

Debunking True Purchase Price Limits in Teenagers

Maggie Tsyganova¹ and Kerry Catlin^{1#}

¹Walter Payton College Preparatory High School

#Advisor

ABSTRACT

This project aims to explore whether or not the endowment effect, a concept in behavioral economics, holds true for adolescents, since this population has not been studied before. The endowment effect occurs when there is a gap between a buyer's willingness to pay (WTP) and a seller's willingness to accept (WTA) at a certain price. A WTA:WTP ratio equal to 1 would exhibit traditional economic rationality, and a ratio above 1 would exhibit the endowment effect. This study used survey research in the form of having participants explicit state prices, to investigate how the WTA-WTP discrepancy, a measurement of the endowment effect, varies across economic goods and survey procedure (or how survey questions were worded). The final conclusion that can be drawn from this paper is that high school students exhibit the endowment effect only for durable goods (shoes and electronics), and exhibit the reverse trend of the endowment effect for perishable goods (food and beverage). Additionally, the survey procedure and socioeconomic status were not a contributing factor to the endowment effect. These results, which differ from previous literature regarding the endowment effect, emphasize the increased importance of studying teenage purchasing pricing preferences, compared to prior studies that focused solely on undergraduate business students.

Introduction

Pricing strategies are incredibly important for a business to thrive in a volatile economy, however, most companies use a simplistic cost-based pricing model and do not consider nuanced market factors or unpredictable consumer behavior, which may limit their ability to break a competitive advantage. In fact, recent studies have shown that only 8 to 15% of all companies develop pricing strategies based on likely buyer purchase response behavior (Breibert et al., 2015). One way for companies to make more informed decisions is through a behavioral economics approach, particularly by analyzing consumer willingness to pay and accept for various goods and services. These types of analysis can not only benefit consumer-based businesses, but also the customers themselves. Increased knowledge of one's own personal spending and budgeting habits can better prepare oneself for future financial stability.

With its beginnings in the 1970s and 80s, behavioral economics combines elements of economics and psychology to understand how and why people behave the way they do in the real world. It differs from neoclassical economics, which assumes that most people have well-defined preferences and make well-informed, self-interested decisions based on those preferences (Witynski, 2022). Several principles have emerged from behavioral economics research that have allowed governments and businesses to develop policy frameworks to encourage particular behavior. For example, understanding that people are loss averse, a concept in the field, can help stimulate more tailored advertisement marketing, which can be crucial in medical-related treatments (Karle & Schumacher, 2017). While behavioral economics has since grown as a field, there are numerous areas of human behavior that have yet to be explored, particularly that of the endowment effect on adolescents.

The endowment effect, a concept in behavioral economics, is defined as "the tendency for us to assign more value to an object when we own it, compared to how we would value the same item if it belonged to someone else" (The Decision Lab, 2022). It occurs when there is a gap between a buyer's willingness to pay (WTP) and a seller's willingness to accept (WTA) at a certain price. In other words, this is when buyers do *not* want to buy at a price higher

than a lower existing price and sellers do *not* want to sell at a price lower than a higher existing price. The discrepancy can be measured using the WTA:WTP ratio; for example, if a company wishes to sell shoes for \$300 but a consumer's maximum willingness to pay is \$150, then the WTA:WTP ratio is 300:150 or 2:1. This phenomenon is one of the violations of neoclassical economic rationality, where traditionally, the buyer WTP for an item should be equal to the seller WTA for that same item. A ratio greater than 1 would exhibit the endowment effect and be economically "irrational." Using WTP and WTA as the foundation for pricing strategy enables companies to pursue a strategy that is customized to their marketing environment (Breidert et al., 2015). Failing to understand customer preferences puts companies at a disadvantage to their competitors, and can further alienate them from their consumers.

Prior experimental studies have analyzed consumer WTP and WTA, specifically for undergraduate business and economics students; however, studying business students introduces a bias due to their prior exposure of market principles, since they have been found to display both a significantly lower WTP and WTA (Bauer & Schmidt, 2008). This introduces a gap in the body of knowledge: analyzing consumer WTP and WTA for adolescents. A more nuanced analysis of consumer purchase behavior will help businesses make more tailored pricing decisions to maximize profits and customer satisfaction, as well as better prepare consumers for financial success (McKinsey & Company, 2021).

The purpose of this research study is to determine whether or not the endowment effect, when WTA is higher than WTP, holds true for teenagers. Additionally, this project investigates how the WTA-WTP discrepancy, a measurement of the endowment effect, varies across economic goods and survey procedure, and which factors are most important when teenagers make purchases. Given the importance of understanding consumer behavior in an increasingly competitive business market for both companies and consumers themselves, where competitive advantages are determined by incremental improvements, there is a great potential pay-off benefit for understanding the following question.

Research Question

How does the endowment effect hold true, if at all, for teenagers? Additionally, how does the WTA-WTP discrepancy, a measure of the endowment effect, vary across survey procedure and for different economic goods?

Literature Review

To understand existing knowledge of the topic, three main themes are explored. First, the relationship between product ownership and price preference under the endowment effect. This is important as the foundation of my research on consumer willingness to pay and accept. Secondly, the different causes for the WTA-WTP discrepancy and other behavioral anomalies are explored. Lastly, the nuances and purchase behavior of adolescents are explored.

Endowment Effect

Coined by Richard Thaler in 1980, a Nobel prize-winning economist and founder of behavioral economics, the endowment effect is defined as "the tendency for us to assign more value to an object when we own it, compared to how we would value the same item if it belonged to someone else" (The Decision Lab, 2022). This phenomenon is one of the violations of economic rationality, where the price a buyer is willing to pay (WTP) for an item should be equal to the willingness to accept (WTA) that same item but it is not. This occurs when simultaneously a seller does *not* want to sell at a price lower than a higher existing price and a buyer does *not* want to buy at a price higher than a lower existing price (The Decision Lab, 2022). Thus, a ratio above 1 would be "economically irrational". These findings are consistent with prospect theory, the principle that people are loss averse and prioritize certainty, information completeness, and risk aversion, when making decisions (Kahneman & Tversky, 1979).

An example of this in action was a study carried out at Cornell University in the 1980s, where half of the students were given Cornell coffee mugs and the other half were not, and then asked for how much they would be willing to buy or sell the mug. The researchers found that students who received the mug were willing to sell it at a minimum price almost double that of the maximum price buyers were willing to pay, resulting in a WTA:WTP ratio of 2:1 (Kahneman et al., 1991). Similarly, a study conducted by researchers at the Ruhr-University in Bochum, Germany examined the WTA-WTP relationship, a measure of the endowment effect, of Christmas presents. The study found that the endowment effect was independent of price, meaning it is present for goods of all price ranges (Bauer & Schmidt, 2008).

These studies suggest that WTA tends to be greater than WTP for most common goods. However, several have shown that there is a lack of correlation between WTA and WTP, meaning that knowing someone exhibits a high WTA provides almost no information about their WTP (Chapman et al. 2021). This is especially important when analyzing both WTP and WTA in the same context, rather than separately.

Explaining the WTP-WTA Discrepancy

Although there has been substantial evidence supporting that WTA tends to be greater than WTP, there is no general consensus within the research community as to why. When behavioral economics research started in the 1990s, it was widely thought the discrepancy was explained by the substitution effect, meaning if fewer substitutes are available for the good then there is a greater disparity in WTA and WTP (Hanemann, 1991). In recent decades, research has shown that the WTA-WTP discrepancy increases both with uncertainty and level of risk aversion (Okada, 2010). As buyers and sellers share the same goal of maximizing utility, or subjective reward from each transaction, each party tends to focus on what they give up in the exchange. This makes WTP more sensitive to reference prices and WTA more sensitive to elaboration of the item's benefits (Okada, 2010). This is consistent with Thaler's original theory of loss aversion, where prospective losses hurt more than prospective gains (The Decision Lab, 2022).

Recent findings have discovered a new theory that may explain the WTP-WTA discrepancy: commitment cost theory. This is when both buyers and sellers demand compensation to trade under uncertain conditions (Kling et al., 2003). Additionally, the endowment effect, uncertainty, individual and team pressures, emotional influences, and even certain socioeconomic factors are correlated with different levels of loss aversion (Metzenroth, 2010). This emphasizes the importance of conducting multiple survey methods to better understand consumer behavior for different age groups. Understanding the reasons behind the WTA-WTP discrepancy can help explain why humans exhibit certain purchase price limits.

Purchase Behavior of Teenagers

Using both experimental and actual market data of WTA and WTP for different products can propel sellers to make more informed pricing choices (Edwards, 2021). In particular, purchase behavior differs with age. Consumer research has shown that high schoolers' most common purchase preferences include food, drink, clothing, and electronics (Piper Sandler Companies, 2021). Additionally, research has shown that teenagers put less importance on budgeting and are more susceptible than older age groups for overspending (Mallalieu & Palan, 2006; Lent et al., 2014), with recent studies supporting this and the fact that family norms play a significant role in influencing purchasing behavior (Ali et al., 2019). Investigating adolescent purchase behavior will help companies tailor their products to their target audience.

There are many situational, personal, and psychological factors to one's financial decision-making (University of Minnesota, 2015). For example, prior research has shown people of lower socioeconomic status less likely to purchase certain goods if they do not have the means (Haymond, 2022). Furthermore, recent literature has shown that financial education from an early age can help prevent future debt. A study conducted by Allianz showed that people

with a good understanding of financial concepts are twice as likely to make better financial decisions and better manage their money (Allianz, 2017). This emphasizes that increased awareness of individual purchase behavior can be influential in creating a more financially-literate generation.

Since most studies on the endowment effect have been centered on undergraduate students, studying adolescents will help fill a gap in the existing literature. This is especially important given that economics students display both a significantly lower WTP and WTA (Bauer & Schmidt, 2008). A more nuanced analysis of adolescent purchase behavior will help both businesses and consumers make more informed pricing decisions to maximize profits and customer satisfaction (McKinsey & Company, 2021).

Overall, existing literature shows that one's WTA is generally greater than WTP, due to the endowment effect. However, this has not been thoroughly investigated outside of undergraduate students. It is critical to fill the existing gap in the research by analyzing whether or not the endowment effect holds true for teenagers, and how it varies across economic goods and survey procedures. Understanding individual purchase behavior is critical for businesses to maximize customer satisfaction and for consumers to make wiser financial decisions.

Methods

Purpose

The purpose of this research study is to determine whether or not the endowment effect holds true for Chicago teenagers. Additionally, I will investigate how the discrepancy in willingness to pay (WTP) and willingness to accept (WTA), a measure of the endowment effect, varies across different economic goods, survey procedure, and socioeconomic status.

Research Design and Method

My goal was to develop a detailed understanding of high school students' true purchase preferences and behaviors, in order to guide both the average teen consumer and company to make more informed pricing decisions. This research design was survey research, with mostly quantitative and one qualitative-based question (Creswell, 2014). Surveys in the context of willingness to pay, specifically asking participants to explicitly state their WTP and WTA for a certain good, have been shown to be an effective method both in gathering more accurate consumer price limits and larger data samples (Stobierski, 2020).

Since it is important for me to collect a large set of quantifiable data to analyze the WTA:WTP discrepancy for teenagers, I am conducting mixed methods survey research to collect the WTP and WTA for different goods. The survey was organized into four sections: for food (burrito/salad bowl), caffeinated drink, shoes, and electronic items. These four goods were chosen because they correspond with high schoolers' most common purchases (Piper Sandler Companies, 2021). For each item, respondents were asked to specify the name of the good, and then state their maximum WTP (in dollars) if they were to purchase that item and then state their minimum WTA (in dollars) if they were to sell it. For example, respondents were asked to state their favorite caffeinated drink, and then state their maximum WTP and minimum WTA for that item. For analysis, the WTA:WTP ratio was used as a measure of the endowment effect. A 1:1 ratio represents economic rationality, and a ratio above 1 would exhibit the endowment effect.

Additionally, this survey aimed to determine whether survey procedure, or how specific questions were worded, affected the presence of and/or discrepancy of the endowment effect. This was done by randomizing survey questions for respondents' most recent consumption or most favorite choice of the item; for example, "most recently-consumed" burrito/salad bowl vs. "favorite" burrito/salad bowl. Respondents only took one version, with the questions consistent for each good. This design was adopted for the importance of detaching emotion from purchasing decisions,

as prior studies have shown that respondents exhibit a higher WTA for goods to which they have a personal attachment (Bauer & Schmidt, 2008).

This survey procedure was replicated from Kim et al.'s study which organized participants into two treatment groups at an auction: one involved explicitly stating WTA for recently-purchased items, and another involved explicitly stating WTA for desired items (Kim et al., 2015). In this project, survey procedure refers to the specific wording of questions, with "survey procedure" and "treatment" used interchangeably. Ages 13, 15, 17 corresponded to respondents' favorite items (Treatment A, "odd"), and ages 14, 16, and 18 corresponded to respondents' most recently-purchased items (Treatment B, "even"). A total of 65 respondents were ages 13, 15, and 17, and 41 respondents were ages 14, 16, and 18.

Lastly, the survey asked participants to rank which factors are most important when purchasing items. Understanding which factors are most important will help determine which variables are explanatory to the endowment effect. See Appendix A for the survey.

Population

The survey was distributed to students at an urban public high school in Chicago, which aimed to sample the larger population of adolescents ages 13-18 years old, since this population has not been studied before. Responses were collected within a six-week time period, and then distributed for a two-week time period via a citywide Google Classroom network of other high school students within the Chicago Public Schools district. A total of 106 individuals completed the survey. The sampling method, therefore, was random volunteer response sampling, because students at various Chicago high schools were invited but not obligated to take the survey.

A consent statement was provided at the beginning, which explained that the survey was voluntary and included a promise of confidentiality, which was possible through Google Forms anonymous responses. IRB procedures were followed and no personally identifying information was collected. At the end of the survey, participants had the option, but were not required to, provide their zip code. This was included to determine whether there is a statistically significant difference in the WTP:WTA discrepancy across different socioeconomic neighborhoods.

Overview of Data Collection

Most prior experimental studies on the endowment effect tested a small sample of undergraduate students and used paper tests to collect price preference points (Kahneman et al., 1991). In order to maximize population reach and distribution across Chicago high school students, this survey was organized using Google Forms. The survey was sent to the Chicago high school on January 23rd, 2023, and via the shared Google Classroom network six weeks later. Data collection occurred for an eight-week time period.

Analysis

To determine whether or not the endowment effect varies across goods, a one-factor analysis of variance was conducted for the distribution of WTA:WTP ratios. A two-tailed t-test for independent samples was also conducted to determine whether there was a statistically significant difference in WTA:WTP ratios across treatment group. Additionally, a two-factor analysis of variance was conducted to determine whether or not there was a relationship between each good's WTA:WTP ratio for survey procedure and zip code variables.

Limitations

The primary limitation of this research was focusing solely on explicit statements of willingness to pay and accept prices. Further research can compare other survey procedures, including conjoint-analysis or Vickrey auctions. Additionally, while the survey was distributed to students at a diverse Chicago public high school and other schools within the city, only 27 of the 56 zip codes within the city were represented in the responses, and some respondents chose not to indicate their zip code. There may be slight differences in the sample collected compared to the overall Chicago teenage population.

Results and Analysis

Demographics

Table 1 shows the age distribution of the sample. Ages 17 and 18 were in the majority and ages 13 and 14 were in the minority. Table 2 shows the percentage of students in each treatment group, with odd ages (13, 15, 17) corresponding to Treatment A (most favorite items), and even ages (14, 16, 18) corresponding to Treatment B (most recently-consumed items).

Table 1. Distribution of Respondents' Age (n=106)

	13	14	15	16	17	18
Number	1	3	17	14	47	24
Percentage	0.97%	2.91%	16.50%	13.59%	45.63%	23.30%

Table 2. Distribution of Treatment Groups

	Treatment A	Treatment B
Number	65	41
Percentage	61.32%	38.68%

Distribution of WTA:WTP Ratios Across Economic Goods

Table 3 shows the distribution of WTA:WTP ratios for each good regardless of treatment, with Figure 3 a visual representation of the mean WTA:WTP ratios across goods. The number of data points differs slightly for each good because respondents were not obligated to answer each question. Table 3A shows the distribution of WTA:WTP ratios of each good for Treatment A, and Table 3B shows the distribution of WTA:WTP ratios of each good for Treatment B.

Table 3. Distribution of All WTA:WTP Ratios Across Economic Goods

	<i>n</i>	\bar{x}	S_x	Min	Q1	Median	Q3	Max
Burrito	100	0.925	0.316	0	0.693	0.995	1.15	1.87
Drink	102	0.932	0.484	0	0.6	0.895	1.17	3
Shoes	98	1.266	1.036	0.56	0.925	1.12	1.298	10
Electronics	104	1.138	0.611	0	0.88	1	1.308	5

Table 3A. Distribution of WTA:WTP Ratios Across Economic Goods for Treatment A

	<i>n</i>	\bar{x}	S_x	Min	Q1	Median	Q3	Max
Burrito	61	0.917	0.336	0	0.67	0.92	1.15	1.87
Drink	61	0.913	0.484	0	0.6	0.83	1.17	3
Shoes	58	1.249	0.626	0.6	0.928	1.17	1.33	5
Electronics	64	1.086	0.529	0	0.86	1	1.25	3.33

Table 3B. Distribution of WTA:WTP Ratios Across Economic Goods for Treatment B

	<i>n</i>	\bar{x}	S_x	Min	Q1	Median	Q3	Max
Burrito	39	0.939	0.295	0.47	0.75	1	1.125	1.5
Drink	41	0.959	0.486	0.25	0.6	1	1.19	3
Shoes	40	1.29	1.447	0.56	0.933	1	1.22	10
Electronics	40	1.222	0.722	0.33	0.9	1.145	1.448	5

Statistical Tests

In order to determine whether there is a statistically significant difference in WTA:WTP ratios across goods and between treatment groups, which are the two main inquiries of this project, two statistical tests were conducted; see Table 4 and Table 5 below, respectively. An additional test was conducted to determine whether there is a statistically significant difference in the WTA:WTP ratios across socioeconomic groups based on reported zip code.

Endowment Effect Across Economic Goods

Table 4 shows a one-factor analysis of variance for the distribution WTA:WTP ratios across the four goods.

Table 4. One-Factor ANOVA for Distribution of WTA:WTP Ratios Across Goods

Null Hypothesis			Alternative Hypothesis		
There is no difference between the dependent variables Burrito WTA:WTP, Drink WTA:WTP, Shoes WTA:WTP and Electronic WTA:WTP.			There is a difference between the dependent variables Burrito WTA:WTP, Drink WTA:WTP, Shoes WTA:WTP and Electronic WTA:WTP.		
	Type III Sum of Squares	df	Mean Squares	F	p
Treatment	7.45	3	2.48	6.97	<0.001
Within	103.6	273	0.38		
Error	96.15	270	0.36		

A one-factor analysis of variance with repeated measures showed that there was a significant difference between the variables, with the F-statistic = 6.97 for $p = <.001$. This means there is a statistically significant difference in the WTA:WTP ratios for the different economic goods. Thus, the null hypothesis is rejected.

Endowment Effect Across Treatment (Burrito Bowl)

Table 5 shows the two-tailed t-test for independent samples conducted to determine whether there was a statistically significant difference in WTA:WTP ratios between treatment groups for the burrito bowl. The same tests were performed for the other economic goods (drink, shoes, and electronics, and can be found in Appendix B). See Appendix B.

Table 5A. Burrito WTA:WTP Ratio Across Treatment

Null Hypothesis		Alternative Hypothesis		
There is no difference between the Treatment A and Treatment B groups with respect to the dependent variable Burrito WTA:WTP.		There is a difference between the Treatment A and Treatment B groups with respect to the dependent variable Burrito WTA:WTP.		
	<i>n</i>	\bar{x}	Std. Deviation	Std. Error Mean
Treatment A	61	0.92	0.34	0.04
Treatment B	39	0.94	0.29	0.05

Table 5B. t-Test for Independent Samples for Burrito WTA:WTP Ratio Across Treatment

	t	df	p (2-tailed)
Equal variances	-0.34	98	0.736
Unequal variances	-0.35	88.68	0.729

Table 5C. 95% Confidence Interval for Burrito WTA:WTP Ratio Across Treatment

	Mean Difference	Std. Error of Difference	Lower Limit	Upper Limit
Equal variances	-0.02	0.07	-0.15	0.11
Unequal variances	-0.02	0.06	-0.15	0.1

The results of the descriptive statistics show that the Treatment A group has lower values for the dependent variable Burrito WTA:WTP ($\bar{x} = 0.92$, $SD = 0.34$) than the Treatment B group ($\bar{x} = 0.94$, $SD = 0.29$). A two-tailed t-test for independent samples (equal variances assumed) showed that the difference between Treatment A and Treatment B with respect to the Burrito WTA:WTP was not statistically significant, with $t(98) = -0.3$, $p = .736$, and the 95% confidence interval between $[-0.15, 0.11]$. Thus, the null hypothesis is retained. This means that there is no statistically significant difference in the WTA:WTP discrepancy, or magnitude of the endowment effect, based on survey procedure for the burrito bowl. The same conclusion was true for each good. See Appendix B for this analysis for the caffeinated drink, shoes, and electronic goods.

Endowment Effect Across Zip Code

In order to examine the relationship between the endowment effect (WTA:WTP ratio) across zip codes, the average income per household and average house value for each zip code was compared in relation to the WTA:WTP ratio for each good. In order to preserve anonymity, respondents were not obligated to report the zip code of their primary household residence; 73 of 106 respondents (68.87%) of respondents chose to report their zip code, with 27 of Chicago's 56 zip codes represented in the sample data (roughly 50%). Table 7 highlights the collected sample data values in comparison to Chicago data for each zip code.

Table 7. Sample vs. Chicago Data for Zip Code Statistics

	Data	Chicago
Mean Average Income Per Household	\$80,853	\$100,347
Median Average Income Per Household	\$76,088	\$65,781
Mean Average House Value	\$383,841	\$338,000
Median Average House Value	\$351,700	\$277,600

Note: The average income per household and average house value prices were the average of each zip code, as reported by the United States Census Bureau from the 2010 Census (U.S. Census Bureau, 2010). There may be slight discrepancies between respondents' true average income per household and average house value prices than the reported census data.

Of the respondents that chose to report their zip code, a linear regression analysis was performed to examine the influence of average income per household on the WTA:WTP ratio for each good respectively. The same regression analysis was performed to examine the influence of average zip code house value on the WTA:WTP ratio for each good. When each good's WTA:WTP ratio was compared in relation to the average income per household and

average house value, the R^2 values were not statistically significant for all comparisons, except Burrito WTA:WTP and average house value, where the regression model showed that the variable Burrito WTA:WTP explained 6.54% of the variance from the average house value. An ANOVA was used to test whether this value was significantly different from zero, where it was found that the effect was statistically significantly different from zero, with the F-statistic =4.82, $p = .031$, and $R^2 = 0.07$. Thus, the p-value is smaller than the significance level of 0.05 and the null hypothesis that the coefficient of Burrito WTA:WTP is zero in the population is rejected. Thus, it is assumed that the coefficient for the variable Burrito WTA:WTP in the population is different from zero. For all other categories, this means that the linear regression analyses showed no statistically significant linear relationship and interaction between the two variables.

Ranking Purchase Factors

Table 8 shows the ranking of most important purchase factors. The four survey options were summarized from University of Minnesota’s study which identified teenagers’ most important factors when making purchases (University of Minnesota, 2015). These options included “*comparing prices from other retailers*”, “*buying from recognizable brands/logos*”, “*purchasing to conform to social trends*”, and “*buying items during sales or discounts*”. The most important factor was “*buying items during sales or discounts*” (44.24% of responses) and the least important factor was “*purchasing to conform to social trends*” (69.81% of responses).

Table 8. Ranking of Most Important Purchase Factors (n=106)

	Mode	<i>n</i>	Percent of responses
MOST important factor to purchasing items	“Buying items during sales or discounts”	47	44.34%
LEAST important factor to purchasing items	“Purchasing to conform to social trends”	74	69.81%

Discussion

The goal of this research project was to answer: How does the endowment effect hold true, if at all, for high school students? Additionally, how does the WTP-WTA discrepancy, a measure of the endowment effect, vary across different economic goods, survey procedure, and socioeconomic status?

To test the presence of the endowment effect, a WTA:WTP ratio of above 1 would be expected. As the F-statistic was 6.97 for the one-factor analysis of variance, this shows teenagers exhibiting varying WTA:WTP ratios for different categories of economic goods. Overall, teenagers exhibited a ratio of *above* 1 for shoes and electronic items (1.266 and 1.138, respectively), meaning they wish to sell these items at a greater cost than buying them. On the other hand, teenagers exhibited a ratio of *below* 1 for food and drink items (0.925 and 0.935, respectively), meaning they wish to buy these items for more than they would sell them. While teenagers exhibited the endowment effect for more durable items, such as shoes and electronic items, they exhibited the reverse trend for more easily perishable goods, such as food and drink. Some possible explanations for this are teenagers placing more importance on food and drink items because they consume them on a more frequent basis. With teens exhibiting different purchase behavior in response to the good of trade, this can give insight for companies to potentially price more perishable goods at a greater price, and more durable goods at lower prices, to meet the behavior of their consumers.

This experiment also showed that the endowment effect does not vary across survey treatment groups. The treatment group for only “favorite” or “most recently-consumed” goods did not play a statistically significant role in

differing the WTA:WTP discrepancy. Additionally, socioeconomic status did not play a statistically significant role in the endowment effect, with the sole exception for comparing Burrito WTA:WTP and average house value. Even for this comparison, only a small percent of the observed data values were explained by changes in average house value, but can likely be explained due to the variation in burrito/salad bowls participants referred to in the survey. While prior research has shown that people of lower socioeconomic status are less likely to purchase certain goods if they do not have the means (Haymond, 2022), a lack of correlation in this experiment may be because the buying and selling survey questions were hypothetical scenarios, rather than real-life transactions. However, the type of good did play a statistically significant role in the WTA:WTP discrepancy. This points to the fact that an individual's traits did not play as large a role in the endowment effect ratios, compared to the specific good of trade. These findings can help inform CPG (consumer-packaged goods) companies to put more emphasis on designing pricing models based on different categories of goods and traits of these items, compared to individual consumer characteristics. With almost half of the average business' annual marketing budget spent on consumer market research, it is important for companies to utilize these funds wisely to maximize customer utility (Reference for Business, 2022).

Lastly, this research aimed to determine which factors are most important when teenagers make purchase decisions. The results were surprising, with almost 70% of participants saying they value conforming to social trends the least. Compared to the overall literature, this may suggest Chicago teenagers buy items based on personal taste and economic benefit and have more determination when it comes to their purchases.

Conclusion

The conclusion that can be drawn from this paper is that high school students exhibit the endowment effect only for durable goods (shoes and electronics) and exhibit the reverse trend of the endowment effect for perishable goods (food and beverage). Additionally, the survey procedure and socioeconomic status were not a contributing factor to the endowment effect. These results, which differ from previous literature regarding the endowment effect, emphasize the increased importance of studying teenage purchasing pricing preferences, compared to prior studies that focused solely on undergraduate business students.

While prior research has suggested that the endowment effect is present across all goods and services, which is a violation of economic rationality, the reverse trend (with a WTA:WTP ratio below 1) was found for perishable goods. This study was another example of human behavior diverging from traditional economic models, as this would be an example of human economic irrationality in the opposite direction. This shows that behavioral economics research and strategies can be implemented to increase market efficiency and investigate or "debunk" true purchase price preferences of consumers. Furthermore, understanding that humans diverge from standard economic models, both in exhibiting prices above *and* below the economically rational ratio of 1, dependent on the good of trade, can have a lasting impact on consumer market research. Specifically, companies can allocate more marketing funds for specific product quality and price tests, compared to over-analyzing individual consumer behavior. Being aware that individuals often choose to sell their products at a price higher than equilibrium, specifically on reselling shoes or electronics, may allow high school students to seek more affordable and alternative means to purchasing products. Given the transition between adolescence and adulthood during high school, being more informed about market nuances can help one make wiser financial decisions for the future.

Future research in this field can survey a greater and more diverse population of high schoolers, such as suburban and rural students. This can help test how marketing research and selling decisions need to be altered from one regional location to the next. Additionally, more nuanced market factors that can affect purchasing behavior, such as other survey procedures and seasonal fluctuations can be tested to determine their role in the endowment effect. Different methods of gathering consumer buying and selling behavior could impact the presence or extent of the endowment effect. Finally, investigations into how brand names or quality of goods affect an individual's WTA:WTP ratio can be explored, helping the average teenage consumer make more informed decisions that can save them money.

While this study resulted in newfound conclusions regarding the endowment effect for adolescents, there continues to be room for further research into how teenagers respond to different economic goods not only in Chicago, but around the country and globe.

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