1), 264–284. https://doi.org/10.3758/s13428-017-0869-7

Heck, D. W., Boehm, U., Böing-Messing, F., Bürkner, P.-C., Derks, K., Dienes, Z., Fu, Q., Gu, X., Karimova, D., Kiers, H. A. L., Klugkist, I., Kuiper, R. M., Lee, M. D., Leenders, R., Leplaa, H. J., Linde, M., Ly, A., Meijerink-Bosman, M., Moerbeek, M., … Hoijtink, H. (2022). A review of applications of the Bayes factor in psychological research. *Psychological Methods*. https://doi.org/10.1037/met0000454

Heck, D. W., & Moshagen, M. (2018). RRreg: An R package for correlation and regression analyses of randomized response data. *Journal of Statistical Software*, *85*(2), 1–29. https://doi.org/10.18637/jss.v085.i02

Heck, D. W., Thielmann, I., Moshagen, M., & Hilbig, B. E. (2018). Who lies? A large-scale reanalysis linking basic personality traits to unethical decision making. *Judgment and Decision Making*, *13*(4), 356–371. https://doi.org/10.1017/S1930297500009232

Hilbig, B. E., & Thielmann, I. (2017). Does everyone have a price? On the role of payoff magnitude for ethical decision making. *Cognition*, *163*, 15–25. https://doi.org/10.1016/j.cognition.2017.02.011

Hsieh, C.-C., & Pugh, M. D. (1993). Poverty, income inequality, and violent crime: A meta-analysis of recent aggregate data studies. *Criminal Justice Review*, *18*(2), 182–202. https://doi.org/10.1177/073401689301800203

Huijsmans, I., Ma, I., Micheli, L., Civai, C., Stallen, M., & Sanfey, G. A. (2019). A scarcity mindset alters neural processing underlying consumer decision making. *Proceedings of the National Academy of Sciences of the United States of America*, *116*(24), 11699–11704. https://doi.org/10.1073/pnas.1818572116

Hunt, M. O., & Bullock, H. E. (2016). Ideologies and beliefs about poverty. In D. Brady & L. M. Burton (Eds.), *The Oxford handbook of the social science of poverty* (pp. 93–116). Oxford University Press USA—OSO.

Jacobsen, C., Fosgaard, T. R., & Pascual-Ezama, D. (2018). Why do we lie? A practical guide to the dishonesty literature. *Journal of Economic Surveys*, *32*(2), 357–387. https://doi.org/10.1111/joes.12204

Jakobsen, T. G., De Soysa, I., & Jakobsen, J. (2013). Why do poor countries suffer costly conflict? Unpacking per capita income and the onset of civil war. *Conflict Management and Peace Science*, *30*(2), 140–160. https://doi.org/10.1177/0738894212473923

Johar, G., Meng, R., & Wilcox, K.. (2015). Thinking about financial deprivation: Rumination and decision making among the poor. In K. Diehl , C. Yoon, & M. N. Duluth (Eds.), *Advances in Consumer Research* (Vol. 43, pp. 208–211). Association for Consumer Research.

Kajackaite, A., & Gneezy, U. (2017). Incentives and cheating. *Games and Economic Behavior*, *102*, 433–444. https://doi.org/10.1016/j.geb.2017.01.015

Köbis, N. C., Verschuere, B., Bereby-Meyer, Y., Rand, D., & Shalvi, S. (2019). Intuitive honesty versus dishonesty: Meta-analytic evidence. *Perspectives on Psychological Science*, *14*(5), 778–796. https://doi.org/10.1177/1745691619851778

Kouchaki, M., & Smith, I. H. (2014). The morning morality effect. *Psychological Science*, *25*(1), 95–102. https://doi.org/10.1177/0956797613498099

Kraay, A., & McKenzie, D. (2014). Do poverty traps exist? Assessing the evidence. *Journal of Economic Perspectives*, *28*(3), 127–148. https://doi.org/10.1257/jep.28.3.127

Kröll, M., & Rustagi, D. (2017). Reputation, honesty, and cheating in informal milk markets in India. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2982365

Laske, K., Saccardo, S., & Gneezy, U. (2018). Do fines deter unethical behavior? The effect of systematically varying the size and probability of punishment. *SSRN Electronic Journal*. https://www.ssrn.com/abstract=3157387

Lawrance, E. C. (1991). Poverty and the rate of time preference: Evidence from panel data. *Journal of Political Economy*, *99*(1), 54–77. https://doi.org/10.1086/261740

Lee, M. D., & Wagenmakers, E.-J. (2014). *Bayesian cognitive modeling: A practical course*. Cambridge University Press.

Lichter, D. T., & Crowley, M. L. (2002). Poverty in America: Beyond welfare reform. *Population Bulletin*, *57*(2), https://www.prb.org/resources/poverty-in-america-beyond-welfare-reform/

Lilleholt, L., Schild, C., & Zettler, I. (2020). Not all computerized cheating tasks are equal: A comparison of computerized and non-computerized versions of a cheating task. *Journal of Economic Psychology*, *78*, Article 102270. https://doi.org/10.1016/j.joep.2020.102270

Lippa, R. A. (2007). The preferred traits of mates in a cross-national study of heterosexual and homosexual men and women: An examination of biological and cultural influences. *Archives of Sexual Behavior*, *36*(2), 193–208. https://doi.org/10.1007/s10508-006-9151-2

Liu, J., Ludeke, S., Haubrich, J., Gondan-Rochon, M., & Zettler, I. (2018). Similar to and/or better than oneself? Singles' ideal partner personality descriptions. *European Journal of Personality*, *32*(4), 443–458. https://doi.org/10.1002/per.2159

Lyness, K. S., & Grotto, A. R. (2018). Women and leadership in the United States: Are we closing the gender gap? *Annual Review of Organizational Psychology and Organizational Behavior*, *5*(1), 227–265. https://doi.org/10.1146/annurev-orgpsych-032117-104739

Mani, A., Mullainathan, S., Shafir, E., & Zhao, J. (2013). Poverty impedes cognitive function. *Science*, *341*(6149), 976–980. https://doi.org/10.1126/science.1238041

Mazar, N., Amir, O., & Ariely, D. (2008). The dishonesty of honest people: A theory of self-concept maintenance. *Journal of Marketing Research*, *45*(6), 633–644. https://doi.org/10.1509/jmkr.45.6.633

Mead, N. L., Baumeister, R. F., Gino, F., Schweitzer, M. E., & Ariely, D. (2009). Too tired to tell the truth: Self-control resource depletion and dishonesty. *Journal of Experimental Social Psychology*, *45*(3), 594–597. https://doi.org/10.1016/j.jesp.2009.02.004

Merriam-Webster. (2021). *Merriam-Webster dictionary*.

Moshagen, M. (2010). Multitree: A computer program for the analysis of multinomial processing tree models. *Behavior Research Methods*, *42*(1), 42–54. https://doi.org/10.3758/BRM.42.1.42

Moshagen, M., & Hilbig, B. E. (2017). The statistical analysis of cheating paradigms. *Behavior Research Methods*, *49*(2), 724–732. https://doi.org/10.3758/s13428-016-0729-x

Moshagen, M., Hilbig, B. E., & Zettler, I. (2018). The dark core of personality. *Psychological Review*, *125*(5), 656–688. https://doi.org/10.1037/rev0000111

Mullainathan, S., & Shafir, E. (2013). *Scarcity: Why having too little means so much*. Macmillan.

Munyon, T. P., Carnes, A. M., Lyons, L. M., & Zettler, I. (2020). All about the money? Exploring antecedents and consequences for a brief measure of perceived financial security. *Journal of Occupational Health Psychology*, *25*(3), 159–175. https://doi.org/10.1037/ocp0000162

O'Donnell, M., Dev, A. S., Antonoplis, S., Baum, S. M., Benedetti, A. H., Brown, N. D., Carrillo, B., Choi, A. L., Connor, P., Donnelly, K., Ellwood-Lowe, M. E., Foushee, R., Jansen, R., Jarvis, S. N., Lundell-Creagh, R., Ocampo, J. M., Okafor, G. N., Azad, Z. R., Rosenblum, M., … Nelson, L. D. (2021). Empirical audit and review and an assessment of evidentiary value in research on the psychological consequences of scarcity. *Proceedings of the National Academy of Sciences of the United States of America*, *118*(44), Article e2103313118. https://doi.org/10.1073/pnas.2103313118

Ong, Q., Theseira, W., & Ng, I. Y. H. (2019). Reducing debt improves psychological functioning and changes decision-making in the poor. *Proceedings of the National Academy of Sciences of the United States of America*, *116*(15), 7244–7249. https://doi.org/10.1073/pnas.1810901116

Ortiz-Ospina, E., & Roser, M. (2013). *Happiness and life satisfaction*. Our World in Data. Retrieved March 27, 2022, from https://ourworldindata.org/happiness-and-life-satisfaction

Ortiz-Ospina, E., & Roser, M. (2018). *Economic inequality by gender*. Our World in Data. Retrieved July 2, 2021, from https://ourworldindata.org/economic-inequality-by-gender

Paldam, M. (2002). The cross-country pattern of corruption: Economics, culture and the seesaw dynamics. *European Journal of Political Economy*, *18*(2), 215–240. https://doi.org/10.1016/S0176-2680(02)00078-2

Pare, P.-P., & Felson, R. (2014). Income inequality, poverty and crime across nations. *The British Journal of Sociology*, *65*(3), 434–458. https://doi.org/10.1111/1468-4446.12083

Patterson, E. B. (1991). Poverty, income inequality, and community crime rates. *Criminology*, *29*(4), 755–776. https://doi.org/10.1111/j.1745-9125.1991.tb01087.x

Prediger, S., Vollan, B., & Herrmann, B. (2014). Resource scarcity and antisocial behavior. *Journal of Public Economics*, *119*, 1–9. https://doi.org/10.1016/j.jpubeco.2014.07.007

Raven, J. (2000). The Raven's progressive matrices: Change and stability over culture and time. *Cognitive Psychology*, *41*(1), 1–48. https://doi.org/10.1006/cogp.1999.0735

Ren, M., Zou, S., Zhu, S., Shi, M., Li, W., & Ding, D. (2022). Do the poor envy others more? The effects of scarcity mindset on envy. *Current Psychology*. https://doi.org/10.1007/s12144-022-03873-7

Rosenbaum, S. M., Billinger, S., & Stieglitz, N. (2014). Let's be honest: A review of experimental evidence of honesty and truth-telling. *Journal of Economic Psychology*, *45*, 181–196. https://doi.org/10.1016/j.joep.2014.10.002

Roser, M., & Ortiz-Ospina, E. (2013). *Global extreme poverty*. Our World in Data. Retrieved May 20, 2022, from https://ourworldindata.org/extreme-poverty

Roser, M., & Ritchie, H. (2019). *Hunger and undernourishment*. Our World in Data. Retrieved November 5, 2021, from https://ourworldindata.org/hunger-and-undernourishment

Roux, C., Goldsmith, K., & Bonezzi, A. (2015). On the psychology of scarcity: When reminders of resource scarcity promote selfish (and generous) behavior. *Journal of Consumer Research*, *42*(4), 615–631. https://doi.org/10.1093/jcr/ucv048

Sainz, M., Martínez, R., Sutton, R. M., Rodríguez-Bailón, R., & Moya, M. (2020). Less human, more to blame: Animalizing poor people increases blame and decreases support for wealth redistribution. *Group Processes & Intergroup Relations*, *23*(4), 546–559. https://doi.org/10.1177/1368430219841135

Schild, C., Heck, D. W., Ścigała, K. A., & Zettler, I. (2019). Revisiting REVISE: (Re)Testing unique and combined effects of REminding, VIsibility, and SElf-engagement manipulations on cheating behavior. *Journal of Economic Psychology*, *75*, Article 102161. https://doi.org/10.1016/j.joep.2019.04.001

Schild, C., Lilleholt, L., & Zettler, I. (2021). Behavior in cheating paradigms is linked to overall approval rates of crowdworkers. *Journal of Behavioral Decision Making*, *34*(2), 157–166. https://doi.org/10.1002/bdm.2195

Schneebaum, A., Rehm, M., Mader, K., & Hollan, K. (2018). The gender wealth gap across European countries. *Review of Income and Wealth*, *64*(2), 295–331. https://doi.org/10.1111/roiw.12281

Schofield, H., & Venkataramani, A. S. (2021). Poverty-related bandwidth constraints reduce the value of consumption. *Proceedings of the National Academy of Sciences of the United States of America*, *118*(35), Article e2102794118. https://doi.org/10.1073/pnas.2102794118

Shah, A. K., Mullainathan, S., & Shafir, E. (2012). Some consequences of having too little. *Science*, *338*(6107), 682–685. https://doi.org/10.1126/science.1222426

Shah, A. K., Mullainathan, S., & Shafir, E. (2019). An exercise in self-replication: Replicating Shah, Mullainathan, and Shafir (2012). *Journal of Economic Psychology*, *75*, Article 102127. https://doi.org/10.1016/j.joep.2018.12.001

Shah, A. K., Shafir, E., & Mullainathan, S. (2015). Scarcity frames value. *Psychological Science*, *26*(4), 402–412. https://doi.org/10.1177/0956797614563958

Shah, A. K., Zhao, J., Mullainathan, S., & Shafir, E. (2018). Money in the mental lives of the poor. *Social Cognition*, *36*(1), 4–19. https://doi.org/10.1521/soco.2018.36.1.4

Shah, A. K., Zhao, J., Shafir, E., & Mullainathan, S. (2022). *A scarcity literature mischaracterized with an empirical audit*. PsyArXiv. https://doi.org/10.31234/osf.io/gphcz

Sharma, E., Mazar, N., Alter, A. L., & Ariely, D. (2014). Financial deprivation selectively shifts moral standards and compromises moral decisions. *Organizational Behavior and Human Decision Processes*, *123*(2), 90–100. https://doi.org/10.1016/j.obhdp.2013.09.001

Siddiqui, F., Salam, R. A., Lassi, Z. S., & Das, J. K. (2020). The intertwined relationship between malnutrition and poverty. *Frontiers in Public Health*, *8*, Article 453. https://doi.org/10.3389/fpubh.2020.00453

Sierminska, E. M., Frick, J. R., & Grabka, M. M. (2010). Examining the gender wealth gap. *Oxford Economic Papers*, *62*(4), 669–690. https://doi.org/10.1093/oep/gpq007

Singmann, H., & Kellen, D. (2013). MPTinr: Analysis of multinomial processing tree models in R. *Behavior Research Methods*, *45*(2), 560–575. https://doi.org/10.3758/s13428-012-0259-0

Spears, D. (2011). Economic decision-making in poverty depletes behavioral control. *The BE Journal of Economic Analysis & Policy*, *11*(1), 1–44. https://doi.org/10.2202/1935-1682.2973

Stroop, J. R. (1935). Studies of interference in serial verbal reactions. *Journal of Experimental Psychology*, *18*(6), 643–662. https://doi.org/10.1037/h0054651

Tagler, M. J., & Cozzarelli, C. (2013). Feelings toward the poor and beliefs about the causes of poverty: The role of affective-cognitive consistency in

help-giving. *The Journal of Psychology*, *147*(6), 517–539. https://doi.org/10.1080/00223980.2012.718721

Tanaka, T., Camerer, C. F., & Nguyen, Q. (2010). Risk and time preferences: Linking experimental and household survey data from Vietnam. *American Economic Review*, *100*(1), 557–571. https://doi.org/10.1257/aer.100.1.557

Thielmann, I., & Hilbig, B. E. (2018). Daring dishonesty: On the role of sanctions for (un)ethical behavior. *Journal of Experimental Social Psychology*, *79*, 71–77. https://doi.org/10.1016/j.jesp.2018.06.009

Thielmann, I., Hilbig, B. E., & Zettler, I. (2020). Seeing me, seeing you: Testing competing accounts of assumed similarity in personality judgments. *Journal of Personality and Social Psychology*, *118*(1), 172–198. https://doi.org/10.1037/pspp0000222

Tollefsen, A. F. (2020). Experienced poverty and local conflict violence. *Conflict Management and Peace Science*, *37*(3), 323–349. https://doi.org/10.1177/0738894217741618

Treisman, D. (2000). The causes of corruption: A cross-national study. *Journal of Public Economics*, *76*(3), 399–457. https://doi.org/10.1016/S0047-2727(99)00092-4

Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology*, *5*(2), 207–232. https://doi.org/10.1016/0010-0285(73)90033-9

United Nations. (2016, October 21). *"Tax evasion industry shocking" says UN expert*. *UN News*.

van Doorn, J., Ly, A., Marsman, M., & Wagenmakers, E.-J. (2020). Bayesian rank-based hypothesis testing for the rank sum test, the signed rank test, and Spearman's ρ. *Journal of Applied Statistics*, *47*(16), 2984–3006. https://doi.org/10.1080/02664763.2019.1709053

von Neumann, J., & Morgenstern, O. (1947). *Theory of games and economic behavior* (2nd ed.). Princeton University Press.

Wagenmakers, E.-J., Verhagen, J., & Ly, A. (2016). How to quantify the evidence for the absence of a correlation. *Behavior Research Methods*, *48*(2), 413–426. https://doi.org/10.3758/s13428-015-0593-0

Wagstaff, A. (2002). Poverty and health sector inequalities. *Bulletin of the World Health Organization*, *80*(2), 97–105. https://apps.who.int/iris/handle/10665/268713

Williams, E. F., Pizarro, D., Ariely, D., & Weinberg, J. D. (2016). The Valjean effect: Visceral states and cheating. *Emotion*, *16*(6), 897–902. https://doi.org/10.1037/emo0000158

World Bank. (2020). *Poverty and shared prosperity 2020: Reversals of fortune*. World Bank. https://doi.org/10.1596/978-1-4648-1602-4

World Economic Forum. (2021). *global Gender Gap Report 2021*. http://www3.weforum.org/docs/WEF_GGGR_2021.pdf

Yaniv, G., & Siniver, E. (2016). The (honest) truth about rational dishonesty. *Journal of Economic Psychology*, *53*, 131–140. https://doi.org/10.1016/j.joep.2016.01.002

Zettler, I., Lilleholt, L., Böhm, R., & Gondan, M. (2021). Comparing responses in repeated cross-sectional and panel studies: Results across eight weeks during the first COVID-19 lockdown in Denmark. *Psychological Assessment*, *33*(8), 691–704. https://doi.org/10.1037/pas0001048

Zettler, I., Thielmann, I., Hilbig, B. E., & Moshagen, M. (2020). The nomological net of the HEXACO model of personality: A large-scale meta-analytic investigation. *Perspectives on Psychological Science*, *15*(3), 723–760. https://doi.org/10.1177/1745691619895036

Received October 29, 2021
Revision received November 22, 2022
Accepted November 29, 2022 ■