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## Girls' Education: A Behavioral Analysis

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# Girls' Education: A Behavioral Analysis

A Senior Project submitted to  
The Division of Social Studies  
of  
Bard College

by  
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Annandale-on-Hudson, New York  
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# Abstract

Universal education has been an international development goal for a very long time, and gaps still exist in gender parity in developing countries. This project aims to address the fact that while the provision of affordable and accessible education institutions have seen great successes in the past, perhaps the way forward now is to analyze the demand side issues. Due to cultural norms, demand for girls' education in developing countries is lacking. The first part of the paper explores the psychological constraints of present bias, role model effect and stereotype threat in the context of girls' educational demands. The second part of the paper analyzes several randomized control trials (RCTs) with the lens of behavioral economics, and then proposes a new RCT to test the role model effect on primary school girls in rural Bangladesh. The proposal calls for the distribution of short stories that portray empowered women to young girls, with the hopes that this will create a virtuous cycle of empowered women acting as role models for younger generations in the long run, while short term effects will be measured on the basis of changes in aspirations.

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# Dedication

To Nanu, for being a champion of women's empowerment.

# Acknowledgments

First, I would like to thank my advisor, Sanjaya DeSilva, for trusting me, encouraging me, and helping me find something I am truly passionate about. I would like to thank Bard College for teaching me resilience, and giving me the opportunity to meet the most amazing people. I would like to thank my parents for their endless love and support through everything. And finally I'd like to thank my brother for making me laugh, and Ahnaf for making me strong.

# Plagiarism Statement

I have written this project using my own words and ideas, except otherwise indicated. I have subsequently attributed each word, idea, figure and table which are not my own to their respective authors. I am aware that paraphrasing is plagiarism unless the source is duly acknowledged. I understand that the incorporation of material from other works without acknowledgment will be treated as plagiarism. I have read and understand the Bard statement on plagiarism and academic honesty as well as the relevant pages in the Student Handbook.

Syeda Zahra Ahmed

# 1

## Introduction

Universal education has been an international development goal for a very long time. Countries boast the success of primary education improvement rates, but gaps in the system still exist. If children are the future, then reducing the gender disparity in education might just be the key to starting a virtuous cycle of women empowerment for years to come. Extensive efforts in helping the cause have been not gone unnoticed; governments and policymakers all over the world have agreed to address the issue of universal education. However, knowledge is always progressing, and we have to keep updating our methods to make sure that the most efficient and effective solutions are being conducted.

This project aims to address the fact that while the provision of affordable and more accessible education institutions have seen great successes in the past, perhaps the way forward now is to analyze the demand side issues. It is evident in developing countries that the supply side solutions are not being met with sufficient demand when it comes to education for girls. This could be the result of cultural environments and social

norms that perpetuate a gender gap in empowerment. With the rise of behavioral economics, we can depart from neoclassical theory and look at the problem in a new lens. Behavioral economists study the psychological constraints that people face when making decisions. These behavioral mechanisms that constrain ones' ability to make rational decisions might be the answer to why there is a disconnect between the supply and demand of education in developing countries.

I start with an overview of the general framework of what has been done so far and what evidence shows to be successful in increasing female educational attainment. Chapter two summarizes supply side solutions into four categories; making schools more affordable, garnering community support for rural schools, making schools more female friendly, and increasing the quality of education. Interventions that fall under these categories will generally increase female enrollment, attendance, and prolong their education continuity. Chapter two also introduces some of the reasons why demand can falter; informational asymmetries, lack of financial access, and behavioral mechanisms.

This leads us to chapter three which is a review of behavioral economics, and its divergence from neoclassical theory of rational choice. In this paper, I define 'rational' as behavior that can be modeled or predicted. Therefore, to say that that behavioral economics does not align with rational choice theory is not to say that the former assumes irrational behavior, since it can still be modeled. The rational choice theory refers to a very specific set of principles, which are being fully informed, being atomistic, having fixed and exogenous preferences, and following a consistent logic. Behavioral economics is a departure from this set of principles, not rationality in itself. The concepts of System 1 and System 2 thought processes are applied to the problem at hand, gender gap in education. In the absence of perfect information, time con-

straints, cognitive constraints, and other barriers that keep us from the neoclassical ‘rationalism’, humans rely on the workings of System 1, the fast and reflexive thought processes. Some of the System 1 biases and heuristics are explored in the context of development and education; (1) intertemporal choice (present bias), (2) availability heuristic and representativeness heuristic (role model effect and stereotype threat).

Chapter four explores randomized control trials (RCTs) in the lens of behavioral mechanisms in order to dissect all the psychological processes in play in the experiments. I specifically look at RCTs that involve the present bias, role model effect, stereotype threat, as well as some that address liquidity constraints (which is not behavioral, but it inspires the following chapter). Chapter five is where I design my own RCT in order to find evidence of the role model effect. The RCT intervenes by distributing short story booklets depicting independent, educated and empowered women, to primary school students and parents. The role model effect was chosen because it has the most potential to create a virtuous cycle of womens empowerment. One intervention would turn the target participants into role models for the next generation.

## 2

# Disconnect in Supply and Demand

### 2.1 General Framework

The benefits of educating women are endless; it leads to women's empowerment in educational attainment and labor force participation, better maternal health as well as children's health, more sustainable families, household income growth, democracy, and productivity. Despite this, there is still a very large gender disparity in education in developing countries, particularly in the poorer and rural regions of sub-Saharan Africa, the Middle East, and South Asia. When education is not made into a mandatory and free public good, the decision to send children to school falls on parents and guardians, and for them the cost-benefit analysis is not as clear as we can see it from all the way here, on the other side of the world.

In their book *What Works in Girls' Education: Evidence and Policies from the Developing World*, Barbara Herz and Gene Sperling describe the reason for this is because the benefits of educating daughters are "less clear and more distant," because

in the most traditional family setting in a developing country, daughters “marry out of their families and join their husbands’,” and so “parents doubt how much they will benefit from having more-educated girls,”<sup>1</sup>. They outline four different costs that parents face that are much more immediate than the benefits; (1) direct fees, which is the tuition and often accounts for up to 20-30 percent of household income in poor families, (2) indirect fees, which they describe as parent-teacher association fees and supplements to teachers’ salaries, (3) indirect costs, which include things such as transportation, clothing, and often safety precautions for girls such as escorts, and (4) the opportunity cost of sending girls to school, which is the time spent doing household chores and contributing to the family income. The last one is like a “self-fulfilling prophecy,” because in many countries girls are traditionally expected to do more work for the household than boys, and so the opportunity cost of sending a daughter to school appears higher than sending sons.

The problem can be analyzed through the supply side and the demand side. The authors mentioned above advocate more for supply side solutions, which include making education free or more affordable, making schools more accessible and safe for girls, and improving the quality of education to make it more attractive and worthwhile. In a paper about health behavior in developing countries, Pascaline Dupas outlines the framework of supply and demand of the public provision of health care, but we find that this outline can also be applied to education<sup>2</sup>.

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<sup>1</sup>Herz & Sperling, *What Works in Girls’ Education: Evidence and Policies from the Developing World*, 2004,p.7

<sup>2</sup>Dupas, “Health Behavior in Developing Countries,” 2011, p.29

## 2.2 Supply Side Solutions

In terms of supply, the problem isn't just the lack of affordable and accessible educational institutions, but also the lack of supply in inputs that require more than just an initial fixed investment. Dupas specifically talks about the absence from work of health staff members, citing that there 45 percent of the time they are absent from the clinic<sup>3</sup>. Translating this to the education sector, we would be referring to the quality of teacher employment and their absenteeism. Amartya Sen argues that the cost of public provision of basic education in developing countries should not be an issue because it is mostly comprised of teacher salaries, and in a country with low economic development, employment can be maintained with very low salaries<sup>4</sup>. However, development economists working in the field of randomized controlled trials (RCT) have found that incentive to show up to work is an issue.

Esther Duflo, one of the pioneers of RCTs, conducted a research on teacher absenteeism in rural Udaipur, India<sup>5</sup>. In the schools that they examined, teachers whose salaries were around Rs. 1000 (US\$ 22) per month, only attended school about 65 percent of the time, and they found a pattern where disciplinary actions were rarely taken on this issue. In the health care field, Dupas goes on to state that while there are issues in supply, perhaps demand is something that is not being addressed as well as supply is. Before getting into the demand side problems that are not meeting the supply side solutions, we will look at some of the progress that has been made already in supply.

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<sup>3</sup>Ibid.

<sup>4</sup>Dreze & Sen, *India, Economic Development and Social Opportunity*, 2001

<sup>5</sup>Duflo, Hanna & Ryan, *Incentives Works: Getting Teachers to Come to School*, 2012

Going back to Herz and Sperling's work, they compile a list of supply side solutions that have garnered considerable success in developing countries<sup>6</sup>. These solutions can be categorized into four general ideas; (1) making girls' schooling more affordable, (2) building local schools with community support and flexible schedules, (3) making schools more girl-friendly, and (4) focusing on the quality of education. We will go through a quick review of some of the successes we have seen under these ideas.

First, in making girls' education more affordable, which is perhaps the fastest and easiest way for a government to increase enrollment and educational attainment in the population, we have seen successes using two different mechanisms; reducing direct costs and covering indirect costs. When Uganda had undergone major school reforms that cut schools fees, enrollment went up by 70 percent. In terms of girls enrollment in particular, total enrollment went "from 63 percent to 83 percent, while enrollment among the poorest fifth of girls went from 46 percent to 82 percent,"<sup>7</sup>. After Tanzania brought about free education, attendance doubled. Reduction in fees also improved girls' enrollments in Asian countries like China, Korea and Sri Lanka.

In covering indirect costs, as well as compensating for opportunity costs, progress has been documented in the provision of scholarships, stipends, and health and nutrition programs in school. When stipends covering books, uniforms and transportation along with tuition were given out to women for secondary school in Bangladesh, girls enrollment rose to "double the national average,"<sup>8</sup>. The PROGRESSA program in Mexico gives conditional cash transfers (CCT) to families, the condition being to send their children to school. The CCT is to minimize the op-

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<sup>6</sup>Herz & Sperling, *What Works in Girls' Education: Evidence and Policies from the Developing World*, 2004, p.9

<sup>7</sup>Ibid.

<sup>8</sup>Ibid.

portunity cost of sending them to school, which is especially important for girls, as discussed, because due to social norms and tradition of women doing more household chores, the opportunity cost of sending daughters to school appears higher. This program was massive success and became almost like a template for other programs tackling education to follow in Latin America.

Next, Herz and Sperling talk about building local schools with the context of the villages in mind, as they have different constraints than schools in more developed urban areas. Evidence shows that building schools that are closer in proximity to where girls live increases girls enrollment and attendance rates. In 1980 Egypt started building rural schools and that increased girls' enrollment by 60 percent, versus a mere 19 percent for boys. This shows that proximity matters more for girls' education, and this makes sense in conservative societies that do not allow young unmarried girls to go far from home.

Safety is also an issue in the rural community, and the Bangladesh Rural Action Committee (BRAC) have found successes in "satellite" schools with flexible schedules. Double sessions have also become a common practice, where girls and boys would have a different time to attend school, and this has shown success in raising female enrollment in Pakistan<sup>9</sup>. Providing child-care services also seems to show promise in this issue, because in families with a lot of children, adolescent girls are often the ones with the responsibility to take care of younger siblings, and hence cannot attend schools themselves. They found in Kenya that a 10 percent increase in child-care costs lead to a reduction in girls' attendance in schools by 13 percent<sup>10</sup>.

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<sup>9</sup>Herz & Sperling, *What Works in Girls' Education: Evidence and Policies from the Developing World*, 2004, p.10

<sup>10</sup>Ibid.

As for making schools more girl-friendly, there are some practical measures that were not there before, such as private latrine facilities. Studies in Africa show that when a school has no private toilet facility, girls miss school during menses. Training teachers to give equal opportunities for girls to participate in classroom discussions could go a long way. Studies in Nigeria show that teachers often give more opportunities to boys to lead discussions and group work. Providing female teachers has also shown significant impacts in encouraging girls' enrollment, and this makes sense in a community that is concerned with safety and maintaining a conservative culture <sup>11</sup>.

Finally, Herz and Sperling mention the quality of education. When quality increases, education becomes more worth while in the perspective of parents, and so the opportunity cost of keeping their daughters at home is less valued. Evidence from Kenya and Bangladesh indicate that the "quality of teaching influences demand for education for girls even more than for boys,"<sup>12</sup>. They found in Kenya that parents were more willing to pay for girls' schooling if studying science was an option. They also found that if textbooks were added as a part of the curriculum, girls' enrollment went up, particularly in Peru by 30 percent<sup>13</sup>.

### 2.3 Gaps in Demand

Going back to Dupas's supply and demand framework, there are several demand side problems that the paper outlines, and again these can be applied to the education sector in developing countries. First and foremost, there is the problem

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<sup>11</sup>Ibid. 11

<sup>12</sup>Ibid. 12

<sup>13</sup>Ibid. 13

of informational asymmetries. Dupas explains that “people seem to lack basic information, and sometimes have limited ability to process information, because of low education levels,”<sup>14</sup>.

In terms of educating children, people are not aware of the benefits of educating girls. The fact that household income could increase significantly in the future because of education is not only an unknown fact, but there is evidence that suggests that even if they were to be made known to the family, the benefits are so far away in the future that the human brain cannot process that information rationally. How humans react to imperfect information will be further discussed in following chapters. Imperfect information can also be the case where a family is not aware that the school has female teachers, or separate times for girls and boys to use the classrooms, or even that opportunities to reduce costs are available like scholarships and stipends, and so they miss out on the opportunity of sending their daughter to school.

The second problem that Dupas highlights is “market imperfections and frictions, especially credit constraints, affecting peoples ability to invest in health,”<sup>15</sup>. Just like preventative healthcare, education is an investment where there is a high cost all at once and the benefits are not seen immediately. It falls into the category of ‘lumpy financial investments,’ where a poor household who is living on less than a dollar a day would have to borrow in order to pay due to liquidity constraints. The lack of financial facilities in rural regions of developing countries poses a problem for this. Even after perfect information, families may not be able to send their daughters to school because of the lack of financial access. However, we know that this demand

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<sup>14</sup>Dupas, “Health Behavior in Developing Countries,” 2011, p.29

<sup>15</sup>Ibid.

problem can be countered with free education and opportunity cost compensating programs in the supply side.

Finally, Dupas highlights the problems in demand that are associated with behavior and mental processing of information, which is the main focus of this project. Dupas observes that “there seem to be some deviations from the rational model, with, as had been widely shown in developed countries, a nontrivial share of people exhibiting time-inconsistent preferences as well as myopia,”<sup>16</sup>. Education in developing countries is also subject to time-inconsistent preferences, as well as many other behavioral mechanisms that serve as limitations when attempting to process information rationally, all of which will be covered in the following chapter.

This is when we get into the realm of behavioral economics. There are two ways that behavioral economics can be viewed. Many behavioral economists claim that instead of a brand new economic theory, this branch of economics “offers many realism-improving theories that Matthew Rabin (2013) calls ‘PEEMs’ portable extensions of existing models,” and these work to “modify existing existing economic models with a psychological assumption,”<sup>17</sup>. The other way of looking at it is as a sort of fresh start for the study predicting human behavior. This is to say that neoclassical assumptions of people wanting to maximize utility, and having fixed and exogenous preferences are not valid when behavioral mechanisms constrain thought processing.

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<sup>16</sup>Ibid.

<sup>17</sup>Demeritt & Hoff, *The Making of Behavioral Development Economics*, 2018, p.3

# 3

## Behavioral Economic Theory

### 3.1 Introduction to Behavioral Economics

In order to study how humans interact with the market and with each other, economists since Adam Smith have placed certain assumptions on human preference. Picking up any neoclassical microeconomics textbook would tell you that humans want to maximize their utility, that is gain the most value out of their preferences with the least amount of money. Neoclassical thought also assumes people to; (1) be fully informed of all the choices available to them, (2) be atomistic, (3) have fixed and exogenous preference, and (4) follow a consistent logic. This is often termed the neoclassical consumer choice theory. The term ‘rational’ is often thrown into the picture, and to avoid confusion in semantics, let us briefly outline the perceived framework of economic thought that this paper will refer to.

First let us define the difference between rational and irrational. In the broadest sense, rational behavior is taken as any pattern of decisions that can be modeled.

Irrational, on the other hand, is behavior that cannot be predicted, and therefore cannot be modeled by economists or psychologists. When asked to define rationality, psychologist Daniel Kahneman makes it clear how his definition deviates from the neoclassical definition:

What you find is that there is a definition of rationality that is accepted in economics and if you stick to that definition then people are definitely not rational it's all about economic decision-making. Of course that does not mean that they are crazy, as this is quite different to what being rational means in everyday language<sup>1</sup>.

Psychology responds to the neoclassical notion of rational choice theory with the idea of bounded rationality (not irrationality), meaning that when an individual makes a decision, they have certain constraints such as limited information, limited time and limited cognition, however, the ultimate decision they come to is still rational based on their bounds. Therefore, a way this literature can be looked at is that under the umbrella of rational models, we have two branches; neoclassical theory and behavioral economics.

Neoclassical choice theory has been widely criticized by behavioral economists. It does not make sense anymore to assume unbounded rationality when assessing human behavior. In a paper aiming to narrow the gap between the disciplines of economists and psychologists, Daniel Kahneman reflects on literature written by economist Bruno Frey in the 1970's, who said: "The agent of economic theory is rational, selfish, and his tastes do not change,"<sup>2</sup>. Behavioral economist Richard Thaler is known as saying that

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<sup>1</sup>Kahneman, "Daniel Kahneman on the Definition of Rationality and the Difference between Information and Insight", 2017

<sup>2</sup>Kahneman, *Thinking Fast and Slow*, 2015, p.269

it is as if economists and psychologists are studying two different species all together, dubbing the species “Econs” and “Humans”. The “Humans” that psychologists study are those that have a “world view that is limited by the information that is available at a given moment,” and their reliance on implicit psychological constructs that work to fill in the gaps when information is unavailable, and so it is impossible for them to be “as consistent and logical as Econs,”<sup>3</sup>. It is the way that our psychological mechanisms deal with imperfect information that distinguishes behavioral economics from neoclassical imperfect information theory.

Of course there have been improvements to the neoclassical model since Frey’s time. Gary Becker, for example, contended Adam Smith’s assumption of an atomistic society by introducing the concept of altruism, particularly in a family setting<sup>4</sup>. He explores how the “advantages of altruism in improving the wellbeing of children and parents are contrasted with its disadvantages in market transactions,”<sup>5</sup>. While altruism still enters the model with the assumption that people are fully informed, consistent, and self-centered, maximizing one’s own utility does not always have to be ‘selfish’ and if we take this further into the psychology of the satisfaction humans feel when helping others, the story diverges into a whole new branch of study on what can be constituted as “maximizing utility”. Bringing it back to the context of education equality, Beckers diversion from the neoclassical model can be observed in a typical single income household in a developing country.

The father’s utility function would be the wellbeing of him and his family, and if that means increasing their utility as much as possible, he will make decisions accordingly. Say he perceives that saving money by only sending his son to school, and

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<sup>3</sup>Ibid.

<sup>4</sup>Becker, “Altruism in the Family and Selfishness in the Market Place”, 1981

<sup>5</sup>Ibid. 1

having his daughter stay at home to help with household chores is a way to maximize income (for the sake of discussing altruism only, we are leaving the arguments against this perception alone for now). Altruism could emerge in the form of the father's "utility function depend[ing] positively on the wellbeing of" his daughter, and this effectively means that his "behavior is changed by his altruism,"<sup>6</sup>. He might just send both of his children to school if his utility changes due to altruism.

Similarly, Amartya Sen contends the assumption of consistency by presenting an extension of Arrow's General Possibility Theorem, arguing that "there is no way of determining whether a choice function is consistent or not without referring to something external to choice behavior (such as objectives, values, or norms)",<sup>7</sup>. One of the ideas Sen introduces to how we see utility is menu dependency, which refers to how we make choices based on the alternatives available to us, and whether or not irrelevant alternatives make a difference. Sen argues that they do<sup>8</sup>. Again in the context of a single income household in a developing country, a father might prefer to (A) save money by only sending his son to school and keeping his daughter at home, over (B) sending both of his children to school. However, given the irrelevant alternative of (C) sending only his son to school and using the saved money for a small television irrelevant because he prefers B over C, and so he would also prefer A over C his preference of choosing A over B might switch, realizing the cost of sending both of his children to school is that of a simple luxury the family could give up. This is Sen's extension to the social choice theory.

Imperfect information is another issue with neoclassical theory that Joseph Stiglitz famously addresses, showing that perfect information is virtually impossi-

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<sup>6</sup>Ibid.

<sup>7</sup>Sen, "Internal Consistency of Choice", 1993, p.495

<sup>8</sup>Sen, "Freedom of Choice", 1988

ble in any market<sup>9</sup>. People have to make decisions despite information asymmetries, and this is why an unregulated market does not work. This idea was incredibly influential in the development field. Stiglitz wrote a book with Karla Hoff and Avishay Braverman, *The Economics of Rural Organization*, in which they discuss imperfect information and how it leads to market failures especially in poor, agrarian communities. Imperfect information creates constraints to maximizing utility. One of the examples they explain in the book is how rural credit markets are affected by the lack of information. The screening problem, for example, is when people in rural communities are unable to use formal financial institutions because the bank cannot perform a proper risk analysis on them with insufficient financial history. They are forced to use informal institutions, that charge much higher interest rates<sup>10</sup>.

These improvements of the neoclassical model should absolutely be applauded. However, unlike economists, like Becker and Sen, who have made attempts to modify and improve the neoclassical choice theory, behavioral economists branch out to create a different framework altogether. While the behavioral economics branch of study does not provide a completely neat and new model to replace the likes of the classical choice theory, it is not chaos either, like many tend to believe. Asking for a single universal model is an unrealistic goal to begin with. Neoclassical models are not realistic in a psychologist's world, but Kahneman argues that “[p]sychology offers integrative concepts and mid-level generalizations [that] explain ostensibly different phenomena in diverse domains”<sup>11</sup>. Another way of looking at it is if classical economic models, that assume certain human behavior, is a top-down method of analysis, behavioral economics attempts to correct that by providing a solution of bottom-up

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<sup>9</sup>Greenwald & Stiglitz, “Imperfect Information, Credit Markets, and Unemployment”, 1986

<sup>10</sup>Hoff et al., *The Economics of Rural Organization*, 1996, p.33

<sup>11</sup>Kahneman, “Maps of Bounded Rationality: Psychology for Behavioral Economics”, 2003, p.1449

analysis. It is not saying that every individual case should be looked at separately, and that all generalizations are incorrect, but rather it avoids sweeping generalizations by providing mid-level ones that originate from observations of how humans actually behave.

For example, instead of assuming that people would make the utility maximizing choice of selling a business that is losing them money and has no profits in the future either, according to what behavioral economists regard as the endowment effect, or divestiture aversion, people will hold on to the failing business despite the loss just because they own it. They ascribe more value to the business than what it is actually worth because of their personal bias of ownership. In that same way, the endowment effect can prevent the parents of a girl in Bangladesh from sending her to school. Despite the fact that more value will come to the family if their daughter is educated and can bring in more income after attaining a high school degree, they might still ascribe more value to the tradition of girls staying at home and doing housework simply because they have owned this tradition for so long. This psychological bias might have come about evolutionarily in order to develop the feeling of satisfaction in humans, so that they value what is in front of them, however we can see how these two examples of decisions made through biases hinders our outcomes.

Humans have implicit biases that have been evolutionarily developed over time in order to help us make faster decisions through shortcuts; for example, humans have evolved by co-existing in small communities that have worked together to help one another survive, and because of this one may say that even today, we are drawn to interact with people that have similar backgrounds and thought processes as us and we tend to have an in-group bias. This is only one of the many shortcuts that we use to make decisions quickly and when there is missing information in a given

moment. When an employer decides among several candidates who to ultimately give the job to, they are more likely to hire somebody who looks like them, in terms of race, gender and class, because they are more likely to get along with them despite another candidate of a different race or gender with the same qualifications. We can see undoubtedly that these implicit biases are just as likely to harm us, even when they are meant to do the opposite. Racism is a negative effect of the in-group bias.

These implicit biases and shortcuts of the mind are not all there is to the story of course, these things can be ‘overridden’ in a sense, through more analytical and conscious thinking. To better understand this, Kahneman came up with a model of how the mind works. According to this model, our thinking process can be divided into two sections; System 1 and System 2. While different parts of our brain can be allocated to each system biologically, as economists, we will just be thinking about them as two theoretical constructs that explain two different methods of thought processing. System 1 is responsible for all the quick, instinctive, effortless and automatic thoughts that we have. For example, driving a car on an empty road does not require much thinking, so a good driver would rely on their System 1 functions to effortlessly make their way down the road. System 2 on the other hand is responsible for the more deliberative thought processes, where more attention and effort is needed to fulfill complex mental activities <sup>12</sup>. So when the driver driving on an empty road suddenly finds other cars joining them slowly and the road is all of a sudden full, their mind will switch to System 2, so as to assess their surroundings more carefully.

In his paper “Maps of Bounded Rationality,” Kahneman describes how his model deviates from prior theories:

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<sup>12</sup>Ibid.1451

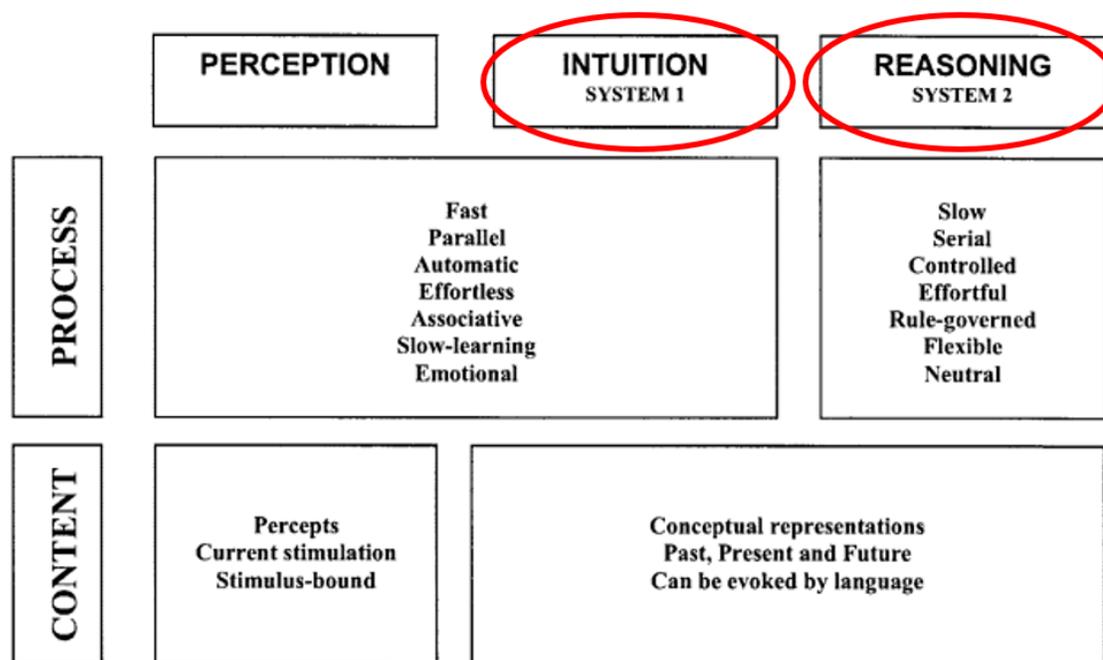


Figure 3.1.1: Three Cognitive Systems from Kahneman, “Maps of Bounded Rationality: Psychology for Behavioral Economics”, 2003

The rational agent of economic theory would be described, in the language of the present treatment, as endowed with a single cognitive system that has the logical ability of a flawless System 2 and the low computing costs of System 1. Theories in behavioral economics have generally retained the basic architecture of the rational model, adding assumptions about cognitive limitations designed to account for specific anomalies. . . The model of the agent that has been presented here has a different architecture, which may be more difficult to translate into the theoretical language of economics. . . The central characteristics of agents is not that they reason poorly but that they often act intuitively. And the behavior of these agents

is not guided by what they are able to compute, but by what they happen to see at a given moment<sup>13</sup>.

Therefore, it is understood in behavioral economics that System 2 can very well override the reflex actions that stem from the reflex thoughts of System 1, so that people analyze their situation more carefully before making a decision. However, this does not mean that people always do this. People have to be aware of their biases and know when to rethink their decision, because they are not aware that they are disabling themselves with their primary choice. How often have we gotten into arguments with people and it is impossible to reason with them because the basis of their debate is that “it just feels right” or something along those lines? It is not easy to make people understand that they are making decisions based on implicit thinking that has been evolved over time for a reason, but those reasons are not always applicable to every situation.

So how does this apply to the demand for education for girls in developing countries? It applies in the way we understand how the target population reacts to the different solutions given to close the gender gap in education. Solutions can only be given once we understand how it will be received by those who the solution is for. This again highlights one of the key differences between traditional economic approach and behavioral economics; the latter focuses on a bottom-up approach, where we aim first to understand how humans work, and then build solutions and theories with that as the foundation, as opposed to having preliminary assumptions about human behavior upon which solutions are proposed.

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<sup>13</sup>Ibid. 1469

The big assumption made when trying to combat the gender gap in education in developing countries is that there is a high demand. Of course this assumption would be made by neoclassical theorists, because according to them, the utility maximizing thinker would have the knowledge that education leads to job opportunities, multiple breadwinners in the family leads to a higher household income, and that in turn leads to higher wealth, health, and overall wellbeing. Therefore, of course families and the girls themselves would want to get educated, because it makes sense for their utility maximization. Gerard Roland determines the returns to education using the economic theory of human capital<sup>14</sup>. It is a form of the expected utility model for education and subsequent earnings. While it is a great model, it is unrealistic to expect rural communities with low levels of education to have knowledge of it.

So the solution for this version of the narration would be an increase in the supply of education, lower costs of education, more accessible routes to education, etc. All the solutions we have seen in the previous chapter will not work because the demand is not always there. The assumptions made can be wrong, people are not always aware that education for women can lead to higher household income. Or they may have a higher preference for the daughter to be married off so that the household has reduced costs. There is an abundance of reasons why families don't necessarily want education for their daughters (nor the daughters for themselves) despite the positive repercussions of education. The target population has too many constraints to their psychological processing to respond the way they are expected to by classical models. Imperfect information does not only act as a constraint, but also affects the way we process information. This chapter explores all the different constraints to

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<sup>14</sup>Roland, *Development Economics*, 2016, p.464

psychological processing that prevents females from getting equal education as males in developing nations.

### 3.2 Theory in Context

Delving deeper into the theory of behavioral economics, we can start bringing the subject of the paper more into context. The goal of this project is to bring together what is currently one of the major topics at the forefront of economic theory with one of the leading methods of empirical economic research; randomized controlled trials (RCT) in policy experiments. The concept of RCTs will be further discussed in the following chapter, but before that we want to outline some of the main conceptual theories that can be used to analyze these experiments. The logic behind this series of literature is as follows: psychologists observe many small samples of people and their behavior in how they make judgements and decisions, these observations are used to create mid-level generalizations (instead of sweeping generalizations) or theories on how to infer and predict human behavior, and finally, these theories are tested as hypotheses on large scale policy experiments. This part of the paper will highlight three of the main theories, or behavioral mechanisms, involved in reducing the gender gap in education in developing countries; intertemporal choices, the availability heuristic, and representativeness bias.

### 3.3 Intertemporal Choice

The first theory, intertemporal choice, refers to the type of decisions people make that have “consequences that play out over time,”<sup>15</sup>. This could explain the simple act of procrastination, like the time economist George Akerlof put off the easy task of sending a package to his friend Joseph Stiglitz for eight whole months. He realized that his procrastination was much more than just a bad habit, it was a way of thinking that is similar to why people have bad saving habits, or why they fall into addiction. It happens because we value the fulfillment of more enjoyable tasks in the present moment versus giving that up for a future fulfillment of completing an important priority or accomplishing a goal<sup>16</sup>

Until behavioral economists stepped in, intertemporal choice was seen through the discounted utility (DU) model, which is a model that exponentially discounts “the value of outcomes according to how delayed they are in time,”<sup>17</sup>. In other words, the DU model assumes that all choices are the same, intertemporal and other types, but in the former there are some consequences that occur over time, and so the weight of that delayed consequence must be accounted for, or ‘discounted.’ This falls in line with the ‘rational’ behavior that would be assumed by neoclassical economists.

George Ainslie first challenged the DU model, critiquing the assumption of the exponential nature of intertemporal choices<sup>18</sup>. He introduced hyperbolic discounting. Recent advances in science, particularly in evidence found in animal research, has

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<sup>15</sup>Berns et al., “Intertemporal Choice toward an Integrative framework”, 2007, p.1

<sup>16</sup>Surowiecki, “What does Procrastination tell us about Ourselves”, 2010.

<sup>17</sup>Berns et al., “Intertemporal Choice toward an Integrative framework”, 2007, p.1

<sup>18</sup>Ibid.

also brought attention to the idea of hyperbolic discounting. Berns, Laibson and Loewenstein describe hyperbolic discounting as:

rewards are discounted by functions that are inversely proportional to delay for example,  $1/t$  or generalizations thereof. Hyperbolic discount functions decay at a more rapid rate in the short run than in the long run, so a hyperbolic discounter is more impatient when making short-run tradeoffs than when making long-run tradeoffs<sup>19</sup>.

Figure 3.3.1 shows three different types of discounting, exponential, hyperbolic, and quasi-hyperbolic, which is when “agents will make patient plans and then break them at the moment of execution”<sup>20</sup>. Parallels have been drawn in how animals and humans react the same way. The difference lies in how well each is able to visualize the delayed consequences, the argument being that humans are able to conceptualize delayed outcomes better. Yet humans are still subject to hyperbolic discounting. If a person is offered \$1 in a month or \$1.10 in a month and a week, they would most likely choose \$1.10, since they are waiting a month anyway, waiting another week for a higher outcome makes sense. However if a person is offered \$1 today versus \$1.10 next week, people would much rather choose \$1 today, because of the immediate satisfaction. This is what it means to have an inconsistency of preference over time. We are more impatient about short-run tradeoffs. We can look beyond simple observations when we look at the evidence found in neuroscience.

Ersner-Hershfield, Wimmer and Knutson evaluated why savings rates weren't increasing along with increases in human life span over the years, and concluded that

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<sup>19</sup>Ibid. 2

<sup>20</sup>Ibid.

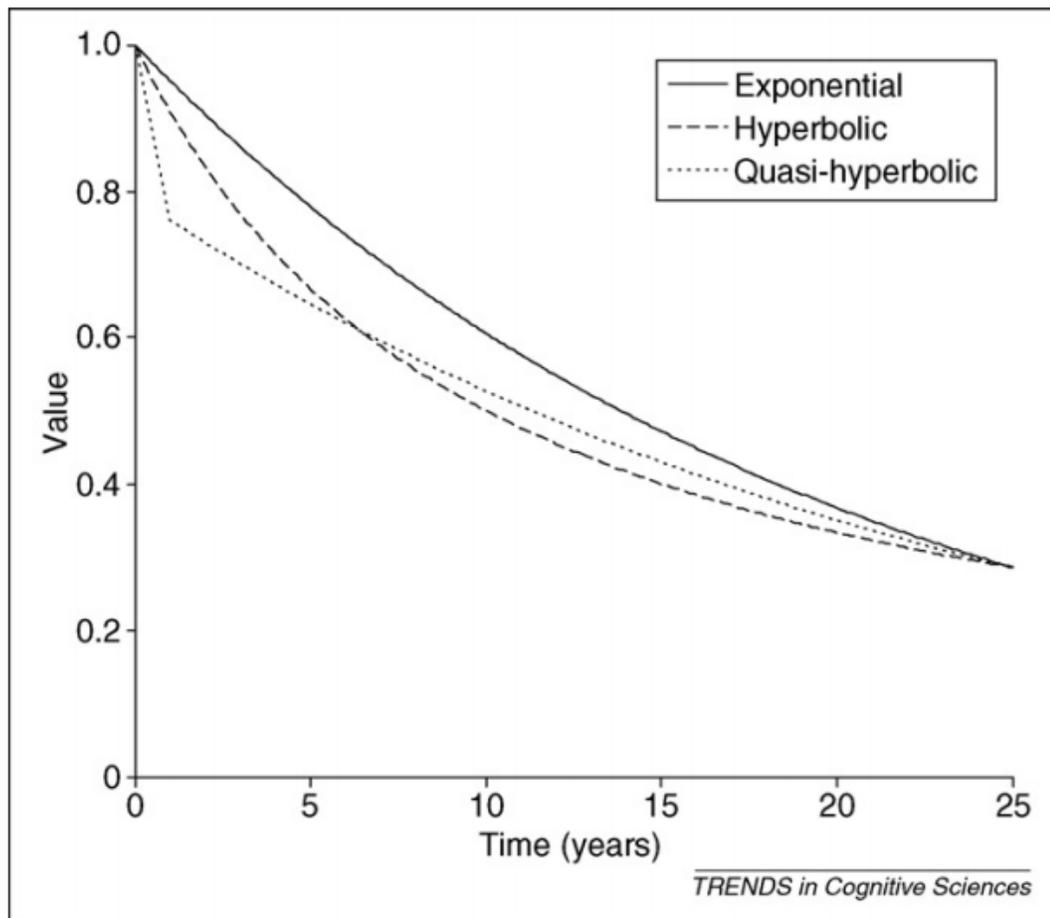


Figure 3.3.1: Three Methods of Time Discounting from Berns et al., “Intertemporal Choice toward an Integrative framework”, 2007

because of the “future self-continuity hypothesis, individuals perceive and treat the future self differently from the present self, and so might fail to save for their future”<sup>21</sup>. Event-related fMRI scans were used to observe differences in rostral anterior cingulate (rACC) activation. The test events were either related to the participant right now, the participants in the future, or another person that the participant has no relation to (i.e. a stranger). The neuroimaging showed that similarities in rACC activation was more prevalent between how participants judged themselves in the future and

<sup>21</sup>Ersner-Hershfield, Wimmer and Knutson, “Saving for the Future Self”, 2008, p. 1

how they judged virtual strangers, versus judging themselves in the present moment. This tells us that people unintentionally look at their future selves as somebody else, not themselves. The future self is unrecognizable, and therefore we don't want to save for it.

A general term that has been used across disciplines to explain this phenomenon is the present bias. When faced with a choice that has effects over time, we tend to choose what will benefit us the most in the present, as we feel most connected to and most selfish about our present selves. Now relating this concept to the problem at hand, we can understand one of the mechanisms why a parent in a developing country would not want to send their daughter to school. Education is an intertemporal choice. Parents invest money in their children's education for approximately 10+ years (high school level), and the gains are met only after that time period when the child can generate income for the household using the education they have been given. For a low income household in a developing country, this means (1) giving up cash today (for schools that require tuition), or (2) a high opportunity cost (when the daughter is not at home to help with household chores), or (3) giving up marriage for the daughter so the cost of her living is transferred to another household. The return on the investment in education is a possible future where their daughter could be generating a lot more income for herself and the household. Note that this is different from liquidity constraints, where a family has limited access to money and cannot afford to send their child to school. When liquidity constraints are eliminated, the present bias is still observed.

This brings to mind the RCTs that have been done using the method of cash transfers or conditional incentives, which will be discussed in detail in the following chapter. Researchers have used the concept of present bias as a 'nudge' for target pop-

ulations to complete specific goals of experiments. The nudge would generally serve as one of the independent variables. A famous example is using bags of lentils as conditional incentives to give out when parents bring their children in for immunization shots<sup>22</sup>. The intuition behind this is that immunization is a cost that doesn't have immediate benefits, making it an intertemporal choice, and so the target population in developing countries tend to forgo immunization, but then pay higher costs for cures later on when the disease is actually acquired. By providing a bag of lentils when they come in for immunization, the researchers are giving an immediate gain to reduce the present bias effect.

### 3.4 Heuristics

Now in order to move on to the other behavioral mechanisms, we have to bring in the concept of heuristics. Heuristics in behavioral economic literature can be generally defined as “decision shortcuts that compromise between efficiency and accuracy,” or “reduce complex problem solving to simpler judgement operations, to meet the pressing demands of the environment,”<sup>23</sup>. This directly opposes the expected utility theory, even after being adjusted for imperfect information and bounded rationality. Our cognition is still limited to the demands of the environment (e.g. having to make a decision on the spot, having too many alternatives to process, etc).

Amos Tversky and Daniel Kahneman are known to provide the first detailed list of heuristics that people tend to use when making decisions under uncertainty<sup>24</sup>. It should be recognized that this list was developed in the United States, by observing

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<sup>22</sup>J-PAL Policy Briefcase, 2011, “Incentives for Immunization”

<sup>23</sup>Fiske & Taylor, “Social Cognition: from brains to culture”, 2016, p.1

<sup>24</sup>Kahneman, “Thinking Fast and Slow”, 2015

people in economically developed environments. It has been shown that not all of these heuristics are universally common throughout the world. For example, it has been discovered through RCTs that the sunk cost effect, something very commonly observed in the United States, does not seem to be as prevalent in developing countries<sup>25</sup>. By cross referencing RCTs and the list of heuristics, we have identified two main concepts that relate to girls' education in developing countries.

The first is the availability heuristic, which is when a person “evaluates an events likelihood based on how quickly instances come to mind,”<sup>26</sup>. This particular mechanism requires very little cognitive processing; it is based on immediate examples that are available to a person. For instance, due to the high amount of news coverage in recent years of plane crashes and plane disappearances, people are likely to overestimate the probability of plane accidents over train accidents. Or when estimating divorce rates “on the basis of how quickly one can think of examples of divorced friends,”<sup>27</sup>.

Many clinical experiments give us solid evidence of the availability heuristic being prevalent even in some of the most professional settings. In 2014, an experiment was conducted on doctors who were made to read Wikipedia articles about certain diseases, and then later, in a “seemingly unrelated study,” were made to diagnose patients with diseases, out of which some “superficially resembled the disease in the Wikipedia entry they had read,”<sup>28</sup>. They found that participants “misdiagnosed cases that looked similar to the Wikipedia description of a disease more often when they had read the Wikipedia description than when they had not,”<sup>29</sup>. Do not lose faith

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<sup>25</sup>Ashraf et al., “Can Higher Prices Stimulate Product Use?”, 2010

<sup>26</sup>Kahneman, “Thinking Fast and Slow”, 2015. p.131

<sup>27</sup>Fiske & Taylor, “Social Cognition: from brains to culture”, 2016, p.3

<sup>28</sup>Schmidt et al. “Exposure to Media Information about a Disease can cause Doctors to Misdiagnose Similar Looking Clinical Cases”, 2014, p.1

<sup>29</sup>Ebid.

in doctors however, as the experimenters found that the tendency to misdiagnose disappeared when introducing reflection (what Kahneman would refer to as using System 2) into the trials!

The second behavioral mechanism that will be looked at is the representativeness heuristic. This is when “the social perceiver matches information about a specific instance against a general category to determine the likelihood of the fit,” or the “judgement of how relevant A is to B; high relevance yields high estimates that A originates from B,”<sup>30</sup>. An example would be to guess a persons career based on how they look and act; Lisa is a quiet and shy person, and she wears glasses is she more likely to work in sales or as a librarian? One would guess librarian because of the characteristics that have been known to be associated with people who spend a lot of time in the library. It should be noted how the representativeness heuristic is different from the availability heuristic. They are very similar in that they require little cognitive processing, and is more of an immediate, instinctual thought (System 1). Where availability heuristic estimates the probability of event A by drawing on other examples of event A, the representativeness heuristic estimates the probability of event A based on observing B and judging how likely it is that the two are related.

The availability heuristic and representativeness heuristic branch off to many different behavioral outcomes that can be observed in everyday life. One of the main outcomes that we found when cross-referencing literature in the education gender gap is the role model effect. The role model effect is looking at examples of people one can identify themselves with, and changing one’s own behavior or judgement in order to match these examples. In the United States, due to a lack of women in science,

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<sup>30</sup>Fiske & Taylor, “Social Cognition: from brains to culture”, 2016, p.4

technology, engineering and mathematics (STEM), less women tend to take the path to even start in STEM, almost like a vicious cycle. In this lens, the idea of ‘boys’ clubs’ come from the lack of role models. Now taking this concept to developing countries, the story becomes a lot more complex because the society as a whole is connected to a lot more social norms, religious norms, and cultural norms.

Not only is there a lack of women role models with a high level of education, there is also the active role models of women as housewives or care-givers. When you add social norms on top of this (for example the dowry system that is still prevalent in some South Asian countries), the available examples for young girls to look up to become more and more limited, and in turn so do the beliefs of what are possible opportunities for them in the future. Researchers have explored what happens when provided with sufficient role models in rural India. In 1993, a law was passed where random villages had to reserve a spot for a woman to be elected in the village council elections, and through this natural setting, RCTs were conducted to see how this affected aspirations in adolescent girls. They found that being exposed to women leaders raised aspirations for young girls and the parents of young girls in terms of educational attainment as well as intentions labor market participation<sup>31</sup>. Another study in India found that having a second teacher, who is a female, in a classroom increases girls’ attendance in schools, because the female teacher serves as a role model<sup>32</sup>. These studies will be further discussed in detail in the following chapter.

Another outcome of the two heuristics is the stereotype threat. A classic study that displays the stereotype threat is one which was conducted on athletes who racially identified as either Black or White. A golf exercise was designed and was verbally

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<sup>31</sup>Beaman et al., “Female Leadership Raises Aspirations and Educational Attainment for Girls”, 2012

<sup>32</sup>Banerjee et al., “Female Teachers Increase Girls’ Enrollment”, 2000

framed in two ways; in the first trial the athletes were told that the exercise was testing their “sports intelligence,” and in the second trial athletes were told that their “natural athletic ability” was being tested. Despite being the same controlled exercise, researchers found that Black participants performed significantly worse in the first trial, and White participants performed significantly worse in the second trial<sup>33</sup>. The conclusion was that the athletes inadvertently externalized negative racially stereotypical behavior. In other words, people inadvertently tend to behave the way they are stereotypically expected to.

The impact of the stereotype threat in developing countries for women follows a similar path. Women are generally expected to be at home, conducting household chores, not having any interest in politics, science or economics. In some countries like India and Bangladesh, women are expected to marry by a certain age, after which they are deemed undesirable and so their dowry (a payment made by a women’s family to her husband in exchange for him to provide for her) is higher. Because of these social norms or traits associated with being a woman in a developing country, young girls in schools either drop out earlier than boys, or attend more irregularly than their male counterparts. School performance can even be affected, as seen by an experiment conducted on boys from different social castes in India. When their caste-identity was made public, boys from lower castes performed worse than their higher caste counterparts. These experiments will be looked at in more detail in the next chapter.

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<sup>33</sup>Stone et al., “Stereotype Threat Effects on Black and White Athletic Performance”, 1999, p.1213

# 4

## Analysis of Randomized Controlled Trials

### 4.1 Introduction to Randomized Controlled Trials

The purpose of this chapter is to analyze several RCTs explicitly in the lens of behavioral economics. The ultimate goal is to design a new RCT, and so this will also help analyze some ways in which studies have been organized and administered. First, what are randomized controlled trials? The idea stems from the scientific experimental method of having a ‘treatment’ and a ‘control’ group in order to see the effects of the treatment. However, taking this method outside of a science lab is difficult, as humans living in society cannot be as easily organized.

In 1925, statistician Ronald A. Fisher came up with the randomization method that would allow researchers to collect experimental data in naturally occurring environments<sup>1</sup>. The idea is that in an RCT, “the assignment of different units to different treatment groups is chosen randomly,” and this “insures that no unobservable char-

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<sup>1</sup>Duflo et al., “The Influence of Randomized Controlled Trials on Development Economics Research and on Development Policy”, 2016

acteristics of the units is reflected in the assignment, and hence that any difference between treatment and control units reflects the impact of the treatment,”<sup>2</sup>. RCTs started being used in development economics in 1994, by researchers Glewwe, Kremer, and Moulin<sup>3</sup>. Since then, it has completely changed the way development economics is taught, studied and practiced. Research organizations such as Innovations for Poverty Action (IPA) and Abdul Latif Jameel Poverty Action Lab (JPAL) have funded many RCTs seeking to alleviate poverty and poor education and health conditions in developing nations.

For social scientists to take on this method was revolutionary because economists and policy makers have always been concerned with making causal relationships, with no way to make a solid conclusion.

Of course the idea is much simpler than the execution, and the conclusions that come out of RCTs are criticized widely, mainly in terms of external validity and ethics. Angus Deaton summarizes the connection between psychology, economics and development:

There also appears to be a good deal of convergence between this line of work, inspired by earlier experimental traditions in economics theory and in psychology, and the most recent work in development. Instead of using experiments to evaluate projects, looking for which projects work, this development work designs its experiments to test predictions of theories that are generalizable to other situations<sup>4</sup>.

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<sup>2</sup>Ibid. 2

<sup>3</sup>Glewwe et al. “Many Children Left Behind? Text Books and Test Scores in Kenya”, 2009

<sup>4</sup>Deaton, “Instruments, Randomization and Learning about Development”, 2010, p.450

This logic of using RCTs in a theoretically sound way can be used to counter the external validity concerns of RCTs; by tracing an RCT back to its initial theory and making that connection more explicit, external validity can be achieved. For example, one of the first long term RCTs that intervened in health and education in a developing country was based in Kenya. They worked with school children with deworming treatments in order to improve health and school attendance in the short term, and productivity in the long term. The study achieved very successful results, but was criticized for not being generalizable in communities where worm infections are not an issue. The context of the experiment being in Kenya, between 1998 and 2001, is a critical centerpiece of the study <sup>5</sup>. However, when the study is stripped back to its theory, which in this case would be that better health improves productivity in the long run, other communities benefit as well. Education is a universal problem in developing nations, and so by tweaking the theory to target a health concern that is prevalent in that space, if not worm infections, the initial study becomes very beneficial.

This chapter aims to analyze several RCTs down to its theory in behavioral economics in order to explicitly underline the connection between the two disciplines. We will look at RCTs, as well as some observational studies, that use the concept of the present bias, the role model effect and the stereotype threat.

## 4.2 Present Bias

As discussed in the previous chapter, present bias is the inconsistency of preferences over time. We as humans have the tendency to have a stronger preference for

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<sup>5</sup>J-PAL Policy Bulletin. 2012. “Deworming: A Best Buy for Development”

gains in the present moment, even if it means giving up higher gains in the much later future. We are more impatient about the immediate gain than gains in later dates. The present bias concept was developed by observing behavior in richer countries, so first we have to understand how, if at all, it appears in developing nations. The present bias has been shown to be prevalent in developing countries, like in Kenya for example, where researchers conducted lab experiments eliciting time and risk preference parameters, but the result was positive for “only for truly immediate payments,” meaning payments that were given there and then, as opposed to tomorrow or this week (which might still be considered ‘immediate’ by some) <sup>6</sup>.

A study in which we see the present bias taking place is in health, but as we know from the deworming RCT, health also has implications in education. In health, the present bias effect takes place when choosing between preventative health care and curative. Like education, preventative measures are an investment in which we don’t see immediate gains. However, when a person gets sick due to the lack of preventative measures, the negative impacts are immediate and therefore the cure is an immediate gain. The problem is that prevention has much lower costs than cure. In a standard neoclassical cost benefit analysis, the better choice would be to pay lower for prevention over taking on the problem when its too late and we have to pay much higher costs for the cure. Of course, this is not how the human mind processes it.

Duflo et. al conducted a study in rural India “that increased the reliability of immunization services by holding well-publicized immunization camps in villages and also providing a small incentive to encourage parents to attend,”<sup>7</sup>. The problem they

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<sup>6</sup>Balakrishnan et al., “How Soon is Now? Evidence of Present Bias from Convex Time Budget Experiments”, 2015, p.1

<sup>7</sup>J-PAL Policy Briefcase. 2011. “Incentives for Immunization”

were tackling starts from the supply; the Indian government provides free immunizations for diseases such as BCG, DPT, polio, and measles, as well as sufficient and accessible clinics in which to get them from, however, nurses who administer the immunization shots are inconsistent in attendance, 45% of the time they are absent according to surveys<sup>8</sup>. Therefore, to a parent of a child, the value of going all the way to the clinic and finding an empty office is much lower than completing other tasks that bring the household more gains. On top of that, the immunization shot does not provide an immediate gain that the human brain can be satisfied with.

The researchers, along with Seva Mandir, an NGO in India, conducted the RCT in Udaipur. 134 villages were randomly selected, and out of those, 30 had received immunization camps, 30 had received immunization camps along with an incentive, and 74 villages were observed as the control group. The immunization camps were facilitated by a mobile immunization team who conducted monthly administrations on a certain date. Social workers employed in every village were made to inform and educate mothers about immunization and its benefits. Every child was given an immunization card. In the villages that had the immunization camp with incentives had the additional feature of giving every parents “1 kilogram bag of lentils per immunization administered, and a set of plates after their child was fully immunized. The value of the lentils was about Rs. 40 (just under US\$1), equivalent to about three-quarters of a day’s average wage in the area,”<sup>9</sup>. Furthermore, the presence of a nurse and assistant was also observed with a time and date stamped photograph.

Making sure that nurses were present fixed the supply issue, and the presence of a social worker being there as an informant served to fix the imperfect information

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<sup>8</sup>Ibid.

<sup>9</sup>Ibid.

issue. They found that the immunization camps with the conditional incentives resulted in 39% of the children being fully immunized (by treatment status, receiving up to 5 immunization shots), versus 18% from just the immunization camps and 6% in the control groups<sup>10</sup>. The staggering difference between the two treatment groups shows that even after imperfect information is controlled for, people are still susceptible to behavioral mechanisms that hold them back from making better decisions. The lentils per immunization in this experiment served as an immediate gain for the parents of the child. The team concluded that “we cannot assume that information and supply of health services will be enough,” and that “incentives as small as a bag of lentils improved immunization rates, possibly because they helped parents overcome procrastination,”<sup>11</sup>. We will be using the intuition behind this RCT for the next portion of the paper.

### 4.3 Conditional Cash Transfers

Conditional cash transfer (CCT) programs programs in which participants would be given cash with the condition that they complete a task, such as making sure a child is attending school everyday like the Progresa program in Mexico<sup>12</sup> that have been conducted over the years since RCTs came into popularity focused more on how to intervene with liquidity constraints in poor households, rather than changing a possible present bias effect. The difference is that liquidity constraints is subsidizing something that costs more than a participant can afford, like school fees, and the present bias mechanism would work by using the payment to nudge the participant

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<sup>10</sup>Ibid.

<sup>11</sup>Ibid.

<sup>12</sup>Dubois et al., “Effects on School Enrollment and Performance of a Capital CCT Program in Mexico”, 2012

to do something that is already affordable to them. CCTs are very popular and the reason the following study is being included, despite having no behavioral connections, is because it inspires aspects of the following chapter where a new RCT is proposed.

In December 2016, Buchmann et al. completed running a study using clustered randomized controlled trials evaluating “the effect of conditional incentives and a girls’ empowerment curriculum on adolescent marriage, childbearing and education in rural Bangladesh,”<sup>13</sup>. Child marriages are a problem in developing countries such as Bangladesh (Bangladesh having the second highest child marriage rate in the world), and there is evidence that shows child marriage is correlated with lower education attainment<sup>14</sup>. The problem arises from the fact that societies like these believe that they would bear a higher cost of marrying a daughter in the form of the dowry payment as they get older. Between January 2007 and September 2015, the experimenters randomly assigned 19,060 girls from six different rural districts in south central Bangladesh to four conditions: (1) a six-month womens empowerment program, (2) a financial incentive to delay marriage, (3) the six-month women’s empowerment program and financial incentive to delay marriage combined, and (4) a control condition.

The empowerment program was called Koshoree Kontha, or “Adolescent Girls’ Voice,” and trained girls aged 10-19 in education and social competency aspects:

The education component aimed to enhance the basic literacy, numeracy, and oral communication of both school-attending and illiterate girls. The social competency component trained girls in life skills and nutritional

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<sup>13</sup>Buchmann et al., “Power vs Money: Alternative Approaches to Reducing Child Marriage in Bangladesh, a Randomized Control Trial”, 2017

<sup>14</sup>Field & Ambrus, “Early Marriage, Age of Menarche, and Female Schooling Attainment in Bangladesh”, 2008

and reproductive health knowledge via a curriculum designed by Save the Children USA. In randomly selected communities (50%), financial literacy and encouragement to generate own income was added to the curricula. Overall, the empowerment curriculum was similar in content to many empowerment programs being implemented worldwide, including those designed by BRAC and Unicef.<sup>15</sup>

Safe spaces spaces in which this program was administered were created around the communities, with adult members of the community helping run them. Each space targeted 20 adolescent girls, and activities included reading aloud from books, games, and discussion groups with specific gender empowering topics and questions. They met five to six days a week, for two hours, for six months. After six months, a new cycle was started for a different group of girls. They completed 4 cycles within the time, and 84% of girls in target communities were reached.

The financial incentive was in the form of cooking oil, which is a regular household purchase in Bangladesh and so perceived to have “close to cash equivalent value, yet it is less susceptible to theft and graft than cash because of its bulk” and “high value to volume ratio, which minimized transport costs,”<sup>16</sup>. The value of this conditional incentive was approximately \$16.00 a year, “an amount chosen to offset the estimated financial cost of higher dowry,”<sup>17</sup>. Girls would present a ration card at distribution points around the community in order to receive this incentive. Marriage conditionality was checked through Community Health Volunteers (CHV) and local networks, and those who were found to be married or surpassed the age of 18 were

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<sup>15</sup>Buchmann et al., “Power vs Money: Alternative Approaches to Reducing Child Marriage in Bangladesh, a Randomized Control Trial”, 2017, p.6

<sup>16</sup>Ibid. 6

<sup>17</sup>Bruce & Sebstad, “Building Assets for Safe and Productive Lives: A Report on a Workshop on Adolescent Girls’ Livelihoods”, 2004

taken out of the eligibility list. 5,617 unmarried girls received the financial incentive at least once in the four years of the program, or “71% of the girls eligible at baseline,”<sup>18</sup>.

They found that the girls that were assigned to the financial incentive condition for at least two years were “22% less likely to be married under 18, 14% less likely to have given birth under 20, and 21% more likely to be in school at age 22,”<sup>19</sup>. The empowerment program, while not as successful in reducing marriage and childbearing at a young age, was found to be successful in education where “12% [were] more likely to be in-school and had completed 2.9 months of additional schooling,”<sup>20</sup>. The concluded that:

... conditional incentive programs are highly effective in increasing age at marriage and schooling attainment, while empowerment programs have no effect on marriage timing, but do encourage unmarried and older married girls to stay in school. We find no evidence of complementarities between the incentive and empowerment program on schooling or child marriage.<sup>21</sup>

The most interesting thing about this study is the indirect positive effect it has on education, since none of the conditions assigned to the girls involve a direct incentive for them to go to school. “Unlike other incentive programs that are conditional on girls staying in school, an incentive conditional on marriage alone has the potential to benefit out-of-school girls,”<sup>22</sup>. Gerard Roland mentions how poor people are most responsive to programs cutting the financial costs of education in order to reduce

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<sup>18</sup>Buchmann et al., “Power vs Money: Alternative Approaches to Reducing Child Marriage in Bangladesh, a Randomized Control Trial”, 2017

<sup>19</sup>Ibid. 1

<sup>20</sup>Ibid.

<sup>21</sup>Ibid.

<sup>22</sup>Ibid.

the educational gender gap in developing countries<sup>23</sup>. While that may be the leading solution in this area, this study gives evidence that there are other alternatives. It plays into the narrative that the demand side of education may be more important than the supply side. The main reason, other than the fact that families are often too poor to send all children to school and so resort to only the boys' education, is the opportunity costs. For girls, the opportunity costs are household work (which helps the household's finances indirectly) and bearing children early in order to have more labor and income generating members in the household. There are also social issues in Bangladesh that play a part in early age marriages and childbearing, such as girls not being "pretty" or "desirable" after a certain age.

This study changes things because it highlights that the reason more girls are not going to school is because of the fact that once they are married with children, they do not have the option to go to school anymore. No matter how much they improve the supply of education through financial cuts, the demand is being hindered through this particular social construct, which renders the supply useless. Through the empowerment program, girls can be taught that education provides higher returns for the family, much more than household chores and marriage and childbearing, thus increasing the demand for education. By incentivizing the delay of marriage, girls are given the option to explore the higher returns of education concept for themselves. This experiment has the potential to be really powerful in the long run because it teaches the benefits of education not only through simply telling the girls how it is, but also making them experience it for themselves given the choice.

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<sup>23</sup>Roland, *Development Economics*, 2016, p.451

By replacing the dowry system with another form of payment that did not jeopardize a young girl's future in education, they were able to find positive results in school continuity. One of the problems that they discuss is that even if the empowerment program was successful in changing the perception of education for all in the minds of the adolescent girls, they do not have the bargaining power in the household to decide whether or not they should attend school or get married. This is something to think about for the next part of the paper; designing the RCT.

#### 4.4 Role Model Effect

As discussed previously, the role model effect is looking for examples in people that resemble us or what we want to be, whether in terms of race, gender, religion, way of thinking, etc. In this case, we are making the argument that adolescent girls do not choose paths in higher education and labor market participation due to the perception that this is not a viable option for them. The lack of women role models in high education jobs creates a vicious cycle in which young girls feel that they don't have a space in these paths. In the same way, in societies where most of the population tend to be conservative, and gender roles are a lot stricter than in developed nations, the role model effect has the potential to create a cycle where empowerment interventions will not be necessary anymore.

One of the most commended RCTs in this topic was Beaman et al.'s research in India studying changes in aspirations in adolescent girls and their families. The main reason why this got so much attention is because this was a study that was based on an intervention made by the Indian government. In 1993, the Indian government passed a law that called for gender quotas in elected village council positions, "a ran-

domly selected third of leadership positions at every level of local government [would] be reserved for women,”<sup>24</sup>. From less than five percent of women representation in local leaders in 1992, the number increased to 40 percent by 2000<sup>25</sup>. Researchers at JPAL found several long-term impacts of this law; (1) female leaders listened more to women’s demands and worked to meet those as well as men’s demands (which differed), (2) continued exposure to women leaders changed the male perception of how ‘competent’ they are, and (3) having an exposure to “female leaders heightened adolescent girls’ career aspirations and increased their level of education attainment,”<sup>26</sup>. We will be focusing on the third one, which is essentially an observation of the role model effect.

The study was conducted between 2006 and 2007, so at this time, villages had either seen one women *Pradhan* (chief councilor) in either 1998 or 2003, two women Pradhans in 1998 and 2003, or none. They went to 495 villages in Birbhum, West Bengal (located 200km from Kolkata), and gave out surveys to 15 randomly selected households per village. There were two different surveys; one for the youngest married couple in the household, and one for adolescents ages 11-15. The surveys had two parts, the first being a sort of household roster asking for the participants’ educational attainment (whether they can read and write, and last school grade completed), and a time use module, where the participant would indicate how many hours in the last 24 hours they spent doing an activity 16 agricultural and household activities were listed, for example, time spent collecting water, cooking, cleaning, child care, collecting fuel, etc.

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<sup>24</sup>Beaman et al., “Female Leadership Raises Aspirations and Educational Attainment for Girls: A Policy Experiment”, 2012

<sup>25</sup>Ibid.

<sup>26</sup>Ibid.

The second part of the survey was aimed at measuring aspirations. For the parents it was the aspirations they had for their children, and the researchers categorized these survey questions into five indicator variables; does not wish child to be housewife or whatever in-laws prefer, wishes child to have a high-education job, wishes child to marry after age 18, wishes child to graduate or get higher education, and wishes child to be Pradhan. The adolescents got a similar survey but aimed at aspirations for themselves, and the same five categories were listed. The results can be seen in the Figure 4.4.1 below:

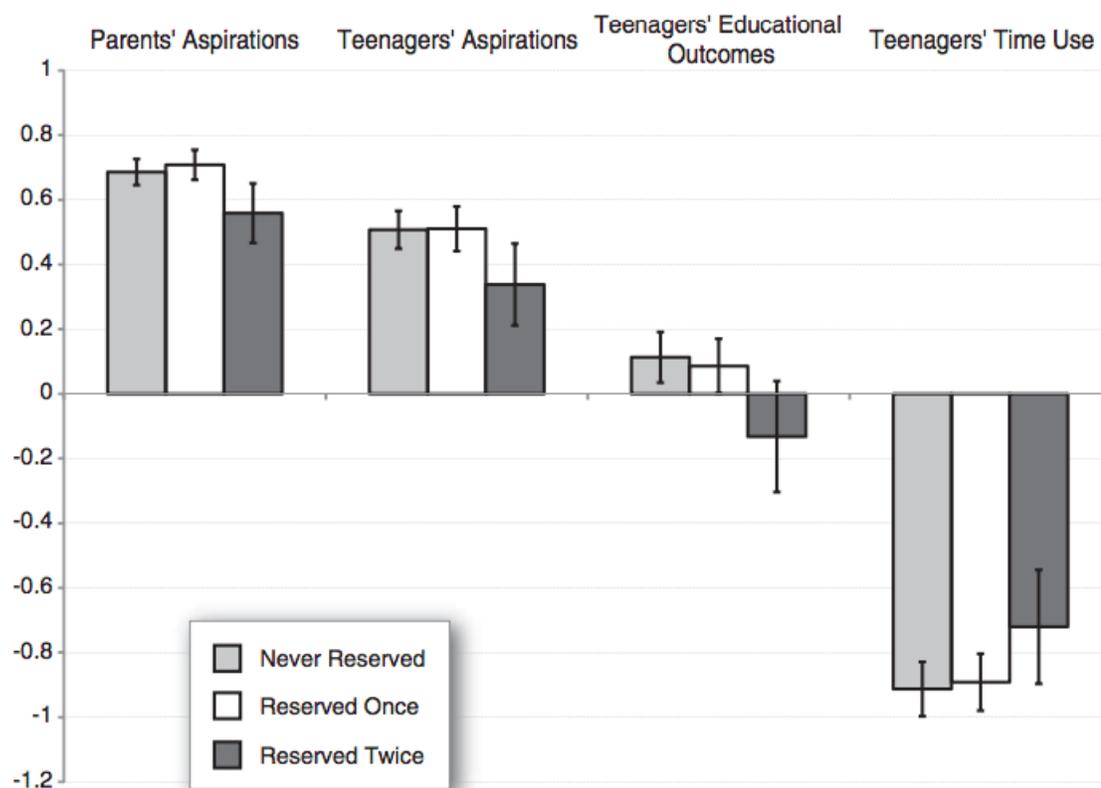


Figure 4.4.1: Gender Gap in Different Survey Questions from Beaman et al., “Female Leadership Raises Aspirations and Educational Attainment for Girls: A Policy Experiment”, 2012

The bars represent the gender gap in aspirations, educational attainment and time use. They found what they call a ‘dose’ effect, where significant results were seen after seeing two female leaders, rather than a time since first exposure effect. Parents generally have higher aspirations for sons than they do for daughters, but after electing two women Pradhans, the gap significantly reduces. The gap in aspirations is not as high in adolescents themselves, but it still reduces even further after two women Pradhans. The gap in educational outcomes actually reverses, which is the perhaps most interesting thing about this study. ‘Education outcomes’ in this case refers to wanting a job in the future that requires high education. This implies that after being exposed to two women leaders, adolescent girls appear to value education and jobs that require an education significantly more than young boys do.

Finally, the gender gap in time spent doing household chores reduces as well, which could possibly “reflect parents giving girls more time to study,” and do other activities that increase human capital in different ways. The researchers concluded that:

The gender gap in aspirations in villages with a female leader for two election cycles drops by 0.14 standard deviation ( $P < 0.03$ , t test) relative to places that never had one. As parental aspirations for boys are unchanged, the entire decline in the gap is accounted for by improvements for girls. . . Women in leadership positions can change aspirations of girls through two main channels: first, by undertaking policies that make it easier for women to succeed, thus changing beliefs on what is possible for girls; and second, by providing a role model of a successful woman.

Two things to note are that there were no changes in boys' aspirations, and there were no changes in young women's labor market opportunities, and therefore, this suggests that the impact of women leaders primarily reflects the role model effect.

On a smaller scale, looking at the classroom environment only, evidence suggests that female teachers also have an effect on girls' enrollment and participation in school. The organization Seva Mandir have a program of "informal schools" in India, where they provide "basic numeracy and literacy education to children who do not attend formal school; these schools then attempt to 'mainstream' these students into the regular school system,"<sup>27</sup>. In 2000, Banerjee et al. conducted an RCT in these Seva Mandir schools in rural Rajasthan that placed a secondary female teacher in the classrooms. The intuition behind this study was that female teachers make schools more attractive for girls and parents of girls, especially those that are approaching adolescence. This is due to safety and conservative culture in many of these developing countries. Results showed that when a secondary female teacher was present, girls' enrollment increased by about half<sup>28</sup>. They did not find an improvement in test scores, and they were not measuring aspirations, so a direct role model effect cannot be claimed.

While the main theory they were addressing was the safety and comfort of adolescent girls outside of their homes, with a few tweaks for the future this study has the potential to show signs of the role model effect. Being exposed to women teachers can be more encouraging for girls to find formal employment outside of household chores, because they are seeing older women doing the same. Herz and

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<sup>27</sup>Herz & Sperlring, *What Works in Girls' Education*, 2004, p.67

<sup>28</sup>Banerjee et al., "Promoting School Participation in Rural Rajasthan: Results from some Prospective Trials", 2002

Sperling, while evaluating the above RCT, mention in their book *What Works in Girls Education*:

... hiring female teachers is not just a way to overcome the problems of male teachers [referring to mistreatment by male teachers in rural communities]; it also offers real advantages. Women teachers may encourage girls more, and they are often inspiring role models, especially where few other women work in the labor force Recruiting female teachers may not be any more expensive than recruiting men, but finding female teachers, particularly in rural areas where few women are literate, can be difficult<sup>29</sup>.

In order to address the critique of generalizability from the first study, since passing an affirmative action law is not possible for all countries like it was for India, this study can be referenced and improved upon to critically measure the role model effect in female teachers.

#### 4.5 Stereotype Threat

Herz and Sperling also talk about how teachers' attitudes and expectations for girls can influence girls' outcomes. Evidence has been found particularly in Nigeria, and many countries in South Asia, where "boys are given more opportunities to ask and answer questions, to use learning materials, and to lead groups... [and] very few teachers are trained in ways of reaching girls effectively or in ways of helping children think beyond gender stereotypes,"<sup>30</sup>. This is essentially what the stereotype threat is;

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<sup>29</sup>Herz & Sperling, *What Works in Girls' Education*, 2004, p.67

<sup>30</sup>Herz & Sperling, *What Works in Girls' Education*, 2004, p.65

if people are made aware of the stereotypes that surround them, they tend to behave that way as well unintentionally, which in this case would be girls underperforming due to gender stereotypes that females are less able in math and science. Outside the classroom, the stereotype in developing countries is that women are housewives, care takers, and do not take on careers that require a high level of education, and so school is not really the place for a young girl to be. The norm is to get married at a young age and leave school, and this would result in girls not giving importance and value to education either, since they are expected to leave anyway.

An experiment conducted by Karla Hoff and Priyanka Pandey looks at the still prevalent caste system impact in India. They provide evidence of the “history of social and legal disabilities [still having] persistent effects on a group’s earnings through its impact on individuals’ expectations,”<sup>31</sup>. Although not a traditional RCT, this study still gives us experimental insight of the stereotype threat. The aim was to see if making someone’s caste identity salient would affect their responses to an economic incentive. The task was to solve mazes for the money; the more mazes they solved, the more money they would earn, along with an additional ‘show up’ fee of Rs.10, which was a “significant amount compared to the Rs.6 unskilled adult hourly wage,”<sup>32</sup>.

They gathered 321 high-caste males and 321 low-caste males in junior high school in rural Uttar Pradesh, India, (from different villages so that it was unlikely that they knew each other) and assigned them to four different conditions; (1) an anonymous condition consisting of three low-caste and three high-caste identifying participants, where no one in the room would know each other’s identities, (2) a caste revealed condition also consisting of three of each group, but this time in beginning of

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<sup>31</sup>Hoff & Pandey, “Belief Systems and Durable Inequalities: An Experimental Investigation of Indian Caste”, 2004

<sup>32</sup>Ibid. 2

the test the experimenters would ask each participant to confirm their name, village, father's name, paternal grandfather's name, and caste, (3) a single identity condition consisting of all 6 participants identifying as a low-caste and asked to confirm their identities, and (4) a single identity condition consisting of all 6 participants identifying as a high-caste and asked to confirm their identities. Two timed rounds of a series of 15 mazes were given out, and collected, after which within two hours they were graded and the prize money was sealed in an envelope to hand over. The results and earnings were revealed only to the participant himself, and they were asked not to open the sealed envelopes until they got home.

They found that a significant difference between conditions 1 and 2; in condition 1, high-caste participants solved 7 percent more mazes than low-caste, but in condition 2 the difference rose to 34 percent. They concluded that “here were no caste differences in performance when caste was not publicly revealed, but making caste salient created a large and robust caste gap in performance. . . [suggesting] that when caste identity is salient, low-caste subjects anticipate that their effort will be poorly rewarded,”<sup>33</sup>. Knowing that there are other participants in the room that identify themselves with a group that is known to be of a higher economic class, participants, in a way, self select themselves out of achieving the most that they can. They underperform because of they are made aware of a stereotype that they are associated with and how other groups expect them to perform due to the existence of that stereotype.

Now that we have explored some studies that involve behavioral theory, we can take ideas and aspects of them to design a new RCT that would look at the gap in demand for girls' education in developing countries.

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<sup>33</sup>Ibid. 2

# 5

## RCT Proposal

### 5.1 Aim and Context

In this portion of the paper, we will present a proposal for an RCT aiming to increase the demand for girls' education in rural Bangladesh, using different behavioral mechanisms that were described so far. By using the concept of the role model effect primarily, and also using the mechanisms or present bias as a secondary layer, the experiment aims to intervene in long-term household decisions through the exposure of gender empowerment materials targeted at mothers and daughters in primary schools.

The setting of a village in rural Bangladesh is understood to be a conservative, patriarchal, Muslim, and a collectivistic society. This means that in the most typical household we are reaching, the primary decision maker of a household is the father, and the family has strong ties to religion and a conservative culture. Being a collectivistic society, this also means that a family would have strong ties to pre-

vious generations (i.e. grandparents, great grandparents), which further solidifies a social norm of gender inequality. With the rise of the garment industry, Bangladesh has seen a major growth in women's labor force participation, but this only happens after migration to urban communities<sup>1</sup>. Rural areas still have a long way to go to achieve gender parity in labor force participation. Labor force participation is the main motive for investing in children's education in this case.

There are a few ways primary education can be accessed in rural areas of Bangladesh; secular government funded schools, non-formal schools, private schools, and madrassas (schools that focus on Islam and the Qur'an). Ahmed et al. came up with a list of 11 different types of schools that fall under these broader categories<sup>2</sup>. This RCT would work with the non-formal schools that are run by NGOs, as they would be most likely to cooperate with researchers. The organization BRAC (Bangladesh Rural Advancement Committee) have participated in studies like this before and so they would be the first people that this proposal would go to. BRAC runs "more than 24,000 one-room, single grade, single teacher non-formal primary schools serving 750,000 students. More than 4.5 million children have graduated out of BRAC schools since the start of the program in 1985,"<sup>3</sup>. BRAC targets rural communities that have limited access to education, and 65% of their student population is female. The teachers are also mostly locally hired women. A gender empowerment intervention would align well with the ethos of the organization and the schools they fund., as their methodologies are described as "learner-centered," "interactive," "gender-sensitive," "pro-poor," and "child-friendly,"<sup>4</sup>.

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<sup>1</sup>Mahmud, "Is Bangladesh Experiencing a Feminization of the Labor Force", 2003

<sup>2</sup>Sommers, "Primary Education in Rural Bangladesh", 2011

<sup>3</sup>Ibid. 13

<sup>4</sup>Ibid. 14

Bangladesh has also been exposed to a role model effect intervention before, in the form of a television show. In 1991, UNICEF worked with the entertainment industry in Bangladesh to develop *Meena*, a television show depicting a cartoon character named Meena, a girl living in a rural village in Bangladesh. The show dealt with issues of gender equality in education and labor market participation mainly, but also included education in things such as health and sanitation, HIV awareness, proper birthing practices, and even things such as sharing with poor neighbors and developing as a community.

For example, in one episode they show Meena wanting to enroll in school like her younger brother, but her father does not see the point of girls going to school and so does not allow it. Meena sends her pet parrot to go to school and repeat the lessons back to her at home, and she learns to count, and because of this she realizes that one of the chickens in her father's farm is missing. At the end of the episode, her father realizes the importance of education for girls too and enrolls Meena<sup>5</sup>. The show was massively popular and spread to other countries in South Asia, eliciting "profound changes in attitudes and practices,"<sup>6</sup>. There are even talks now on whether this program can be repurposed to target the problem of isolation in children with disabilities. A similar method of story telling in order to educate will be used in our experiment.

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<sup>5</sup>UNICEF, "Meena: Tape 1: Education", 1992

<sup>6</sup>Anis & White, "The Meena Communicative Initiative in Bangladesh", 2017, p.1

## 5.2 Design

The RCT would randomly assign different BRAC schools in rural Bangladesh to empowerment programs for mothers and daughters. The empowerment program is essentially the distribution of reading materials in the form of small booklets. These booklets would contain children's stories that would introduce positive female role models for young girls to read about. Studies show that in developing countries, reading materials, like books and poems, often portray women according to their gender stereotypes; women are depicted as housewives, mothers, and care takers, while men are depicted as police officers, construction workers, etc<sup>7</sup>. The female characters in the booklets that will be distributed will be portrayed differently. It will not be as drastic as completely reversing gender roles and having female police officers and male homemakers, as this may cause backlash from a conservative society. It will be subtler, like introducing mothers who run businesses, or older sisters who migrate to the city to work in a factory or an office. Before getting into the content details of the booklets, distribution is major factor that this study focuses on.

There are two target populations in the distribution part of this experiment; female students and mothers. As Buchman et al found in their study, targeting only adolescents in women's empowerment programs does not have a big effect because they do not have the authority in their households to control decisions about their future<sup>8</sup>. This is why we would involve a parent figure in the experiment. A random half of the schools that are being tested with the intervention will only distribute to the students. The other half will distribute to students as well as a parent who will

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<sup>7</sup>Kobia, "Femininity and Masculinity in English Primary School Textbooks in Kenya", 2009

<sup>8</sup>Buchmann et al., "Power vs Money: Alternative Approaches to Reducing Child Marriage in Bangladesh, a Randomized Control Trial", 2017

be incentivized (with a bag of lentils) to come to school (distribution point) in order to be handed the booklet.

The distributions will take place once a month, with a new story in the booklet every time. The booklets will be distributed in the classrooms of the fourth year (last grade before graduation) students at school, to both male and female students. The story will be read aloud in class and a 10-minute conversation about the story and its implications will be conducted with the teacher leading the discussion. BRAC institutions have a formal training program for all teachers already, but teachers will be briefed as well in the general message that the stories are trying to promote, which is gender equality. The distribution to parents is a little more complicated.

Because distribution is more than just handing the booklet out, it involves verbal communication to make sure that the material is understood in the right way, we need to find a way to make parents come to the distribution centers. For this, we have designed an incentive mechanism for a parent to pick up their child after school. If a parent comes, they will receive a small bag of lentils, as this is a common cost in Bangladeshi households, and we have seen this to work as a conditional incentive in neighboring country, India<sup>9</sup>. It will be measured to equal the average amount of money that is spent on lentils every month. In a patriarchal society where men are usually the main bread winner, it is assumed that the mother will come to the distribution point, since they will have more free time.

Schools will have tents placed outside with volunteer teachers who will be distributing the booklets and lentils to the parent, and giving them a short briefing on the material. They will also be encouraged to share the stories with their children

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<sup>9</sup>J-PAL Policy Briefcase, "Incentives for Immunization", 2011

(reading to their children, discussing with them, having their child read to them if they are illiterate, etc). Students will be asked in class the following day whether or not the booklets were discussed in the household. This is the part of the experiment that cannot be controlled; we do not know for sure if the interaction in the household is happening or not. If it is not happening, it would be very easy for the child to lie about it anyway. Whether or not involving parents makes a difference will be determined by the group where the ‘treatment’ is being administered to the children only.

As for the content, booklets will be published in Bengali as this is the primary language spoken and taught in the village setting. They will be based on the average reading level of the fourth year students in the BRAC schools (BRAC schools have a 4-year primary system as opposed to the national 5-year system). They will contain short and simple stories of girls and women being empowered in some way. For example, there will be a story about a 17-year-old girl who is being made to drop out of secondary school because the family has found a marriage prospect for her. However, the girl has a passion for sewing clothes and there is a local businesswoman who is willing to hire her. She knows that this may not be a possible option after marriage if the the man’s family does not allow her to work, and so she convinces her family to let delay marriage so that she can earn money for the household. The discussion topics of this story would be women in the labor force, women as business owners, and women standing up against social norms of early marriage.

Now we come to the collection of data. This experiment would be ideally done in a long term to see real results of these young girls growing up to become women who defy the social norms. A simpler method of testing the effectiveness of the intervention would be to conduct aspiration surveys, like the RCT in India measuring aspiration

changes after exposure to women Pradhans, by Beaman et al<sup>10</sup>. The experiment would be conducted within a year, so a total of 12 booklets will be distributed. Before the distribution of the very first booklet, students will be asked to fill out surveys of their future plans and aspirations.

The surveys will be anonymous so that answers are more honest and they are not afraid of judgement. Since they are the graduating class, questions can be posed in that context. Four main questions will be asked: (1) Do you think education is important? (2) Do you plan to continue to secondary school? (3) Do you see yourself using your education for a job at the age of 25? (4) Do you want to be a leader someday? After a year, and more specifically a month after graduating from the primary school, the same survey will be given out to the now-graduated students. The difference between Yes and No answers will be measured in girls and boys, yes indicating higher aspirations. It is expected that the number of Yes's in boys will be higher prior to the intervention, and after the intervention, the gap will be smaller.

### 5.3 Expected Behavioral Mechanisms

The first behavioral mechanism that can be observed in this study is the role model effect, which is the primary 'treatment' that will be measured through the surveys. By reinforcing gender empowerment through the short stories and discussing them in class and at home, it is expected that aspirations will increase. Since BRAC is already running curriculums that tackle gender parity problems, the key difference is that the parents are involved in this experiment. By making gender empowerment something to be discussed at home, it is expected that the stories will create a role

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<sup>10</sup>Beaman et al., "Female Leadership Raises Aspirations", 2012

model effect in the household as well. The adults in the house are the ones who can make the difference for their daughters' futures, and so it is just as important to reach them. After collecting the results, we would see if this is true by comparing the aspiration levels of the students who had their parents involved, and the ones who didn't.

Another way that benefits the students whose parents are involved in the experiment is that it increases the compatibility of what information young minds retain at school and at home. Often times the information that is taught at school can be diluted if it is not the same as the kinds of ideas that children hear at home. In countries like Bangladesh, there is a certain resistance that exists in rural communities against NGOs and foreign ideas that threaten the continuity of the conservative social norms that have been passed down for generations. A personal anecdote from someone who worked on a project with IPA in Bangladesh: "We were interviewing village households in Rajshahi to figure out how people managed their finances, and in one particular village, while conducting the first interview, the entire village came out of their houses, around 40 people, and tried to break into the house to drive the surveyors (two men, one White American and one Bangladeshi) out"<sup>11</sup>. This could be the result of a colonial hangover, negative perceptions of different religions, and just the protection of 'sacred' values. Therefore, by eliciting behavioral changes in the adults at home, the effectiveness of the intervention can be increased.

The experiment is also utilizing the present bias in order to get the parents involved. If the study had asked the parents to come without any incentive, we may not have seen the results play out as well as it would with the conditional incentive.

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<sup>11</sup>Azfar Khan (ex IPA Employee) in discussion with author, January 2018

In this experiment, we are only testing the role model effect, not the present bias, but it is being used an assumption that conditional incentives work in communities like these. By receiving the immediate gain of lentils, parents are more likely to forego the procrastination from going to the distribution point. We use this to our advantage by giving them exposure to the gender empowerment stories and discussions.

By asking a parent to come and receive their child, we mentioned that it would be assumed that the mother would come. We know that in a patriarchal society, men make the important household decisions, and women may not always have a say. So empowering a mother may not make that much of a difference in determining the child's future. However, this why there is another reason for the distribution of lentils. They not only serve as a conditional incentive, but also a tool to possibly increase the bargaining power for women in the household. If a woman brings home something that would significantly reduce costs for the household, along with a booklet that would empower her and her daughter, we may see a behavioral change. If our assumption is incorrect, and a father or an older male sibling comes instead, it would be noted, but in the particular results we are collecting (young girls' empowerment), we shouldn't see a change, as the male guardian would also be encouraged to read and discuss the booklet with the student.

#### 5.4 Expected Results and Implications

As mentioned, the expectation is that the gender gap in aspiration surveys will decrease, and this is the short term result. It would be great to be able to track down the participants in the long term, perhaps 10 years down the line, to see how this study has affected their career prospects and decisions. We would ask them to recall

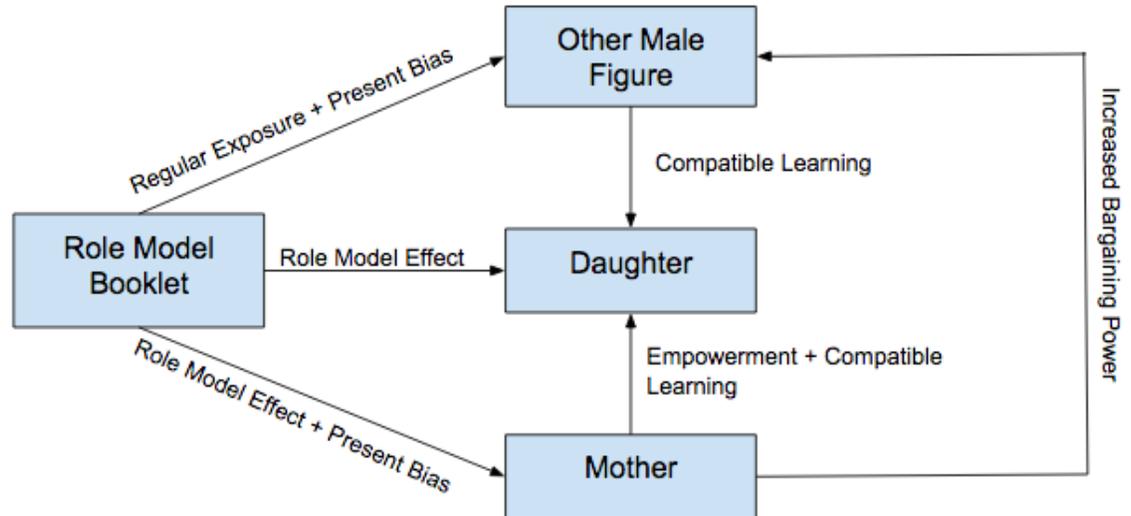


Figure 5.3.1: Behavioral Mechanisms of Design

the study and answer anonymously whether it had an impact in their lives (changed what they thought was possible for them, changed household relationships, etc). It would be interesting to compare these with BRAC students that didn't participate in this study, like the class one year above the participating group, to see if there is a difference in careers and life decisions revolving around gender parity problems.

# 6

## Conclusion

The aim of this project was to explore girls' education in developing countries from the demand side with new behavioral insights. First we explored some of the supply side solutions, like reducing costs of education, direct and indirect, providing more female-friendly environments, improving the quality of education to make sure that its worth while and better than the opportunity costs, etc. Unfortunately, due to social norms and specific gendered roles and responsibilities, the supply isn't always met with sufficient demand when it comes to girls' education. We look at ways to empower girls and their families and increase demand through concepts in behavioral economics.

We explored topics under behavioral economics that could be applied to the issue of the education gender gap in developing countries; psychological processes such as the present bias, role model effect, and stereotype threat stop girls from being motivated to get an education, as it is seen as something that is not meant for them. We can change this through nudges and small interventions, which is where the

design portion of the project comes in. I go on to design my own RCT that works with short stories portraying empowered women, with the hopes that it will have a role model effect when distributed as an intervention and create a virtuous cycle within the community. The girls who were given the intervention would ideally be able go on to spread the ideas of empowerment, and the generation after them would look at them as role models, and they would do the same once they grow up, thus creating a cycle of women empowering each other. The short term effects will be measured through surveys measuring aspiration changes in the participants, but it would be quite extraordinary to see the long term effects bring about real social and behavioral change in the community.

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