Thinking About Scarcity

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Recent research on scarcity has focused on how it shifts cognitive capacities (i.e., limiting bandwidth, constraining attention). Here, we describe how scarcity shifts the content of cognition. We show that scarcity changes semantic networks, makes it more difficult to suppress certain thoughts, and naturally draws attention to the scarce resource.

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Scarcity, Poverty, and their Implications for Consumers’ Cognitions, Judgment and Behavior

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Paper #2: When Those Who Have the Least Spend the Most: Understanding the Relationship Between Resource Scarcity, Socioeconomic Status and Materialism
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Paper #4: The Effectiveness of Reciprocity Appeals in Economic Booms and Busts
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SESSION OVERVIEW

Resource scarcity is a pervasive facet of human life. Despite increasing interest in this research topic, many open questions remain regarding the consequences of scarcity on consumers’ cognitions and behavior. For example, how are consumers’ cognitive processes shaped by the experience of resource scarcity? Moreover, the influence scarcity exerts on materialistic tendencies and reciprocal relationships still remain vastly unexplored. This session addresses this gap by providing new insights into how different cues of scarcity—both naturally occurring and experimentally primed— influence consumers’ cognitions and behaviors.

The first paper, by Shah, Shafir and Mullainathan, investigates how living in a chronic state of scarcity (e.g., poverty) impacts the content of consumers’ cognitions. The authors suggest that when faced with chronic resource scarcity, the resource that is scarce (e.g., money) becomes the main focus of people’s cognitions. In support of this, the authors demonstrate that lower-income consumers are more likely to falsely recall hearing the word “money,” have more difficulty suppressing thoughts related to costs, and are faster to identify stimuli that have been associated with money than higher-income consumers.

Having demonstrated that scarcity shapes consumers’ cognitions, interesting questions arise regarding how these thoughts affect their judgment and behavior, such as their materialistic tendencies. The second paper, by Roux, Goldsmith, Blair and Kim, addresses this by examining whether consumers from lower socioeconomic (SES) backgrounds are more prone to materialism. Two experiments reveal that lower-SES consumers express more materialistic tendencies only when confronted with reminders of resource scarcity. The authors provide two additional experiments demonstrating evidence of the underlying psychological mechanism.

Resource scarcity-related cognitions may also have consequential implications for how consumers choose to behave in reciprocal relationships with others, which the final two papers address. In the third paper, White, Morales and Kenrick propose that, under resource-scarce conditions (e.g., economic recession), consumers increasingly engage in and rely upon reciprocal relationships, because such relationships confer adaptive advantages (e.g., decrease variability in resource acquisition). They provide support for this prediction in four experiments in addition to revealing important boundary conditions (e.g., the trustworthiness of the reciprocal partner).

Finally, the fourth paper, by Durante, Griskevicius, Redden and White, draws from evolutionary biology to study the reciprocal nature of parent-child relationships. The authors suggest that because male children have a higher likelihood of reproductive failure (i.e., producing zero offspring) than female children, parents will direct their financial resources differentially toward female children (and away from male children) when financial resources are scarce, in an effort to gain the best reproductive return on parental investment. Five experiments provide support for the predicted effect in addition to revealing theoretically relevant moderators (e.g., if the child has reached reproductive age).

Taken together, this session offers a coherent set of innovative perspectives that enhance the breadth of our knowledge in the growing area of research on the implications of resource scarcity on judgment and decision making. We expect this session to appeal to a broad audience, including researchers interested in resource scarcity, poverty, cognitive processing, materialism, reciprocity, and evolutionary psychology.

Thinking About Scarcity

EXTENDED ABSTRACT

Recent research has revealed how conditions of scarcity—being short on money, time, or other resources—can directly influence cognition and behavior. Notably, this work has found that scarcity often reduces mental bandwidth (Mani, Mullainathan, Shafir, and Zhao, 2013; Spears, 2011), increases stress (Chemini, De Last, and Haushofer, 2013), constrains attention, and hurts decision making (Shah, Mullainathan, and Shafir, 2012). Meanwhile, other research has considered the ways that the scarcity mindset improves decision making (Shah, Shafir, Mullainathan, 2014; Spiller, 2011). That is, existing work focuses on how scarcity increases or decreases our cognitive capacities. But relatively little work has been done to study the broader texture of everyday thinking under conditions of scarcity. How does scarcity qualitatively alter the landscape of cognition?

In this line of research, we suggest that thoughts about a scarce resource tint even the most mundane activities. As a result, the scarce resource becomes top-of-mind. Scarcity reshapes how we organize concepts, it makes certain thoughts difficult to suppress, and it naturally grabs our attention. We explore these hypotheses with quasi-experimental designs where we examine how income variation (i.e., monetary scarcity and abundance) interacts with other factors to reshape cognition.

In Study 1a (N=125), we find that scarcity can make apparently unrelated items seem much more related simply because they all
place a demand on a limited budget. For example, things such as “groceries,” “utilities,” “phones,” and “bills” may not seem like they share strong semantic connections. But we expected that lower-income individuals would see a common link between these concepts: They all require money.

To test this, we adapted a classic paradigm that assesses the semantic relatedness of concepts (Roediger and McDermott, 1995). In this paradigm, participants are shown a list of words (e.g., uncle, woman, doctor, beard) which are strongly related to a target word (e.g., man). The target word, however, is not included in the list of studied words. Participants are then asked to recall as many of the words as they can. A strikingly high number of people usually recall hearing the word “man” even though they had not. This happens because the studied words are all semantically related to the target, making it highly accessible.

In our study, participants studied a control word list (such as words related to “man”) and scarcity-related word list (such as the list described above for “money”). For the first list, we found that lower-income and higher-income individuals had equal false recall rates for the target word (“man”: 18% vs. 16%). However, in the second list, lower-income individuals were significantly more likely to recall hearing the target word (“money”: 15% vs. 2%). In Study 1b, we replicate these results on a larger sample (N = 478). These results suggest that scarcity adds a tinge to even the most mundane thoughts or objects. Items that place a demand on a budget will start to feel more related when that budget is limited.

Because scarcity tints so many experiences, it might be difficult to suppress recurring thoughts of limited resources. That is, scarcity might capture the mind even as it tries to wander elsewhere. In Study 2 (N = 437), we adapted Wegner et al.’s (1987) “white bear” study. We asked participants to let their mind wander freely for three minutes. Some participants were asked to avoid thinking about how much they drive each month. Other participants were asked to avoid thinking about how much their monthly driving costs them. We recorded the number of times that participants’ thoughts strayed to the topics that they were supposed to be suppressing. We found that lower-income individuals had a more difficult time suppressing thoughts about the cost of driving, whereas higher-income individuals did not.

If scarcity is top-of-mind and difficult to suppress, then it seems natural that we will automatically orient our attention to the limited resource. In Study 3 (N = 94), we tested this hypothesis using a dot-probe task. Each trial of the task began with two words presented on either side of a fixation cross. On each trial, one of the words was money-related (e.g., “cash”) and the other word was not money-related, but was matched for length and pronounceability (e.g., “cane”; Shapiro & Burchell, 2012). The words then disappeared and a dot appeared where one of the words had been. Participants had to quickly indicate which side of the screen the dot appeared. We found that lower-income individuals were faster to identify the dot when it appeared on the same side as the money-related word, suggesting that monetary scarcity naturally orient attention toward money-related concepts.

Together, these results begin to paint a broader picture of how scarcity affects cognition. Instead of focusing on how scarcity affects cognitive capacity, these studies delve into the ways that scarcity changes the content of cognition.

When Those Who Have the Least Spend the Most: Understanding the Relationship Between Resource Scarcity, Socioeconomic Status and Materialism

EXTENDED ABSTRACT

“Maybe someday I’ll be able to afford an iPhone like the person in front of me at the grocery store. The one paying with FOOD STAMPS!”

This remark was widely circulated on social media, generating long strings of indignant reactions regarding the inappropriateness of low-income consumers engaging in conspicuous consumption (Whitmer 2012). It illustrates the extent to which consumers can become upset, or even enraged, when they observe people who live in poverty spending their limited financial resources on unnecessary luxuries (Schechter 2011). However, to date, little academic research has directly examined if or when individuals of lower socioeconomic status (SES) might be prone to materialism.

In the current research, we argue that materialism among lower-SES consumers may represent an attempt to cope with resource scarcity. This proposition is based on the idea that by limiting one’s ability to interact effectively with the environment, resource scarcity undermines consumers’ perception of control. Building on past work showing that materialism helps consumers cope with uncertainty and self-doubt (Chang and Arkin 2002), we predict that consumers will likewise use materialism to cope with low perceived control stemming from resource scarcity. However, because lower-SES (vs. higher-SES) consumers already have limited means available, reminders of scarcity are likely to threaten perceived control to an even greater extent for these individuals. Consequently, we predict that the tendency for scarcity to engender materialism will be stronger for lower-SES (vs. higher-SES) consumers. Indeed, the idea that SES will moderate consumer response to scarcity is consistent with recent findings in the domain of evolutionary psychology, which has shown that SES moderates other scarcity responses such as impulsivity, self-control, and risk taking (Griskevicius et al. 2013). In sum, our theorizing suggests that materialism may not be a chronic tendency of lower-SES consumers. Rather, it may be a coping mechanism employed only when reminders of scarcity threaten their perception of control.

The goal of the first two studies is to demonstrate our proposed interaction between scarcity, SES and materialism. In study 1 (N=138), following Roux, Goldsmith and Bonezzi (2014), scarcity was primed by asking participants to list things they could not do without certain resources (e.g., water). Participants in the control condition were asked to list things that they could do with the same resources. Next, all participants completed the Envy sub-scale of Belk’s (1985) Materialism Scale. Finally, all participants completed a six-item subjective SES measure (Griskevicius et al. 2013), which is also used in all subsequent studies, along with other demographic questions. In line with our prediction, we found a significant interaction between the scarcity prime and SES (p<.05). Lower-SES participants became more materialistic, expressing greater envy of other people’s material possessions, when exposed to reminders of scarcity (vs. control; p=.02). Reminders of resource scarcity had no effect on higher-SES participants (p>.06). Further, no main effects emerged.

In study 2 (N=105) we examined another indicator of materialism, by testing how reminders of resource scarcity and SES affect one’s belief that happiness can be achieved through material possessions. Participants in the scarcity-prime condition were asked
to recall times when they felt resources were scarce, whereas those assigned to the control condition were asked to list activities they did in the past week (Roux et al. 2014). Next, all participants completed the Happiness sub-scale of Richins’ (2004) Material Values Scale. We again found a significant interaction between the scarcity prime and SES (p=.01). Specifically, lower-SES participants were more likely to indicate that happiness can be attained through material possessions after being exposed to reminders of scarcity (vs. control; p=.01), whereas reminders of resource scarcity had no effect on people from high-SES backgrounds (p>.3).

Having demonstrated support for our prediction that lower-SES consumers’ materialistic tendencies are moderated by their exposure to reminders of resource scarcity, we next conducted a series of studies to provide a deeper understanding of the psychological processes underlying these effects. Study 3 (N=71) examined if the effect of SES on one’s desire for control was moderated by whether or not reminders of resource scarcity were present. Participants first completed the scarcity manipulation used in study 1. Next, all participants completed a measure assessing their desire for control (Cutright 2012). In line with our predictions, results revealed a significant interaction between the scarcity prime and SES (p=.04). Lower-SES participants expressed a greater desire for control when exposed to reminders of scarcity (vs. control; p=.04), whereas reminders of scarcity had no effect on higher-SES participants (p>.4).

The final study used a different operationalization of perception of control, in order to provide convergence on our theory. Prior work has shown that being in a promotion focus tends to foster an illusion of control, or an overestimation of one’s control over an outcome (Langens 2007). Study 4 (N=115) thus tested whether the effect of SES on one’s regulatory orientation was moderated by whether or not reminders of resource scarcity were present. Participants first completed the scarcity manipulation task used in study 2. Next, participants’ regulatory orientation was assessed using the Regulatory Focus Questionnaire (Higgins et al. 2001). Results revealed a significant interaction between the scarcity prime and SES (p=.02). Lower-SES individuals became more promotion-focused when exposed to reminders of scarcity (vs. control, p=.03), whereas reminders of scarcity had no such effect on higher-SES individuals (p>.2). These findings were replicated in an additional study conducted on participants drawn from a different pool.

In summary, although media reports may lead one to presume lower-SES individuals chronically desire materialistic luxuries beyond their means, our research suggests that lower-SES consumers may only become more materialistic when faced with reminders of resource scarcity. Further, our findings suggest that this shift in materialism may occur because lower-SES consumers experience an increased desire to regain control and take action in the face of scarcity. Although further research is necessary to fully understand the boundaries of these effects, this research provides an important first step towards understanding the relationship between poverty, scarcity and materialism, and suggests important public policy implications.

**Spending on Girls in Economic Recessions**

**EXTENDED ABSTRACT**

Imagine you have two children – one boy and one girl. Which child would you favor? Deciding which child to favor is undoubtedly difficult. Yet favoring a child of one gender over the other is common practice in many cultures and across many species. We draw on theory in evolutionary biology to test the prediction that poor economic conditions should lead people to bias investment toward a daughter vs. a son.

We build on the idea that spending on children can be viewed as an investment (Becker 1991), but instead consider investment from an evolutionary perspective. A central prediction from an evolutionary model is that investment patterns in offspring should differ depending on the offspring’s reproductive value, which is the child’s ability to convert parental resources into reproductive success by having children of their own (Daly and Wilson 1988).

Theory in evolutionary biology suggests that parents should invest more in one gender over the other depending on whether resource availability is currently good or bad (Trivers and Willard 1973). The logic for this idea stems from mammalian sex differences in reproduction. Males and females are expected to produce the same number of offspring on average, but males and females have different reproductive variances. Females have lower variance than males (Clutton-Brock and Albon 1982; Leimar 1996). The maximum number of children a female can produce is smaller but most females produce a moderate number of offspring. By contrast, the maximum number of children that a male can produce is larger and primarily limited by the number of mates he can attract. A consequence of the sex difference in reproductive variance is that male children have been more likely than female children to produce zero offspring over evolutionary history.

Based on this logic, we propose that poor economic conditions should alter which gender provides the best reproductive return on parental investment. Poor economic conditions decrease the average number of offspring produced for both males and females. However, the sex difference in reproductive variance means that poor economic conditions will have a catastrophic consequence for many male offspring. But, most female offspring will continue to produce at least one child. Thus, we predict that poor economic conditions will lead people to prioritize spending on girls rather than boys. We tested this hypothesis in five studies.

A correlational study examined how fluctuations in U.S. GDP over the last three decades were related to retail spending on boys’ versus girls’ apparel. Findings revealed that GDP had a strong negative correlation with relative spending on girls versus boys (p < .001).

Experiment 1 manipulated cues to economic condition. Participants first viewed a slideshow depicting an economic upswing or an economic recession. Participants then imagined they had two children (a boy and a girl) and answered questions about how they would divide their assets between their son or daughter in a will. Consistent with predictions, economic recessions led people to bequeath more assets to daughters than to sons (p<.01).

Experiment 2 sought to replicate E1 using a different manipulation of economic condition: news articles. E2 also examined preferences for spending money on several types of child expenditures. The study also sought to rule out alternative explanations based on general affect rather than economic conditions. Replicating E1, participants bequeathed more to a girl in the economic recession condition compared to the economic upswing condition, a negative affect control condition, and a neutral control condition (p<.05). Participants also indicated they would spend more money on a girl in the economic recession condition compared to the economic upswing condition, a negative affect control condition, and a neutral control condition (p<.08).

The previous studies demonstrated that poor economic conditions lead people to allocate more resources to girls. We have proposed that this effect emerges because of changes in the relative reproductive value of each gender. Poor economic conditions should...
make females a safer reproductive investment than males because many males will not reproduce in difficult times. We would expect that the effects of economic conditions would grow stronger as children near reproductive age. Thus, we examined how poor conditions influenced bequeathing assets to a girl versus a boy as a function of the age of both children (6 months old vs. 15 years old).

Experiment 3 had a 2 (Economic Condition; between-subject) X 2 (Children’s Age; within-subject) design. Participants viewed the slideshows from E1 and indicated how they would divide assets in a will. Consistent with our prediction, participants bequeathed more assets to a girl in the economic recession condition when the children were 15 years old (p < .03). Participants were more likely to bequeath assets to a 15 year old girl (rather than boy) than to an infant girl (rather than boy; p < .02).

Experiment 4 aimed to examine the psychological mechanism. Because investing in girls is akin to investing in the sure thing or odds-on favorite, investment in girls by boys represents choosing a safe reproductive outcome rather than gambling on a riskier long shot. This suggests that risk aversion may underlie our effects. Thus, we hypothesized that the predicted effect should be stronger for individuals who are more risk averse. E4 used the same manipulation as in E2 and participants indicated how they would divide their assets in a will. To assess risk aversion, participants made a series of choices between receiving a certain monetary reward or a 50% chance of getting a larger monetary reward. Participants allocated more resources to girls in the economic recession condition (p < .01). Importantly, there was an interaction between economic condition and individual differences in risk aversion (p < .01). At +1 SD in risk aversion, recessions led people to bequeath more assets to girls compared to the upswing condition (p < .01). There was no effect of economic condition on bequeathing assets to a girl at -1 SD (p > .34).

We found that as economic conditions worsened, people chose to invest in daughters over sons. This research contributes to the literature by revealing how, why, and when resource scarcity influences spending on girls versus boys.

The Effectiveness of Reciprocity Appeals in Economic Booms and Busts

EXTENDED ABSTRACT

Reciprocity, the rule that obliges us to repay others for what we have received from them, has been observed in every human society and is one of the strongest and most pervasive social forces (Gouldner 1960; Cialdini, 1993). Why is reciprocity so prevalent, and so powerful? According to anthropological field studies of food sharing, reciprocity likely arose to help people survive in resource scarce conditions. When resources are limited, an individual or family may be unable to obtain enough resources to survive; forming reciprocal exchange relationships can be an effective means of reducing the risk of running out of food. Indeed, researchers adopting an evolutionary perspective have proposed that reciprocity norms confer several adaptive advantages in resource-scarce environments: they serve to reduce or manage variability in resource acquisition, provide stability within social systems, reinforce altruistic acts, and discourage exploitation in relationships (Gouldner 1960; Wilson and Sober 1994). Building on this research, we posit that under resource-scarce conditions, people increasingly engage in and rely upon reciprocal relationships. In a series of lab and field studies, we test the link between resource scarcity and reciprocity, and explore the processes that mediate and moderate it.

Study 1 examined the relationship between chronic concerns about resource scarcity (socioeconomic status; SES) and reciprocity. Those in the reciprocity condition received a small monetary reward and were then asked to volunteer to fill out extra survey questions. Those in the no reciprocity condition were asked to fill out the extra questions before receiving the reward. The outcome—number of extra survey questions completed—was the measure of reciprocity. Results showed a main effect of reciprocity and a reciprocity X SES interaction, p < .001. Low SES participants responded more strongly to the reciprocity appeal (Mno reciprocity ¬ = 5.5 vs. Mreciprocity = 9.7) than high SES participants (Mno reciprocity ¬ = 5.7 vs. Mreciprocity = 7.3).

Study 2 experimentally manipulated concerns about resource scarcity and utilized a field setting where students did not know they were part of a study. Eight thousand undergraduates were emailed a request to complete a voluntary survey about their university’s admission process in a 2 (resource scarcity vs. control) X 2 (reciprocity vs. no reciprocity) between-subjects design. The reciprocity message emphasized the university’s previous efforts to improve the application process, whereas the control message did not. The resource scarcity manipulation simply added a half sentence referencing “today’s tough economic times” that was not included in the control. Each email ended with a survey link and the number of people completing the survey was the behavioral measure of compliance. Results indicated a main effect of reciprocity and a marginally significant resource scarcity X reciprocity interaction (p = .09). Students in the resource scarcity condition responded more strongly to the reciprocity appeal (reciprocity = 594 vs. no reciprocity = 447, p < .001) than those in the control condition (reciprocity = 531 vs. no reciprocity = 450, p < .003).

Study 3 tested gratitude as a potential mediator of the relationship between resource scarcity and reciprocity. Participants read a story that manipulated resource scarcity and then read a reciprocity scenario. In the reciprocity condition, participants read about being enrolled in a special valued customer program at their local department store. In the no reciprocity condition, participants read about going to their local department store. Participants also indicated how grateful and appreciative they felt. The dependent variable measured participants’ willingness to buy an expensive product from the store. Analyses showed a resource scarcity X reciprocity interaction for both gratitude and willingness to buy the expensive product, ps < .001. The effect of reciprocity was exacerbated in the resource scarcity condition: people receiving the reciprocity benefit felt even more grateful and were even more willing to buy the expensive product. Further, gratitude mediated the relationship between resource scarcity and reciprocation, CI (.004, .41), β = .12, SE = .10.

Studies 4 established a boundary condition for the observed relationship between resource scarcity and reciprocation. From a functional perspective, reciprocity is beneficial to the extent that it helps establish or maintain a trusting, exchange relationship. If trust does not exist, however, attempting to enter into a reciprocal relationship may actually be dangerous—an untrustworthy relationship partner could take advantage of you, and this would be especially costly during periods of resource scarcity. Given this possibility, we hypothesize that those concerned with resource scarcity should be particularly wary of cues suggesting untrustworthiness. Study 4 tested this prediction using a 2 (resource scarcity vs. control) X 2 (reciprocity vs. no reciprocity) X 2 (persuasion knowledge active vs. not) between-subjects design. Study 4 used the same manipulation of resource scarcity as Study 3. Afterwards half of the participants read a persuasion knowledge induction describing manipulative marketing tactics (Morales 2005). All participants then read a consumer scenario in which they received an invitation...
to a sales event. Half the participants read that the invitation came with a free gift (reciprocity condition). The DV was a composite of participants’ reported likelihood of going to the sales event and likelihood of buying something at the sales event ($r = .73$). Results revealed a significant three-way resource scarcity X reciprocity X persuasion knowledge interaction, $p = .005$. When persuasion knowledge was not activated, results replicated previous studies. However, when persuasion knowledge was activated, a different pattern of results emerged. While there was an effect of reciprocity in the control condition, $p < .00$, in the resource scarcity condition, the effect of reciprocity was significantly reduced, $p = .031$. In fact, for those in the combined resource scarcity and persuasion knowledge conditions, there was no difference between the reciprocity and no reciprocity conditions ($p = .38$)—indicating an instance when reciprocity is ineffective.

Overall, these findings demonstrate when and for whom reciprocity appeals are most effective. Moreover, they highlight the usefulness of considering reciprocity from a functional evolutionary perspective and show support for a behavior strategy we characterize as strategic interdependence.

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