

Age and Gender Differences in Altruistic Behavior

by

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Abstract.

Is altruistic behavior something learned, or are we born with it? In this paper I investigate when altruistic behavior begins to appear, and what influences the degree to which it is developed. I tested a sixth-grade class, a twelfth-grade class and a college class. I found that sixth graders displayed very little altruistic behavior, but by high school it is beginning to appear. I also found that gender plays a role in this behavior, as does price. Even the sixth graders' decisions about how much to share were sensitive to the cost of sharing. Height and weight did not make a significant difference, nor did income or number of years in attendance at the student's previous school.

Acknowledgments.

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Approved, with Herby

Introduction.

When does altruistic behavior appear? Is sharing a concept that people are born with, or is it learned somewhere before adulthood? This is one of the two main questions myself and past economists have tried to answer. Recent studies have shown that adults do not always behave in a selfish manner, and that being self-interested can mean making choices based on what one enjoys rather than what the most self-serving option available is. This raises many new questions for economists as well as psychologists. One question is if altruistic behavior can be explained using economic models, or is altruistic behavior rational? In essence, this means when the price of being altruistic goes up, will the quantity shared go down? When a person's income goes up, will the quantity shared go up? More formally, I checked for rationality using the Generalized Axiom (GARP). Past economists have also used this method in experiments, for example, Andreoni and Miller (1999). They conclude that altruistic behavior is rational for adults. Also using GARP analysis Harbaugh, Krause and Berry (2000) conclude that children's decisions are rational.

Once I conclude whether the behavior displayed by those in our experiment is rational, I ask if altruistic behavior changes with age, and if price responsiveness changes with age. I conducted our experiment on sixth-grade children, high school seniors, and college students. In addition, I also tested for a number of other variables that may affect the level of altruistic behavior present in our participants.

Next I ask, are there gender differences in altruism, and are there gender differences in price responsiveness? Many people have theories as to whether men or women are more altruistic, and this too has been a subject of research for many economists. Andreoni and Vesterlund (1999) examined the male and female "demands for altruism". This is a new concept observing individuals' sharing decisions with different "prices of altruism". In doing this I can compare the gender differences not only on levels of giving, but also by the price of giving. My results from the sixth grade class are consistent with those of Andreoni and Vesterlund, and I find that boys are more price sensitive than girls. In high school price sensitivity is similar for the genders, but in college women are more price sensitive than men, and this is opposite of Andreoni and

Vesterlund's findings. The use of demand curves is a new idea that has not been used in many papers and distinguishes my results from previous experiments looking at gender, particularly those of developmental psychologists.

Other variables included were height and weight. These were included to test a "bully theory", that the big kids would share less than the little kids. I also gave each of my participants a questionnaire including questions of income, number of siblings, allowances, previous school attended and length of attendance there. In addition, I looked at whether these variables were correlated with altruism. This questionnaire is included in the appendix.

The next section will discuss the experimental design, and will be followed by an explanation of the revealed preference analysis. Next will be the results. I will split the results into three sections. First I will present the results for all the ages, concentrating on the effect of price and income. Then I will look at the separate regressions by age to analyze the other variables mentioned. The paper will end with analysis of the three ages together again using interactive covariates and a conclusion.

1. Experimental Design.

My experiment is a relatively new method of examining two main issues, and is based on the experiments used by Andreoni and Miller (1999), and Andreoni and Vesterlund(1999). It checks for consistency with GARP, and provides information on behavior at many different cost levels. The experiment was conducted with volunteers from the University of Oregon, Sheldon High School and Monroe Middle School. The college experiment consisted of 30 participants, the high school experiment was done with 18 participants, and the sixth-grade experiment was done with 26 participants, for a total of 74 subjects. When recruiting subjects no emphasis was placed on gender, and approximately 60% of our subjects were male. Ten sixth-graders, ten high school students, and 23 college students were male, giving a total of 43 males and 31 females.

The experimental design involves a modification of what is commonly called the dictator game. A copy of the instructions and decision sheets are included in the appendix. In this game one person decides how to allocate a fixed number of points

between themselves and another person. At the end of the game for the 6th and 12th graders, these points could be used to buy school supplies, which we showed them at the beginning of the experiment. Participants understood that by giving away points they would be able to buy less of these items. In the college game their points were for extra credit. The students made allocation decisions over eight different sets of choices, with different relative prices for their own payoff and their partner's payoff. This is what allows us to look at individual demand curves for the students. One choice set was selected at random and their decision from that choice set was implemented.

In each session the students were assembled in their usual classroom, and the experiment was run in place of an hour of class. Each student was given a packet with a cover page, a post-it with their identification number on it (to ensure anonymity) on a second page, and eight decision sheets. The students were asked to remove their identification number, write it on the inside of their packet, and keep it where no one could see it. Next I read the instructions aloud, answering questions and using one of the decision sheets as an example to aid in the explanation.

The students were told to allocate a fixed number of points between themselves and another person in the room. Each decision page differed in the number of points to be divided between the two students, and the number of points a student would lose or gain by moving up or down one line on the decision sheet. The students understood that more for the other person meant less for them. The following table gives a condensed example of one of their choice sheets. Here the income was 120, and the price was 2, so giving one token to the other person cost you 2 tokens.

TABLE 1

<u>Self</u>	<u>Other</u>
0	60
2	59
4	58
6	57
8	56
...	...
114	3
116	2
118	1
120	0

All students were given eight choice sheets similar to this one, and made one decision on each page. I explained that they would have two partners. A “giving” partner whom they would give points to, and a “getting” partner whom they would receive points from. Once started, I went through each sheet as a class; the students received 40 seconds for each page the first time. Next I went through the sheets again, this time giving them 10 seconds in case they wanted to make any changes. They were told to cross out old answers, not to erase them.

The entire experiment was anonymous so each student could make decisions without fear of other students or their teacher knowing their choices. This was because psychologists have found that children will share more than they want to if they think others will find out. The experimenter was the only person who knew their choices, and this was only for handing out point totals for prizes. In addition, we never used the students names, only their numbers, so their decisions could not be traced back to them later. They were also encouraged to choose which option they liked best on each page, since only one would be chosen at random to be used in their payoffs.

The total number of points available for each sheet and the cost of giving up one point is shown in table 2 below, and each point was worth one cent.

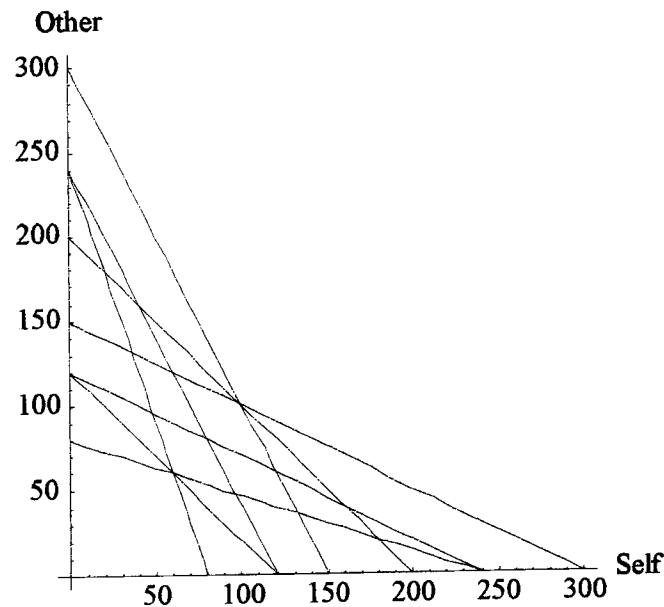
TABLE 2

Allocation Choices		
Budget	Point Endowment	Price of Giving
1	240	0.33
2	80	3.00
3	240	0.50
4	120	2.00
5	300	0.50
6	150	2.00
7	120	1.00
8	200	1.00

Here the point endowment is the income variable, and the price of giving is the cost variable used to determine price sensitivity and demand curves later on. It is also important to point out that each page has the option to split the points evenly between the two students.

The eight different choice sheets can be used to form eight different budget curves. Each of the curves have different intercepts and slopes; the x-intercept being the income of the subject, the y-intercept being the maximum amount of points they can pass to their partner, and the slope being the price of sharing. The following figure shows the eight different budget sets.

FIGURE 1



After collecting all the packets from the students (an example is included in the appendix), I passed out a questionnaire for them to put their number on and complete while I shuffled the papers and assigned partners at random. This questionnaire is included in the appendix. After I finished pairing the students and figuring out their point totals from the page chosen, I collected the questionnaires and passed out a prizes sheet. I then went around the room and had each student show me their number so I could show them their point total, and hand out the prizes that they chose.

2. Revealed Preference Axioms.

Before I can analyze which variables influence behavior, I need to determine if my participants are rational. My discussion is taken from Harbaugh et. al. (2000). Rationality, as explained by economists, requires that choices be transitive but little else.

Any choice can be deemed rational as long as it is consistent. For example, if a participant always chose to split the points 50/50 with their partner this would be a rational choice as long as this choice is applied consistently. The fact that they could improve their own point total does not make their choice irrational. Likewise, choosing to share all points or keep all points can be rational choices if made consistently.

In this experiment the budget sets payoffs cross in ways that provide a strong test for whether well-behaved preferences could explain the data. Let A, B and C be distinct bundles of payoff alternatives. Then define two concepts taken from Andreoni and Miller (1999), from Varian (1994).

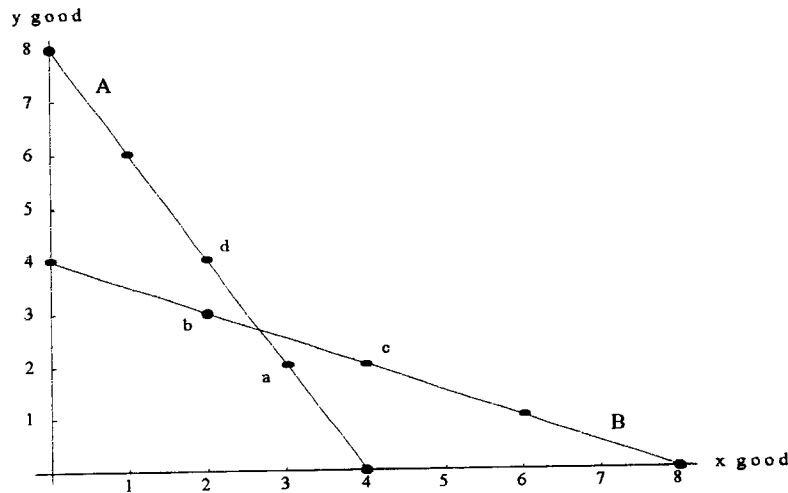
1. **Directly Revealed Preferred:** A is directly revealed preferred to B if B was in the choice set and A was chosen.
2. **Indirectly Revealed Preferred:** If A is directly revealed preferred to B, B is directly revealed preferred to C, then A is indirectly revealed preferred to C.

From these two concepts I can define three revealed preference axioms:

1. **Weak Axiom of Revealed Preference (WARP):** If A is directly revealed preferred to B then B is not directly revealed preferred to A.
2. **Strong Axiom of Revealed Preference (SARP):** If A is indirectly revealed preferred to B, then B is not directly revealed preferred to A.
3. **Generalized Axiom of Revealed Preference (GARP):** If A is indirectly revealed preferred to B, then B is not strictly directly revealed preferred to A, that is, A is not strictly within the budget set when B is chosen. GARP is both a necessary and sufficient condition for the existence of well-behaved preferences.

Figure 2 gives an example of a violation of revealed preference axioms, and is taken from Harbaugh, Krause and Berry (2000).

FIGURE 2



Choices a and b would violate the original definition of GARP, presented in terms of budget sets, because a was picked from the budget set with boundary A when b was within that set, while b was picked from the budget set with boundary B, when a was within that set. By the following argument these choices cannot be rationalized by a continuous, concave, and weakly monotonic utility function. We know that a was chosen when b could have been, so if this person was choosing rationally then $u(a) > u(b)$. We also know that b was chosen when a could have been, so if this person was choosing rationally then $u(b) > u(a)$ is a contradiction.

GARP allows for indifference between bundles or flat spots in indifference curves, while SARP does not. Since there is no obvious reason to rule out indifference, this means that passing GARP is the most relevant test for choice data, and that SARP is sufficient but not necessary. WARP only requires that choices not be directly revealed preferred. While it is a necessary condition for rationality if we rule out indifference, it is not sufficient. On the other hand, choices that violate SARP are particularly direct in nature, and so in some sense it appears as a particularly weak test of rationality.

In my experiment the analysis includes all three axioms, but determination as to whether a participant is rational or not is derived from GARP analysis, since GARP is necessary and sufficient in ruling whether a choice is rational or not.

3. Results.

I will report the results in four parts. First I will present some descriptive statistics for the different ages. Next I will comment on the effect price and income have on decisions. Then I will break up the ages to discuss the remaining variables. This section will discuss the gender differences and demand curves present in the different ages. Then I will explore what variables effected each age group and what variables didn't, and compare this to the other ages. Finally, I will look at the entire sample again and interpret covariates by age. The presented results will be only for the rational participants of the experiment.

3.1 Descriptive Statistics

	6 th Grade	12 th Grade	College	All Ages
n	26	18	30	74
n boys	10	10	23	43
n girls	16	8	7	31
#rational boys	8	9	19	36
#rational girls	15	5	6	26
Ave. #siblings	1.73	2.07	1.96	1.83
Ave. height	60.4	69.357	70.25	66.286
Ave. weight	89.37	160.357	167.04	136.48

3.2 Price and Income Affects.

The most obvious factor to check for are price and income effects. If participants are choosing rationally, they will share less (or certainly not more) as the price of sharing raises, and share more as their income raises. First I will check if this is true for all ages combined, then I will check the different age groups and gender.

Table 3 shows how price, income and age effect a participants' decision to share.

TABLE 3

Variable	Class 6	Class 12	Class C	All Ages
Income	-.05015 (.035)	.05746 (.091)	.0104 (.076)	.170*** (.053)
Price	.164 (2.837)	-22.115*** (7.245)	-16.582*** (6.095)	-12.583*** (4.139)
Age				-.158 (.491)
AgexPrice				.779*** (.236)
Constant	-39.707 (46.615)	202.059 (159.864)	53.415* (30.101)	12.58 (11.265)
Adjusted R2	.01	.094	.067	.082
Observations	23	14	25	62

Note: *indicates significance at the 10%level, ** at the 5%level, *** at the 1%level.

Notice that price has a large effect on the decisions when all ages are combined, but income does not. Also, notice the interactive variable age*price. This number implies that as age increases price has less of an effect than expected after looking at the coefficient for price over all ages. This is due to the fact that 6th graders are less price responsive than the 12th graders, but then there is a decrease of price responsiveness from the high school to college participants.

I can also compare the effect price and income have on each different age group, referring back to Table 2. Price affects the high school and college age groups at a 1% level of significance, but it affects the high school students the most, and the sixth graders very little. The 6th graders are by far the least price responsive age group.

Averaging across the eight budget sets, I find no evidence of gender difference in the sixth or twelfth grade classes. I do in the college class, where women are more generous than men. The following graphs show the eight budget sets, derived from the eight choice sheets as shown in the introduction. The left graph shows the average choice made by the males, and the right graph shows the average choice made by females.

Figure 3 represents the sixth grade class, Figure 4 the 12th grade class, and Figure 5 the college class.

FIGURE 3

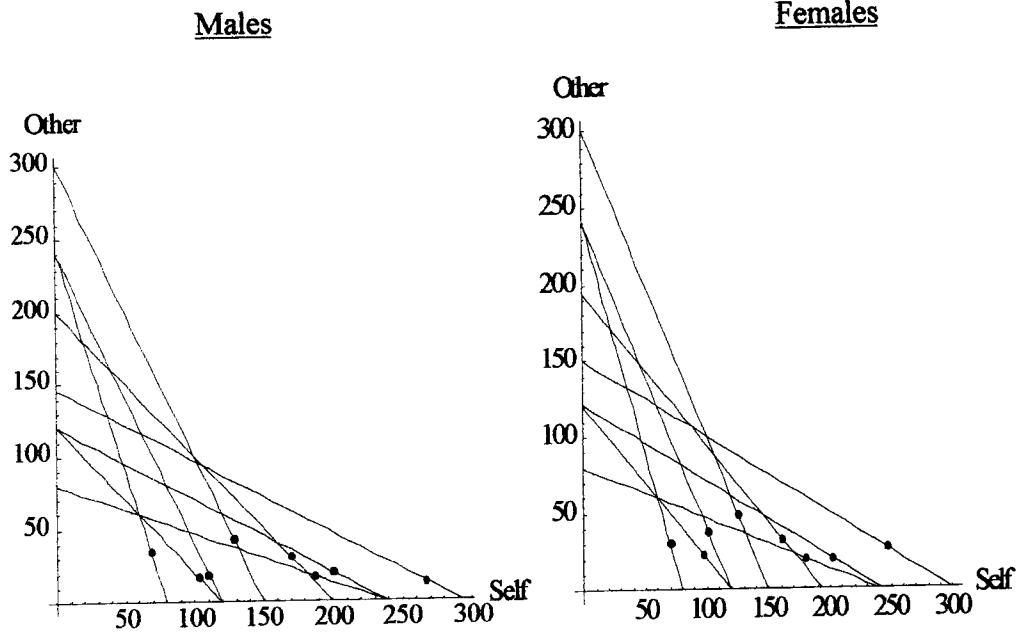


FIGURE 4

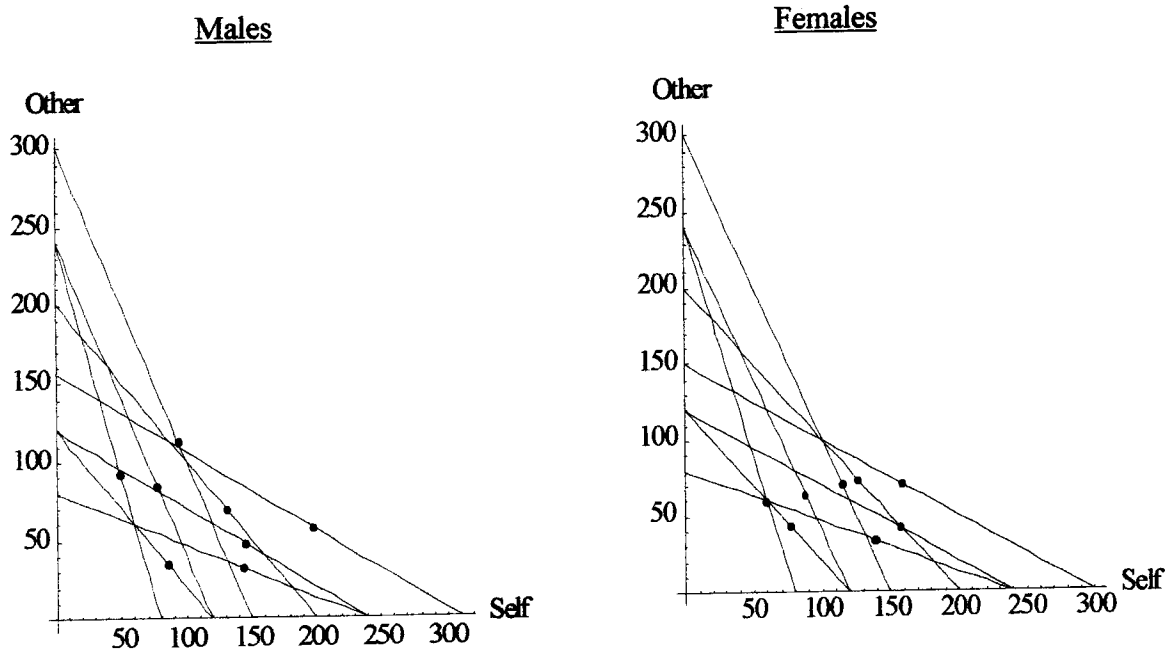
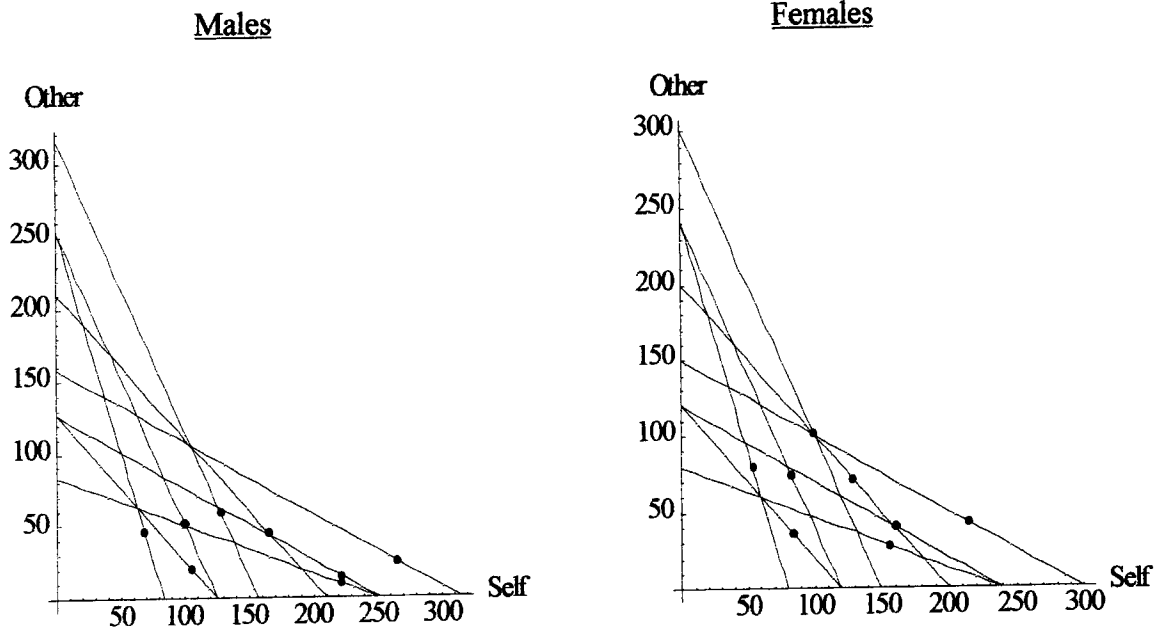


FIGURE 5



The steeper lines on the graph have smaller slopes, and the slopes are the cost of sharing. So the steeper the line, the cheaper it is to share. Notice that in the 12th grade and college age groups when it becomes cheaper to share, the participants tend to share more than when it is expensive. Also notice that the 6th grade class is much less effected by price, keeping their level of giving more consistent.

This finding can be better illustrated by graphing a demand curve for the male and female preferences for sharing, holding income constant. Because these curves are shown with the axes reversed from the usual presentation, the steeper the demand curve, the more elastic it is. Figure 6 represents the sixth grade class, Figure 7 12th, and Figure 8 college.

FIGURE 6

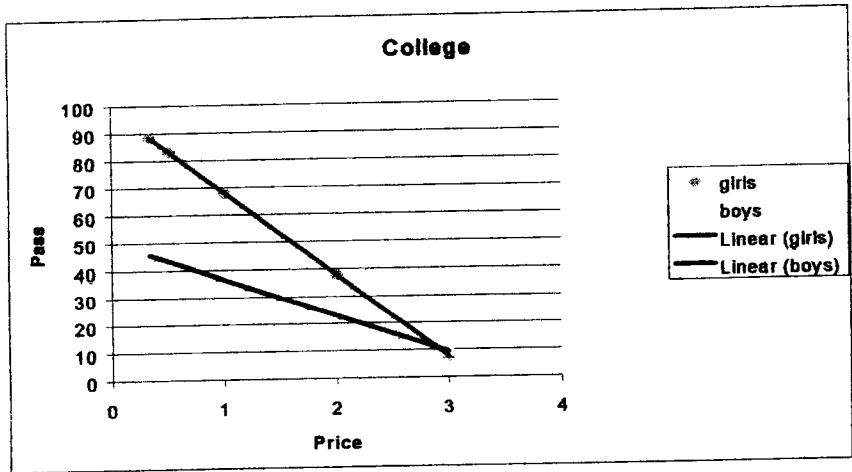


FIGURE 7

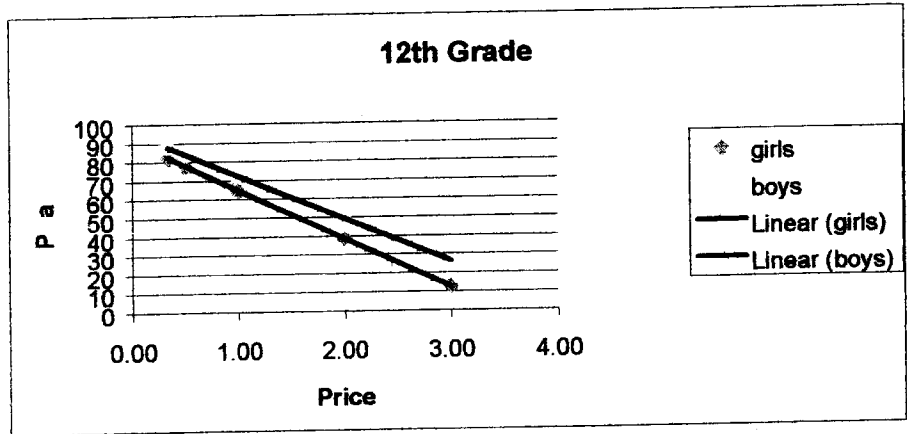
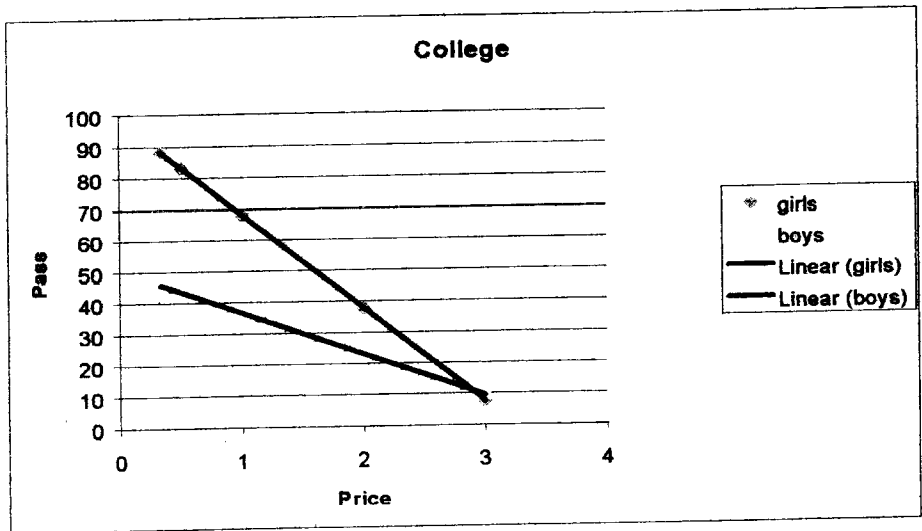


FIGURE 8



Notice on the sixth grade curves, the male curve is more elastic than the female curve, and crosses it from above. This coincides with my predictions. This means that the boys were more price sensitive than the girls. However, the curves are quite close, so the level of giving for each gender is never very different from the other. Also notice that the pass value never gets very high, making the curves flatter than the other grade levels. This shows that overall, the sixth grade class is more selfish than the other classes.

The high school class' curves do not cross. That means that the boys are consistently giving more than the girls are, regardless of cost. Here the girls are slightly more price sensitive than the boys, and their demand curve is a little more elastic. The boys are giving more at both high and low costs of altruism.

In the college class, the girls' demand curve is much more elastic than the boys'. Here the girls gave consistently more, until right before the price of 3. The boys' level of giving is comparable to that of the sixth grade class. When it is cheap to share the girls give a great deal more than the boys do, but when it is expensive to share the boys and girls are giving a comparable amount. Here the girls are more generous, which is opposite of the high school class, and opposite of Andreoni and Vesterlund's findings in their paper on gender differences in altruism (1999).

3.3 Variable Affects by Age Group.

The descriptive statistics section shows the average subject in each of the different age groups, and the number of rational participants in each. I will begin this section with a discussion of the overall sharing tendencies of each age group. In addition, I have variables from the questionnaire to consider. To present these, I will continue with tables and analysis of those variables which affected the participants' decisions to share, and then comment on those that didn't.

While men are sharing more at times, and women at others, neither the males or females are sharing much in the sixth grade class. The behavior is mostly selfish regardless of cost. 11 of the 26 participants are either perfectly selfish or very close to it, and only one provides their partner with a payoff equal to their own each time. This finding is important and addresses the question, when does altruistic behavior begin to appear in people? It appears that altruistic behavior is not something we are born with, rather it's

something we learn on our way to adulthood. In light of this finding, I chose not to test a younger group of students, but to move on to the high school class.

In the high school class, the students were beginning to share more. None of the students were perfectly selfish, and only two were close to it. Two students also split their points evenly between themselves and their partner every time. This is important because far fewer of the students are being perfectly selfish, and altruistic behavior has started to appear by high school.

The college class reverts back to being selfish. 12 of the students were perfectly selfish, and one consistently chose the option just above it, giving their partner, at most, 12 points. Three of the students split their points evenly every time between themselves and their partner. These results are interesting because after the high school class was more altruistic than the sixth grade class, I expected this result to continue into college, but this was not the case. A possible explanation could be that rather than sharing money, they were sharing extra credit points for their class. The high school class was the most altruistic of the three ages compared. When comparing this to Andreoni and Vesterlund's results, however, this selfish behavior is not surprising. They found that nearly half of men and 36% of women were selfish, so the subjects in my experiment were not unusual in that sense.

Moving on to the first of the remaining variables from the questionnaire, Table 4 shows the coefficients and standard errors for the effect that having siblings has on the students decisions to share.

TABLE 4

Variables	Class 6	Class 12	Class C	All Ages
Income	.0204 (3.715)	.0574* (.09)	.0104 (.076)	.087* (.047)
Price	-6.860* (4.469)	-22.115*** (7.222)	-16.582*** (6.084)	-18.69*** (3.73)
# Siblings	11.050*** (3.715)	5.868 (5.186)	-1.961 (2.179)	11.61 (7.98)
Age				2.05** (.802)
Agex#Siblings				-.576* (.35)
Constant	10.104 (9.305)	68.343*** (16.684)	62.140*** (10.945)	12.296*** (17.46)
Adjusted R2	.058	.098	.062	.067
Observations	23	14	25	62

Note: *indicates significance at the 10%level, ** at the 5%level, *** at the 1% level.

It is a common assumption that only children are more selfish than children with siblings. I only found this to be true and statistically significant with the sixth grade class. A possible explanation for this could be that high school and college students have been exposed to more situations where they have been encouraged to share other than with their siblings. On the other hand, sixth grade students interact mostly with, and are encouraged to share with their siblings.

The next variables are height and weight, to check our "bully theory" that bigger kids will share less than little kids. Table 5 shows the results of these variables.

TABLE 5

Variables	Class 6	Class 12	Class C
Income	.0261 (.086)	.05746* (.091)	.0104 (.076)
Price	-8.278 (6.842)	-22.115*** (7.294)	-16.581** (6.061)
Height	12.596*** (3.752)	-.373 (1.665)	.401 (1.374)
Weight	-.02157 (.249)	.00206 (.244)	-.258* (.141)
Constant	-721.437*** (208.221)	106.05 (87.795)	73.163 (94.258)
Adjusted R2	.291	.08	.069
Observations	23	14	25

Note: * indicates significance at a 10% level, ** at a 5% level, *** at a 1% level.

These results do not support my hypothesis. In fact, at the sixth grade level height has a positive relationship with giving rather than a negative one, and it is statistically significant. Weight is slightly negative for college, but not with a large coefficient. For all ages, none of the coefficients are significant, so my "bully theory" is obviously incorrect.

From the questionnaire I have more variables to include in my analysis. Income and price were discussed above, and while price had a negative coefficient and was significant, income was very small and insignificant.

The remaining variables did not significantly effect the participants' decisions to share. The amount of money a student had each week that was theirs to spend made little difference in their decisions to share. The number of years they had spent at their current school was also included in the questionnaire because psychologists have found that children share more with people they know than with people they don't know. However, this did not have an effect on the decisions to share. Psychologists include variables similar to mine, but their main interest in prosocial behavior is modification. Most of their studies include prompts for attempting to influence participant's behavior. My interest was not in modification, but in finding differences in sharing and being able to predict future actions.

3.4 Interactive Covariates Across all Ages.

Interactive covariates are independent variables in a regression equation that are the multiple of two or more other independent variables. Each interactive term has its own coefficient, so the end result is that the interaction term has three components. These variables estimate the change in the amount a participant shared with respect to one independent variable when the effect depends on the level of another independent variable. I checked the affect of age*height, age*weight, age*income (for boys and girls separately), age*#siblings, gender*income, and gender*price. The gender dummy variable is defined as 1 for male, and 0 for female.

Table 6 (on next page) shows the coefficients and their standard errors for the different covariates. Each of the variables also had at least its two independent variables separate in the equation also. The two variable beneath each interactive variable are the variables which were in the equation also. For example, the first variables are gender*price and gender*income, and below them are gender, income and price, and they were included in the equation as well.

TABLE 6

Gender*Price	13.828** (6.055)
Gender*Income	.0818 (.085)
Gender	-34.028 (22.255)
Price	-14.93*** (4.054)
Income	.0874 (.058)
Age*#Siblings	-.576** (.35)
Age	2.05** (.802)
#Siblings	11.613 (7.98)
Age*Income	.000119 (.006)
Age*Price	.781*** (.263)
Age	-.183 (.006)
Income	.169 (.106)
Price	-12.569*** (4.208)

Note: * indicates significance at a 10% level, ** at a 5% level, *** at a 1% level.

The interactive variable with the largest coefficient was gender*price. This statistically significant variable shows that there is a gender difference in the price effect, and it is quite large. This supports my previous argument that men are more price sensitive than women, and that there is a difference in how the genders share due to price.

In addition, the age*price variable, is consistent with my previous findings. Not only did I assert that there was a gender difference in price sensitivity, but an age difference also. This interactive variable shows that as the participants get older they become more price sensitive, which I also noted in earlier data.

The age*siblings variable is statistically significant also, and is consistent with earlier findings in my paper. I suggested that as students get older and are exposed to more people their experience with siblings would have less of an effect on their sharing decisions. This theory may be true, since the interactive variable is negative.

All of these interactive variables are consistent with my previous results, including that income is not a large factor in participants' decisions to share.

4. Conclusions.

Do age and gender play a role in people's taste for altruism? Past researchers have found conflicting evidence, where sometimes men are fairer and sometimes women are. In this study I examined the behavior of men and women, and young and old, across different choices with varying prices of altruism. I find that, depending on price, either sex can be more altruistic for the grade school and high school students. In college, women are more altruistic regardless of cost, although they are much more so when the price of giving is low. For the high school class, when the price of giving is high, men are more altruistic, but when the price is low, women's level of altruism approaches that of the men's. This is not true in the youngest age group, where neither sex is significantly price sensitive. In other words, men's taste for altruism is more price sensitive than women's, and their demand curves are more elastic in the sixth grade class, but the reverse is true for the other two age groups. The men's demand curve for altruism cross the women's demand curve from below in the college class, and the women's curve is always lower in the high school group. These results are confirmed by my interactive variable coefficient for age*price.

Looking at age, I notice an increase in altruism followed by a decrease. The sixth grade class gave very little, and half of their class kept all of their income. Moving to the high school class, there was a significant increase in altruism. This brought me to the conclusion that altruism is learned between the end of grade school and the end of high school. However, in the college age group there is another decline in altruism, bringing

the level of sharing back down to the original level seen in the grade school class. This may be due to the use of extra credit points rather than money.

These findings imply a few things. One is that there is a systematic difference in the way men and women decide to share. The price of sharing does have an effect on both sexes in the 12th grade and college classes, and economists other than myself have reached these results also. However, my experiment is the first including children in this analysis. In 12th grade the men are more price sensitive than women, and the opposite is true in college. Secondly, age plays a role in altruism, as the levels of sharing definitely varied throughout the age groups in the experiment.

Other variables included had less of an impact on subjects' decisions to share. While number of siblings was important in the sixth grade class, it was of little relevance in the other age groups. Height and weight also played an insignificant role in the subjects' decisions. Other included variables were not significant in the choices of either sex, or any age group.

In conclusion, there are variables that help predict altruistic tendencies. While gender and age are the most obvious, price also plays a large role, while income surprisingly does not. These factors can be indicators of how to predict future behavior in following experiments or to predict behavior in real life.

APPENDIX

Protocol:

[Teacher introduces Kristen, asks students to cooperate with her.]

Hi everyone, my name is Kristen. Today for your class we're going to play a game about making decisions. There is no "right" thing to do, we just want you to do whatever makes you feel best. By playing this game you will get some new school supplies. The amount of supplies that you get depends in part on how well you understand the game, so pay attention!

[Show the school supplies.]

You don't have to play the game if you don't want to. If during the game you decide you want to stop, just let me or your teacher know. We'll find something else for you to do.

[See if anyone wants to quit.]

The game is a little hard, so pay attention. In the game you will make a series of choices about how to divide points between yourself and another student in the room. We will pick this person for you randomly. You will never be told who that person is, and they will never be told who you are. We will keep track of everyone's decisions using code numbers so that everyone's decision is secret. Remember, at the end of the experiment you get to use the points that you have to buy some of the school supplies we showed you. Each point is worth about 1 penny, and the supplies will cost about the same as in a regular store.

You will make your choices on a sheet like this one.

[Show sheet, on overhead, using sheet number 1 for an example.]

On this sheet you can see that there are two columns of numbers. The one on the left shows the number of points that go to you, the one on the right shows the points that go to the person you are matched with. [Show columns.] To make it easier to keep track, the points that go to you are always in blue, the points that go to the other person are always in red. See how as you go down the page the number of points that go to you goes up, and the number that goes to the other person goes down. [Show on overhead.] All you have to do is circle a pair of numbers on any one of the lines. Then you will get the number of points in red, the other person will get the number of points in blue. Remember that you can choose any pair of numbers and that no one will know what your choice was.

When you choose numbers remember that you and your partner get the points right next to each other. You can't choose one line for yourself and another for your partner! In this example you must divide 120 points. You can keep all the points, keep some and pass some, or pass all the points. Remember that each point is worth about 1 cent. So, if you chose the last pair and keep all 120 points you will receive \$1.20 and your partner will

receive \$0. Or, you could choose to hold 0 points and give your partner 80 points, and then you will get \$0.00 and your partner will get \$0.80. Or you could pick somewhere in the middle, say, 48 for you and 64 for your partner, or say 180 for you and 20 for your partner. It's all up to you to decide what you want to do. Are there any questions?

[Answer any questions.]

We are going to give you a packet with 8 different lists of numbers like this one. Each list will be on a separate page. We want you to make one choice from every page. Then, after everyone has made a choice on every page, I will shuffle the forms and randomly choose partners. Then I will choose a number to determine which page in the packets I will use to give you and your partner points. You will get the points you kept for yourself and your partner will get the points you passed to them. After we have done this, we will pick another partner, who will also be secret, and this time we will choose one of the pages in their packet. This partner will get the points they kept, and you will get the points they passed to you.

Only one of each of your sheets will be chosen. On every sheet be sure you choose the pair of numbers you like the best, since you don't know which sheet I will pick in the end. We will add the points you kept and the points you were given to determine the total amount of points you get.

For each page, I will give you 45 seconds to choose the points you would like for you and your partner. If you choose right away, we want you to use the extra time to think some more about the different options. Make sure you have really picked the one you like best. When the 45 seconds are up, I'll tell you to circle the point pairing you like best. Don't circle it until I tell you the time is up, I want you to think about your choices!

Are there any questions?

[Answer any questions they have.]

Now I'm going to hand out a packet with 8 pages to each of you. Do not open it until I tell you to.

[Hand out packets.]

Notice that there is a number on the top of your packet, and that we will not be using your names. This is so no one will know what choices you make, and you can make any choice you want to. At the end of the experiment we will pay you in school supplies based on this number, and we will place them in a brown paper bag so no one else will know how much you get!

This is just like a test. Please don't talk to anyone, or look at anyone else's paper. Now turn to page one, you have 45 seconds to make your choice.

[After 45 seconds, proceed to the next page until done.]

Ok, now to make sure you picked your favorite choice from each page, we're going to go through the choices again. I want everyone to go back to the front page.

Just like before, wait for me to tell you to turn to the next page. This time I'll give you 15 seconds for every page. If you make a change, cross out your old choice with an X, and circle your new choice instead. Don't erase your old answer.

Are there any questions?

[Answer any questions.]

Start on page 1.

[After 10 seconds, proceed to next page until done.]

Now, remember which number is on the front of your paper, and pass your packets up.

[Collect the packets.]

While we figure out which pages to use for your points you can use to buy new school supplies, we're going to ask you to fill out a questionnaire. Please put your number on top of your form, and fill it out honestly. Remember that no one will know who's questionnaire is who's.

[Pass out questionnaire]

Thank you for your help, please pass the questionnaires up to the front, still remembering your number.

[Collect the questionnaires.]

Now we're going to pass out a sheet that tells you how many points you need to buy each school supply. Then we'll come around and have you show us your number so we can show you how many points you have. After you know, write down how much money you have and which school supplies you want on your sheet.

[Pass out sheets and go around giving everyone their point totals.]

Now please come up one at a time with your paper so we can give you the school supplies you have chosen. [Hand out students school supplies individually until done.]

Your id number is _____

Put this note with your id number on it in your pocket.

Don't lose it, you will need to show it to us to get your points.

Circle one pair of numbers.

Points to keep for yourself.

Points to pass to other person.

0	80
12	76
24	72
36	68
48	64
60	60
72	56
84	52
96	48
108	44
120	40
132	36
144	32
156	28
168	24
180	20
192	16
204	12
216	8
228	4
240	0

Circle one pair of numbers.

Points to keep for yourself.

Points to pass to other person.

0	240
4	228
8	216
12	204
16	192
20	180
24	168
28	156
32	144
36	132
40	120
44	108
48	96
52	84
56	72
60	60
64	48
68	36
72	24
76	12
80	0

Circle one pair of numbers.

Points to keep for yourself. Points to pass to other person.

0	120
8	116
16	112
24	108
32	104
40	100
48	96
56	92
64	88
72	84
80	80
88	76
96	72
104	68
112	64
120	60
128	56
136	52
144	48
152	44
160	40
168	36
176	32
184	28
192	24
200	20
208	16
216	12
224	8
232	4
240	0

Circle one pair of numbers.

Points to keep for yourself. Points to pass to other person.

0	240
4	232
8	224
12	216
16	208
20	200
24	192
28	184
32	176
36	168
40	160
44	152
48	144
52	136
56	128
60	120
64	112
68	104
72	96
76	88
80	80
84	72
88	64
92	56
96	48
100	40
104	32
108	24
112	16
116	8
120	0

Circle one pair of numbers.

Points to keep for yourself. Points to pass to other person.

0	150
4	148
12	144
20	140
28	136
36	132
44	128
52	124
60	120
68	116
76	112
84	108
92	104
100	100
108	96
116	92
124	88
132	84
140	80
148	76
156	72
164	68
172	64
180	60
188	56
196	52
204	48
212	44
220	40
228	36
236	32
244	28
252	24
260	20
268	16
276	12
284	8
292	4
300	0

Circle one pair of numbers.

Points to keep for yourself. Points to pass to other person.

0	300
4	292
8	284
12	276
16	268
20	260
24	252
28	244
32	236
36	228
40	220
44	212
48	204
52	196
56	188
60	180
64	172
68	164
72	156
76	148
80	140
84	132
88	124
92	116
96	108
100	100
104	92
108	84
112	76
116	68
120	60
124	52
128	44
132	36
136	28
140	20
144	12
148	4
150	0

Circle one pair of numbers.

Points to keep for yourself.

Points to pass to other person.

0	120
4	116
8	112
12	108
16	104
20	100
24	96
28	92
32	88
36	84
40	80
44	76
48	72
52	68
56	64
60	60
64	56
68	52
72	48
76	44
80	40
84	36
88	32
92	28
96	24
100	20
104	16
108	12
112	8
116	4
120	0

Points to keep for yourself.

Points to pass to other person.

0	200
4	196
8	192
12	188
16	184
20	180
24	176
28	172
32	168
36	164
40	160
44	156
48	152
52	148
56	144
60	140
64	136
68	132
72	128
76	124
80	120
84	116
88	112
92	108
96	104
100	100
104	96
108	92
112	88
116	84
120	80
124	76
128	72
132	68
136	64
140	60
144	56
148	52
152	48
156	44
160	40
164	36
168	32
172	28
176	24
180	20
184	16
188	12
192	8
196	4
200	0

Student Survey

Thank you for participating in this research. All information that you provide on this survey is strictly confidential. We will assign a random number to this survey as well as your choice sheet. We will not be able to link your name to that ID Number. Your name will never appear on any experiment records. Please answer the following questions honestly, and to the best of your ability.

1. Age: _____
2. Gender: Male: _____ Female: _____
3. Grade in School: _____
4. Do you receive a regular allowance or payment for chores? Yes: ____ No: ____
If yes, about how much per week? _____
5. In a typical week, how much money do you have that is yours to spend?
(Include allowance, earnings, gifts, etc.) _____
6. Do you have any siblings? Yes: _____ No: _____
If yes, give their ages and genders

Age: _____	Male: _____	Female: _____
Age: _____	Male: _____	Female: _____
Age: _____	Male: _____	Female: _____
Age: _____	Male: _____	Female: _____
Age: _____	Male: _____	Female: _____
7. Your height: _____
8. Your weight: _____
9. What grade did you start this school in? _____
10. How many years did you go to your last school? _____
11. What is the name of your last school? _____

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