EXPLORING THE AUTONOMOUS ECONOMIC WORLD OF CHILDREN: A MIXED METHODS STUDY OF KIDS’ NAÏVE ECONOMIC THEORIES INCORPORATING ETHNOGRAPHIC AND BEHAVIORAL ECONOMICS METHODOLOGIES

by

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ABSTRACT

Children construct meaning from their economic experiences in the form of naïve theories and use these theories to explain the relationships between their actions and the outcomes. Inevitably, due to their lack of economic literacy, these theories will be incomplete. Through curriculum design that acknowledges and addresses these naïve theories, we can help children develop theories consistent with expert theories. As a first step, however, we need to understand what children’s naïve economic theories look like, and what factors inform their development. My dissertation is an investigation of children’s naïve economic theories about resource allocation. In this multiphase, mixed methods study, there are two overlapping phases conducted over one academic year: in Phase 1, I utilized ethnographic methods to develop an initial model of children’s naïve theory of resource allocation; in Phase 2, I used adaptations of classic experimental economics games to test and revise my initial model. In this study I find children’s naïve economic theories are based on their experiences allocating resources in their own economic world. Additionally, when children participate in the adult economic world, they apply these same rules for resource allocation. These findings about children’s naïve economic theories have implications for future research as well as curriculum development in economic education. Through understanding children’s current thinking, we can better design curriculum to guide naïve theory development to be consistent with expert economic theory.
Chapter 6
Discussion

A Second Grade Economics Lesson

“Why might it be better to wait than to have something now?” Mrs. Gerard asked the second-grade kids after they had watched a Cookie Monster music video about impulse control. The kids looked blankly at the teacher and at their desks. No one offered an answer. In an effort to guide the conversation, Mrs. Gerard then asked, “would it be better to buy something with a credit card now, or save and buy it later?” The kids unanimously responded it would be better to buy it now. Mrs. Gerard, dismayed, tried to convince them waiting was better, “When you buy something with credit” she explained, “you have to pay back more than it costs, like 115% of the cost. That’s how banks make money, by charging you. They don’t just give you money.”

The kids were listening closely as Mrs. Gerard continued, “My daughter used to pay her credit card balance in full every month when she lived at home. Then, when she moved out of the house and into a house with a roommate, the roommate told her to just pay a little each month.” Mrs. Gerard paused here and asked the kids, “Was that a good idea?” All of the kids emphatically agreed that paying a little at a time was a great idea, “Yeah! Yeah! A little at a time!” they exclaimed. Mrs. Gerard pursed her lips and wrinkled her forehead, then reiterated “But you would have to pay more.”

At this point, Hannah, who was clearly frustrated, announced, “This doesn’t make any sense” and Arianna added, “I’m going to tell my mom not to do that.” The conversation ended here as it was time for the kids to pack up before going to art.
While Mrs. Gerard’s initial intent may not have been to teach kids about the adult economic world, it quickly became the focus. In an effort to teach them why it is better to wait, she used an example from her own experience, buying on credit. Unfortunately, the kids in her class did not have a similar experience. They responded to her question based on their own experiences: it is better to have things now. This preference is evident when kids’ trade with each other. No kid prefers to wait to get the good they want.

Mrs. Gerard insists that waiting is better and tries to convince the kids of this with yet another piece of evidence that does not take kids’ naïve theories into account. She tells the kids that banks don’t just give you money, they charge you to borrow money. However, in the economic world of kids, this is not how borrowing works. Thinking like a kid: If someone borrows scissors from you, you expect them to give back your scissors. You don’t expect them to give back the scissors and a pencil.

It is clear the kids have not changed their naïve theory about borrowing in response to Mrs. Gerard’s explanation, because when she tells the story of her daughter and her credit card payments, the kids are still big fans of only paying a little bit, not the whole thing. This is also consistent with their naïve economic theories: why give someone a lot, when you can give them a little? Why give someone all of your snack today if instead you can just give them some of your snack for the next couple days?

At this point, there are two different responses that reveal kid’s thinking. Hannah has heard Mrs. Gerard, but is unwilling to adjust her naïve economic theory about how consuming and borrowing works. She announces that it “doesn’t make any sense”, a clear indication she is not incorporating the new knowledge into her existing
theory. Arianna, on the other hand, has decided she is “going to tell her mom not to do that”. Arianna, however, does not indicate any changes in her own behaviors. This suggests she has fragmented her naïve theory. In Arianna’s mind there are now two ways things work: one way for grown-ups and one way for kids. Based on this interaction, it is not possible to tell how this fragmented theory will manifest. Will she tell her mom that credit cards are bad? Will she tell her mom that paying for things a little at a time is bad? Will she be able to distinguish between credit and debit cards, or will she assume that grownups should always pay in cash?

This exchange illustrates how instruction that does not first address kid’s prior knowledge and beliefs, their naïve theories, can result in undesired effects; hybrid naïve economic theories that are no closer to expert theories after instruction than before instruction. Designing effective instruction is dependent upon understanding kid’s naive economic theories.

My dissertation is motivated by a desire to understand how kids think about economics before they learn economics in formal school settings. Unlike in science and math content areas, little is known about how kids think about the subject of economics. Socio-constructivist learning theory contends that this is problematic for kids’ learning. Specifically, new learning should build up on previous understandings and knowledge. If educators are unaware of kids’ previous understandings and knowledge, they cannot build on this knowledge.

The naïve theory framework provides a way to conceptualize kids’ prior understandings. Kids’ naïve theories are developed based on relationships between causes and effects that they experience within a specific domain. Naïve theories then serve as models for how kids understand the world. When kids are presented with new
experiences, they test them against their theories, and if necessary, revise their theories to reflect what they have learned from the new experience. It is important for educators to be aware of these naïve theories because if educators present kids with new knowledge without first addressing naïve theories, kids may incorporate the new knowledge into their naïve theories in unexpected ways. For example, they may try to make the knowledge fit into their existing theory. Thus, instead of replacing their naïve theory with the new information presented, they create a hybrid theory based on both the old and new information. This hybrid theory is most likely not aligned with expert theories, and is therefore problematic. Curriculum can be strengthened by ensuring it is designed to first acknowledge kids’ naïve theories, then guide their learning in a way that provides new experiences to help them develop new theories that are aligned with expert theories.

In content areas such as mathematics and physical and life sciences, kids’ naïve theories have been extensively studied, and this research has led to changes in how these subjects are taught. In economics, however, there is very limited research into kids’ naïve theories about the economic world. Research in the area of how kids think about economics has focused on how kids understand and become socialized in the economic world of adults, specifically a market economic system. However, the economic world of children is rarely acknowledged by researchers, and therefore rarely studied. Preliminary studies in this area have provided evidence that kids do have an autonomous economic world, defined as economic problems that are identified and addressed among children, without direct interaction from adults. In this study, I expanded upon these initial findings through a multiphase mixed methods study.
Kids’ Naïve Economic Theories

The section below presents findings from Phases 1 and 2 for both the role of relationships in kids’ resource allocation decisions and the ways in which kids understand the value of money. I begin each section with an overview of each phase’s contribution and conclude with a merging of the analysis from both phases to create revised theories of kids’ naïve economic theories as they relate to resource allocation decisions and the value of money.

The Role of Relationships in Resource Allocation

In my ethnographic exploration of the economic world of kids, I found strong evidence for a system of resource allocation. Their system involves allocating both tangible possessions and access to physical and social spaces. Furthermore, their allocation system is guided by rules that are both negotiable and guided by relationships in their social network. When kids make decisions about sharing, lending, gifting, and trading, they are willing to negotiate terms. Often, these terms reflect a kid’s relationship with the potential recipient, or the potential recipient's position within the social hierarchy.

In the first experiment, I focused on how kids use relationships with potential recipients to determine how resources will be allocated. Kids played a dictator game and earned candy; they then had the opportunity to share it with four anonymous and four named recipients. The named recipients represented a best friend, a central kid, an isolated kid, and an acquaintance. While prior research shows kids have an equality preference, this study finds kids only exhibit this preference when the recipients are anonymous. When recipients are named, kids are significantly less likely to divide resources equally among recipients. Results from this experiment provide strong
evidence that kids make allocation decisions based on the relationship they have with
the recipient, sharing more candy with best friends than with any other group, and
sharing more candy with central kids than with isolated kids.

Analysis from Phase 2 merged with the analysis from Phase 1 resulted in a
revised theory of kids’ naïve economic theories about resource allocation. Analysis
from the dictator game provided additional evidence that kids allocate resources based
on relationships, thus strengthening the basis for the theory developed in Phase 1.
Additionally, qualitative evidence from interviews conducted after the experiment
enhanced the theory by adding kids’ explanations for their own behavior. Kids often
mention that they want to give, not just to people they know, but to people they know
who are also nice to them. This was often a disincentive for kids to give to the
anonymous recipients. Kids described being hesitant to allocate resources to the
anonymous recipients because they did not want to allocate candy to people who they
potentially didn’t know, or to people who had been mean to them. While the
experiment only provided kids the opportunity to share candy with potential
recipients, in Phase 1 I observed multiple ways of allocating resources, of which
sharing was only one way. Phase 1 provided evidence that kids consider relationships
not only when they share, but also when they trade and lend. Together with the
evidence from Phase 2, this provides a basis upon which to conclude that kids’
resource allocation decisions are affected by relationships with the potential recipient
and that the resource allocation with close friends and central kids is more likely to be
advantageous to the recipient.
The Differential Value of Money

A second important finding from this study is that kids are aware of the adult economic world, and are eager participants. Although their participation is limited, for example, to being consumers at the school store or producers when selling handmade goods in their neighborhood, kids seem to construct meaning in the adult economic world using the rules of their own economic world. This application of naïve theories from the kids’ economic world to the adult economic world has interesting consequences. While their theories work well to explain the causes and effects in their own economic world, they are less than perfect at explaining relationships in the adult economic world. For example, while adults recognize that prices are more likely to reflect the seller’s profit motive in equilibrium with the buyer’s willingness and ability to pay, kids see prices in the same way they see trades among kids. Rules for trades differ based on the relationship between the two parties, and therefore reflect a desire to arrive at a price that is fair and does not take advantage of the other person (perhaps this means being more fair to kids with whom you are close friends, and less fair to kids who are either not popular or not your friends).

Finally, kids seem to make decisions about the uses of money that while different from expert theories about consumption, are consistent with how lay adults make decisions. Kids seem to assign differential values to money based on its source. Specifically, money from parents has less value than the kid’s own money, consequently kids are more willing to spend their parent’s money than they are to spend their own money.

In the second experiment I focused on how kids made decisions about the uses of money when the sources of money differed. I combined data from a survey conducted before and after kids attended their school’s spring book fair with a field
experiment where kids had the opportunity to make purchases at a mock store using either other people’s money, or their own money. Results from the survey conducted during the school’s book fair provide some evidence that kids are more likely to not spend all of their money if at least part of the money is theirs, as opposed to it all being another person's money.

While the survey findings are not replicated in the mock store field experiment, kids do engage in different purchasing behaviors depending on the whether the money is theirs or someone else’s. Specifically, second-grade kids are able to achieve higher levels of utility from their purchases when they spend other people’s money whereas fourth-grade kids achieve higher levels of utility when they are spending their own money. Preliminary analysis of qualitative data from the mock store experiment suggests this might be due to how kids make purchasing decisions. Kids in fourth grade are more likely to immediately exclude some items and prioritize other items, while second-grade kids appear to be more flexible in how they group the items they will purchase. Thus, through flexible grouping the fourth-grade kids are able to make combinations of items that result in higher achieved utility.

The analysis of the book fair survey and mock store field experiment enhanced the initial theory about how kids use money from different sources. Based on Phase 1, I theorized that kids value money differently, and that this value differential resulted in increased spending of other people's’ money compared to a kid’s own money. In Phase 2 I found mixed evidence to support the spending differential: results from the book fair survey supported my initial theory, while results from the mock store field experiment did not support my theory. Kids did report having more money left over at the book fair when they were spending their own money, but at the mock store, there
was no difference in the amount of money spent between kids who spent their own and other people's' money. However, results from Phase 2 did provide evidence that other aspects of kids’ spending behaviors are affected by the source of money, and these differences are different for the second- and fourth-grade kids. In contrast to the first experiment where evidence strengthened the theory proposed in Phase 1, the second experiment served to refine the theory proposed in Phase 1. Specifically, kids may be sensitive to the amount of money, not just the source of money, and second- and fourth-grade kids may have distinct ways of responding to the sources of money. While kids in the book fair had access to an average of $16, these same kids in the mock store experiment only had access to $5. This suggests that the amount of money available may be a mediating factor in the relationship between sources of money and uses of money. Secondly, second grade and fourth grade kids may have fundamentally different methods for making decisions as consumers in the adult economic world.

**Implications**

The implications for this study are twofold. First, as an initial investigation of kids’ naïve theories about resource allocation, findings from this study have implications for economics curriculum and instruction. Second, as a novel methodological approach to the study of kid’s naïve economic theories, the method and findings have implications for future research in economic education. Below I describe implications for curriculum followed by implications for future research.

**Curriculum Implications**

The Voluntary National Content Standards in Economics (the Standards) are divided into 20 individual standards, with embedded benchmarks at the
fourth, eighth, and twelfth grade levels. The Standards represent knowledge and thinking that is consistent with expert understandings of economics theories and concepts. The benchmarks are designed to scaffold learning so that by twelfth grade, students have the knowledge and skills to be economically literate. The benchmarks are divided into elementary, middle and high school levels, however initial findings from this study suggest there may be a benefit to further narrowing the benchmark grade bands. Between second and fourth grade, this study provides evidence that kids’ naïve economic theories are different. Specifically, kids’ conceptions of the function of money and how jobs are determined appear to shift away from being determined by relationships. Given this, further refining the benchmarks to reflect early and late elementary grades could help guide curriculum to be more closely aligned with kids’ naïve economic theories.

Additionally, the current benchmarks follow a backward design, starting with the end goal for high school graduates and scaffolding backwards to elementary-aged kids. Given the limited research on kids’ naïve economic theories, these benchmarks represent best guesses about what kids should be able to do at each level. Without available research on kids’ naïve economic theories, these benchmarks are based on benchmark writers’ knowledge of cognitive development and their experiences working with kids. Given that socio-constructivist learning theory prioritizes kids’ prior understandings in designing curricular progressions, perhaps this backward mapping could be balanced with a forward mapping based on kid’s naïve theories. For example, findings from this study suggest kids’ understandings about resource allocation are strongly tied to role of social networks. This would suggest that economics’ benchmarks at the elementary level should reflect the role of relationships
in resource allocation. Currently, the benchmarks guide kids toward an understanding of how a market economic system functions, however by placing more emphasis earlier on alternative economic systems, curriculum designers may be more effective in helping kids develop their naïve economic theories about resource allocation so that those naïve economic theories more closely aligned with expert economic theories about resource allocation, including allocation in market economic systems.

Adjusting benchmarks, either in frequency, or in content, has implications for instruction at the classroom level. For example, the Grade 4 Benchmark for *Standard 3: Allocation* in the Standards requires kids to discuss the advantages and disadvantages of different methods of allocation. However, this standard does not address motivations for these different methods of allocation. Since relationships seem to be a strong influence on how kids believe resources should be and are allocated, perhaps specifically incorporating not only advantages and disadvantages, but also reasons why people allocate differently would encourage conceptual change in kids’ naïve theories. How might this look in a classroom? Perhaps kids spend time thinking about the resources they control and have the power to allocate, or even engage kids in an activity where they make real allocation decisions (similar to the dictator game experiment in this study). Afterwards, the kids and teacher could talk about how kids decided what to do, and why. A teacher could emphasize that we often allocate resources based on our relationships and lead a discussion about the advantages and disadvantages of making choices based on relationships. The list of disadvantages could lead to a wider discussion and possibly time for kids to try allocating in different ways, and end with repeating the process of reflection and discussion about advantages and disadvantages. Since kids are not likely consciously aware of and able
to verbalize their naïve theories (Barrett & Buchanan-Barrow, 2005), leading kids through an exploration of what their current theory of allocation looks like, challenging it by discussing limitations, and then introducing and allowing them to practice alternative methods of allocation may affect conceptual change and therefore development of naïve theories more consistent with expert theories of resource allocation.

While I have offered the above examples of how findings might affect economic education standards and curriculum, I am far from recommending that the above approach is superior to current methods, or even that it should be implemented. These findings are the result of a single study and therefore may not be generalizable to a wider population. In physical and life sciences, investigations into naïve theories date back to the 1970s, and naïve theory development has been thoroughly investigated in these content areas. Additionally, intervention studies have been conducted to ensure that curriculum sequencing is consistent with the kind of theory development that effectively guides kids from naïve to expert in the respective areas. The findings in this study require further investigation before they are interpreted in ways that affect curriculum design and implementation.

Research Implications

This study presents several implications for future research, and some of these implications stem from the limitations of the current study. First, this study was situated in a specific context and setting, thus limiting generalizability of findings. The kids who participated in this study all came from two grades within a single school that had a fairly homogenous population with respect to race/ethnicity and income. Additionally, the demographic characteristics of the school vary significantly from the
demographic characteristics of the wider community. Given that economics is social system, it is strongly influenced by the people who make up that system. Thus, it is likely that these findings are representative of the school population, and not of the wider community of which the school is a part.

Second, this study was limited by sample size. This is especially relevant for interpreting the results from experiments carried out in Phase 2. The small sample size may have affected power to detect significant effects, or may have resulted in significant findings, that would not have been significant given a larger sample.

Finally, this study was limited by the time frame and resources available to the researcher. This study was designed to be conducted within an academic year so as to preserve the social system of the kids in the study. Given that I was the primary researcher responsible for both collecting data in Phase 1 and simultaneously designing experiments and collecting data in Phase 2, I was limited in the number of experiments I could design and run.

Given these limitations, there are recommendations for future research. First, replicating the study design, either in full or in part, in different settings with different samples, would expand our understanding of kids’ naïve economic theories. Working with kids from different geographic locations with different demographic characteristics would address the generalizability of the study findings. Additionally, as this study represents a snapshot of kids’ thinking, replicating the study with samples of different ages would help develop an understanding of the progression of naïve theory development.

Second, this study specifically addresses two areas of kids’ naïve economic theories: the role of relationships in sharing, and the differential value of money from
different sources. Future studies should examine other aspects of kids’ naïve economic theories. For example, in the dictator game, I limited my investigation to sharing behaviors, however kids engage in a wide range of allocation behaviors in addition to sharing. These behaviors include trading and borrowing/lending. Studies that examine these behaviors both through ethnographic and experimental methods would deepen our understanding of the rules kids use in resource allocation, and thus their naïve economic theories.

Finally, the design of the study itself has implications for future research. Prior research in the area of kids thinking about economics has primarily relied on interviews to uncover kids’ thinking. This study, however, used a mixed methods framework to delve more deeply into the ways kids think. Instead of assuming I knew the economic problems faced by kids, I became a participant-observer during the school day. This allowed me to discover economic problems as they were experienced by kids. I was able to observe the ways in which kids approached and attempted to resolve these problems. I was immersed in their school lives, and this gave me an invaluable perspective about how they negotiate their autonomous economic world.

Using ethnographic methods allowed me to see not only that kids have different sets of economic problems than adults, but they hold fundamentally different views about resources than adults do. Where adults and economic experts have well defined rules about ownership and the property rights conveyed by that ownership, kids seem to lack distinct ownership roles, instead relying on varying levels of control over resources. For example, kids do not own swings on the playground, or the iPad they use during library, but they can exert control over those resources, therefore they have the ability to make allocation decisions about how they are used and by whom.
Armed with this deep knowledge about what economic problems kids defined as important and the ways in which they appeared to solve those problems, I shifted from an ethnographic approach to an experimental approach. By utilizing an experimental approach, I tested my hypotheses about kids’ naïve economic theories in a controlled setting where I manipulated one variable at a time to see if behaviors I observed in natural setting could be replicated. The experimental method also allowed me to expand my sample from one class of fourth and one class of second grade kids to three classes of each grade. By expanding my population from a class to a grade, I provided external validity to the theory I developed. Finally, perhaps the greatest strength of the mixed methods approach can be recognized in the merging of analysis from the ethnographic and experimental phases. By merging the analysis of the qualitative and quantitative results, I developed a rich dataset that resulted not only in meaningful findings about kids’ naïve theories, but also created opportunities to continue exploring and developing research in the field of kids’ naïve economic theories.
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