More Bills than Thrills? Comparing Predicted and Actual Levels of Essential and Nonessential Spending

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ABSTRACT

In terms of the expense, spending $50 a week on both commuting and on a recreational happy hour should be perceived equally. Yet, it is proposed that consumers tend to overestimate their level of spending on necessities, and underestimate their extent of nonessential expenses. In two studies, participants predicted their level of spending in essential and nonessential purchase categories, and then recorded their actual spending across multiple weeks. Results show support for each hypothesis in some categories, and propose factors that produce accurate estimates for other purchase types. Consequences of spending misperceptions are discussed, as well as suggestions to reduce them.

INTRODUCTION

Economic hardships stemming from crises such as the Great Recession and the novel coronavirus underscore how important it is for consumers to understand and manage their expenses. From a purely utilitarian perspective, spending $50 a week each on commuting and on a recreational happy hour should be perceived equally. Yet, research on asymmetries (Atler and Balcetis, 2010; Hardisty and Weber, 2020; Kahneman & Tversky, 1984) suggests such reasoning may be influenced by a tendency to over-emphasize items that have unfavorable, rather than favorable, associations. In addition, adaptation and distraction may diminish the impact of positive experiences (Nelson, Meyvis, & Galak, 2009), producing an under-emphasis of those expenditures. As a result, purchases for commuting and other necessities may represent a relatively large portion of consumers' perceived expenses. More optional costs for items like happy hour may be relatively under-weighted in perceptions of overall spending.

There may be consequences if consumers feel more of their income goes toward essentials than is actually the case, or underestimate their nonessential purchasing. Such asymmetries in estimating actual expenses may make it difficult to form—or to adhere to—realistic budgets. Affectively, consumers may be discouraged by the exaggerated perception that a higher proportion of their income goes toward necessary rather than entertaining purchases. Frustrated by lack of control, it is perhaps not surprising that major sources of financial stress are having savings for emergencies and for retirement (Tepper, 2020).

Perceptual accuracy for expenditures is relevant at the household level, and also to organizational buying. For example, if consumers underestimate their spending on nonessentials, they may justify purchasing more. The same practice can happen in business, with some firms accused of focusing too many resources on business entertainment rather than on professional pursuits like product development (e.g., Zakrzewski, 2016). Enhanced understanding of factors biasing consumption awareness may foster more realistic spending perspectives at home and at work.

This research examines how the purchase of essentials and nonessentials affect consumers' expense assessments. What follows is a review of past research that illustrates the tendency to over- and underemphasize activities with unfavorable and favorable associations, respectively. Then, hypotheses are presented that relate the literature to essential and nonessential purchases. Next comes descriptions of the research (i.e., of Study 1, of a preliminary examination that establishes classifications for the next study, and of Study 2). Finally, a general discussion focuses on application and limitations of this work, as well as on future research topics.

LITERATURE

Overemphasizing unfavorable associations. Behavioral researchers have discovered a number of asymmetries revealing higher perceptual impacts for negative, rather than positive, associations. Atler and Balcetis (2010) found that individuals perceive unfavorable locations as farther than equidistant favorable locations. Consumers may therefore inaccurately estimate that more resources are expended getting to the former. Such findings follow asymmetric effects in choice settings seen for decades in prospect theory (Kahneman & Tversky, 1984) and mental accounting (Thaler, 1999), with research demonstrating that the possibility of losing money is felt more heavily than the potential to gain it. That makes individuals less inclined to accept an unfavorable loss (such as a $10 fee) than to reject a favorable gain (such as a $10 discount; Kahneman & Tversky, 1984). Even the anticipation of unfavorable and favorable experiences is asymmetric, with the former felt stronger in absolute terms. Specifically, Hardisty and Weber (2020) found that consumers feel discomfort waiting for both negative and positive events. However, while the former has the added discomfort of imagining the event with dread, the latter is more balanced by imagining with enjoyment. Overall, unfavorable associations (e.g., disliked locations, potential financial losses, and the anticipation of negative events) have a larger perceptual impact than favorable associations (e.g., preferred places, possible monetary wins, and anticipating positive events).

Underemphasizing favorable associations. Favorable associations, in turn, prompt their own biases that can cause them to be underweighted. The fun of consuming foods (Galak, Kruger & Loewenstein, 2012; Kahneman & Snell, 1990), enjoying geography (Schkade & Kahneman, 1988), or engaging with technology (Galak, et al., 2012) can be diminished by consumers' tendency to adapt to the experiences (Baltas, Kokkinaki, & Loukopoulou, 2017; Nelson, et al., 2009). Adding to such concerns, individuals neither self-pace their consumption as effectively as they could to avoid satiation, nor recognize and learn from past habituation experiences (Galak, et al., 2012). The impact of entertaining events can be fleeting even while in progress, as adaptation to a continuous positive experience can occur after just 80 seconds (Nelson & Meyvis, 2008). As a result, such occasions may be underappreciated or more susceptible to forgetting.

In addition, consumers are more likely to document favorable than unfavorable events by taking pictures. Yet, while photographs provide lasting images, the distraction of creating them may reduce enjoyment for positive experiences (Nardini, Lutz, & LeBoeuf, 2019), as well as reduce the memory for those activities (Henkel, 2013). Ironically, "selfies" and other types of pictures may come at the cost of fully experiencing and remembering favored moments.

Since consumers make purchases that range widely in favorability, this research investigates if the unequal reactions to negative and positive associations pertain to everyday spending.

HYPOTHESES

If unfavorable locations are seen asymmetrically as further away than favorable distance matches (Atler & Balcetis, 2010), and financial losses loom larger than gains (Kahneman & Tversky, 1984), purchasing essential items such as gasoline or utilities may have a similarly large disproportionate effect on expense perceptions.

H1: Consumers will overestimate their level of spending on essentials.

Favorable associations for locations, potential financial gains, and event anticipation have a smaller impact than their unfavorable counterparts. In addition, if adaptation and distraction diminish the experience and memory of enjoyable events, then nonessential purchases such as happy hour food or new outfits may be under-emphasized. Therefore, hypothesis two is that consumers will underestimate their nonessential spending.

H2: Consumers will underestimate their level of spending on nonessentials.

These hypotheses were explored in two studies comparing consumers' predicted and actual spending levels. Again, it was thought that overestimation (i.e., predictions exceeding actual spending) would occur for items that are essential, and underestimation would happen for purchases that were more entertaining and optional. Study 1 focuses on food spending, a purchase category that has components of being a necessity as well as a vehicle of enjoyment (e.g., going out to eat). Study 2 is a broadened investigation of multiple product types.

STUDY 1 METHOD

Participants

Study 1 was conducted at a large public university. Two Introduction to Marketing sections totaling 124 undergraduates were asked to participate in this study. Twelve (9.6%) declined, leaving 112 participants. As part of a class exercise, they were asked to complete a set of assignments about their expenditures. To better protect their privacy, and to reduce self-presentation concerns, the materials were turned in using course-specific ID numbers instead of names. Participation in Study 1 was anonymous.

Dependent Variables

Predicted spending. Participants were asked to estimate what percentage of their total spending in the next month would be for "food" purchases. Then, they were asked to predict what percentage of those expenditures would fall into two overall subcategories. The first was "everyday" purchases for meals prepared in or outside a home (e.g., spending for grocery

shopping or for convenience foods, respectively). The second estimate was for the proportion of food spending that would occur for nonessential, "entertainment" purposes (i.e., to enjoy while socializing, or for special occasions). Five to 10 minutes of class time was allocated for this assignment, which was turned in on paper so that the participants could not refer to it while completing the second part of the exercise (described below). The data provided information about what percentage of their total spending was predicted to occur for essential and nonessential food purchases.

Actual spending. In the class session after turning in predictions, participants were given a subsequent assignment. For four weeks, they recorded how much they spent each day on food for necessary and for more recreational purposes, using the "everyday" and "entertainment" classifications described above. They provided the information on a spreadsheet, which also had space for recording their total expenditures for each day.

Data analysis commenced after the 112 participants agreed to be part of this study by sharing anonymously their predicted and actual spending levels. The percentages actually spent on "essential" and "nonessential" food were calculated, and were compared to the corresponding predicted spending percentages.

STUDY 1 FINDINGS

Preliminary data check. An examination of the data revealed that 13 of the participants (or 11.6%) made food "essential" and "unessential" predictions that did not sum to 100%. They were excluded from the analyses because comparisons to their actual spending percentages would have been in unequal units. Another issue is that six of the participants (or 5.4 %) did not follow the instructions to record their food expenses. It is not possible to know if the eliminated participants made calculation errors, or if they simply did not follow the instructions for each of the tasks. However, if the remaining sample of 93 participants is skewed toward those who are relatively comfortable with numbers, or who tend to be more careful with instructions, this study may be a conservative test of the hypotheses about inaccurate perceptions.

The participants' actual spending percentages were compared to their predicted spending percentages. Paired-sample t-tests examined if the mean differences, for both the essential and nonessential food purchase categories, are different from zero. The analyses reveal mixed support for the hypotheses, as explained below for the essential, and then for the nonessential, spending types.

Essential food purchases. Hypothesis 1 is that consumers will overestimate their level of spending for essential purchases. Analysis reveals this was not supported when examining the essential food subcategory. The mean predicted percentage (M = 18.56, SD = 10.45) is quite close to the mean actual percentage (M = 18.75, SD = 12.61), t(92) = -.067, ns.

Nonessential food purchases. Hypothesis 2 is that consumers will underestimate their level of spending for nonessential purchases. A paired-sample t-test reveals this was supported. The mean predicted percentage (M = 5.12, SD = 6.97) is lower than the mean actual spending percentage (M = 7.63, *SD* = 9.64), t(92) = -.2.70, $p < .009$.

STUDY 1 DISCUSSION

The Study 1 findings suggest that the perception of essential and nonessential purchases may be unequal, but for the food category only the nonessential purchases show the hypothesized underestimation effect. The participants were quite accurate in their essential food purchases, perhaps because the variance for that measure is relatively low. Most undergraduates do not have families and shop only for themselves. Many have meal routines or programs that are easy to anticipate. Alternatively, nonessential food expenses might be harder to predict, as they vary by such factors as the restaurants' prices, the practices of splitting the expense equally with friends or paying with separate checks, and the frequency of outings (e.g., such occasions may increase after midterms).

Study 1 examined the food category because it contains both favorable and unfavorable components with which most consumers are highly familiar. However, the study has a number of issues that often occur in real-world settings. It was desirable to measure participants' every day expenses, but it was of course impossible to control the spending environment. And even with careful study procedures, such as the ones used in class when participants made predictions, individual differences in math facility or attentiveness threw off some participants' estimates. In a laboratory setting, a researcher would have the option to see if each total summed to 100%, and to ask participants to make any needed adjustments before turning in the materials. In contrast, in this research successful addition was part of a class exercise, so it would have been inappropriate to check or to correct the math before the materials were submitted.

Despite limitations, the results of Study 1 provide support for hypothesis 2, and suggest times when over- and underestimation might occur across a variety of product categories. For example, in Study 1 essential food expenses took up a higher mean percentage of the participants' total expenditures than did nonessential spending ($M = 18.75$, $SD = 12.61$ and $M = 7.63$, $SD = 9.64$, respectively). Overall, the category is more "essential." Given Study 1's support of hypothesis 2 regarding the buying of nonessentials, Study 2 was conducted largely to further explore necessary spending using multiple purchase categories.

Study 2 provides an opportunity to explore factors that affect accuracy. Again, since grocery bills are paid frequently, and since campus food plans are somewhat stable, those amounts might be relatively easy to predict. On the other hand, going out for food as entertainment happens much less often, and is variable depending on factors like pricing. In addition to the effects of spending frequency and price stability on predictions, another factor with potential impact is salience. For example, consumers searching for a place to live have likely heard the advice to spend no more than 30% of gross income on housing. Even without that guidance, rents and mortgages are such huge expenses that it may be easier to predict their impact on overall expenses than it is for less salient or less regular expenses. In short, Study 2 provides another opportunity to explore hypotheses 1 and 2, using a number of different purchase categories that vary in spending frequency, pricing stability, and cost salience.

PRELIMINARY STUDY ON ESSENTIAL PURCHASES

Prior to conducting Study 2, a preliminary study sought to determine purchase categories that are perceived as essential. Similar to the Study 1 participants, 133 respondents were asked to predict what percentage of their food purchases were and were not essential. For this preliminary study, participants were also asked to provide estimates for additional products and services. First, they were asked if they made purchases in each of the categories. If they did,

they predicted what percentage of their expenses was considered essential. For each category, descriptions were provided of items considered truly necessary or optional.

For example, for the category of “shelter” mandatory payments included rent, mortgage, and repairs, as opposed to noncrucial home improvements. Similarly, “transportation” consisted of the necessary costs of gas, parking, car repairs, insurance, and public transportation, as opposed to expenditures on car enhancements. For “health,” necessary expenses would include prescriptions and health-related appointments, while more optional items included fitness-related purchases (i.e., those related to athletic pursuits, like gym fees). “Appearance” was divided between necessary grooming items and clothes (e.g., replacing worn garments, dry cleaning bills), and nonmandatory items (e.g., fashion updates to grooming items or clothing).

Categories perceived as essential due to their high mean predicted percentages for necessary expenditures are “food” ($M = 85.01$, $SD = 14.24$), “transportation” ($M = 90.64$, $SD = 16.590$), “utilities” ($M = 86.15$, $SD = 23.19$), “shelter” ($M = 85.72$, $SD = 26.69$), and “education” ($M = 94.72$, $SD = 14.79$). A sixth classification for “other expenses,” intended to cover miscellaneous expenditures that are not in the remaining categories, was more neutral and leaned toward the essential ($M = 61.90$, $SD = 33.44$). Categories considered nonessential include “appearance” ($M = 48.90$, $SD = 32.78$), “health” ($M = 41.16$, $SD = 41.67$) and “recreation” (which, by definition, is considered nonessential with unavoidable spending at 0%).

Some purchase categories are linked with gender. For example, there is general agreement that historically females have been encouraged to experiment more with appearance-related products, such as different fashions. To account for such differences, each prediction was analyzed across male and female participants. There were significant differences for two categories.

First, the genders had discrepant estimates for “appearance.” Neither viewed it as an essential purchase category, with the overall mean for that measure at only 48.9%. However, females were even less likely to have that perspective than males ($M = 36.07\%$, $SD = 29.50$, and $M = 55.99\%$, $SD = 32.52$, respectively), $t(116) = 3.29$, $p < .002$. That reflects the expectation of females having a higher percentage of nonessential “appearance” expenditures than males.

Second, “health” overall was not deemed an essential category, which is not a complete surprise given the ages and fitness levels of college students. While the overall mean for necessary purchases was only 41.16%, females had a higher percentage than males ($M = 61.82$, $SD = 40.04$, and $M = 28.98$, $SD = 37.93$, and, respectively), $t(87) = 3.87$, $p < .001$. This finding likely reflects biological differences, with women having responsibility for purchases related to reproductive cycles. The gender difference may also reflect a historic emphasis to encourage males, more than females, to pursue sports and gym workouts, as the former anticipated a higher proportion of nonessential “health” purchases.

Finally, for the purposes of complete reporting, it is worthwhile to note a marginal difference across genders for “other expenses.” The overall mean of 61.90% perhaps reflects males’ tendency to estimate a higher percentage of necessary purchases ($M = 66.76$, $SD = 30.51$) than the females ($M = 50.56$, $SD = 37.96$), although the difference misses statistical significance, $t(58) = 1.75$, $p < .09$. Perhaps many males reasoned that any miscellaneous expenses not covered by the other categories would be unavoidable, while the females were inclined toward a 50-50 split.

The preliminary study results highlight the challenges of any quasi-experiment, such as the lack of both random assignment and control over environmental factors. At the same time, the external validity of real-world settings brings theoretical concepts to life in a manner that can potentially help consumers. Study 2 was pursued with the hope that even the imperfect research environment could provide insights into spending perceptions. Having conducted the preliminary study to outline purchase categories that were, and were not, considered essential, Study 2 used those classifications to further examine perceived spending levels for both.

STUDY 2 METHOD

Participants

Six sections with a total of 510 Introduction to Marketing students were approached to participate in Study 2 by sharing their predicted and actual spending percentages. Nineteen (3.73%) did not provide consent, leaving 491 participants.

Independent Variable

The gender differences in the preliminary study suggest the importance of measuring this variable. When asked to volunteer their gender, 56% of the participants noted being male, and the remaining 44% noted being female.

Dependent Variables

Participants were asked to predict what percentage of their expenses in the next few weeks would fall into the nine types of purchases used in the preliminary study. Then, they recorded their actual spending in each category for three weeks. Calculated spending percentages were compared to the corresponding predictions.

Different from Study 1's focus on "food," some undergraduates do not pay for all nine purchase categories explored in Study 2. Many who live with their parents do not have "shelter" payments; it would be easy for them to both predict and to achieve spending 0%. This work focuses on perceptions of *existing* expenditures, and it is unequitable to combine assessments of those who do and do not have payments. Therefore, only participants who planned to cover expenses in a given category were included in the corresponding analysis. As seen in the findings section, the percentage of participants ranged from a high of 100% for "food" (revealing all participants had this expense) to a low of 60% for "shelter."

In all, Study 2 included predictions and recorded spending for nine categories with five considered via the preliminary test as highly essential ("food," "transportation," "utilities," "shelter," "education,"), one leaning toward essential ("other expenses"), one deemed mostly nonessential by females ("appearance"), one considered mostly nonessential by males ("health"), and one that by definition is nonessential ("recreation").

STUDY 2 FINDINGS AND DISCUSSION

Preliminary data check. Similar to Study 1, some participants (49, or 9.98%) had predictions that did not sum to 100%. While many of them were quite close (e.g., 21 of them had estimates between 98% and 102%), and retaining their data would have enhanced statistical power, their presence required a judgment call of what errors are small enough to be acceptable or adjusted,

which can cloud the data interpretation. For consistency, all of the respondents whose predictions did not sum to 100% were excluded from the analyses, resulting in 442 participants. As was the case for Study 1, the sample may be skewed toward those more quantitatively inclined, who might provide a conservative look at expense biases.

To analyze the data, one idea was to use mixed factorial ANOVA with gender as a between-subjects variable. However, Levene's test of equality of error variances revealed homogeneity concerns for a number of the purchase categories: "appearance" ($p < .001$), "recreation" ($p < .001$), "other expenses" ($p < .005$), "utilities" ($p < .02$), "transportation" ($p < .06$), and "food" ($p < .08$). For reporting consistency, each purchase category is analyzed two ways. First, as was done in Study 1, paired-sample t-tests compared the mean predictions with the mean actual spending amounts. Then, conservative non-parametric analyses—Wilcoxon signed-rank tests—explored the two measures for each gender. In this way, information is provided for both the magnitude of any prediction-to-spending differences, as well as the frequency of over- and underestimates. The results for the categories considered essential are reported first.

Essential purchase categories. Analyses reveal mixed support for hypothesis 1. Across the parametric and nonparametric analysis, four of six categories display overestimates for predicted versus actual spending levels. The remaining two purchase classifications show no difference between the measures. The results of the parametric analyses for each category are in Table 1, and the nonparametric results are in Table 2. As there are many purchase types, the findings for each will be described below, followed by a brief discussion of the results. Then, the general discussion focuses on overall findings, applications, limitations, and future research.

Food. As seen in Table 1, paired-sample t-tests reveal no differences across predictions and actual spending levels. Similarly, as seen in Table 2, Wilcoxon signed-rank tests reveal no differences in the median predicted and actual spending percentages for males or for females. Showing no support for hypothesis 1, participants had accurate predictions for this overall essential category, as they did for their necessary food spending in Study 1. As noted above, such purchases might be frequent and habitual, such as grabbing a sandwich between classes. Prediction accuracy may have been further enhanced by regular payments to meal plans, or by the fact that most undergraduates shop only for themselves.

Transportation. The results for this category support the notion that essential spending is overestimated (hypothesis 1). In the paired-sample t-test, mean percentages are higher for predictions than for actual spending. Similarly, in the Wilcoxon signed-rank tests conducted for each gender, median predictions are different from median spending levels, with more over- than underestimates. "Transportation" costs (e.g., gasoline) might be harder to estimate as they are likely not paid as frequently as daily or weekly "food" items. Crude oil prices and supply and demand pressures—as well as traffic—increase the variability of this expense which, in this case, appears to have encouraged the anticipated overprediction.

Utilities. As with "transportation," the parametric analysis and the nonparametric tests for each gender reveal that predictions exceed actual spending levels. Like transportation, utilities are not paid daily, and might be harder to remember. Uncontrollable factors like weather add variance to the bills. That predictions are off in the direction of overestimation supports hypothesis 1.

Shelter. Similar to "food," there are no differences across predictions and actual spending levels. Correspondingly, Wilcoxon signed-rank tests reveal no significant differences in the median percentages and the number of over versus underestimates for males or for females.

As noted above, this finding may not be so surprising given the salience of large rent/mortgage payments, which make them relatively easy to predict.

Education. For this category, the magnitude of difference between anticipated and actual spending is not strong, yet the frequency of overestimates is, and supports hypothesis 1. The paired-sample t-test revealed no differences in magnitude between the predicted and actual mean spending percentages. However, the Wilcoxon signed-rank tests reveal statistically significant findings, with both the males and females having higher median percentage estimates in their predictions than in their actual spending. The different parametric and nonparametric findings might reflect both the salience of fees like tuition and, in contrast, the fairly unpredictable costs of items like textbooks. The former is rather large and might, like "shelter," be relatively easy to estimate (hence the lack of difference in the magnitude of predictions and spending). The textbook-type purchases, like "utilities," are neither as large nor as predictable, which may have produced small-scale overestimations.

Other expenses. Since these purchases include those that are not in other categories, it is perhaps unsurprising that the results are mixed. The paired-sample t-test reveals no differences in magnitude between the predicted and actual spending percentages. However, the nonparametric findings extend the gender differences hinted at in the preliminary study, wherein males estimated a marginally higher mean percentage of essential expenditures ($M = 66.76$, $SD = 30.51$) than did females ($M = 50.56$, $SD = 37.96$). The Wilcoxon signed-rank tests reveal that males, who tended to see the category as more essential, provided a higher median percentage estimate for predictions than for actual spending, with more overestimates. That is congruent with hypothesis 1. The females, who as a group saw the category as neutral, accordingly did not differ significantly in their median scores or over- and underestimates.

Table 1. Study 2 means (standard deviations) for dependent measures				
Purchase Category	Predicted Percentage	Actual Spending Percentage	df	t-statistic
Food	22.13 (11.95)	23.28 (15.41)	441	-1.55
Transportation	14.71 (9.41)	12.29 (11.74)	408	3.98*
Utilities	7.18 (5.19)	5.47 (6.02)	304	4.01*
Shelter	26.51 (15.01)	25.34 (21.61)	264	0.87
Education	16.44 (13.58)	14.95 (20.62)	376	0.85
Other Expenses	8.64 (7.29)	9.01 (15.62)	344	-0.47
Appearance	9.27 (8.17)	10.63 (12.42)	415	-2.32*
Health	5.66 (3.31)	3.65 (6.42)	339	5.24*
Recreation	10.51 (7.23)	9.54 (11.89)	401	1.57

* Means in the same row differ at $p < .05$.

Table 2. Study 2 median scores and number of ranks by gender for dependent measures

Purchase Category	n	Median Predicted Percentage	Median Actual Spending Percentage	Overestimates (positive ranks)	Underestimates (negative ranks)	Z statistic
Food						
Males	247	20	20.47	121	126	-0.91
Females	194	20	18.75	101	93	-0.29
Transportation						
Males	232	10	8.97	141	91	-3.02*
Females	176	15	8.39	122	54	-5.59*
Utilities						
Males	173	5	4.15	112	61	-4.71*
Females	131	5	4.72	76	55	-2.28*
Shelter						
Males	153	25	27.73	90	63	-1.16
Females	111	25	24.52	63	48	-0.59
Education						
Males	204	10	6.46	125	79	-2.22*
Females	172	10	4.58	115	57	-2.55*
Other Expenses						
Males	191	5	1.29	132	59	-3.65*
Females	153	6	3.18	99	54	-1.57
Appearance						
Males	226	5	4.15	146	80	-2.35*
Females	189	8	9.19	83	106	-2.49*
Health						
Males	188	5	1.49	152	36	-7.56*
Females	151	5	1.24	118	33	-5.15*
Recreation						
Males	229	10	8.07	125	104	-0.72
Females*	173	10	3.53	133	40	-5.92*

* Median scores in the same row differ at $p < .05$.

Nonessential purchase categories. While Study 1 showed support for hypothesis two, with predictions underestimating nonessential "food" spending, Study 2 reveals only one of four groups showing that pattern. The findings for each category will be described below, as well as environmental factors that may have influenced the results.

Appearance. The results for this category provide support that nonessential spending is underestimated (hypothesis 2). Paired-sample t-tests reveal that overall participants underestimated their spending. However, analyses of the genders provide additional insights into the findings. As noted above, females in the preliminary study estimated an average of only 36.07% of their purchases would be essential, which suggests they saw this category as more nonessential. Wilcoxon signed-rank tests reveal female participants indeed have a lower median percentage for their predictions than for their actual spending, with more under- than overestimates, supporting hypothesis 2. Males in the preliminary study predicted on average that 55.99% of their spending would be essential. Wilcoxon signed-rank tests reveal that males have a higher median percentage for predictions than for actual spending, and more overestimates; this underscores that strong underestimation occurred for the group (females) that truly saw this as a nonessential category.

Health. A paired-sample t-test analysis reveals participants tended to overestimate "health" expenditures. However, like "appearance," this purchase category had gender differences in the preliminary study. Males predicted a low mean percentage of essential purchases (28.98%), revealing they viewed this category as heavily nonessential. However, contrary to hypothesis 2, Wilcoxon signed-rank tests reveal that these participants have a higher median percentage for predictions than for actual spending, with more over- than underestimates. On the other hand, preliminary study females anticipated most (61.92%) of their purchases would be essential. Indeed, nonparametric tests reveal a higher median percentage for predictions than for actual spending, which provides additional support for hypothesis 1. For this purchase category, the results for the females, but not the males, are congruent with expectations.

Recreation. As this category is nonessential by definition, it was anticipated that underestimation would occur. However, paired-sample t-tests reveal no differences between predicted and actual spending levels. Furthermore, nonparametric tests reveal no differences in the prediction and actual spending median percentages for the males. And, opposite to hypothesis 2, females have higher median percentages for predictions than for actual spending, with more overestimates for this purchase category. For "recreation," neither the results for the males nor the females are as anticipated.

Environmental factors influencing nonessential categories. According to the preliminary study, males view "health" and "recreation" more as nonessential categories. Yet, instead of underestimating their predictions, they overestimated for the former category, and showed no prediction/actual differences for the latter. The "health" finding may be due to an error of good intentions, wherein they hoped to engage in fitness activities but did not. Annually, many consumers experience this when their New Years' resolutions to exercise disappear.

Yet, the "health" and "recreation" findings together suggest they may be due to unexpected and unusual circumstances that arose when Study 2 was conducted. During that time, two local professional teams from different sports rose to win their league, and then their national, championships. The hype of their unprecedented successes had many in the community—even non-sports fans—glued to their televisions' cable and streaming services. (While a sports team's success can increase spending on game tickets or in bars, the high demand and limited availability combined with the costs of those activities made those options out of reach for most students, as well as most nonstudents.) Members of the community rearranged spare time to watch games, with some faculty even revising their course schedules. Time and money that the male participants may have earmarked when making predictions for "health" (e.g., sports and fitness activities) and "recreation" (e.g., going to concerts) might instead have been spent

viewing games at their or their friends' homes. Any cost of TV viewing would have been covered in monthly "utility" bills.

The professional sports effect might also explain the one confusing female participant finding, their overestimation of the nonessential category of "recreation." Instead of going out as planned, they, too, may have been staying in to watch games on TV at their or their friends' homes. Again, that expense would be incorporated in the "utilities" category.

It is not possible to know the full impact of professional sports on the Study 2 findings. Overall, the potential effect of that, and of other uncontrollable factors, illustrates the obvious point that it is more of a challenge to study less stable expenses like "recreation" than more regular and unavoidable ones like "utilities."

Summary of findings. In all, the categories of "transportation," "utilities," and "education," considered to be essential by both genders, show support for hypothesis 1, with more over- than underestimates of actual spending levels. Similarly, in the categories for which males and females tended to predict mostly essential purchases, (i.e., "other expenses" and "health," respectively), their overestimates exceed their underestimates. The category that females considered more nonessential ("appearance") shows support for hypothesis 2, with actual spending levels exceeding predictions. In contrast, the category that males considered more nonessential ("health"), and the one category considered nonessential by both genders ("recreation") show no support for the second hypothesis.

GENERAL DISCUSSION

Applications of this Research

In this research the results are mixed, with Study 1 showing more support for the underestimation of nonessentials (hypothesis 2), and Study 2 providing more examples of the overestimation for essentials (hypothesis 1). While neither effect occurred consistently, evidence that they exist for real-world expenditures suggests they could at times be consequential. At some level, consumers must take responsibility for their spending. Yet, if biases prompt an over-emphasis on needs and an under-emphasis on wants, then there is an up-hill battle to fight skewed perceptions. It is worthwhile to outline possible consequences of, and potential ways to reduce, these effects.

Spending estimates and essential purchases. The purchase category results that were not statistically significant reflect participants' abilities to form accurate predictions. These estimates likely benefitted from frequent and routine purchasing (e.g., for essential "food" items), and from expense salience (e.g., for rent). It is natural to suggest that when trying to understand essential expenses, consumers should make special efforts to learn about the ones that are less predictable.

As noted above, bills related to "utilities" are seen only monthly, and can vary by season. Further reducing awareness for such expenses is the practice of electronically deducting these costs from checking accounts, a relatively mindless transaction that may additionally hinder the formation of accurate predictions. To compensate, consumers may want to track their utilities over time, seeing specifically when they spike. Not only would that make for more thoughtful predictions, it might also encourage changes to help with future expenses (e.g., creating gardens with drought resistant plants to reduce summertime water costs). The same can be

said for “transportation.” Instead of paying a gas bill with a credit card and then forgetting about it, money management experts suggest it is better to make efforts to record and watch the expense over time to get a better understanding of its impact (Robin & Dominguez, 2008).

Spending estimates and nonessential purchases. The purchase categories for which there were effects opposite to what was hypothesized were all nonessential (i.e., males overpredicting “health,” and females overpredicting “recreation”). The challenge of examining nonmandatory spending is that it is easily changed by uncontrollable factors. Nonetheless, there was still some support for the notion that nonessential spending can be underpredicted from Study 1 (for nonessential food purchases) and Study 2 (for females purchases of “appearance” items). Since the impact of entertaining expenditures can be fleeting (Nelson & Meyvis, 2008), or lessened by distraction (Nardini, et al., 2019), lower recall for those purchases can potentially produce repeat behavior, which may further derail spending perceptions.

It may behoove consumers to track their nonessential spending to determine not just the level of purchasing, but also the types (e.g., “appearance” or “recreation”) that are under-remembered. That would take some effort as the total costs would not appear automatically and in bill form as they do for essentials like “utilities” and “shelter.” However, consumers can use personal expense tracking software, which categorizes credit card spending and can be further customized to show the magnitude of different expenditures (e.g., those from favored stores or restaurants). Tracking by self-reporting or by software can develop spending baselines that can be adjusted upward for times like the holiday season, or downward for times with less socializing (e.g., when staying home is preferable to dealing with seasonal bad weather).

Spending estimates and affect. Beyond issues of budgetary accuracy, is it harmful to overestimate (underestimate) essential (nonessential) expenses? Affectively it could be discouraging if spending seems overly lopsided toward the former. A realization that necessities are perceived as larger than they are may provide much needed perspective and reassurance. A better balance for the awareness of enjoyed “nonessentials” even has the potential to encourage small gestures of helpfulness. For example, Louie & Rieta (2018) compared the behavior of individuals with and without heightened appreciation of a nonessential treat (i.e., candy); later, the former group engaged in more helpful behavior (i.e., donating back the useful supplies used to deliver the individual treats). Aknin, Dunn, and Norton (2012) found that the happier participants were after describing a past $20 or $100 purchase, the more likely they were to choose to spend a windfall on someone other than themselves (i.e., to purchase a gift for someone or to make a charitable donation). While there is no intention to exaggerate the influence of accurate spending perceptions on prosocial behavior, small helpful actions can add some joy to daily life.

In short, a more balanced and accurate perception of spending that is and is not mandatory could have bottom line, peace of mind, and perhaps even helpfulness benefits.

LIMITATIONS AND FUTURE RESEARCH

In addition to the previously mentioned concerns surrounding quasi-experiments, this research is limited in scope because undergraduates, while consumers, have spending habits that are different from older adults. College life often comes with resource constraints that keep spending simple. On the other hand, less complicated expenses may make predictions easier, which may in turn reduce and underemphasize perceptual spending inaccuracies. Future

research can focus on older adults to see if they have more complex spending and more biases, or if their experiences with expenses enhances their prediction accuracy.

In particular, this study could be replicated to include undergraduates and those who are three or so years away from graduation. Such an effort might reveal if the confines of college life have reduced or perhaps increased the effects seen in this effort. In addition, a comparison with older individuals, such as those with more mandatory health-related concerns, would provide insights into how essential and nonessential classifications change over time, and again would allow a test of the hypotheses.

A related issue concerns the purchase categories themselves. While Study 2 focused on those used largely by undergraduates, it would be worthwhile in future work to reassess the classifications for different life stages. For example, while the level of spending in "other expenses" was relatively low, some participants volunteered how they used it. Some of their responses include recording expenses for a pet, or for donations to nonprofits. In future studies, consumers with families might want other options, such as "child care." Again, a reassessment of the purchase categories that does not make the expense recording too complicated may be worthwhile.

In this research, expenses were recorded for relatively short time periods, which made unusual events like those involving the professional sports teams harder to overcome. Even students doing the assignment have mentioned that the time period should be longer to provide a more solid look at their spending. (When mentioning that they can still document their expenditures without being graded for it, they often seemed surprised at the suggestion, revealing that voluntary expense tracking is not intuitive for many.) Extending the time period in future research would buffer against unusual events and unexpected purchases.

The preliminary study and Study 2 revealed gender effects. Future research can focus on group-specific environmental factors prompting levels of nonessential spending that sabotage attempts to save. For example, marketers' historic encouragement of females to seek fashionable clothes and cosmetics can make "going shopping" a social activity. If that produces more buying than solo trips (e.g., to the mall), females with that habit could be encouraged not to shop with friends, or at least to be extra careful. Males also impulse shop and—due perhaps to their pull toward big ticket items—spend more than females (Braverman, 2019). If that becomes problematic, males could be encouraged to leave credit cards at home in favor of cash. While all consumers would benefit from being mindful, targeting norms specific to the genders may increase spending awareness.

The professional athletic teams' successes might be viewed as uncontrollable factors that hindered this research. While they may have contributed to unexpected findings, they have added something favorable to this exploration of real-life expenditures. One goal of this work was to suggest ways to reduce misperceptions that hinder preparations for financial emergencies. The sports teams are a reminder of something that is often not discussed, which is that a realistic grasp of expenses may help not just for emergencies but for unexpected events that are happy.

In other words, it might be wise to have an accurate view of expenses both to form a financial emergency plan, *and* to create a pool of funds for surprise opportunities. To illustrate the latter, one student benefited from assessing his predictions to attain more careful spending. A parttime worker at one of the professional sports team's in-house food services, he learned before the season's end of a unique opportunity. If the team was victorious, he and his co-

workers might have the chance to purchase their own authentic, albeit much smaller scale, championship rings. The student took time to reprioritize his spending, cutting back and saving in case his team won. When the opportunity arose, he was able to purchase a once-in-a-lifetime championship ring, personalized with his last name (like the athletes'), and cleaned for free at any Tiffany's shop (again, like the athletes'). The keepsake is a treasure for such a sports and franchise fan. Accurate predictions and careful spending allowed him to prioritize his expenses to his satisfaction, which ultimately is the aim of research like this.

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