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Hyperopia and Frugality: Different Motivational Drivers and Yet Similar Effects on Consumer Spending

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ABSTRACT

The effects of hyperopia and frugality on spending have not been directly compared. Moreover, previous research on hyperopia has focused on the avoidance of luxury spending, rather than spending on routine consumer goods. We address these gaps in the literature by comparing how hyperopia and frugality affect monthly spending, and spending on ordinary consumer goods. Our survey indicates that both tendencies relate to lower monthly spending. Our shopping experiment extends these findings by showing that both hyperopic and frugal consumers avoid purchasing higher priced consumer goods when lower priced substitutes are available. Our findings contribute to the literature, which suggests that hyperopic consumers avoid indulgent luxuries, by showing that they also avoid higher priced routine consumer goods and exhibit lower monthly spending, similar to frugal consumers, but for fundamentally different reasons. Hyperopia inhibits spending by lowering the motivation to spend, while frugality inhibits spending by increasing the motivation to save.

Key Words: Frugality, hyperopia, saving, spending, price effects

1. Introduction

In some countries where the spending rate is too low relative to the savings rate, such as China, the government and other entities are trying to increase consumer spending. The Chinese government, for example, allocated $586 billion USD to stimulate domestic demand which included subsidies for consumers to purchase new home appliances and vehicles (Li and Zhang, 2014). However, in other countries where the spending rate is too high relative to the savings rate, such as the USA, attempts are being made to decrease consumer spending and increase savings. Some employers in the USA, for example, nudge their employees to spend less and save more by automatically enrolling their employees in individual retirement accounts (Card and Ransom, 2011).

Routine consumption plays an important role in consumers' financial status and well-being. Two individual factors that help consumers constrain their spending are the personality traits of hyperopia and frugality. Hyperopia indicates the extent to which consumers have an aversion to indulgences (Haws and Poynor, 2008), whereas frugality indicates restraint and resourcefulness in product acquisition and consumption (Lastovicka et al., 1999). Frugal consumers tend to constrain their purchases overall, and also to avoid purchasing consumer goods that are higher priced in favor of lower priced options (Lastovicka et al., 1999; Pettit et al., 1985). Frugal consumers also reduce their purchases of discretionary products if the prices get too high (Rose et al., 2010). In sum, frugal consumers are thrifty in their day-to-day product purchases and consumption habits (Lastovicka et al., 1999; Rose et al., 2010).

In contrast, what is currently known about hyperopic consumers is quite different. Based on past research, hyperopic consumers limit their spending by eschewing indulgences, because they do not appreciate the short-term benefits of indulging themselves (Kivetz and Keinan, 2006; Haws and Poynor, 2008; Keinan and Kivetz, 2008). Major gaps in the literature exist, though, as no one has examined the effects of hyperopia on routine monthly spending or

spending on day-to-day consumer goods. Also, no one has directly compared the effects of hyperopia and frugality or their underlying motivations. We address these topics here.

The specific goals of our research are to increase our understanding of when and why consumers who are hyperopic or frugal limit their spending. We posit that hyperopia and frugality are associated with reduced routine monthly spending, and also reduced spending on higher-priced consumer goods when lower-priced options are available. Although we posit that frugal and hyperopic consumers look similar in terms of their spending behaviors, we expect the underlying mechanisms to be different. We predict that consumers who are frugal spend less because frugality enhances their motivation to save. In contrast, consumers who are hyperopic spend less because hyperopia reduces their motivation to spend.

We test the effects of hyperopia and frugality on overall monthly spending, and spending on different priced consumer goods, using a survey and a shopping experiment respectively, and we examine the underlying mechanisms that influence spending. First, in a survey, we examine whether and why hyperopia or frugality affects monthly consumer spending. Then, in a shopping experiment, we examine whether and why hyperopia or frugality influences what consumers actually buy when given the option of buying either higher priced consumer goods or lower priced substitutes in the snack category.

Our findings contribute to the literature by illustrating that hyperopia and frugality influence ordinary consumer spending similarly, despite having different motivational underpinnings. Moreover, our findings suggest that hyperopic consumers not only avoid indulging in luxuries, as past research has shown (Kivetz and Keinan, 2006; Haws and Poynor, 2008; Keinan and Kivetz, 2008). Hyperopic consumers also report lower monthly spending, and they avoid purchasing routine consumer goods that are higher priced in favor of lower priced substitutes. Such spending patterns have been observed among frugal consumers (Lastovicka et al., 1999; Pettit et al., 1985; Rose et al., 2010), but we are the first to observe them among hyperopic consumers. We also directly compare the distinct motivational underpinnings that differentiate hyperopia from frugality.

Our results have implications for governments like those in China and the USA that seek to influence consumer savings and spending. Our findings indicate that governments should not concentrate solely on frugality to influence consumer spending, as they have in the past (Witkowski, 2003). Instead, they should also consider hyperopia, because both tendencies influence monthly spending and spending on consumer goods that are higher priced. Furthermore, the Chinese government's quest to increase consumer spending should not only focus on durables but also on perishables (Li and Zhang, 2014). The Chinese government should target day-to-day spending on a wide range of consumer goods and encourage both hyperopic and frugal consumers to purchase goods that are higher priced. Moreover, our research suggests which specific messages should be effective for communications campaigns. Messages to discourage hyperopia should be framed to stress the benefits of spending, while messages to deter frugality should be framed to discourage savings.

2. Conceptual Framework

Many consumers need to constrain their spending and consumption. Consumers may be motivated to do so by external forces, such as government communications campaigns promoting frugality (Witkowski, 2003), economic downturns (Egol, 2010), or anti-consumption consumer subcultures (Starr, 2007). Some consumers may limit their spending to save for a particular goal, such as purchasing a home (Baumeister, 2002). Individual factors may also influence constraint on spending and consumption, e.g., individuals may minimize their spending due to precaution, foresight, independence, enterprise, pride or avarice (Keynes, 1936). Quite often, however, in the United States and many other countries, the motivation to spend overpowers the motivation to save, resulting in savings being pushed into the background (Watson, 2003).

The individual tendencies toward hyperopia and frugality also affect consumer spending. Haws and Poynor (2008) define hyperopia as an aversion to indulgence, and they identify

three characteristics of hyperopic consumers. First, hyperopic consumers are less likely to indulge. Second, they acknowledge they have difficulty indulging. And third, they tend to feel regret or a sense of missing out on life as the result of forgoing indulgences. That is, hyperopic consumers reject indulgences without careful consideration of their potential short-term benefits, and view any indulgence as a threat to their long-term objectives (Haw, and Poynor 2008). Hyperopic consumers' tendency to avoid opportunities to indulge has been shown to negatively affect their purchases of luxury products and services (Kivetz and Keinan, 2006; Haws and Poynor, 2008; Keinan and Kivetz, 2008). Hence, hyperopia may lower monthly spending in part by reducing spending on indulgent luxuries. Moreover, we propose that hyperopia may also lower monthly spending by deterring purchases of even routine consumer products that are higher in price relative to available substitutes, because the higher-cost items will be viewed as more indulgent relative to the lower-cost alternatives.

Frugality has been defined as "a unidimensional consumer lifestyle trait characterized by the degree to which consumers are both restrained in acquiring and resourceful in using economic goods and services to achieve longer-term goals" (Lastovicka et al., 1999, pg. 88). According to Lastovicka et al. (1999), frugal consumers are disciplined in their spending, and resourceful in using and reusing their possessions. Also, frugal consumers buy fewer discretionary products (Rose et al., 2010), and they buy less costly consumer goods that offer good value over more costly consumer goods that offer poorer value (Pettit et al., 1985). Hence, based on these literatures, we hypothesize that both frugality and hyperopia will negatively affect monthly consumer spending.

H1. Both frugality and hyperopia will negatively affect consumers' monthly spending.

Although both hyperopic and frugal consumers could look similar in terms of constraining their overall spending, their underlying motivations for reducing their spending could be quite different. Lastovicka et al. (1999) argue that the short-term sacrifices of frugal consumers reflect their strength of discipline and do not result in feelings of deprivation.

Frugal consumers spend conservatively because they experience pleasure from saving, rather than suffering pain from deprivation (Rick et al., 2008). These findings suggest that frugal consumers spend less because they are actually motivated to save.

Hyperopic consumers do not seem to be driven by the motivation to save. Instead, hyperopic consumers appear to restrain their consumption because they lack the motivation to spend. Hyperopic consumers acknowledge that they have difficulty indulging themselves (Haws and Poynor, 2008). Also, unlike frugal consumers who feel pleasure from saving, hyperopic consumers want to avoid feeling regret from indulging themselves, e.g., on luxury products or services (Kivetz and Keinan, 2006; Keinan and Kivetz, 2008). Hence, we hypothesize that hyperopic consumers lack the motivation to spend, in contrast to frugal consumers who possess the motivation to save.

H2. Frugality and hyperopia have different motivational underpinnings for reducing overall spending; hyperopia lowers spending by decreasing the motivation to spend, whereas frugality lowers spending by increasing the motivation to save.

According to economic theory, the price of a consumer good represents a scarce economic resource that must be sacrificed to purchase the good; and therefore a higher price negatively affects purchase probability (Monroe, 1973). Evidence suggests the negative effect of price on purchase is even greater among frugal consumers (Rose et al., 2010). In addition, frugal consumers tend to use resources more carefully (DeYoung, 1986) and are known to be price conscious (Pettit et al., 1985; Lastovicka et al., 1999). Thus their purchases of consumer goods that are higher priced should be lower, relative to consumers who are less frugal.

The effect of an ordinary consumer good’s price on the purchase behavior of hyperopic consumers has not been studied. Past research on hyperopic consumers has examined their spending on indulgent goods and services (Haws and Poynor, 2008; Keinan and Kivetz, 2008; Kivetz and Keinan, 2006; Kivetz and Simonson, 2002). Haws and Poyner (2008) studied spending on designer jeans, a massage, a trip to Mexico, and a concert. Kivetz and Keinan

(2006) and Keinan and Kivetz (2008) studied spending on vacations and nightlife. Kivetz and Simonson (2002) studied spending on a massage and a symphony. These studies have found that consumers who were high in hyperopia had lower intentions to purchase the indulgent offerings, relative to consumers who were low in hyperopia.

However, additional research has shown that the tendency toward hyperopia actually increases the perception that products are indulgent and luxurious (Haw and Poynor, 2008). This suggests that hyperopic consumers could even view routine consumer products that are higher in price as indulgent, relative to the cheaper substitutes. Other research indicates that consumers are especially likely to perceive costlier items as indulgences (Lichtenstein, Ridgway, and Netemeyer, 1993) and that perceptions of indulgence are relative (Kapferer and Laurent, 2016). Therefore, hyperopic consumers could tend to perceive higher priced routine consumer goods as indulgences, especially in the presence of lower priced substitutable goods. Hence, we test a final research hypothesis. Our conceptual framework is shown in Figure 1.

[INSERT FIGURE 1 HERE]

H3. Both frugality and hyperopia will negatively affect consumers' spending on consumer goods that are higher priced, but not their spending on substitute lower priced consumer goods.

3. Study 1

3.1. Overview

Study 1 examines when and why hyperopia and frugality may affect the motivation to save, the motivation to spend, and/or routine monthly spending. Specifically, we test H1 which predicts that frugality and hyperopia will have similar negative effects on overall monthly spending. In addition, we test H2 which predicts that frugality and hyperopia will have distinct motivational drivers for restrained spending, with frugality being associated with motivation to save and hyperopia being associated with lack of motivation to spend.

3.2. Participants

Two hundred and ninety-five Chinese consumers were recruited for this study using a popular instant messaging service in China called QQ. Because this study examines how consumers spend their discretionary income in an average month, three participants were excluded because they indicated they had no income. Twelve participants were excluded because they did not complete the dependent measures, ten because they reported no control over how they spend their income, and eleven because they failed the attention check to verify that they read the study instructions. Statistical models that included all participants except those lacking dependent measures are in the appendix and the results mirror those below. In exchange for participating in the survey, participants were entered in a lottery for the chance to win a cash prize.

3.3. Measures

We used validated and reliable scales to measure the tendencies toward hyperopia (Haws and Poynor, 2008) and frugality (Lastovicka et al., 1999). We translated these scales into Chinese and checked the accuracy of our translations by back-translating the Chinese versions to English. A comparison of the original versions with the back-translated versions indicated that our translations were appropriate.

A principle components factor analysis verified that the scale items loaded onto the hyperopia and frugality factors as expected. Inter-item reliability was adequate for both the hyperopia scale (alpha = 0.79) and the frugality scale (alpha = 0.81) and the correlation between trait hyperopia and trait frugality was low ($r = 0.24$, $p < .01$).

Next, participants' spending and saving behaviors were measured using an approach that was developed by Liu and Aaker (2007). Participants were asked to report their monthly income, and then report the percent of their monthly income that they typically allocated to spending, saving, and investments, which are the three financial categories that Chinese consumers commonly use to manage their finances. An "other" category was also included

but on average only 4.3% (SD = 11.2) of monthly income was allocated to the “other” category. This finding suggests that our three specific financial categories adequately captured the main monetary accounts used by participants.

Monthly spending was described as “money spent each month on living expenses and consumer goods, including housing, food, clothing, transportation, entertainment, and gifts.” Monthly saving was described as money put in a savings account that was readily accessible if needed. Monthly investment was described as money spent to purchase long-term assets that were expected to increase in value (e.g., real estate investments, investment funds, stocks, bonds, etc.), but the money was not readily accessible.

Participants were asked to write a percentage ranging from 0% to 100% for each financial category including “other” so the sum equaled 100%. The savings and investment questions were included to help participants calibrate how they allocated their monthly income so they would provide more accurate estimates of their monthly spending. At the end of the survey, we measured participants’ demographics including gender, age, education, income, and marital status (with single as baseline, and married without children and married with children as two dummy variables).

Finally, motivation to save was measured by asking participants “Have you made a specific plan for saving money?” (1 = yes or 0 = no). Motivation to spend was measured by asking participants “To what extent is spending money important in your life?” (1 = very unimportant to 5 = very important).

3.4. Results

3.4.1. Participant demographics

The 259 participants were 54% female, their mean age was 28.1 (SD = 3.4), and their mean monthly household income was 9,708 RMB (SD = 9,513) or about $1,600 USD. Also 98.8% were college educated, 60% were unmarried, 20% were married without children, and 20% were married with children. Participants reported that they spent 46.4% (SD = 21.1) of their monthly income on living expenses and consumer goods, on average.

Participants who scored higher on frugality tended to have a lower monthly income (r = -.25, p < .01) and less education (r = -.12, p < .05); and they were also younger (r = -.13, p < .05) and more likely to be male (r = .16, p < .01). For hyperopia, there were no significant correlations with any of the measured demographics. The full set of descriptive statistics and the variable inter-correlations are provided in Table 1.

[INSERT TABLE 1 HERE]

3.4.2. Monthly spending

A multiple regression analysis was conducted that included score on hyperopia, score on frugality, and a hyperopia by frugality interaction term as predictor variables, and monthly spending as the dependent variable. Demographic variables (gender, age, monthly income, education, marital status) were included as covariates. We included covariates in our models because they help to control for potential confounds when predictor variables are measured rather than manipulated (Cook and Campbell, 1979; Meyvis and van Osselaer 2018). However, we also estimated all of our models without covariates and we obtained comparable results (see web appendix).

Consistent with H1, both hyperopia and frugality negatively influenced monthly spending, and their effects were roughly comparable in magnitude in terms of both the regression coefficients and the t-values (hyperopia: β = -3.84, t(250) = 2.46, p < .05; frugality: β = -4.34, t(250) = 2.66, p < .01; Table 2). The Variance Inflation Factors (VIF) for hyperopia and frugality were 1.18 and 1.08 respectively, both substantially below the threshold of 5 indicating multicollinearity. Moreover, the two-way interaction between hyperopia and frugality was not significant (β = -3.20, t(249) = 0.80, p = 0.42), indicating that the effects of hyperopia and frugality on monthly spending were independent. Therefore, this interaction term was not included in the final model. See Table 2.

[INSERT TABLE 2 HERE]

Additional descriptive analyses showed that participants who scored at least one standard deviation above the mean on hyperopia reported spending 39.18% (SD = 21.65) of their

monthly income, while participants who scored at least one standard deviation below the mean on hyperopia reported spending significantly more or 53.39% (SD = 21.65, $F(1,83) = 8.80$, $p < .01$). Likewise, participants who scored at least one standard deviation above the mean on the frugality trait reported spending 39.41% (SD = 19.43) of their monthly income, while participants who scored at least one standard deviation below the mean on frugality reported spending significantly more or 50.35% (SD = 24.91, $F(1,83) = 5.00$, $p < .05$). The results for hyperopia and frugality were strikingly similar in these analyses as well.

3.4.3. Motivation to spend and save

A multiple regression analysis was conducted to test the hypothesized relationship between motivation to spend and hyperopia. The model included motivation to spend as the dependent variable, and score on hyperopia, score on frugality, and a hyperopia by frugality interaction term as predictor variables. Demographic variables were included as covariates. The results show that hyperopia related negatively to motivation to spend ($\beta = -0.14$, $t(250) = 2.47$, $p < .05$), whereas frugality was unrelated to motivation to spend ($\beta = -0.08$, $t(250) = 1.35$, $p = .18$). The frugality by hyperopia interaction term had no effect, and so it was not included in the final model.

A comparable logistic regression analysis was conducted to test the hypothesized relationship between motivation to save and frugality. The model included motivation to save as the binary dependent variable, and the same predictor variables and covariates as in the above analyses. The results show that frugality related positively to motivation to save ($\beta = 0.58$, Wald χ^2 (1) = 10.90, $p < .01$), while hyperopia was unrelated to motivation to save ($\beta = -0.12$, Wald χ^2 (1) = 0.59, $p = .44$). The frugality by hyperopia interaction term had no effect, and so it was dropped from the final model.

3.4.4. Mediation analyses

To test for mediation, we regressed monthly spending on hyperopia and motivation to

spend, and the effect of hyperopia weakened (β = -3.42, t(248) = 2.27 p < .05), while the effect of motivation to spend remained significant (β = 4.92, t(248) = 3.01, p < .01). Using bootstrapping, we formally tested for mediation using the SPSS macro for Hayes model 4 with 5,000 resamples (Preacher and Hayes, 2008). The test of the indirect effect of hyperopia on monthly spending through motivation to spend supported mediation (95% CI: LL CI = -1.88, UL CI = -0.10).

Likewise, we regressed monthly spending on frugality and motivation to save, and the effect of frugality weakened to non-significance (β = -2.62, t(248) = 1.64, p = .10), while the effect of motivation to save remained significant (β = -9.77, t(248) = 3.96, p < .001). We verified this mediation using an SPSS macro suitable for a mediational model with a dichotomous mediator, and 5,000 resamples (Valeri and VanderWeele, 2013). The test of the indirect effect of frugality on monthly spending through motivation to save supported mediation (95% CI: LL CI = -2.25, UL CI = -0.05). In sum, H2 was supported; the negative effect of hyperopia on monthly spending was mediated by lack of motivation to spend, while the negative effect of frugality on monthly spending was mediated by motivation to save.

3.5. Discussion

Study 1 indicates that consumers who are either more hyperopic or more frugal spend a lower percentage of their monthly income on living and consumer expenses. Moreover, the spending reductions attributable to these two tendencies are roughly comparable in magnitude. However, the underlying motivational mechanisms by which hyperopia and frugality affect monthly spending are fundamentally different. Hyperopia lowers monthly spending because it negatively affects the motivation to spend, whereas frugality lowers monthly spending because it positively affects the motivation to save. Measuring tendencies like hyperopia and frugality captures realistic phenomena, but may be influenced by confounding variables, and so in Study 2, environmental cues are used to manipulate

hyperopia and frugality.

4. Study 2

4.1. Overview

Study 2 examines when and why hyperopia and frugality may affect consumers' actual spending on routine consumer goods during a shopping task. This study experimentally manipulates hyperopia and frugality rather than measuring them as in Study 1. The use of experimental manipulations complements Study 1's approach because it rules out potential confounds (Cook and Campbell, 1979; Meyvis and van Osselaer, 2018). We manipulate both hyperopia and frugality using environmental primes and we include high, low and neutral primes for each. Study 2 diverges from previous research by studying the effect of hyperopia and frugality in a situation that involves actual spending. We examine actual spending by placing consumers in a simulated shopping environment and allowing them to spend their own money, some of which was provided as payment for their participation. We measure motivation to save and motivation to spend to examine underlying motivational processes.

Study 2 tests H3 which predicts that both frugality and hyperopia will negatively affect consumers' spending on ordinary consumer goods that are higher priced, but not their spending on substitute lower priced goods. Study 2 also retests H2, which posits that hyperopic and frugal consumers have different motivations for limiting their spending.

4.2. Participants and Design

Participants were 196 Chinese university students who were recruited using advertisements distributed through the popular instant messaging service WeChat. The experimental design was a between-subjects factorial with 3 levels of prime valence (high, low, and control) and 2 levels of prime content (hyperopia prime and frugality prime). Participants were individually and randomly assigned to one of the six experimental cells. Consumer goods price level (lower priced vs. higher priced) was an additional repeated

measures factor. Participants were given 100 RMB (about $16.48 USD) to participate in this study (see section 4.4 for more information about the participants' compensation).

4.3. Hyperopia and Frugality Manipulations

Hyperopia and frugality were primed using environmental cues, specifically, posters that were hung on the wall in the room where the experiment took place. The posters were full color, professionally produced, 29.7 cm (11.7 inches) wide, and 42 cm (16.5 inches) tall. The wording was in Chinese and the messages were similar in length across posters. Randomization to one of the six posters was determined before each participant entered the room to shop, and the poster was hung up accordingly.

The low hyperopia prime stated "Enjoy your wonderful life at the present moment." The high hyperopia prime stated "Work hard now; enjoy life later." The control prime for hyperopia showed a dove and said "World peace requires you and me to work together." The low frugality prime said "It is OK to be extravagant occasionally." The high frugality prime said "Frugality is a virtue." The control prime for frugality showed two men shaking hands and said "Friendly cooperation makes your life happy." The control primes were included to examine the effects of the high and low valence primes independently, and to rule out the alternative explanation that any social prime might affect consumption. Pictures of the posters used as primes are included in the appendix. To verify that the posters communicated the intended messages about frugality or hyperopia, participants completed a manipulation check at the end of the study.

4.4. Spending Measure

Following the procedure developed by Bayuk, Janiszewski, and Leboeuf (2010), participants were given money that they could spend or save however they wanted, and then later they were given the opportunity to spend the money in a simulated shopping context. Participants were told that the purpose of the study was to examine consumer interest in

different food products. Then they were given 100 RMB (about $16.48 USD) and they were told they could use it to buy food products that would be available for purchase, and they could spend more than this amount using any money they brought with them, but they were not obligated to buy anything, and they could save all the money if they so desired.

Next, each participant was individually led into a room that was set up beforehand to display one of the six randomly selected environmental primes (high frugality, low frugality, control frugality, high hyperopia, low hyperopia or control hyperopia). In this room, the participant also saw a simulated retail display with six snack items. Two of the snacks had the lowest available price; they cost 10 RMB (about $1.65 USD): Pacific Salty Milk Soda Crackers and Lay's Potato Chips. The remaining snacks were higher in price: Yinlu Mixed Congee and Starbucks Coffee at 15 RMB (about $2.47 USD), and Guansheng Garden Honey and Bangbangwa Beef Jerky at 25 RMB (about $4.12 USD). Because each participant had been given 100 RMB (about $16.48 USD) for participating in the study, they could technically afford to purchase these items. All were standard snacks that are routinely purchased by Chinese consumers, which was verified by pre-test interviews with a separate sample of similar consumers.

Each participant was told to take as much or as little time as needed to shop in the simulated store. After the participant was finished shopping, the participant paid the research assistant for any snacks purchased and was given appropriate change. The purchased snacks were recorded by the research assistant and then placed in a grocery bag for the participant. The dependent variable was the amount each participant spent on the snacks, to mirror Study 1's focus on spending amounts. However, comparable results were obtained for the number of snacks purchased (supplemental results are available upon request).

4.5. Other Measures

After the simulated shopping was over, participants were led to another room to complete a survey that measured the posited mediators: motivation to save and motivation to

spend. Motivation to save was measured by asking participants “To what extent do you feel the need to have a saving plan?” (1 = Do not need to at all to 7 = Need to very much). Motivation to spend was measured with three items: “How important is it to you that you spend money?” “How important is it to your well-being that you spend money?” and “How important is it in your life to spend money?” (1 = very unimportant to 5 = very important). These items were averaged (alpha= 0.88).

After this, participants provided demographic information including age, gender, and monthly income. Next they completed the scale measures of hyperopia and frugality that were used in Study 1; however measured hyperopia and frugality did not affect the results and so they will not be discussed further (supplemental results are available upon request). At the end of the study, participants responded to manipulation check items to verify that the environmental cues primed the intended constructs. The manipulation check items were: “The poster reminded me of the importance of indulgence” and “The poster reminded me of the importance of frugality” (1 = strongly disagree to 7 = strongly agree).

4.6. Results

4.6.1. Participant demographics

The 196 participants were 53% were female, their mean age was 20.4 (SD = 1.3), and their mean monthly income was 2,038 MB (SD = 867) or about $336 USD. Their monthly income far exceeded their payment for participating in the study (100 RMB), and the cost of each available snack item (10 RMB to 25 RMB).

4.6.2. Manipulation checks

The manipulation check data were analyzed using a one factor ANOVA with prime valence as the factor. First we checked the hyperopia primes among the 96 participants who saw these primes. The results confirmed that hyperopia prime valence affected hyperopia salience ($F(2, 93) = 63.12$, $p < .001$). The high hyperopia prime made hyperopia more salient, relative to the control prime ($M = 5.63$ vs. 3.97, $t(93) = 2.57$, $p < .05$). The low hyperopia

prime made hyperopia less salient, relative to the control prime (*M* = 3.47 vs. 3.97, *t*(93) = 8.20, *p* < .001). Next, we checked the frugality primes among the 100 participants who saw these primes. As expected, frugality prime valence affected frugality salience (*F*(2, 97) = 86.32, *p* < .001). The high frugality prime made frugality more salient, relative to the control prime (*M* = 5.66 vs. 3.45, *t*(97) = 8.69, *p* < .001). The low frugality prime made frugality less salient, relative to the control prime (*M* = 2.53 vs. 3.45, *t*(97) = 3.87, *p* <.001).

To verify that hyperopia prime valence did not affect the salience of frugality and that frugality prime valence did not affect the salience of hyperopia, we conducted an ANOVA with hyperopia prime valence as the independent variable and salience of frugality as the dependent variable. The results confirmed that hyperopia prime valence did not influence frugality salience (*F*(2, 93) = .29, *p* = .75). A similar analysis with frugality prime valence as the independent variable and salience of hyperopia as the dependent variable confirmed that frugality prime valence did not affect hyperopia salience (*F*(2, 97) = 1.63, *p* = .20). Additionally, salience of hyperopia and salience of frugality were uncorrelated (*r* = .042, *p* = . 56). In other words, there was virtually no overlap between frugality and hyperopia salience; they were not tapping into two bipolar ends of the same scale.

4.6.3. Actual spending

The data for the higher priced ￥15 RMB and ￥25 RMB snacks were aggregated because the analyses showed that these snacks were essentially replicates. To verify that these were replicates, we conducted a mixed model ANOVA analysis on unit purchases to control for the expected main effect of price. The analysis included prime valence (high, low, and control) and prime content (hyperopia and frugality) as between-subjects factors and ￥15 RMB versus ￥25 RMB as a within-subjects factor. The main effect for ￥15 RMB versus ￥25 RMB was non-significant (*M* = .542 vs. .544, *F*(1,191) = .01, *p* = .93), the two-way interaction with

prime content was non-significant ($F(1,191) = .56$, $p = .57$), the two-way interaction with prime valence was non-significant ($F(2,191) = 1.96$, $p = .16$), and the three-way interaction was non-significant ($F(2,191) = .91$, $p = .41$).

Therefore, the results were analyzed using a mixed model ANOVA that included two between-subjects factors, prime valence (high, low, and control) and prime content (hyperopia and frugality), and one repeated measures factor, consumer good price level (lower priced vs. higher priced). The results were supportive of H3 which predicted that both hyperopia and frugality would negatively affect spending on consumer goods that were higher priced but not lower priced. We observed a two-way interaction between prime valence (high vs. low vs. control) and consumer good price level (lower priced vs. higher priced) on the amount spent ($F(2, 191) = 11.43$, $p < .001$). This effect was consistent across the hyperopia and frugality primes, i.e., the three-way interaction involving prime valence, prime content, and consumer good price level was non-significant ($F(2, 191) = .28$, $p = .76$).

The high valence primes that increased the salience of hyperopia or frugality lowered the amount spent on the higher priced snacks relative to the control primes ($M = 13.26$ vs. 19.92, $t(191) = 2.41$, $p < .05$). Conversely, the low valence primes that decreased the salience of hyperopia or frugality raised the amount spent on the higher priced snacks relative to the control primes ($M = 31.72$ vs. 19.92, $t(191) = 3.81$, $p < .001$).

The results did not differ for hyperopia versus frugality, i.e., there was no three-way interaction, as reported above. Nevertheless, looking at each prime separately, the high hyperopia versus control prime tended to lower spending on the higher priced snacks though not significantly ($M = 10.88$ vs. 17.50, $t(191) = 1.60$, $p = .11$), and the low hyperopia versus control prime significantly raised spending on the higher priced snacks ($M = 31.56$ vs. 17.50, $t(191) = 3.35$, $p < .001$). Similarly, the high frugality versus control prime marginally reduced spending on the higher priced snacks ($M = 15.57$ vs. 22.65, $t(191) = 1.65$, $p = .09$), while the low frugality prime significantly increased spending on the higher priced snacks relative to the control prime ($M = 31.88$ vs. 22.65, $t(191) = 2.07$, $p < .05$). These results are depicted in

Figure 2. We show the effects separately for the hyperopia primes and the frugality primes to illustrate the consistency of their effects on spending.

[INSERT FIGURE 2 HERE]

There were no priming effects on amount spent on the lower priced substitute snacks. The high valence primes that increased the salience of hyperopia or frugality, relative to the control primes, had no effect on the amount spent on the lower priced snacks (M = 5.36 vs. 7.14, $t(191) = 1.41$, $p = .16$). Likewise, the low valence primes that decreased the salience of hyperopia or frugality, as compared to the control primes, had no effect on the amount spent on the lower priced snacks (M = 7.97 vs. 7.7.14, $t(191) = .61$, $p = .54$). The results did not differ for hyperopia versus frugality, that is, there was no three-way interaction, as reported earlier. Looking at each prime separately, the mean spending on the lower priced snacks was 6.47 for high hyperopia, 7.33 for control, and 8.75 for low hyperopia, and the mean spending on the lower priced snacks was 4.29 for high frugality, 6.97 for control and 7.19 for low frugality, with no significant differences. See Figure 2.

4.6.4. Motivation to spend and save

Multiple regression analyses were conducted that included prime valence as the independent variable (low = -1, control= 0, high= 1), and either motivation to save or motivation to spend as the dependent variable. First we examined the effects of hyperopia prime valence, using the 96 participants who saw those primes. Consistent with H2, hyperopia prime valence negatively influenced motivation to spend ($\beta = -0.20$, $t(94) = 3.45$, $p < .001$) but did not affect motivation to save ($\beta = 0.18$, $t(94) = 1.55$, $p = .125$). Next, we examined the effects of frugality prime valence, using the 100 participants who saw those primes. Again supporting H2, frugality prime valence positively influenced motivation to save ($\beta = 0.46$, $t(98) = 3.49$, $p < .001$) but did not affect motivation to spend ($\beta = -0.07$, $t(98) = 0.87$, $p = .38$).

4.6.5. Mediation analyses

Mediation analyses were conducted on the hyperopia primes, using the 96 participants who saw them. The analyses showed that hyperopia prime valence (low = -1, control = 0, high = 1) reduced the amount spent on the higher priced snacks (β = -11.44, $t(94) = 5.72$, $p < .001$) but, when both hyperopia prime valence and motivation to spend were included in the regression model, the effect of hyperopia prime valence weakened (β = -6.53, $t(93) = 4.11$, $p < .001$), and the effect of motivation to spend remained significant (β = 15.54, $t(93) = 6.02$, $p < .001$). SPSS macro, model 4 with 5,000 resamples (Preacher and Hayes 2008) confirmed the indirect effect of hyperopia prime valence on amount spent on the higher priced snacks through motivation to spend (95% CI: LL CI = -6.12, UL CI = -0.79).

Next, mediation analyses were conducted on the frugality primes, using the 100 participants who saw them. The analyses showed that frugality prime valence (low = -1, control = 0, high = 1) lowered the amount spent on the higher priced snacks (β = -8.13, $t(98) = 3.71$, $p < .001$) but, when both frugality prime valence and motivation to save were included in the regression model, the effect of frugality prime valence was not significant any more (β = -3.14, $t(97) = 1.77$, $p = .08$), while the effect of motivation to save remained significant (β = -10.90, $t(97) = 8.47$, $p < .001$). SPSS macro, model 4 with 5,000 resamples (Preacher and Hayes 2008) confirmed the indirect effect of frugality prime valence on amount spent on the higher priced snacks through motivation to save (95% CI: LL CI = -8.57, UL CI = -1.89).

4.7. Discussion

Study 2 indicates that priming either hyperopia or frugality using environmental cues lowers consumer spending on routine consumer goods that are higher priced, but does not affect their spending on lower priced substitute consumer goods. This finding extends Study 1, by showing that avoiding higher priced consumer goods may be one way in which hyperopia and frugality negatively affect routine monthly spending. Study 2 also verifies that the underlying psychological mechanisms by which frugality and hyperopia affect spending

are fundamentally different. Frugality lowers spending because frugal consumers possess the motivation to save, while hyperopia lowers spending because hyperopic consumers lack the motivation to spend.

5. General Discussion

5.1. Summary of Findings and Theoretical Contributions

Our studies are the first to compare the effects of hyperopia and frugality on monthly spending on consumer goods and living expenses, and to compare the underlying motivations that drive the spending. Heretofore, hyperopia and frugality have been studied separately by marketing scholars, making it difficult to identify similarities or differences between them. Replicating past research, we find that frugality lowers overall monthly spending, and spending on consumer goods that are higher priced in favor of goods that are lower priced (Pettit et al., 1985). However, we also extend past research by showing that hyperopia likewise lowers overall monthly spending and spending on consumer goods that are higher priced. These findings extend previous research showing that hyperopic consumers avoid indulgent luxuries (Haws and Poynor, 2008; Keinan and Kivetz, 2008; Kivetz and Keinan, 2006; Kivetz and Simonson, 2002). We find that hyperopic consumers also avoid purchasing higher priced ordinary consumer goods when lower priced substitutes are available, and moreover exhibit lower overall monthly spending. As a result, the purchase behavior of hyperopic and frugal consumers appears to be strikingly similar in these respects.

We also show that, while both frugality and hyperopia exert negative effects on spending, they do so for fundamentally different reasons: frugal consumers possess a motivation to save, while hyperopic consumers lack a motivation to spend. Thus, although the spending behavior of hyperopic and frugal consumers may often appear to be very similar, the processes driving their behavior are very different. This finding is important because it suggests that messages targeted to these two groups of consumers should be framed differently.

5.2. Policy Implications

An imbalance between saving and spending in a country creates obstacles for economic growth. For countries with very high savings rates, the lack of consumer spending causes undue reliance on exports rather than on domestic consumption, which threatens the country's long-term growth and stability (Hung, 2008). For countries with low savings rates, consumers are highly sensitive to economic downturns, because they lack the financial resources that protect them in hard times, which slows the recovery process (Manoj et al., 2011). Thus it is often important for policy makers to try to shift consumers' spending patterns to create better situations for economic growth. The two studies that we have conducted suggest that policy makers may benefit from taking into consideration the hyperopic and frugal tendencies of consumers, to make savings and spending rates more balanced in their countries.

For a country like China that openly recognizes the dangers of low consumer spending, easing the current government propaganda in schools and public places that strongly promote frugality could help stimulate economic growth and stability (Chan, 2006). In addition, the Chinese government regulates all messages included in retail advertising, and typically does not approve messages that counter frugality or hyperopia; instead the government primarily approves frugality messages (He et al., 2010). Hence, the Chinese government may want to rethink which retail messages they approve, if indeed they want to increase consumer spending.

Policy makers in countries like the USA with low savings rates typically attempt to increase the savings rate through structural changes to the ways consumers save (e.g., default enrollment in savings plans) or by educating consumers about retirement and the need for investments (Wiener and Doescher, 2008). The results of this research suggest that retail communications that prime high frugality and high hyperopia can also increase savings.

In contrast, both traditional and online retailers may want to consider using messages

that prime low hyperopia and low frugality to encourage consumers to purchase goods that are higher priced. Retail messages promoting high frugality have been used in the past, in both China (He et al., 2010) and the USA (Witkowski, 2003). Therefore, this seems to be a viable communications strategy for influencing consumer spending in one way or another.

5.3. Limitations and Future Research Directions

The two studies conducted for this research focused on Chinese consumers. It would therefore be beneficial to conduct similar research in other countries to test the generalizability of the results. Considering that most of the research used to develop our hypotheses was conducted in the USA, similar process mechanisms are likely to affect spending in the USA and other non-Chinese samples, but this should be verified empirically. Additionally, future research could investigate whether additional motivations help to explain how hyperopia and frugality affect spending. Hyperopic consumers, in addition to lacking the motivation to spend, may also spend less to avoid regret. Frugal consumers, in addition to being motivated to save, may also spend less because they possess higher self-control, in contrast to hyperopia which is unrelated to self-control (Haws and Poynor (2008).

In Study 1, we surveyed working adults with a monthly household income of about 9,708 RMB but with a large standard deviation of 9,513 RMB. The large standard deviation shows that our sample included consumers across a range of incomes. Interestingly, monthly income itself, which was included as a covariate, did not affect monthly spending, motivation to spend or motivation to save. In contrast, frugality related to both monthly spending and monthly income, while hyperopia related to monthly spending but not monthly income. This result suggests that Chinese consumers' saving and spending behaviors are influenced in complex ways, in part by internal factors such as the tendencies toward hyperopia and frugality, and not just by objective financial resources. An interesting topic for future research would be to study when and why objective financial resources influence

spending, relative to or in combination with the tendencies toward hyperopia and frugality.

Future research could also extend our work by studying how hyperopia and frugality may affect spending across different product categories. Marketers could benefit from knowing the specific product categories that are most affected by frugal and hyperopic tendencies because they could then create customized marketing communications for those product categories. It seems especially important to conduct additional research on spending by hyperopic consumers, because it has not previously been recognized that their spending could be so broadly inhibited.

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Table 1. Study 1 Descriptive Statistics and Correlations

		M	SD	1	2	3	4	5	6
1.	Monthly spending	46.41	21.12						
2.	Motivation to save	.47	.50	-.28**					
3.	Motivation to spend	3.47	.76	.23**	-.08				
4.	Frugality	4.36	.83	-.20**	.22**	-.14*			
5.	Hyperopia	2.84	.83	-.21**	.01	-.19**	.24**		
6.	Gender (Male = 1)	.46	.50	-.21**	.08	-.05	.16**	.12	
7.	Age	28.14	3.44	-.12	.02	-.05	-.13*	.01	.01
8.	Education	4.32	.56	-.01	-.04	.09	-.12*	-.03	-.01
9.	Monthly income	9,708	9,513	-.05	-.05	.12	-.25**	-.09	-.08
10.	Married with child	.20	.40	-.06	-.01	.05	-.01	.04	-.03
11.	Married without child	.20	.40	-.03	.04	.00	-.02	-.04	-.01

*$p < .05$, **$p < .01$

Table 2. Study 1 Results

	DV = Monthly Spending		DV = Motivation to Spend (Mediator)		DV = Motivation to Save (Mediator)		DV = Monthly spending (Full Model)	
	B	**t**	**β**	**Wald**	**β**	**t**	**β**	**t**
Independent variables								
Motivation to save							-9.77	-3.96***
Motivation to spend							4.92	3.01**
Frugality	-4.34	-2.66**	-.08	-1.35	0.58	10.90***	-2.62	-1.64
Hyperopia	-3.84	-2.46*	-0.14	-2.47*	-.12	.59	-3.42	-2.27*
Control variables								

	-7.21	-	.00	-.02	.19	.51	-6.77	-2.77**
Male		2.82**						
Age	-.74	-1.71	-.03	-1.66	.03	.35	-.55	-1.32
Education	-.24	-.11	.09	1.04	-.07	.08	-.83	-.37
Monthly income	.00	-1.16	.00	1.25	.00	.02	.00	-1.49
Married with children	-1.52	-.44	.09	.74	-.01	.00	-2.01	-.61
Married without children	1.53	.39	.06	.38	.16	.15	1.61	.43
F statistic or chi-square	4.31		2.28		14.82		6.39	
Significance	.000		.023		.063		.000	
R^2	.12		.07		.06		.21	

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

Figure 1.
Effects of Hyperopia and Frugality on Consumer Spending: A Conceptual Framework

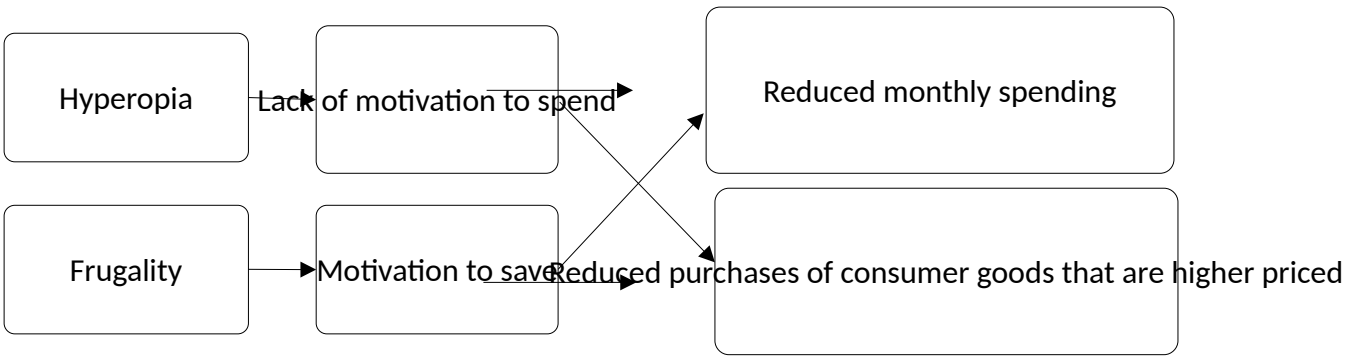
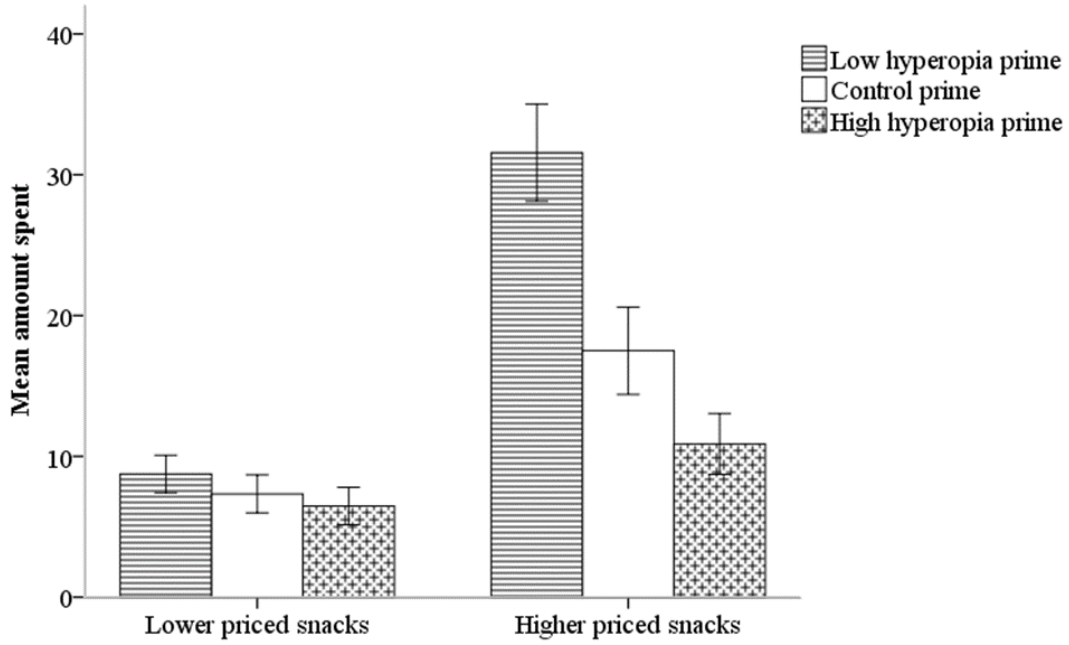
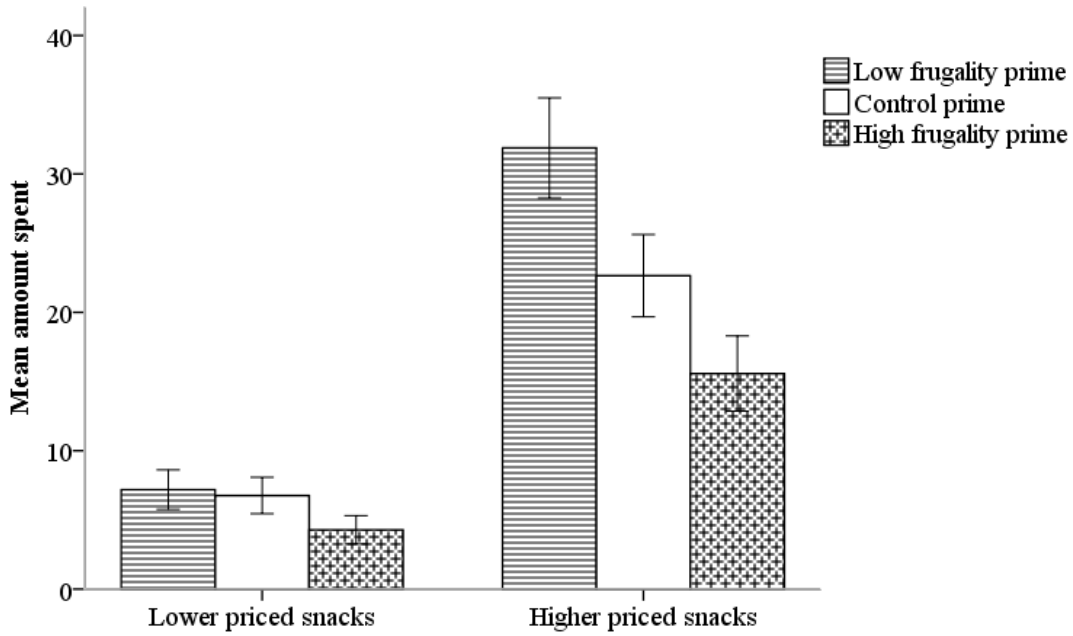


Figure 2.
Study 2 Results: Hyperopia and Frugality Effects on Spending on Consumer Goods

A. Hyperopia Effects



B. Frugality Effects



Appendix A. Chinese Measurement of Hyperopia and Frugality in Study 1
Hyperopia Measure

- □□□□□□□□□□□□□□□

I often fail to enjoy attractive opportunities.

- □□□□□□□□□□□□□□□□

It’s hard for me to make myself indulge.

- □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

I regret missed opportunities to enjoy rich experiences in the past.

- “□□□□”□□□□□□□□□□

I have difficulty pampering myself.

- □□□□□□□□□□□□□□□□□□

I rarely enjoy the luxuries life has to offer.

Frugality Measure

- □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

If you take good care of your possessions, you will definitely save money in the long run.

- □□□□□□□□□□□□□□□□□□□□□□□□□□□□

There are many things that are normally thrown away that are still quite useful.

- □□□□□□□□□□□□□□□□□□

Making better use of my resources makes me feel good.

- □□□□□□□□□□□□□□□□□□□□□□□□□□□□

If you can re-use an item you already have, there's no sense in buying something new.

- □□□□□□□□□□□□

I believe in being careful in how I spend my money.

- □□□□□□□□□□□□□□□□□□□□

I discipline myself to get the most from my money.

- □□□□□□□□□□□□□□□□□□□□□□□□□□

I am willing to wait on a purchase I want so that I can save money.

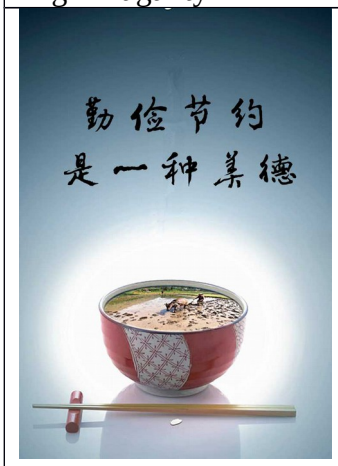
- □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

There are things I resist buying today so I can save for tomorrow.

Appendix B. Frugality and Hyperopia Manipulation Stimuli
Hyperopia Primes used in Study 2

High Hyperopia	Control Hyperopia	Low Hyperopia
		

Frugality Primes used in Study 2

High Frugality	Control Frugality	Low Frugality
		

Web Appendix.

Mediation Analysis for Study 1 without Covariates for all Participants with Dependent Measures (N=283)

	DV = Monthly Spending		**DV = Motivation to Save (Mediator)**		**DV = Motivation to Spend (Mediator)**		**DV = Monthly Spending (Full Model)**	
	β	**t**	**β**	**Wald**	**β**	**t**	**β**	**t**
Independent variables								
Motivation to save							-9.06	-3.71***
Motivation to spend							4.31	2.66**
Frugality trait	-4.97	-3.25***	0.54	11.64***	-.10	-1.90	-3.36	-2.22*
Hyperopia trait	-4.28	-2.79**	-.09	.31	-0.14	-2.54*	-3.86	-2.57*
F statistic or chi-square	12.43		12.52		6.79		12.23	
Significance	.000		.002		.001		.000	
R^2	.08		.04		.05		.15	

*$p < .05$, **$p < .01$, ***$p < .001$. Motivation to save mediated the frugality trait effect on monthly spending: 95% CI: LL CI = -1.98, UL CI = -0.27. Motivation to spend mediated the hyperopia trait effect on monthly spending: 95% CI: LL CI = -1.5950, UL CI = -0.0674