Supplementary Materials for

Some Consequences of Having Too Little

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Supplementary Online Material:

Materials and Methods:
Experiment 1: Attention task

Sixty participants ($M_{age} = 30.2; 34$ females, $26$ males) were recruited from Amazon.com’s Mechanical Turk service (MTurk) and could win $10$ gift certificates.

Participants played a version of *Wheel of Fortune* in which they were budgeted chances to guess letters on each word puzzle. Poor participants were given an overall budget of $84$ guesses (paychecks of $6$ guesses per puzzle) and rich participants were given an overall budget of $280$ guesses (paychecks of $20$ guesses per puzzle). Some participants could not borrow, others could borrow with $R = 3$. There were no time constraints within the game. Participants earned points for solving puzzles (1 point per puzzle) and these points were converted into lottery entries for the gift certificates. Earning more points increased the chances of winning a prize. Participants played until they exhausted their overall budget of guesses.

After played *Wheel of Fortune*, they moved to the Dots-Mixed task. Participants saw pictures of either a green apple or a lime presented on the left or right side of a fixation cross. If participants saw a green apple, they pressed a key on the same side as the apple. If the apple appeared on the left, they were to press the ‘Q’ key as quickly as possible. If the apple appeared on the right, they were to press the ‘P’ key. If participants saw a lime, they pressed a key on the opposite side. If the lime appeared on the left side, they were to press the ‘P’ key. If the lime appeared on
the right side, they were to press the ‘Q’ key. Thus, trials in which a green apple appeared were “congruent” trials. Trials in which a lime appeared were “incongruent” trials. There were 40 congruent and 40 incongruent trials. For both types of trials, there were 20 presentations on the left and 20 on the right. The order of trials was randomized. Each trial began with a fixation cross presented for 500ms. Then the picture was presented for 750ms, during which participants had to respond.

**Experiment 2: Angry Blueberries**

Sixty-eight participants ($M_{age} = 29.5$; 38 females, 30 males) were recruited from MTurk and could win $15 gift certificates.

Participants played a video game called *Angry Blueberries*. The object of this game was to fire blueberries from a slingshot at waffles scattered throughout each level. There were 7 waffles per level, and participants earned 1 point for each waffle that they hit as well as a 3 point bonus if they cleared all the waffles from the level (a maximum of 10 points per level). Points were converted into lottery entries for the gift certificates. Earning more points translated into a higher chance of winning a prize.

The mechanics of the game were as follows. Participants could click the “blueberry chute” on the screen to load a blueberry into the slingshot. They could then click and drag the blueberry such that pulling the blueberry farther would increase the velocity of the shot. Participants could also drag the blueberry as they aimed, to shoot it at different angles. If participants loaded a
blueberry into the chute, but did not fire it, then the blueberry remained in the overall budget. The blueberry was subtracted from the budget only once it was fired.

Poor participants were given 30 blueberries overall (3 per round) and rich participants were given 150 blueberries overall (15 per round). Participants were randomly assigned to a condition where they could not borrow or where they could borrow with interest with \( R = 2 \) (two blueberries were subtracted from the overall budget for each shot used beyond the paycheck for a round). Participants could bank blueberries by exiting a round whenever they wished (there was no minimum number of blueberries that they had to use on each level).

There were no time constraints in the game. Participants could always see their score, the blueberries used on the current round, and the blueberries remaining overall. Participants played until they exhausted their overall budget of shots.

**Experiment 3: Family Feud Without Debt**

One hundred forty-three participants (\( M_{age} = 27.6; \) 99 females, 44 males) were recruited from the Princeton University community. Participants could win $50 gift certificates based on performance.

Participants played *Family Feud*, where they tried to guess the five most popular responses to survey questions such as *Name things you take on a picnic*, which previously had been posed to a panel of 100 people. Participants earned one point per correct response (a maximum of five points per round). These points were converted into lottery entries for the gift certificates.
There were six between-subjects conditions that resulted from crossing two factors. The first factor was time scarcity. Poor participants had 300 seconds overall (with 15-second paychecks) and rich participants had 1000 seconds overall (with 50-second paychecks). Participants played until they exhausted their overall time budget.

The second factor was the opportunity to borrow. Some participants could not borrow. Other participants could borrow with $R = 1$ (one second was subtracted from the overall time budget for each second spent beyond the paycheck for a round) and others could borrow with $R = 2$ (two seconds were subtracted). Participants could enter as many guesses as they wished per question, within the time constraints mentioned above.

All participants could bank time by exiting a round early, which re-deposited their unused time into their remaining overall time. The option to bank time became available after 40% of the paycheck had elapsed (6 seconds for the poor; 20 seconds for the rich).

Participants were continuously shown their score, the time remaining on the current round, and the overall remaining time. For those who borrowed, borrowing began as soon as the paycheck for a round was depleted, at which point a large warning which said “You are borrowing time!” appeared. Participants saw the correct answers at the end of each round, before the next round began.

**Experiment 4: Family Feud With Debt**
One hundred eighteen participants ($M_{age} = 31.3; 79$ females, $39$ males) were recruited from MTurk and could win $25$ gift certificates.

Participants played *Family Feud*, with a slightly different structure. Participants played until they exhausted their total time budget or until they reached 20 rounds, whichever came first.

Some participants could not borrow, while others could borrow with $R = 2$. Poor participants again had $300$ seconds overall, while rich participants had $1000$ seconds. However, the size of paychecks depended on how people borrowed and saved. On each round, paycheck-size was computed as the average time remaining across remaining rounds. Poor and rich participants therefore started the game with paychecks of $15$ seconds and $50$ seconds, respectively. Paychecks could shrink below but could not exceed the default paycheck-size. If the average remaining paycheck exceeded the default, then the excess time was preserved in the overall budget. Shrinking paychecks represented the accumulation of debt. Suppose a rich participant had $350$ seconds and $7$ rounds remaining, leaving a paycheck of $50$ seconds for the next round. Imagine that the participant used $95$ seconds (the allotted $50$ plus $45$ borrowed). That would incur a total cost of $140$ (the $95$ used plus an interest payment of $45$), leaving the participant with a total of $210$ seconds with $6$ rounds remaining and a paycheck of $35$ seconds on the next round.

All participants could bank time by exiting a round early, which re-deposited their unused time into their remaining overall time. The option to bank time became available after $40\%$ of the default paycheck had elapsed ($6$ seconds for the poor; $20$ seconds for the rich).
Experiment 5: Family Feud With Previews

One hundred thirty-seven participants ($M_{age} = 27.19; 58$ females, $79$ males) were recruited from MTurk and could win $25$ gift certificates.

Participants played a version of *Family Feud* structured similarly to Experiment 3. However, all participants could borrow with $R = 3$. Some participants were shown a preview of the next round’s question. This question was written in a small font at the bottom of the game screen. Other participants did not see this preview. There were thus four between-subjects conditions that resulted from crossing two factors: scarcity and the ability to preview the next round.

**Results:**

Experiment 1: Attention task

Four participants (one from each condition) were excluded from the analyses for having zero correct responses. Note that scarcity and borrowing conditions did not interact to influence performance on the attention task [$F(1, 52) < 1$].

*Table S1: Correct responses as a function of scarcity and trial type*

<table>
<thead>
<tr>
<th>Scarcity Condition</th>
<th>Congruent</th>
<th>Incongruent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td>24.62 (9.47)</td>
<td>20.50 (11.49)</td>
</tr>
<tr>
<td>Rich</td>
<td>29.07 (6.04)</td>
<td>23.87 (10.13)</td>
</tr>
</tbody>
</table>

*Note: Standard deviations in parentheses.*
Experiment 2: Angry Blueberries

Table S2: Unstandardized points earned as a function of scarcity and borrowing conditions

<table>
<thead>
<tr>
<th>Scarcity Condition</th>
<th>Borrowing Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Borrowing</td>
</tr>
<tr>
<td>Poor</td>
<td>69.10 (17.78)</td>
</tr>
<tr>
<td>Rich</td>
<td>250.69 (54.99)</td>
</tr>
</tbody>
</table>

Note: Standard deviations in parentheses. Only participants in the borrowing condition used fewer than the maximum shots allotted (Poor: $21.75 \pm 5.91$; Rich: $145.80 \pm 8.16$).

Experiment 3: Family Feud Without Debt

Table S3: Unstandardized points earned as a function of scarcity and borrowing conditions

<table>
<thead>
<tr>
<th>Scarcity Condition</th>
<th>Borrowing Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Borrowing</td>
</tr>
<tr>
<td>Poor</td>
<td>35.95 (13.84)</td>
</tr>
<tr>
<td>Rich</td>
<td>57.55 (24.68)</td>
</tr>
</tbody>
</table>

Note: Standard deviations in parentheses. Only those who borrowed with interest used less than the maximum time allotted (average seconds used, Poor: $239.04 \pm 32.38$; Rich: $961.88 \pm 57.01$).
**Experiment 4: Family Feud With Debt**

The following analysis reveals that the poor gradually increased their borrowing relative to their total remaining budget. We calculated how much time was borrowed on each round as a proportion of the total time remaining when the round started. We analyzed the slope of this number over the course of the game for each participant. As the game progressed, poor participants increased their proportional borrowing (.04 ± .04) more than did the rich (.001 ± .002) [Mann-Whitney test, \( z = 4.70, P < .001 \)].

**Table S4: Unstandardized points earned as a function of scarcity and borrowing conditions**

<table>
<thead>
<tr>
<th>Scarcity Condition</th>
<th>No Borrowing</th>
<th>Borrowing (( R = 2 ))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td>31.48 (8.54)</td>
<td>20.09 (10.35)</td>
</tr>
<tr>
<td>Rich</td>
<td>48.10 (9.96)</td>
<td>50.62 (14.82)</td>
</tr>
</tbody>
</table>

*Note: Standard deviations in parentheses. All participants could use less than the maximum time if they completed 20 rounds sooner or borrowed time (Poor-no borrowing: 289.48 ± 23.98; Poor-borrowing: 213.50 ± 41.84; Rich-no borrowing: 849.13 ± 144.42; Rich-borrowing: 825.12 ± 126.64).*
Experiment 5: Family Feud With Previews

Table S5: Unstandardized points earned as a function of scarcity and preview conditions

<table>
<thead>
<tr>
<th>Scarcity Condition</th>
<th>Preview Condition</th>
<th>No Previews</th>
<th>With Previews</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td>No Previews</td>
<td>24.05 (12.92)</td>
<td>23.67 (10.09)</td>
</tr>
<tr>
<td>Rich</td>
<td>No Previews</td>
<td>55.48 (19.53)</td>
<td>69.62 (20.89)</td>
</tr>
</tbody>
</table>

Note: Standard deviations in parentheses. All participants could use less than the maximum time allotted (Poor-no previews: 235.05 ± 43.77; Poor-with previews: 235.42 ± 53.55; Rich-no previews: 925.90 ± 137.98; Rich-with previews: 982.53 ± 29.27).