

NEGOTIATING A BETTER FUTURE: HOW INTERPERSONAL SKILLS FACILITATE INTERGENERATIONAL INVESTMENT*

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Using a randomized controlled trial, we study whether a negotiation skills training can improve girls' educational outcomes in a low-resource environment. We find that a negotiation training given to eighth-grade Zambian girls significantly improved educational outcomes over the next three years, and these effects did not fade out. To better understand mechanisms, we estimate the effects of two alternative treatments. Negotiation had much stronger effects than an informational treatment, which had no effect. A treatment designed to have more traditional girls' empowerment effects had directionally positive but insignificant educational effects. Relative to this treatment, negotiation increased enrollment in higher-quality schooling and had larger effects for high-ability girls. These findings are consistent with a model in which negotiation allows girls to resolve incomplete contracting problems with their parents, yielding increased educational investment for those who experience sufficiently high returns. We provide evidence for this channel through a lab-in-the-field game and follow-up survey with girls and their guardians. *JEL* Codes: D13, I24, J16, O15.

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I. INTRODUCTION

In highly constrained environments, why do two children with similar abilities, coming from households with similar financial resources, receive very different levels of education and have vastly different later life outcomes? To answer this question, we examine whether children's noncognitive skills, a form of nonfinancial resource, can help explain this variation, focusing on adolescent girls in Zambia. Adolescent girls and their parents face enormous constraints in this environment. School fees increase and girls' dropout rates spike at the end of middle school. If parents do not fully internalize the benefits of schooling to their daughters and there is imperfect contracting over schooling investments, a girl may not be educated even if it would be efficient based on her ability. Girls may then find themselves powerless to navigate the constraints they face, and economic development and social welfare may suffer as a result.

How, then, can we empower girls to overcome these constraints? Empowerment has traditionally meant the degree to which one has independent control of one's life circumstances (Bandiera et al. forthcoming). Thus, one way to create empowerment would be severing girls' dependence on other decision makers. We explore an alternate source of power: using the interdependence of decision making to generate joint gains. Although girls in Zambia recognize the extent to which they are reliant on their parents, they may not realize the extent to which their parents' utility is dependent on them. Thus, girls have a nascent form of power that is rarely emphasized. By influencing the household welfare function, girls have the power to affect their parents' decisions and, as a result, their own outcomes. This idea aligns with a growing literature that recognizes children as active agents in the household rather than passive consumption vehicles or receptacles for investment (Bursztyn and Coffman 2012; Cosconati 2013; Del Boca, Monfardini, and Nicoletti 2017; Sutter, Zoller, and Glätzle-Rützler 2019).

We use a randomized controlled trial to study the impact of a two-week interpersonal skills training in advance of the peak period for female dropout. This training taught girls to use their agency in the household to affect overall household surplus and thus parents' decision making. Following the tradition in the business world of training executives in the skill of reconciling different interests by looking for "win-win" solutions, we call this training "negotiation training." Indeed, the curriculum was designed

to teach girls to identify their own and others' interests and develop solutions that create value for both parties. Thus, negotiation skills may alleviate incomplete contracting problems between parents and their daughters arising from different preferences over education.

The negotiation treatment is related to a movement focusing on empowering young women to improve development outcomes.¹ Negotiation skills are designed to endow young women with a specific form of empowerment that may be particularly well suited to an environment with strong cultural traditions of obedience and reciprocity to parents, such as exists in Zambia (Whiting and Whiting 1973; Munroe and Munroe 1972; Harkness and Super 1977; Wenger 1989).² At the same time, a training designed and administered exclusively to girls by female coaches may also have more traditional empowerment effects. The program may lead girls to have higher aspirations and place a greater weight on their own utilities. We refer to this as “individualistic empowerment” and include another treatment arm, “safe space,” to capture its effects. Safe space was designed to have individualistic empowerment effects without teaching negotiation skills. While individualistic empowerment may increase girls' determination to pursue education, if it also undermines norms around respectfulness and deference to parents, it could have the unintended consequence of exacerbating incomplete-contracting problems. Thus, understanding the effects of this treatment is important in its own right.

We randomly assign 2,366 eighth-grade girls in 29 schools to be in either the negotiation, safe space, or control treatment. An additional 12 schools serve as “pure control” schools to assist in the measurement of spillovers to untreated girls. We also cross-randomize all arms with an informational intervention to test another possible means of empowering girls—arming them with information required for decision making about educational

1. In a systematic review of 77 studies of adolescent girl programs in low- and middle-income countries, Haberland, McCarthy, and Brady (2018) find that 30% of the programs had girls' empowerment or leadership as an objective.

2. Murriss (2016, 118) writes of parent-child relationships in Africa, “The idea often written about in African philosophy is that African societies are characterized by communal interdependence... Hierarchies are written into the nature of the universe, with children low in the hierarchy—subservient (obedient and respectful) to adults and ancestors. The child's place is to serve this extended family, with obedience as a prerequisite and reinforced through physical punishment.”

investment. To measure the effects of these treatments, we track enrollment in the next three grades. We also measure whether girls enrolled in the higher-ability schooling track, called “morning schooling,” in 10th and 11th grade. This track requires girls to perform well on a national exam to enroll and provides higher-quality educational inputs. We complement these measures with additional, shorter-term administrative data. We collect follow-up survey data from girls and their guardians and study their behavior in a lab-in-the-field game designed to measure the effect of negotiation skills in a controlled setting.

We find that the negotiation training has large impacts on enrollment by 11th grade, reducing dropout during the critical transition to secondary school. For 11th grade, our longest-term enrollment outcome, the treatment increases enrollment by 4.4 percentage points (10%). In contrast, the negotiation treatment has little effect in ninth grade, when continued enrollment depends more on girls than their parents. Thus, for enrollment, unlike many other educational interventions, the effects of the negotiation training accumulate rather than fade out over time. Negotiation also has large effects on the probability of being enrolled in the higher-ability track. By 11th grade, negotiation increases the probability of being enrolled in a morning program by 4 percentage points (16%). Supporting the longer-term results, negotiation also increases aggregate measures of shorter-term human capital outcomes.

The comparison with the safe space treatment provides some evidence on the role of skills versus other empowerment elements in creating this effect. The negotiation treatment has statistically (and economically) significantly larger effects on enrolling in the higher-ability track and directionally larger effects for all outcomes.

Results from a machine learning exercise that identifies sources of heterogeneity in the negotiation effect are also consistent with differences in the negotiation and safe space treatments’ effects. Girls in the top 40% of the ability distribution, who were on the margin of enrolling in 10th and 11th grade, benefited the most. Safe space does not exhibit the same heterogeneity and has zero effect on the long-term enrollment of high-ability girls. The fact that the pattern of the safe space estimates is so different suggests that the individualistic empowerment elements of the negotiation treatment alone are unlikely to drive the human capital effects. Negotiation also consistently has statistically larger effects than

the cross-randomized information treatment, suggesting that its treatment effects are not due to learning about the returns to education from female mentors or examples in the curriculum.

We then test a model where the educational decision is partly a strategic interaction between parents and daughters, and negotiation skills allow daughters to expand the feasible contracting space for reciprocating investments. To do so, we use a lab-in-the-field game to allow girls to use their negotiation skills with parents in a controlled environment where the returns to investment cannot be affected by the treatment. In the game, parents are endowed with tokens they can choose to pass on to girls. Any tokens passed increase in value. Girls can then choose to return or spend any tokens they receive, aiming to mimic the return and risk of educational investments for parents. When parents and daughters communicated before parents decided, the negotiation treatment led parents to send significantly more tokens. Two additional variants of the game provide evidence that this effect is not driven by altruism or individualistic empowerment. Complementing these findings, a follow-up survey provides evidence that girls made concurrent transfers in response to greater educational investment.

This article contributes to a growing literature on the importance of noncognitive skills ([Heckman and Rubinstein 2001](#); [Kautz et al. 2014](#); [Alan, Boneva, and Ertac 2019](#); [Attanasio et al. forthcoming](#)) by showing how to build the capacities that make an individual successful. Although much of the literature has focused on noncognitive skills that develop in the critical period before age five, adolescence may also be critical. Skills related to interpersonal communication have been shown to develop most quickly in adolescence ([Choudhury, Blakemore, and Charman 2006](#)). Thus we focus on a particularly important period for intervention in terms of both the potential for acquiring noncognitive skills and the vulnerability of the population. By measuring the effects of the different components of a treatment that is designed to improve noncognitive skills, we provide evidence that the specific skills aspect of the intervention is important. Moreover, we find that these skills affect human capital investment in ways that accumulate rather than fade out over time. From a policy perspective, we add to growing evidence that it is not too late to teach these skills in adolescence, suggesting that these skills could be taught directly within the school system.

This article also contributes to the literature on intrahousehold bargaining and inefficiencies in investment within the

household (Udry 1996; Ashraf 2009; Bobonis 2009). Whereas much of this literature has focused on spouses rather than parents and children, this article shows that, in a context where parents and children have different preferences over educational investments, household members can learn skills that increase the contracting space.³ These skills help households get closer to the efficient frontier, in the spirit of the theoretical work of Chassang (2010) and Watson (1999).

Finally, this article establishes a causal link between negotiation skills and economic outcomes. Despite the large amount of resources spent on these trainings at business and law schools, little is known about their effects.⁴ While there are growing efforts to expand access to these skills to other populations, negotiation training is usually only available to the most economically advantaged.⁵ If these skills are indeed effective at changing economic outcomes, providing this powerful tool only to the most privileged could perpetuate inequality.

The article is organized as follows. Section II describes the negotiation treatment and the experimental design. Section III develops a simple model to guide our analysis of the mechanisms driving the negotiation treatment effect. Section IV measures the effects of negotiation and alternative treatments on enrollment, morning schooling, and other human capital outcomes. Section V uses a follow-up survey and a lab-in-the-field investment game to test for the different mechanisms laid out by the model. Section VI concludes. All appendix material is contained in the Online Appendix.

3. Examples of papers focusing on intergenerational intrahousehold bargaining include Bergman (2015), Jensen and Miller (2017), Bau (2019), and Ashraf et al. (forthcoming).

4. Negotiation training reaches more than 200,000 MBA and executive students in the United States alone and is used at more than 16,000 business schools worldwide (Murray 2011). Evidence of negotiation's efficacy rests on measures of participants' ability to identify mutually beneficial trades in simulated negotiations or on subjective measures of efficacy (e.g., Gist, Stevens, and Bavetta 1991; Nadler, Thompson, and Boven 2003; Movius 2008; Zervas et al. 2013). Studies of negotiation measuring behavioral outcomes examine either very short-term measures inside the lab (Small et al. 2007) or find no effect (Hobfoll et al. 2002).

5. In terms of offering these skills to the disadvantaged, Mercy Corps has implemented more than 100 conflict management programs since the 1990s. Conflict resolution training effectively reduces disputes in areas with weak rule of law (Blatman, Hartman, and Blair 2014; Hartman, Blair, and Blattman, forthcoming).

II. EXPERIMENTAL DESIGN AND DATA

In this section, we document the design and timing of the negotiation, safe space, and information interventions, as well as the timing of our data collection. We discuss our outcome variables, collected over the subsequent three years, which allow us to measure the effects of the negotiation training and shed light on the different mechanisms underlying the negotiation effect.

II.A. Experimental Design and Timeline

We study the effects of a randomized controlled trial targeting eighth-grade girls at 41 primary schools throughout Lusaka, Zambia. These schools are co-ed government schools with sufficient enrollment to allow for within-school randomization. Of the girls approached to take part in the experiment at these schools, 67% received permission from their guardians to participate (and agreed themselves). [Online Appendix Figure A1](#) shows the template for the letter sent to parents to invite them to participate. We collected baseline data from the set of girls whose parents agreed.⁶ The data collection is described in greater detail in [Online Appendix A](#). At baseline, girls were randomly assigned at the individual level to receive an information treatment on health and the returns to education.

We randomly chose 29 three-arm treatment schools. Within these schools, we stratified by classroom and information treatment and randomized girls at the individual level into three groups: (i) control group (780 girls), (ii) safe space group (785 girls), and (iii) negotiation group (801 girls). The experimental design is shown in [Figure I](#). Following standard practice, we control for classroom fixed effects and the information treatment, our randomization strata, throughout our analyses of the interventions' effects in these schools ([Glennester and Takavarasha 2013](#)). The girls were informed that the randomization would be done by a

6. Because of the tight implementation timeline, some girls whose parents had consented were randomized into the experiment without having been surveyed with the goal of surveying them and informing them of their treatment status on the day of intervention. Because of this, 4.6% of girls did not receive baseline surveys and usually did not learn their treatment status in time to take part in the intervention. This was not differential by treatment assignment (see [Online Appendix Table A1](#)), and we exclude these girls from most of our analyses. In [Online Appendix D](#) we demonstrate that our main results are robust to including these girls.

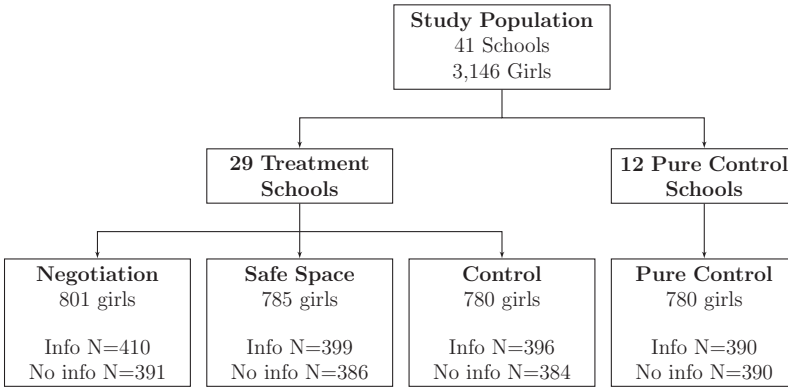


FIGURE I

Experimental Design

This figure details the design of the experiment and the number of schools and individuals assigned to each treatment.

computer and that they might receive one of two programs or be assigned to receive a program later (the control group).

The remaining 12 schools were then assigned to be a “pure control” group.⁷ Thus, one of our strategies to assess the extent of spillovers is to compare control girls in the treated schools to girls in the pure control schools.

Three to four months after the negotiation and safe space interventions follow-up data were collected, and at the same time the lab-in-the-field experiment was conducted. We continued to collect administrative data on the girls’ educational and pregnancy outcomes for the next three years. [Figure II](#) documents the timeline of the study.⁸

7. Treatment and pure control schools were assigned through a matched pair randomization using prebaseline administrative data to make 12 pairs of schools that were similar on geography, number of girls, and percent of students on scholarships. One school in each pair was then randomly assigned to be a three-arm school, and the other was assigned to be a pure control school. We discuss this further in [Online Appendix H](#).

8. In line with our commitment to the Zambian government to offer the program to control schools and control girls, we expanded the negotiation training program to pure control schools after the grade 9 exam was taken and to control girls from treatment schools during the 10th-grade school year. For budgetary reasons, we stopped tracking girls in pure control schools after the scale-up was completed, planning to use the short-term outcome measures to look for spillovers. We continued tracking treatment school participants for an additional year after scale up, discussed further in note 13.

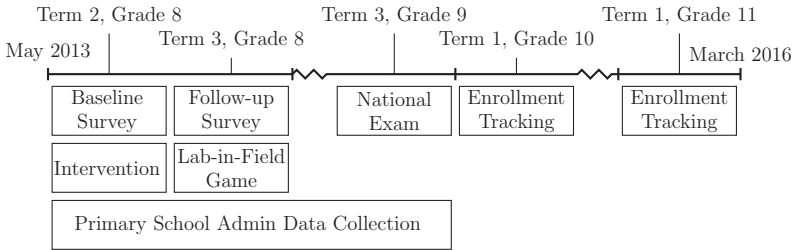


FIGURE II
Experimental Timeline

This figure details the timeline for the baseline data collection, the initiation of the experiment, the follow-up data collection, the lab-in-the-field game, and the subsequent administrative data collection.

Table I reports summary statistics for the 29 treated schools, and the results of balance tests between intervention groups, controlling for classroom fixed effects. The table shows that most characteristics are balanced for the negotiation treatment relative to the safe space and control treatments, with a p -value for joint tests of whether the covariates significantly predict negotiation treatment status relative to the control of .311. However, there is some evidence that girls who received the negotiation treatment are lower ability. They are 4.8 and 5.7 percentage points less likely to read and speak Nyanja (the vernacular language) excellently and 4.9 percentage points less likely to speak English excellently relative to the control. Given that we test balance across 14 outcomes, these may be significant by chance. If negotiation girls are slightly lower ability, this is likely to negatively bias our results.

Online Appendix Table A2 compares our intervention schools to other urban government schools in Zambia that offer eighth grade (columns (1)–(5)), all government schools in Zambia that offer eighth grade (columns (6)–(8)), and all Zambian schools, including private and community schools, that offer eighth grade (columns (9)–(11)). The intervention schools are larger than other urban schools on average, but otherwise resemble other urban government schools in terms of the male and female dropout rates and resources. Thus, although our intervention took place in Lusaka, we expect our results to be externally valid across urban Zambia. In contrast, our intervention schools have lower dropout rates and more resources than the average school in Zambia.

TABLE I
SUMMARY STATISTICS AND BALANCE OF CHARACTERISTICS BY NEGOTIATION TREATMENT

	Mean	Std. dev.	Coeff. (Neg. vs. control)	Std. err. (4)	Coeff. (Neg. vs. SS)	Std. err. (6)	Coeff. (SS vs. control)	Std. err. (8)	Number of obs. (9)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Both parents alive	0.737	0.440	-0.019	0.021	-0.017	0.022	-0.005	0.021	2,254
Live with bio dad	0.548	0.498	-0.020	0.025	-0.004	0.025	-0.009	0.025	2,254
Live with bio mom	0.701	0.458	0.011	0.023	0.007	0.024	0.002	0.022	2,254
Live with mom and dad	0.499	0.500	-0.023	0.024	-0.009	0.025	-0.010	0.025	2,254
Parents pay fees	0.763	0.425	0.032	0.020	0.017	0.022	0.015	0.022	2,249
Read Nyanja excellently	0.399	0.490	-0.048*	0.026	-0.046**	0.021	0.001	0.028	2,254
Speak Nyanja excellently	0.480	0.500	-0.057**	0.027	-0.037	0.023	-0.015	0.025	2,254
Read English excellently	0.697	0.459	-0.019	0.023	-0.026	0.021	0.008	0.026	2,254
Speak English excellently	0.412	0.492	-0.049*	0.028	-0.002	0.022	-0.043	0.029	2,254
Read Nyanja well	0.637	0.481	-0.026	0.022	0.003	0.027	-0.028	0.024	2,254
Speak Nyanja well	0.885	0.320	0.000	0.017	-0.006	0.017	0.001	0.014	2,254
Read English well	0.899	0.301	-0.008	0.014	0.000	0.016	-0.009	0.013	2,254
Speak English well	0.789	0.408	-0.020	0.023	-0.025	0.021	0.003	0.022	2,254
Age	14.419	1.461	0.058	0.067	0.035	0.064	0.011	0.068	2,254
<i>p</i> -value (joint test)			.311		.183		.920		

Notes. This table reports summary statistics collected during the baseline survey for the girls from the 29 treatment schools who participated in the experiment, as well as tests of the within-school randomization balance between the negotiation, safe space, and control groups. For the coefficient columns, each row is a regression of a child/household characteristic on an indicator for whether the girl was included in the treatment of interest, controlling for classroom fixed effects. The final row regresses indicator variables for negotiation (column 3) and (5) or safe space (column 7) on the full set of covariates and classroom fixed effects using a sample of either negotiation and control girls (column 3), negotiation and safe space girls (column 5), or safe space and control girls (column 7), and reports the *p*-value from a joint test of the significance of the covariates. Standard errors are clustered at the class level. * denotes 10% significance, ** denotes 5%, and *** denotes 1%.

II.B. Negotiation Treatment

The negotiation program was made up of six two-hour training sessions, including activities like role-play, group discussion, storytelling, and games building on materials from [Curhan \(1998\)](#), [Mercy Corps \(2009\)](#), and the classic negotiation texts of [Fisher, Ury, and Patton \(2011\)](#) and [Ury \(1993\)](#).⁹ Attendance rates for these sessions were high, with the average girl attending 4.8 out of 6 days. The curriculum ([McGinn, Low, and Ashraf 2012](#)) was designed to allow girls to understand their ability to potentially affect other people's decisions without violating cultural norms of deference to elders. A key component was recognizing the potential for agreements that result in joint gains in a situation where these gains are not immediately obvious. Recognizing this potential allowed girls to propose alternatives to their parents without being viewed as disrespectful.

A canonical example in the negotiation literature helps illustrate how negotiation skills can create “win-win” solutions, which we adapted for the curriculum:

Two sisters are arguing over an orange. One says “I saw the orange first, so I should get it!” The other says, “I’m older so I should get it!” They go back and forth, getting more and more angry, until finally they compromise and cut the orange in half. One takes her half of the orange, peels it, throws away the rind, and eats the inside. The other takes her half of the orange, peels it, throws away the inside, and uses the rind to make a cake.¹⁰

By using negotiation skills, the sisters could have realized that they wanted the orange for different things, and thus could both have had what they wanted, expanding the available surplus. Examples of girls being able to increase joint surplus in their real lives, in addition to reciprocating educational investments, might include agreeing with siblings about times when it is least costly for each to watch younger children or working with parents to do housework at a time that does not interfere with schoolwork.

In the negotiation literature, a distinction is made between positions and interests. Whereas positions tend to be diametrically opposed (e.g., “I want the orange,” and “No, I want the orange!”), interests may be reconcilable (e.g., “I want a snack,” and “I want

9. The curriculum is freely available under a creative commons license at <https://hbsp.harvard.edu/girls-arise/>.

10. Adapted from [Fisher, Ury, and Patton \(2011\)](#).

to bake a cake”). Thus the key steps of the curriculum involve determining one’s own interests, determining the other party’s interests, identifying areas of overlap or profitable exchange, and crafting a solution that creates joint gains.

These four steps were called Me, You, Together, and Build (see [Online Appendix Figure A2](#)), and formed the structure for the curriculum. These steps were designed to teach skills typically found in an MBA-style negotiation class, adapted for the age of participants and the cultural context. Some activities directly mimicked real situations that girls might face, whereas other types of exercises were more abstract, such as games that illustrated the effect of one’s own choices on long-term payoffs for both parties. We now discuss each of the four steps in greater detail.

1. *Me.* This step taught girls to understand their own interests—that is, to identify their deeper needs and values rather than the proximate cause of a dispute. Knowing one’s own interests is a necessary step for identifying potential gains from trade. A girl can then identify other ways a negotiation partner can make her better off beyond conceding on a disputed issue. In addition, girls were taught to know their outside option so that they recognized at what point they would not compromise and could walk away if the agreement options did not serve their needs and interests. Girls were also taught to focus on regulating their emotions ([Fabiansson and Denson 2012](#)), “taking five” when they were angry.

2. *You.* This step emphasizes the importance of understanding the other party and discovering their interests. Girls learned to “step to the side” of the other party, taking their perspective. [Galinsky et al. \(2008\)](#) show that individuals who can take their partners’ perspectives generate more efficient solutions in cases where a deal seemed impossible. In this particular context, this is a crucial step for girls to see that their negotiating partner is not a fixed, “dogmatic” actor but motivated by incentives, which may be affected by the girl’s actions. Understanding a parent’s utility function allows a girl to see how she can make transfers or trades that would alter the parents’ willingness to invest. Recognizing that such deals exist can be thought of as expanding the feasible contracting space. Typically this step is done using open-ended questions. However, since direct questions to a parent can be considered rude in the Zambian context, girls were taught to use indirect questions to identify their parents’ interests.

3. *Together.* This step taught the girls to look for common ground with their negotiating partner and treat resistance as a roadblock to be solved together. First, they were taught to recognize and emphasize the shared values with the person they were negotiating with. This removed the mindset that parents were acting from dictatorial whims, which obscures profitable exchanges. For example, instead of thinking or saying, “If you cared about me, you would pay my school fees,” a girl might substitute, “We both care about education, let’s find a way to make this work.” Second, they were taught to see other people’s decisions as a product of constraints, rather than fixed preferences. For example, a parent might say “no” to paying for something because they needed to pay for other things, rather than not caring about the girl. Girls could then realize that if they were able to solve problems with their negotiating partner and help remove the roadblocks, they might be able to change the outcome.

4. *Build.* In this step, girls learned to brainstorm solutions to roadblocks and look for win-win agreements that met the needs of both negotiating partners. Girls were taught ways to brainstorm with their negotiation partner to look for new solutions to external constraints. Moreover, they were taught to look for productive trades, where one person cares about something a lot, but it is easy to give for the other person. They were taught that “building an agreement is like building a house you can both live in,” and therefore, an agreement should give both parties something they want. In effect, this skill taught girls to use what they had learned in previous steps in the negotiation to look for solutions closer to the efficient frontier. Such solutions may not have been in the feasible contracting space in the absence of negotiation, but negotiation skills could expand that space.

A story relayed to us by one of the negotiation coaches illustrates a girl successfully using all the steps together to convince her parents to pay her school fees:

I asked my parents if they could talk with me. I put on my chitenge [traditional material skirt], and knelt before them. I chose to approach with respect and so they asked me to stand and sit in the chair near them and tell them what I wanted to say. I said that I really wanted to be able to go back to school but wasn’t able to because the school fees weren’t paid. They said I knew that the family had no more money so it wasn’t possible. I said I know that mom sells chickens out of the house. I see that some people sell them in

the marketplace nearby. If I can sell some chickens in the market over the school holiday, could I use the money for my school fees? They agreed and that is how I got to go back to school.

The approach laid out by the curriculum focused on cooperative actions that allowed girls to get their needs met, rather than teaching them to “bargain” for all the surplus. In this way, it is related to a theoretical literature in relational contracting that demonstrates how the establishment of dynamic cooperation can lead to more efficient outcomes (Kranton 1996; Ghosh and Ray 1996; Chassang 2010). Because of the emphasis on understanding the other party’s utility function, we also view it as related to breaking out of a “cursed equilibrium” (Eyster and Rabin 2005) that can be caused by misperceptions and lack of communication. [Online Appendix B](#) provides more qualitative information from the girls in the sample about how they used the training in everyday life.

To test whether girls in fact learned the negotiation curriculum and could apply what they learned to a new situation, a scenario was included in the follow-up survey (three to four months after the intervention).¹¹ [Online Appendix Table A3](#) regresses girls’ scores on different questions in the scenario and their average score across the questions on an indicator variable for whether they received the negotiation treatment. As the table shows, girls who were taught negotiation scored substantially better on all three questions. Given that the follow-up occurred several months after the negotiation classes, this provides evidence that the classes had persistent effects on girls’ knowledge of negotiation skills and how to apply them. In addition, it shows that the safe space and control girls who did not receive the training were not able to fully learn the negotiation skills from their classmates.

To test whether girls applied their negotiation skills in the household, we also designed a module to ask guardians about girls’ behavior in the household during the follow-up survey.

11. Girls were asked to imagine they were in the following situation: they needed to study for a test and had asked their sister to take care of their younger brother, but the sister refused, saying that she wanted to go visit a friend. The girls were asked three open-ended questions about what they would do. The responses were coded, blind to treatment, on a scale of 1–7, with 7 indicating the best answer according to the negotiation curriculum. According to this coding scheme, 1 = no reflection of negotiation lessons and 7 = full integration of Me, You, Together, Build. Coding was based on evidence of attention to both parties’ interests, working together to solve the problem, dealing with emotions, and brainstorming solutions.

[Online Appendix](#) Table A4 shows that negotiation girls also behave in a way that is more aligned with the negotiation curriculum according to their parents or guardians. These results suggest that girls were not limited to knowing the skills theoretically but were able to apply them in ways that were observable to their parents.

II.C. Safe Space Treatment

The safe space program was designed to have individualistic empowerment effects and the same ancillary benefits as negotiation without imparting negotiation skills. Thus, we can compare the negotiation and safe space treatment effects to determine if the skills component of the negotiation training is important. In the safe space program, girls met for the same number of sessions under the supervision of the same female mentors as the negotiation training.¹² However, in place of the negotiation curriculum, the mentors launched each session with some songs and cheers and then allowed the girls to play games, do homework, or just talk with one another. We provided simple games and materials, such as cards, jacks, and hula hoops. The safe space program had all the same small, auxiliary benefits as the negotiation program (free lunch on session days, a notebook, and pens) and affected girls' time spent in an after-school program in the same way. The common individualistic empowerment benefits between the programs are the provision of female role models and a positive, girls-only space as part of a program focused specifically on girls. However, safe space may have had a greater impact in other areas, such as building social capital among girls, since they had more free time to spend with one another. Some girls may have found it more fun or appealing, since it was free time rather than structured learning time. We further describe the safe space treatment in [Online Appendix B](#).

II.D. Information Treatment

The information intervention was intended to measure the effects of providing information about the returns to education or health protection, which may also be unintentionally transferred through the negotiation curriculum (because it used both educational and health examples). The information treatment provided

12. Attendance rates were not statistically significantly different between the negotiation and safe space treatments. The average girl in the safe space treatment attended 5 days (relative to 4.8 in negotiation).

more information than the negotiation program, so we should not think of it as nested in the negotiation program. Rather, comparing the treatments allows us to compare pure information effects to negotiation effects. This treatment is described in more detail in [Online Appendix B](#). Because negotiation was cross-randomized with information, we can also test for any complementarities between the interventions.

II.E. Schooling Outcomes

In this subsection, we describe the two main measures we use to evaluate the treatments' effects on education over the subsequent three years.

1. Enrollment. Enrollment is our most important measure because it allows us to capture the longer-term educational effects of negotiation. Many of our shorter-term measures can be seen as investments that need to be made to ensure a girl remains enrolled. Thus, enrollment captures the aggregate effects of both observable and unobservable investments. Because girls had to be enrolled in grade 8 to participate in the program, we measure enrollment for grades 9, 10, and 11.¹³

The barriers to enrollment across grade levels vary in significant ways in our context. Institutionally, girls are very likely to progress into ninth grade conditional on being enrolled in eighth grade. There is no high-stakes national exam to pass at this transition, and schools are prohibited from barring girls from class for nonpayment of fees (although they may pressure parents to pay). To progress to 10th grade, however, a girl must cross a series of important hurdles. She must take the national exam and receive a sufficiently high score to be admitted to a school, and parents must pay both any outstanding fees for 9th grade (or else a girls' scores will not be released) and the entry fee for 10th grade to enroll at the new school. Thus, enrollment in grades 10 and 11 captures whether a girl has passed the peak dropout period at the transition between schools.

Enrollment in ninth grade was measured administratively from the primary schools we were working with for the study. Therefore, false negatives would only occur if a girl moved away

13. Because the program was scaled up during grade 10 at the treatment schools, grade 11 enrollment effects could be negatively biased by "catch-up" from girls in other arms. However, since the program was offered through schools, girls who had already dropped out were unlikely to be affected by the expansion.

from the area but enrolled in a government school elsewhere. Enrollment for grades 10 and 11 was captured by having teams of data collectors verify girls' presence at schools either directly or through official school rosters. This is administrative data, in the sense that they come from official status and not self-reports, but there is no central enrollment database. Accordingly, there is some possibility for false negatives if a girl enrolled in a school in which she was not expected to enroll and was not found by the data collection team. It should also be noted that enrollment is only coded as 1 if girls enrolled in a government school program, since any other schooling is lower quality and still reflects a worse educational outcome. This process is discussed further in [Online Appendix A](#).

2. Schooling Type. We also measure enrollment in “morning school,” the higher-quality ability track in the Zambian school system. To officially be promised a place in 10th grade, girls must score above a threshold on their national exam, which was a score of 361 in the year our participants finished 9th grade (in the top 27% of exam takers). Girls with a lower score could potentially get a place in “afternoon school,” if a school had space available.¹⁴ These schools differ in terms of inputs and students' ability. Historically, afternoon school was introduced as remedial classes (for a fee) serving students who had been denied placement in the official school system. These classes, called Academic Production Units (APUs), essentially functioned as a private school operating on government school grounds ([Verspoor 2008](#)). In 2011, the government formally abolished APUs and stated that all students must be incorporated into the government system ([Lusaka Times 2011](#)). In practice, distinctions between the afternoon and morning program remain. In addition to the peer group being different, morning and afternoon girls in secondary school wear different uniforms, and girls typically cannot take “pure science” (essentially, STEM) in the afternoon program. Contact hours are also higher in the morning program, and teacher effort and attention are probably higher. Moreover, the afternoon program does not include exam preparation for the government exam that girls must pass to graduate 12th grade. Thus, girls in morning school are much more likely to continue their education after high school.

14. Schools offer one school day starting at 7 a.m. and a second after the standard school day has finished.

II.F. Additional Human Capital Outcomes

To further investigate the effects of the experimental treatments on girls' educational outcomes, we consider five more measures. We also collect data on pregnancy, a health outcome that is potentially related to education. To account for multiple hypothesis testing, we introduce aggregate measures across the different human capital outcomes.

1. *Paid School Fees.* This measure is coded as 1 if parents had paid all school fees by the end of grade 9 and 0 otherwise. The data were collected directly from the experimental schools.

2. *Took National Exam.* This measure is coded as 1 if girls took the ninth-grade national exam and 0 otherwise. Passing this exam is required for girls to graduate from junior secondary school and receive their certificate. In addition, the results are used to assign girls to secondary schools. Most girls (90% of the control) took the exam.

3. *Threshold Math and English.* These two measures are coded as 1 if girls took the national exam and scored in the top 27% in math and English, respectively, and 0 otherwise. Scoring in the top 27% of the exam is the official threshold for being assigned to a morning secondary school in Lusaka.

Our measures combine taking the exam and doing well to avoid the attrition that would occur if we only examined scores and dropped the observations of the girls who did not take the exam. These measures may capture girls' effort in preparation as well as educational inputs from parents, like time to study. In contrast to the previous two measures, these measures are more likely to capture variation among higher-ability girls.

4. *Attendance Rate.* This variable measures the average attendance rate of girls across the terms in which attendance rates were collected (terms 2 and 3 of grade 8 and terms 1 and 2 of grade 9) conditional on being enrolled in school. We view this measure as providing information on the important intensive margin of actually attending school. Among the control girls, average attendance rates are 54% and range from 27% at the 5th percentile to 76% at the 95th percentile.

5. *Pregnancy.* Our last outcome measure is an indicator variable for whether a girl was reported to have become pregnant prior to the start of 11th grade. This could have been affected by the negotiation training both through direct negotiations with partners as well as through the opportunity cost of schooling channel described by [Duflo, Dupas, and Kremer \(2015\)](#). Reported pregnancies are relatively rare (4% of the control group). This may be reflective of underreporting and the relatively young age of the sample.

6. *Aggregate Measures.* We aggregate the additional educational measures into a human capital index in two ways. First, we form an index by standardizing the individual variables and averaging over them. Second, we follow [Kling, Liebman, and Katz \(2007\)](#) and [Clingingsmith, Khwaja, and Kremer \(2009\)](#) and estimate our treatment effects as average effect sizes.¹⁵ As [O'Brien \(1984\)](#) shows and [Kling, Liebman, and Katz \(2007\)](#) note, average effect sizes allow for the formation of a global test statistic with the maximum power against the alternative that all the effects are equal to 0. The use of average effect sizes and indices has two advantages. First, they reduce the possibility of false positives due to multiple hypothesis testing by allowing us to jointly test the hypothesis that the treatment affects human capital with a single test statistic. Second, these measures increase our statistical power by allowing us to combine information across multiple measures.

[Online Appendix Table A1](#) reports the rates of attrition for the schooling and human capital measures. Attrition is usually low and is not differential across the treatments.

II.G. Lab-in-the-Field and Follow-up Survey Measures

Our remaining outcomes, which allow us to explore potential mechanisms for negotiation's effects, come from the lab-in-the-field experiment and the follow-up survey, which occurred three to four months after the treatment. Thus, these outcomes can be

15. To form average effect sizes, we run stacked regressions of our outcomes on the treatment of interest, allowing the treatment to have different effects by outcome. We then scale the effect sizes by the standard deviation of the control group and take their average to arrive at the final effect size. Running the stacked regressions allows us to estimate the full covariance matrix, which can be used to test the hypothesis that the average effect size is equal to 0.

thought of as providing early indicators of changes in the household. The lab-in-the-field experiment was designed to directly measure the effect of girls using their negotiation skills and to isolate different potential channels for the negotiation training's effect in a controlled environment. The game is discussed in detail in [Section V.A.](#)

The follow-up survey was designed to gather suggestive evidence on possible mechanisms in households' "real," everyday behavior. The survey measures parental beliefs about girls' abilities, time and work allocation in the household, parents' perceptions of girls' behavior, and girls' own educational aspirations. Thus, the follow-up survey allows us to test several potential channels for negotiation's effects, which we explore more fully with the theoretical framework. These include changes in parents' beliefs about daughters' ability, changes in daughters' aspirations, and increases in strategic cooperation between parents and daughters.

III. THEORETICAL FRAMEWORK

In this section, we develop a theoretical framework outlining different forces through which negotiation training could affect educational investment. For simplicity, we model educational investment as a one-shot game. However, we view this as a reduced-form representation of a reality where small educational investments (such as allowing a daughter to study) are made over time and daughters can reciprocate these investments by cooperating with their parents (e.g., by doing more chores or doing chores more willingly) in addition to making later transfers. Our framework is designed to capture the individualistic empowerment effects of a negotiation training and the skills effects. For brevity, we do not explicitly discuss the information effect, because we will show that information alone does not affect schooling in our context, although the model can be generalized to accommodate it.

In the model, parents make the decision to invest in girls' education. Because parents are imperfectly altruistic, and the set of feasible contracts between girls and parents is limited, parents may decline to invest even when the return exceeds the costs. This reflects the fact that in our follow-up survey, daughters report wanting significantly more education (1/10 of a year on average) than parents report wanting for them. Thus, there is scope to improve efficiency and increase educational investment if girls

whose return is sufficiently high can increase their transfers to parents to elicit investments.

We assume girls will naturally transfer some amount of the returns to education to their parents due to a sense of obedience and reciprocity. However, savvy girls may also want to transfer more than they would naturally out of reciprocity because of a desire to incentivize parental investment. Negotiation skills could create added scope for this strategic cooperation by allowing girls to better recognize that their transfers will affect their parents' decisions, helping them find opportunities for concurrent transfers, or increasing the ability to commit to future transfers. In the model, this is just represented as an increased set of feasible contracts, but this reduced-form representation should be thought of as standing in for the many facets of successfully using negotiation skills.

III.A. Set-up

In our basic framework, an imperfectly altruistic parent can choose whether to make an investment, $E \in \{0, 1\}$, in her daughter's education, for which she experiences a cost, \tilde{f} . The cost is offset by the parent's altruism toward the daughter and by the transfer she will receive from her daughter conditional on $E = 1$, τ . The parent's problem is therefore given by

$$(1) \quad \max_E U^p = (-\tilde{f} + \tau + \delta U^d)E,$$

where $\delta \leq 1$ is the altruism parameter, and U^d is the daughter's utility. Each daughter has a discounted, net-of-effort return to schooling $R_i \sim$ i.i.d. drawn from a distribution F , which can be thought of as the ability distribution.

The daughter's key choice variable is τ , which she can transfer to her parent to offset the cost of education when $E = 1$. The daughter also internalizes the cultural norm of obedience and reciprocity to her parents and experiences a convex loss from the distance between her transfer and her return to education, represented as

$$c(R_i - \tau),$$

where $c'(R_i - \tau) > 0$, $c''(R_i - \tau) > 0$, $c(0) = 0$, and $c'(0) < 1$.¹⁶

16. This assumption ensures that a daughter always prefers to keep at least some of the returns to investment. If $c'(0) \geq 1$, daughters would always give

The daughter's problem is therefore given by

$$(2) \quad \max_{\tau} U^d = (-\tau + R_i - c(R_i - \tau))E.$$

First, imagine the daughter solves this problem taking the parent's educational decision as fixed. Then, the daughter will maximize utility taking E as fixed and will transfer 0 if $E = 0$ and τ^{ns} if $E = 1$, where τ^{ns} solves $c'(R_i - \tau^{ns}) = 1$. Because τ^{ns} is ex post incentive compatible given the parent's investment decision, it does not require any commitment (or contemporaneous transfers) by the daughter. This situation is in line with girls thinking of their parents' decision making as unchangeable, consistent with the cultural norm in Zambia of deference toward elders by youths, especially by girls.

In general, substituting the daughter's utility into the parent's problem shows that the daughter will be educated if

$$(3) \quad R_i > \frac{\tilde{f} - \tau(1 - \delta)}{\delta} + c(R_i - \tau).$$

If only τ^{ns} is transferred, we see that the required R_i to be educated is decreasing in τ^{ns} . Thus, one benefit of greater internalization of cultural norms by girls is that it may make parents expect more transfers, making them more willing to educate their daughters.

Now, imagine that two criteria are met:

- (i) Daughters fully understand the parent's utility function.
- (ii) Daughters have either full commitment or the ability to transfer a large enough τ to change the parent's behavior contemporaneously.

In this case, a daughter is willing to transfer a maximum of R_i to be educated. Substituting $\tau = R_i$ into [equation \(3\)](#) shows that any daughter with $R_i \geq \tilde{f}$ will then be educated. The actual transfer required to be educated is $\tau^* = \frac{\tilde{f}}{1-\delta} - \frac{\delta}{1-\delta}(R_i - c(R_i - \tau^*))$, which is obtained by inverting [equation \(3\)](#). As long as $\tau^* \leq R_i$, a daughter is always made better off by transferring this amount to compensate her parent for her education.

Our full model nests both the cases of complete contracting and no contracting described above, allowing for imperfect

parents the entire returns to their investments and strategic cooperation would be unnecessary.

contractibility. We assume that daughters may not be able to transfer τ^* because either they cannot discern parents' motives for investment, find the right things to transfer contemporaneously, or commit to future transfers. Therefore, daughters are constrained in the amount they can transfer above τ^{ns} by σ_i , which captures the feasible contracting space, and the total maximum transfer is $\bar{\tau}_i = \tau^{ns} + \sigma_i$. This creates a limited contracting problem where it is possible $\tau^* > \bar{\tau}_i$, and thus a fully sophisticated daughter would want to transfer more resources to her parent to be educated, but she is constrained from doing so.¹⁷

III.B. Equilibrium

We characterize the equilibrium with Proposition 1.

PROPOSITION 1. *Equilibrium educational investment is characterized by*

- (i) If $R_i \geq R_i^* \equiv \frac{\bar{f} - \tau_{ns}(1-\delta)}{\delta} + c(R_i^* - \tau_{ns})$, $\tau^* = \tau_{ns}$ and $E = 1$.
- (ii) If $R_i^* > R_i \geq R_i^{**} \equiv \max(\frac{\bar{f} - \bar{\tau}(1-\delta)}{\delta} + c(R_i^{**} - \bar{\tau}), \bar{f})$, $\tau^* = \frac{\bar{f}}{1-\delta} - \frac{\delta}{1-\delta}(R_i - c(R_i - \tau^*))$ and $E = 1$.
- (iii) If $\bar{f} \leq R_i < R_i^{**}$, $\tau^* = 0$ and $E = 0$.
- (iv) If $R_i < \bar{f}$, $\tau^* = 0$ and $E = 0$.

Proof. See [Online Appendix C](#).

In equilibrium, a girl in case i, who has sufficiently high returns to education $R_i > R_i^*$, does not need to strategically compensate her parent to be educated and only transfers the amount that is utility maximizing because of her norms of obedience and reciprocity. A girl in case ii, with intermediate values of R_i , will not be educated unless she strategically makes a transfer to her parent. Her equilibrium transfer is less than $\bar{\tau}_i$, so she is able to make that transfer and be educated. In case iii, a girl would like to be educated, and it would be net welfare maximizing to educate her because the returns R_i outweigh the costs \bar{f} , but she is not able to strategically compensate her parent enough to be

17. To formalize the channel of girls' awareness of parents' utility functions, one could imagine that a daughter incorrectly perceives her parent's utility function as a weighted average of the parent's taste for education that is unaffected by the daughter's actions and the parent's true utility, $\bar{U}^p = \alpha|\bar{E} - E| + (1 - \alpha)(-\bar{f} + \tau + \delta U^d)E$. If girls believe that $\alpha = 1$, they assume $E = \bar{E}$, and transfer 0 ex post if $E = 0$ and τ_{ns} if $E = 1$. If girls believe $\alpha < 1$, they solve for a weighted average between τ_{ns} and τ^* , providing a cap on the amount they will transfer, and thus the same predictions as the model we outline.

educated because τ^* is outside of the feasible contracting space, so $E = 0$ and $\tau^* = 0$. The number of girls in case iii ($\bar{f} < R_i < R_i^{**}$) determines how much changing σ_i can affect education. If the parent is perfectly altruistic ($\delta = 1$), then a girl for whom $R_i \geq \bar{f}$ will always be educated, and no girl will be in case iii. Finally, in case iv, a girl would never be willing to transfer enough to be educated because the returns are less than the costs, and therefore, $E = 0$ and $\tau^* = 0$.

Proposition 1 tells us that a girl with $R_i > R_i^{**}$ is educated. Thus, to develop predictions about how changing the parameters of the model will affect education, we only need to consider if they affect R_i^{**} or R_i . The model also indicates that the negotiation treatment should affect education the most for girls whose returns to education place them on the margin of being educated. Next we consider how the negotiation and safe space treatments could affect the different parameters of the model, keeping in mind that safe space has individualistic empowerment effects, whereas negotiation may have both individualistic empowerment and skills effects.

1. Effects of Negotiation Skills. The negotiation training was designed to help girls better understand their parents' utility functions and find opportunities for Pareto-improving trades. Thus, part of the training is endowing girls with game-theoretic thinking. In line with this, girls could learn to make transfers either contemporaneously or in the future that increase the parent's willingness to invest in education. Thus, we think of the main intended effect of the negotiation curriculum as increasing σ_i , the set of feasible transfers, and thus \bar{v}_i , the total possible transfer.

It is also possible that girls who become more sophisticated about their parents' decision-making processes and constraints are able to take actions that reduce the cost of schooling without directly making transfers. For example, a girl could provide a parent with information about when it is most effective to spend time on schoolwork versus chores, thus decreasing \bar{f} . This mechanism allows for the possibility that girls can take actions to increase schooling without absorbing the cost themselves.

In addition to these hypothesized channels, it is also possible for negotiation skills to affect education through other parameters, which we will test for. They could lead girls to be more persuasive or increase the parent's other-regarding preferences, increasing δ , which can also be thought of as the daughter's

TABLE II
SUMMARY OF MODEL PREDICTIONS

Mechanism	Impact on Outcomes, Relative to Control							
	Parental Giving in Investment Game							
	Schooling investment		Comm		Non-comm		Dictator	
	Neg (1)	SS (2)	Neg (3)	SS (4)	Neg (5)	SS (6)	Neg (7)	SS (8)
Increasing σ_i	+	0	+	0	0	0	0	0
Decreasing \bar{f}	+	0						
Increasing R_i	+	+						
Decreasing $c'(\cdot)$	-	-	-	-	-	-	0	0
Increasing δ	+	+	+	+	+	+	+	+

bargaining weight in the household. Negotiation skills could also increase the net returns to education if they are a complementary, noncognitive input to educational investment, increasing R_i .

2. *Effects of Individualistic Empowerment.* Individualistic empowerment might also have positive effects that could lead to increased education in this model. By exposing parents to a “pro-girl” mentality, the program could have reduced parents’ gender bias toward daughters, increasing δ . Spending time in an all-female peer group with a role model may lead a girl to see herself as someone who can avoid pregnancy, complete school, enter the labor force, and pursue a professional career, increasing R_i .

At the same time, individualistic empowerment might also reduce girls’ compliance with cultural norms, which would lower the parent’s expectation of τ_{ns} . This is because empowerment could decrease a girl’s psychic costs to deviating from gender-biased cultural expectations of obedience, perturbing c so that the marginal girl experiences a lower c' .

3. *Predictions for Human Capital Investment.* If negotiation primarily increases σ_i , we expect the training to have positive effects on human capital investment. However, since there are many potential mechanisms, positive effects are not enough to draw definite conclusions about mechanisms. The first two columns of Table II summarize the predictions for how the different parameters affect human capital investment and how they can lead safe space (through individualistic empowerment) and negotiation (through individualistic empowerment and skills) to affect

educational investment. [Online Appendix C](#) provides proofs. The potentially ambiguous impact of individualistic empowerment, through a possible decrease in nonstrategic transfers, highlights the importance of including the safe space arm. Doing so allows us to determine whether any possible negative effects are due to the negotiation skills channel or the common empowerment elements of the programs.

[Table II](#) also shows how we will use a lab-in-the-field experiment to progressively shut down some of the possible mechanisms, in the hopes of more clearly identifying the mechanisms. The lab-in-the-field experiment and this approach are described in more detail in [Section V.A](#).

IV. EFFECTS ON ENROLLMENT AND OTHER HUMAN CAPITAL OUTCOMES

In this section, we first test whether the negotiation training positively affected girls' human capital outcomes and compare its effects to the other two treatments. The comparison between negotiation and safe space allows us to test whether the negotiation effects are driven by individualistic empowerment, whereas the comparison between negotiation and information ensures that the effects are not driven by any informational elements of the treatment. In the second subsection, guided by the theoretical framework, we use machine learning to explore sources of heterogeneity.

IV.A. Treatment Effects

1. Empirical Strategy. Our main estimating equation for the negotiation treatment effect is

$$(4) \quad y_{ic} = \beta_0 + \beta_1 \text{negotiation}_i + \beta_2 \text{safe space}_i + \alpha_c + \Gamma \mathbf{X}_i + \epsilon_{ic},$$

where i denotes a girl, c denotes a classroom, y_{ic} is the outcome of interest, negotiation_i is an indicator variable equal to 1 if girl i was assigned to receive the negotiation treatment and 0 otherwise, safe space_i is an indicator variable equal to 1 if a girl i was assigned to the safe space treatment, α_c are classroom effects, and \mathbf{X}_i is a vector of control variables. In our most basic specification, \mathbf{X}_i only includes a control for the information treatment, since the negotiation and safe space treatments were stratified by classroom and information. In a second specification, to maximize precision, we choose additional controls using

the double lasso method introduced by [Urminsky, Hansen, and Chernozhukov \(2016\)](#). The potential controls consist of controls for both parents being alive, living with one's biological father, living with one's biological mother, living with both parents, parents paying school fees at baseline, indicator variables for whether a girl reads and speaks Nyanja and English excellently or well, age and age squared, and ethnicity fixed effects. To maintain a consistent sample across specifications, we restrict the sample to participants who received the baseline survey, as discussed in note 6. In [Online Appendix D](#), we relax this restriction. Throughout our regressions, we cluster our standard errors at the classroom level, resulting in 141 clusters.

The negotiation and safe space treatment effects—our estimates of interest—are identified as long as there is within-classroom balance by treatment (as the joint tests in [Table I](#) suggest) and the control group is not contaminated by spillovers. [Online Appendix H](#) uses a variety of strategies to test for spillovers.

IV.B. Schooling Outcomes

[Table III](#), Panel A reports the estimates from [equation \(4\)](#), when the outcomes are enrollment in 9th, 10th, and 11th grades. The point estimates indicate that negotiation positively affects enrollment, with larger effects in the grades after the transition to secondary school. The negotiation treatment increases 10th and 11th grade enrollment by 3.5–4.4 percentage points, depending on the specification. This means negotiation increases enrollment by approximately 10% in the crucial upper secondary years. Negotiation's larger effect in later grades aligns with the fact that most dropout occurs after 9th grade (91% of the sample continue to 9th grade, while less than 50% are observed in 10th and 11th grade). Strikingly, this means that negotiation's effects do not fade out. Rather, negotiation contributes to girls' educational attainment more than a year later when parents must make decisions about enrolling girls in a new level of schooling. Turning to the comparison with safe space, we cannot reject that safe space had zero effect on enrollment, but neither can we reject that the safe space effects are equal to the negotiation ones.¹⁸

18. As discussed in [Online Appendix D](#), [Online Appendix](#) Tables A5 and A6 reestimate enrollment effects including participants who did not take part in the baseline survey.

TABLE III
THE EFFECTS OF NEGOTIATION AND SAFE SPACE ON ENROLLMENT

	Grade 9 (1)	Grade 9 (2)	Grade 10 (3)	Grade 10 (4)	Grade 11 (5)	Grade 11 (6)
Panel A: Enrolled in government school						
Negotiation	0.011 (0.014)	0.013 (0.013)	0.035 (0.023)	0.040* (0.022)	0.040* (0.022)	0.044** (0.022)
Safe space	0.011 (0.014)	0.011 (0.014)	0.027 (0.025)	0.029 (0.025)	0.028 (0.027)	0.029 (0.027)
Controls	Baseline	Double lasso	Baseline	Double lasso	Baseline	Double lasso
Mean of dep. var.	0.912	0.912	0.486	0.486	0.424	0.424
Neg. vs. SS (<i>p</i> -value)	.979	.883	.749	.633	.642	.580
Number of observations	2,239	2,239	2,244	2,244	2,244	2,244
Adjusted R^2	0.011	0.026	0.072	0.100	0.065	0.089
Panel B: Enrolled in morning school						
Negotiation			0.024 (0.020)	0.031 (0.020)	0.037* (0.020)	0.040** (0.019)
Safe space			-0.003 (0.023)	-0.001 (0.023)	-0.002 (0.023)	-0.002 (0.022)
Controls			Baseline	Double lasso	Baseline	Double lasso
Mean of dep. var.			0.279	0.279	0.251	0.251
Neg. vs. SS (<i>p</i> -value)			.205	.138	.105	.078
Number of observations			2,170	2,170	2,196	2,196
Adjusted R^2			0.085	0.110	0.071	0.101

Notes. Panel A reports the effect of the negotiation and safe space treatments on being enrolled in the indicated grade for the full sample of treatment schools. Panel B reports the impact on being enrolled in morning school, the more academic track of the Zambian school system. Baseline controls consist of classroom fixed effects and an information treatment control, our stratification variables. The double lasso specification uses double lasso to choose additional controls among variables for both parents being alive, living with one's biological father, living with one's biological mother, living with both parents, parents paying school fees at baseline, reading and speaking English excellently and well, reading and speaking Nyanja excellently and well, age and age squared, and ethnicity fixed effects. Individuals for whom baseline data are not available are dropped from the regressions. Standard errors are clustered at the class level. * denotes 10% significance, ** denotes 5%, and *** denotes 1%.

Table III, Panel B uses the same specifications to measure negotiation's effect on being in a morning program, the higher-ability track, in grades 10 and 11 of secondary school.¹⁹ Being in the negotiation training program significantly increased the likelihood that girls were enrolled in morning programs by 11th grade. In 11th grade, negotiation increases the likelihood of enrolling in morning school by up to 4.0 percentage points (an increase of 16% from the control group level of 25% enrollment). Because the magnitude of the total enrollment and enrollment in morning school effects are similar, one possible explanation is that enrollment increased for girls who were able to enroll in morning school due to their test scores. This is consistent with higher-ability girls who faced external constraints from their parents being most affected by the treatment.

In Panel B, we find meaningfully different effects of negotiation and safe space on morning schooling. The estimated safe space effect is negative and very close to 0. With the double lasso specification, we can reject that safe space and negotiation are equal at the 10% level for 11th grade, and the two-sided p -value is .105 for 11th grade in the baseline specification. This suggests that even if safe space had positive effects on enrollment, safe space and negotiation appear to operate through different mechanisms. Because only high-ability girls are able to enroll in morning schools, this provides preliminary evidence that negotiation has larger effects on higher ability girls. This is consistent with our hypothesized mechanism of impact, detailed in the theoretical model, where only girls who have returns that make it efficient to invest will be able to use negotiation skills to elicit greater investments. We further explore this possibility in the heterogeneity analysis in Section IV.C.

As an additional exercise to get a sense of the magnitude of our enrollment results across all years, we also estimate a Cox hazard model for dropout. According to the estimates of this model (reported in Online Appendix Table A7), negotiation reduced the yearly dropout hazard by a statistically significant 10 percentage points. As before, safe space has insignificant effects, though

19. We did not collect data on morning school for ninth grade since all girls who were enrolled in our program were in morning schooling in eighth grade. It is unlikely that they would switch to afternoon school in ninth grade because there is no test to transition between eighth and ninth grade.

we cannot reject that the effects on dropout are the same as for negotiation.

Finally, we compare the effects of negotiation on schooling outcomes to information in [Online Appendix Table A8](#). Columns (1)–(9) show that information had no effect on enrollment or morning school. Information’s interactions with negotiation are also insignificant. Indeed, for 10th- and 11th-grade enrollment and 11th-grade morning schooling, we can always reject that negotiation and information have same-sized effects. Information alone is insufficient to alter girls’ enrollment outcomes.

1. Additional Human Capital Outcomes. In [Table IV](#), we reestimate [equation \(4\)](#) with the additional shorter-term human capital outcomes documented in [Section II](#), using double lasso to select the controls. The coefficients are reported in both the natural units of the outcomes and in standard deviations of the control group, so that they are comparable to the magnitudes of the index estimates and average effect sizes. For the individual outcomes, negotiation is positively related to paying school fees, taking the national exam, scoring above the “assignment threshold” for math (which is marginally statistically significant) and English, and attending school. It is negatively associated with pregnancy. To summarize these results, we construct a human capital index and average effect size (columns (1) and (2)). For the human capital aggregates, negotiation has positive and significant or marginally significant effects. [Table IV](#) estimates the safe space effects for these additional human capital outcomes. We again cannot reject that safe space had zero effect on the outcomes, even when we aggregate across all the human capital index components. We also cannot reject that negotiation and safe space had the same effects at conventional significance levels. The last columns of [Online Appendix Table A8](#) show the effects of information and its interaction with negotiation on the human capital index. Again, information does not have a significant effect, and we can reject that the effect is the same size as the negotiation effect at the 5% level.

Finally, to account for the possibility of multiple hypothesis testing across our outcomes, we form an average effect size over all the nonaggregate outcomes in [Tables III and IV](#). The point estimate is 0.056 std. dev., and it is significant at the 1% level. Overall, we conclude that providing adolescent Zambian girls with non-material resources by teaching them negotiation skills in school

TABLE IV
THE EFFECTS OF NEGOTIATION AND SAFE SPACE ON ADDITIONAL OUTCOMES

	Educational outcomes							Health outcome	
	HC investment index (1)	HC AES (2)	Paid all fees year 9 (3)	Took national exam (4)	Threshold math (5)	Threshold Eng. (6)	Avg. attendance rate (7)	Ever pregnant (8)	
Negotiation	0.045* (0.025)	0.054** (0.027)	0.013 (0.021)	0.015 (0.014)	0.039* (0.020)	0.029 (0.021)	0.005 (0.005)	-0.004 (0.008)	
Negotiation effect in SDs			0.027	0.051	0.091	0.066	0.034	-0.023	
Safe space	0.014 (0.026)	0.019 (0.026)	0.008 (0.022)	0.011 (0.015)	0.017 (0.020)	-0.012 (0.020)	0.005 (0.005)	-0.008 (0.009)	
Safe space effect in SDs			0.017	0.038	0.039	-0.027	0.032	-0.042	
Mean of dep. var.	-0.014		0.673	0.901	0.236	0.262	0.534	0.034	
Neg. vs. safe space (<i>p</i> -value)	.268	.232	.834	.819	.242	.062	.939	.683	
Number of observations	2,174		2,203	2,232	2,232	2,232	2,225	2,244	
Adjusted <i>R</i> ²	0.191		0.137	0.045	0.117	0.165	0.614	0.031	

Notes. This table reports estimates of the effect of the negotiation and safe space treatments on outcomes collected in the shorter-term administrative data. Estimates are reported both in the natural units of the data and in terms of standard deviations of the control group, so that the effects are in the same units as the average effect sizes. In column (1), the outcome is a human capital index constructed by standardizing each of the outcomes in columns (3)–(7) and taking their average. In column (2), the estimate is the average effect size over columns (3)–(7). In column (3), the outcome is an indicator variable equal to 1 if parents paid 9th grade school fees and 0 otherwise. In column (4), the outcome is an indicator variable equal to 1 if the student took the national exam at the end of grade 9. In columns (5) and (6), the outcome is 1 if the student received greater than the threshold required for morning school placement in math and English, respectively, on the national exam. In column (7), the outcome is the students' average posttreatment attendance rate in grade 8 and terms 1 and 2 of grade 9. In column (8), the outcome is 1 if the student is reported to be pregnant. All regressions include controls for the stratification variables (classroom fixed effects and information treatment). In addition, double lasso is used to choose additional controls among variables for both parents being alive, living with one's biological father, living with one's biological mother, living with both parents, parents paying school fees at baseline, reading and speaking English excellently and well, reading and speaking Nyanja excellently and well, age and age squared, and ethnicity fixed effects. The Neg. vs. safe space row reports the two-sided *p*-value from an *F*-test of the equality of the safe space and negotiation coefficients. Participants for whom baseline data was missing were dropped from the regressions. Standard errors are clustered at the class level. * denotes 10% significance, ** denotes 5%, and *** denotes 1%.

increases human capital over the subsequent years. These human capital effects are driven both by improvements on the intensive margin (better school quality and higher test scores) and the extensive margin (greater enrollment).

IV.C. Heterogeneity

Recalling that our theoretical framework suggests that negotiation will have the largest effect on girls on the margin of educational investment, we explore heterogeneity in our negotiation treatment effect. To search for this heterogeneity in a principled way, we draw on the machine learning, honest causal tree methodology proposed by [Athey and Imbens \(2016\)](#). [Online Appendix E](#) provides the details of this procedure, and several points are worth highlighting. First, to identify this heterogeneity, we split the data into two nonoverlapping, randomly chosen samples and use one subsample to determine the heterogeneity and the other to estimate our point estimates and confidence intervals. This ensures that our confidence intervals are valid and we are not overfitting. Second, consistent with the drivers of educational investment in our theoretical framework in [Section III](#), we specifically search for heterogeneity in the negotiation effect by child ability and parental altruism.²⁰ We include age as a potential source of heterogeneity, because it is the only baseline variable that is not included in either the ability or altruism proxy. Finally, we use the machine learning procedure to search for heterogeneity in the effect on enrollment in 11th grade, our longest-run outcome.

According to the machine learning exercise with the training sample, negotiation has heterogeneous effects by ability, with the strongest effects for those in the top 40% of the ability distribution. Thus, when we turn to the analysis sample, we allow both the negotiation and safe space treatments to have different effects on enrollment and morning schooling for girls in the top 40% of ability and the bottom 60%.²¹

[Table V](#) shows that in grade 9, negotiation and safe space if anything had larger (though only marginally significant) effects

20. We proxy for ability by taking the first factor of a factor analysis of the Nyanja and English ability variables. Altruism is proxied with the first factor of a factor analysis of the variables that capture whether a child lives with her biological parents and has parents paying school fees at baseline.

21. The sample is restricted to the distinct sample that was not used to identify the heterogeneity, resulting in half as many observations as in [Table IV](#).

TABLE V
THE EFFECTS OF NEGOTIATION AND SAFE SPACE ON ENROLLMENT BY PRETREATMENT ABILITY

	Grade 9 (1)	Grade 9 (2)	Grade 10 (3)	Grade 10 (4)	Grade 11 (5)	Grade 11 (6)
Panel A: Enrolled in government school						
Negotiation × high ability	0.021 (0.028)	0.023 (0.028)	0.079 (0.060)	0.082 (0.059)	0.112** (0.055)	0.114** (0.056)
Negotiation × low ability	0.054* (0.030)	0.056* (0.030)	-0.007 (0.044)	-0.009 (0.043)	-0.026 (0.046)	-0.030 (0.044)
Safe space × high ability	-0.000 (0.029)	0.005 (0.029)	0.041 (0.057)	0.025 (0.059)	0.027 (0.057)	0.010 (0.060)
Safe space × low ability	0.044 (0.027)	0.048* (0.027)	0.000 (0.048)	0.011 (0.047)	0.021 (0.053)	0.026 (0.050)
Controls	Baseline	Double lasso	Baseline	Double lasso	Baseline	Double lasso
Mean of dep. var.	0.901	0.901	0.513	0.513	0.452	0.452
High ability neg. vs. low ability neg. (<i>p</i> -value)	.421	.418	.293	.256	.072	.062
High ability neg. vs. high ability SS (<i>p</i> -value)	.414	.490	.499	.313	.138	.076
Number of observations	1,137	1,137	1,139	1,139	1,139	1,139
Adjusted <i>R</i> ²	0.025	0.041	0.076	0.106	0.053	0.072

TABLE V
(CONTINUED)

	Grade 9 (1)	Grade 9 (2)	Grade 10 (3)	Grade 10 (4)	Grade 11 (5)	Grade 11 (6)
Panel B: Enrolled in morning school						
Negotiation × high ability			0.137** (0.055)	0.142*** (0.054)	0.143*** (0.054)	0.144*** (0.053)
Negotiation × low ability			-0.035 (0.042)	-0.035 (0.040)	-0.030 (0.042)	-0.033 (0.042)
Safe space × high ability			0.024 (0.047)	0.014 (0.049)	0.015 (0.053)	0.011 (0.054)
Safe space × low ability			-0.022 (0.044)	-0.012 (0.044)	-0.001 (0.046)	0.003 (0.046)
Controls			Baseline	Double lasso	Baseline	Double lasso
Mean of dep. var.			0.297	0.297	0.269	0.269
High ability neg. vs. low ability neg. (<i>p</i> -value)			.030	.020	.023	.020
High ability neg. vs. high ability SS (<i>p</i> -value)			.032	.021	.012	.013
Number of observations			1,103	1,103	1,116	1,116
Adjusted <i>R</i> ²			0.102	0.123	0.081	0.099

Notes. Panel A reports the heterogeneous effects of negotiation and safe space on girls in the top 40% and bottom 60% of the ability distribution on being enrolled in the indicated grade. Panel B reports the same heterogeneity analysis for the impact on being enrolled in morning school, the more academic track of the Zambian school system. The heterogeneity examined here was determined by a causal tree machine learning analysis. 50% of the data were used to determine the sources of heterogeneity. The effects in this table are then estimated on the remaining, distinct 50% of the data. Baseline controls consist of classroom fixed effects and an information treatment control, our stratification variables. The double lasso specification uses double lasso to choose additional controls among variables for both parents being alive, living with one's biological father, living with one's biological mother, living with both parents, parents paying school fees at baseline, reading and speaking English excellently and well, reading and speaking Nyanja excellently and well, age and age squared, and ethnicity fixed effects. The high ability neg. vs. low ability neg. row reports the two-sided *p*-value from an *F*-test of the equality of the negotiation coefficients for high- and low-ability girls. The high ability neg. vs. high ability SS row reports the two-sided *p*-value from an *F*-test of the equality of the negotiation and safe space coefficients for high-ability girls. The data set is restricted to participants with baseline data. Standard errors are clustered at the class level. * denotes 10% significance, ** denotes 5%, and *** denotes 1%.

for lower-ability girls. These results align with the educational transition process in Zambia, where ninth grade is part of the same schooling level as eighth grade, and thus dropout is rarer and would be concentrated among those in poor academic or disciplinary standing.

In 11th grade, however, negotiation had greater effects for high-ability girls. The negotiation treatment had an effect of 11 percentage points for high-ability girls, while having a null effect on low-ability girls. In contrast, the safe space treatment had no effect on high-ability girls' enrollment in 11th grade, and we reject at the 10% level in the double lasso specification that safe space and negotiation had the same effects on high-ability girls in 11th-grade enrollment. Panel B shows that the heterogeneity is even more striking for morning schooling, which increases by 14 percentage points for high-ability negotiation girls. Safe space has no effect on either group, and the two treatments' effects on high-ability girls are statistically significantly different at the 5% level.

The fact that we do not see the same heterogeneity in the safe space and negotiation effects further suggests that though safe space may have some positive effects, these do not operate through the same mechanisms as the negotiation training. The positive effects of both treatments on lower-ability girls in ninth grade are somewhat suggestive that the common "individualistic empowerment" elements of the two treatments may have helped low-ability girls who were on the margin of dropout due to internal constraints (such as lack of motivation or avoiding disciplinary trouble) remain in school. By 11th grade, however, when parental investment becomes a key constraint, the two treatments' effects are different. The heterogeneity we identify also aligns with our model, in which high-ability girls whose parents are insufficiently altruistic to invest without transfers are able to use skills to resolve incomplete contracting problems in the household, enabling them to continue in school. Thus, altogether, the heterogeneity in the negotiation effect and its comparison to safe space provides additional evidence that the skills component of the negotiation training matters for girls' education.²²

22. For completeness, [Online Appendix Table A9](#) also reports estimates of heterogeneous effects for whether girls are above or below the median for the parental altruism index and age. According to the point estimates, negotiation has larger effects on girls with lower altruism measures, consistent with the idea

V. UNDERSTANDING MECHANISMS

To explore the specific mechanisms in the model through which negotiation skills and empowerment may affect parental investment, we turn to two additional sources of evidence: the lab-in-the-field investment game and the follow-up survey. The follow-up and investment game took place three to four months after the training. Girls were asked to bring a parent or guardian to school to take part in the follow-up and the game, and the majority (57%) brought their biological mothers. Seventy percent of girls in the sample attended the follow-up/lab-in-the-field game,²³ and attrition was not differential by treatment status (see [Online Appendix Table A10](#)).

V.A. Effect of Negotiation in a Controlled Environment: The Lab-in-the-Field Experiment

1. Experimental Design and Link to the Model. The lab-in-the-field experiment was designed to measure the effect of girls using their negotiation skills with parents in a controlled environment, as well as to isolate the different mechanisms outlined in the model. The principal game is an investment game with communication, which was designed to most closely mirror the everyday household interactions that could lead girls to receive greater human capital investments (time to do homework, money for school fees, or other forms of parental support). Except in this setting, the cost of investing for parents and the returns to investment are fixed. This allows us to more cleanly test for the remaining mechanisms in the model—increasing the contracting space, the daughter’s cultural fealty toward parents, and parental altruism. In addition to the principal version, we assigned some girls to two other variants of the game that allow us to further isolate mechanisms: an investment game without the opportunity for communication and a basic “dictator” game. [Table II](#), which we discuss in detail, shows how the different games allow us to isolate different parameters from the model, and [Online Appendix Table A11](#) reports the number of girls assigned to each variation.

that negotiation matters more in households with greater incomplete-contracting problems. Negotiation also has larger effects on younger girls, who are likely to be higher ability because a younger age means a girl has repeated fewer grades.

23. Seventy girls came to the follow-up survey but did not bring a parent or guardian. In this case, we administered the follow-up survey to them, but the girls did not take part in the lab-in-the-field experiment.

i. Investment Game with Communication. In the investment game with communication, parents were endowed with 10 tokens, worth about \$2, which either could be redeemed for cell phone air time or sent to daughters. Any tokens sent to daughters were doubled and combined with a random income shock of two or four tokens. The size of the income shock was not revealed to the girls, which served two purposes. First, the income shock obscured the parent's decision and ensured that no girl was left with zero tokens. Second, it created random variation in the girl's tokens, which can be used to identify her propensity to return tokens. Girls could then choose how many tokens to send to parents and redeem the remaining tokens for girl-specific "prizes."²⁴

After these rules were explained to girls and parents, but before any decisions were made, girls and parents were given the opportunity to communicate with one another. The surveyors implemented this by pausing and allowing the girl and her guardian to meet before returning to their "stations" to make their decisions privately. Parents and girls were not required to communicate, mirroring the fact that in the real world, girls can choose to communicate with their guardians if they wish, and negotiation skills may help in initiating these communications.

This version of the game allows us to directly test whether girls are able to use their negotiation skills to elicit higher "investments" from their parents. If they are, since the return to investment and the cost of investment is fixed by the game, it will provide evidence that an increase in the contracting space (σ_i) may be a possible channel. However, it is also possible that parents exhibit higher altruism (δ) or have different expectations about nonstrategic transfers (τ_{ns}) in the negotiation arm. Thus, the total prediction about the effect of negotiation on the number of tokens sent by parents is ambiguous, as shown in columns (3) and (4) of [Table II](#). Specifically, although we expect negotiation to increase

24. Unlike in typical lab games, which are played by strangers, the results of a game between daughters and parents could easily be undone after the game if daughters received cash. To solve this problem, daughters redeemed their tokens for prizes at a "store" (a table in the game room) displaying and selling girl-specific items that parents would not value for themselves, including consumption items (games, hair bands, and candy), school supplies (pencils and notebooks), and personal items (socks and menstrual pads). [Online Appendix](#) Figure A3 shows the store and the prizes. Parents had no control over how daughters spent the tokens, though we acknowledge that resource allocations from the game might still be undone *ex post* because parents can control daughters' later consumption.

the scope for strategic cooperation, increasing tokens sent, it may also increase “individualistic empowerment,” decreasing tokens sent. Similarly, it could increase parental altruism, increasing tokens sent (or decrease altruism if there is a backlash effect).

Thus, to further untangle the three channels in the investment game with communication, we introduced two additional versions of the game, which shut down or vary the strength of these channels.²⁵

ii. Investment Game without Communication. The second version of the game follows the investment game protocol but with no communication between girls and their guardians. Thus, a guardian will make decisions based on her expectations of how much a daughter will return in the absence of the opportunity to negotiate and her altruism toward her daughter. Because our hypothesis is that negotiation allows girls to increase the feasible contracting space explicitly through communication, we expect the σ_i channel to be less active here than in the version with communication.

If the σ_i channel is indeed less active in the noncommunication game, then this version would be relatively more affected by parents’ expectations of nonstrategic return, τ_{ns} and parental altruism, δ . It is possible that the individualistic empowerment elements of both the negotiation and safe space treatments could reduce either of these parameters. In particular, the model provides a channel through which individualistic empowerment could decrease τ_{ns} by making girls less sensitive to costs associated with deviating from cultural norms of reciprocity. The fact that altruism effects could be positive, however, makes the overall prediction ambiguous, as shown in columns (5) and (6) of [Table II](#).

iii. Dictator Game. The last version of the game allows us to separate channels that depend on parents’ expectation of reciprocity from parental altruism by eliminating the stage where

25. There was also one additional cross-randomized variation of the game. For a subset of girls, the tokens sent were only doubled if they successfully completed a word search. This was intended to allow the returns to parental investment to vary based on daughters’ ability. However, parents’ investments did not respond to the potential variation created by the word game, and we pool it with other versions for our main analyses. The results from the word game are discussed in detail in [Online Appendix F](#), and its experimental protocols are included in [Online Appendix G](#).

girls return tokens. Parents simply choose how many tokens to send, knowing that any that are sent will be doubled and then used by girls for prizes. This allows us to see to what extent effects in the other variants could have been driven by negotiation's effects on parental altruism, δ , alone. If girls' empowerment increases altruism, we would expect both the safe space and negotiation treatment to have positive effects, as shown in [Table II](#), columns (7) and (8). If negotiation skills enhance altruism—for example, if girls convince their parents to put a higher weight on their utility—the negotiation effect will be positive. If the negotiation or safe space treatments caused parents to be annoyed with their daughters, these treatments would have negative effects.

In our analyses of the effects of the different games, our main outcome variable is the number of tokens sent by parents, which is the analogue of educational investment in the real world. To confirm the connection between the game and real-world outcomes, [Online Appendix Table A12](#) regresses the enrollment variables and human capital index on the number of tokens parents sent. We find that tokens sent are positively related to the human capital index, grade 10 and 11 enrollment, and grade 10 and 11 morning schooling. The number of tokens parents send in the investment game also serves as a measure of the daughter-parent's distance from the efficient frontier. Since tokens will be doubled and can be fully returned to parents, full efficiency requires that the parent sends all the tokens. In fact, only 2.4% of households do so, suggesting that parents and daughters have limited contractibility, and that parents treat the stakes of the game as “real.”

2. Lab-in-the-Field Game Results.

Tokens Sent to Daughter. For each variant of the investment game, we estimate the effects of negotiation and safe space on our main outcome of interest, the number of tokens parents sent to daughters. In addition, we pool the investment games with and without communication and estimate the effect of the interaction between communication and the two treatments.

[Table VI](#) reports our results for the number of tokens that parents sent to daughters. Columns (1) and (2) report the results in the investment game where parents and girls could communicate before parents made their allocation choices. Girls in the negotiation treatment receive 0.4 more tokens than control girls in this game. Safe space girls receive about the same number of

TABLE VI
EFFECTS OF NEGOTIATION AND SAFE SPACE ON TOKENS SENT BY GUARDIANS

Game type:	Dependent variable: Tokens sent by parents			
	Comm. investment (1)	Comm. investment (2)	Pooled investment (3)	Pooled investment (4)
Negotiation	0.396** (0.193)	0.404** (0.195)	-0.476*** (0.177)	-0.445** (0.176)
Safe space	0.092 (0.200)	0.092 (0.195)	-0.447*** (0.167)	-0.399** (0.172)
Negotiation × comm.			0.835*** (0.257)	0.813*** (0.255)
Safe space × comm.			0.526* (0.270)	0.490* (0.271)
Controls	Baseline	Double lasso	Baseline	Double lasso
Mean of dep. var.	5.279	5.279	5.360	5.360
Neg. vs. safe space (<i>p</i> -value)	.197	.191	.266	.246
Number of observations	630	630	1,290	1,290
Adjusted <i>R</i> ²	0.071	0.100	0.040	0.054

TABLE VI
(CONTINUED)

Panel B: Alternate game results to isolate mechanisms

Game type:	Dependent variable: Tokens sent by parents			
	No comm. investment (1)	No comm. investment (2)	Dictator (3)	Dictator (4)
Negotiation	-0.451** (0.195)	-0.456** (0.206)	0.645 (0.398)	0.569 (0.386)
Safe space	-0.380** (0.180)	-0.357* (0.188)	0.484 (0.357)	0.429 (0.345)
Controls	Baseline	Double lasso	Baseline	Double lasso
Mean of dep. var.	5.441	5.441	4.952	4.952
Neg. vs. safe space (<i>p</i> -value)	.703	.610	.643	.670
Number of observations	660	660	321	321
Adjusted <i>R</i> ²	0.033	0.047	0.065	0.081

Notes. This table reports the effects of the negotiation and safe space treatments on the parent's behavior in the lab-in-the-field investment game. The dependent variable is the number of tokens sent by the parent out of her 10 tokens. Panel A, columns (1) and (2) use the sample that participated in the main game, the investment game with communication. Columns (3) and (4) pool this game with the investment game with no communication to isolate the effect of communication. Panel B, columns (1) and (2) restrict the sample to girls who participated in the investment game with no communication, while columns (3) and (4) restrict the sample to those who participated in the dictator game. Baseline controls consist of classroom fixed effects and an information treatment control, our stratification variables. The double lasso specification uses double lasso to choose additional controls among variables for both parents being alive, living with one's biological father, living with one's biological mother, living with both parents, parents paying school fees at baseline, reading and speaking English excellently and well, reading and speaking Nyanja excellently and well, age and age squared, and ethnicity fixed effects. The Neg. vs. safe space row reports the two-sided *p*-value from an *F*-test of the equality of the safe space and negotiation coefficients, except in the case of Panel A, columns (3) and (4). In these columns, it reports the *p*-value for a test of the equality of the interaction terms Negotiation × comm. and Safe space × comm. The sample is restricted to participants for whom baseline data were available. Standard errors are clustered at the class level. * denotes 10% significance, ** denotes 5%, and *** denotes 1%.

tokens as the control. Although we cannot reject that safe space and negotiation girls received the same number of tokens in this version with two-sided F -tests, a one-sided test indicates that negotiation girls received marginally significantly more tokens in columns (1) and (2). Thus, the treatment had positive effects when parents alone make investment decisions, rather than only when the girl directly controls investment. This provides additional evidence that negotiation's educational effects are not merely due to increased motivation on the part of the girls and affirms that the positive effects of negotiation can stem from channels other than increasing the returns to education. Because this finding also provides initial evidence that strategic cooperation could increase parental investment, we next turn to the remaining variants of the game to isolate σ_i from the other potential channels.

Columns (3) and (4) pool the game with communication and the game without communication to show that there is a strong positive interaction between the communication variant of the game and the negotiation treatment. When girls with negotiation skills are allowed to communicate, they receive 0.8 more tokens than when they are not. Because the main wedge between the two games is the scope for the girls to communicate strategic cooperation (affecting σ_i in the theoretical framework), this suggests that this channel is important for the positive effects in the investment game. The interaction between safe space and communication is approximately half the size. Consistent with our findings in [Table VI](#), Panel B in [Online Appendix Table A13](#), we also find that knowledge of negotiation interacts positively with communication.

Interestingly, as shown in [Table VI](#), parents give fewer tokens to negotiation and safe space girls in the noncommunication game. The negative effect of negotiation and safe space in columns (1) and (2) of Panel B suggests that in the absence of communication, the common element of the two treatments, individualistic empowerment, negatively affected parental giving. Linking these results to the model, empowerment may have either decreased parents' expectations of transfers or decreased parental altruism toward girls. In this case, having the safe space treatment for comparison is crucial for interpreting the results, because it means the negative effect is unlikely to be driven specifically by negotiation skills.

Turning to the last version of the game, in Panel B, columns (3) and (4) we see a statistically insignificant but directionally

positive effect of being in the negotiation or safe space arms on parental giving in the dictator game, where girls do not return tokens. Thus, it is unlikely that negotiation and safe space's effects on pure altruism are responsible for the negative impact in the noncommunication investment game. Indeed, both negotiation and safe space's effects in the noncommunication game are statistically significantly different from the effect in the dictator game in both of our specifications. Given the apparent lack of a negative effect on altruism, the model suggests that parents reduced the number of tokens sent in the noncommunication game because the individualistic empowerment elements of the negotiation and safe space treatments led parents to expect a lower return from the girls. That is, they expected that the girls would spend more tokens on themselves. In the model, this is consistent with the channel of individualistic empowerment lowering the marginal girl's sensitivity to $c'(\cdot)$, her cost associated with deviating from the cultural norm of reciprocity toward parents.

To summarize, combining the evidence from the game with the predictions of the model suggests that the channel of increasing expected strategic cooperation played a role in increased parental giving in the game with communication. In contrast, when girls could not communicate, we do not see an increase. In fact, giving decreased in both the negotiation and safe space arms, indicating that parents expected girls to be less reciprocal in the absence of communication in both treatments. Results from [Online Appendix Table A14](#), which examines how daughters spent the tokens, further support this interpretation. When negotiation girls could not communicate, they spent more on consumption goods like candy and make-up. When they could communicate, they spent more on household items and school supplies.

Tokens Returned to the Parent. Our findings in [Table VI](#) suggest that negotiation girls may have been sent more tokens because they were able to increase parents' expectations of reciprocity when they were allowed to communicate. If this is the case, and parents have rational expectations, girls in the negotiation \times communication cell should be more likely to send parents back a marginal token.

Because the number of tokens a girl receives is endogenous, we cannot simply regress the number of tokens a daughter sends back to her parent on the number of tokens that she receives, since this will be confounded by the fact that girls whose parents

sent more tokens were different from those who were sent less. Instead, we take advantage of the fact that daughters received a random windfall of two or four tokens before deciding how many tokens to send to their parents, leading some girls to exogenously receive more tokens. Using the sample of girls in the investment game, we use this random shock to estimate the daughter's rate of pass-through of a marginal token to the parent.

Table VII, columns (1) and (2) report that girls in the negotiation treatment playing the communication game passed through between 0.475 and 0.480 more of a marginal token. The analogous effect for the safe space treatment, added in columns (3) and (4), is less than one-third the size and is statistically insignificant.²⁶

Using the coefficients from Table VII, in the bottom panel we calculate what fraction of an additional token parents should expect to receive when a girl in the negotiation, safe space, or control treatment who is allowed to communicate receives an additional token. Control girls pass through one-third of a token, whereas safe space girls pass through one-fifth. In contrast, negotiation girls pass through one-half of an additional token. Although we do not have enough statistical power to rule out the possibility that the overall pass-through rate when communication is allowed is the same for both safe space and negotiation girls, the pattern of the point estimates is consistent with the idea that negotiation (in the presence of communication) increases parental investment by increasing girls' ability to commit to reciprocate investments (σ_i).

In Online Appendix F, we report additional analyses of the lab-in-the-field game, including estimating the effects of negotiation and safe space on the number of tokens with which girls end the game and providing a visual representation of how distance to the efficient frontier is affected by negotiation. The former results confirm that negotiation girls in the communication game not only receive more tokens, they end the game with more tokens despite a higher marginal propensity to return tokens (Online Appendix Table A15). Safe space girls in the communication variant, in

26. The direction of the point estimates also suggests that parents of negotiation and safe space girls would be right to expect these more empowered girls to send back fewer tokens in the absence of communication. The coefficients for *extra* \times *negotiation* and *extra* \times *safespace* are both negative. However, when negotiation girls can communicate, they appear to alter their behavior to be consistent with their communications to their parents about reciprocity.

TABLE VII
EFFECTS OF NEGOTIATION AND SAFE SPACE ON TOKENS RETURNED

	Dependent variable: Tokens returned by girls			
	(1)	(2)	(3)	(4)
Extra tokens	0.448*** (0.091)	0.452*** (0.092)	0.583*** (0.151)	0.580*** (0.150)
Comm. × extra × negotiation	0.480** (0.229)	0.475** (0.227)	0.554** (0.258)	0.565** (0.252)
Negotiation × extra	-0.298* (0.169)	-0.323* (0.167)	-0.437** (0.205)	-0.446** (0.201)
Comm. × extra	-0.159 (0.127)	-0.136 (0.127)	-0.227 (0.202)	-0.234 (0.204)
Safe space × extra			-0.259 (0.219)	-0.239 (0.213)
Comm. × extra × safe space			0.126 (0.333)	0.163 (0.334)
Negotiation	0.283 (0.242)	0.354 (0.245)	0.416 (0.270)	0.463* (0.273)
Safe space	0.092 (0.210)	0.111 (0.208)	0.343 (0.303)	0.346 (0.301)
Communication dummy	-0.206 (0.228)	-0.193 (0.233)	-0.143 (0.277)	-0.090 (0.283)
Comm. × negotiation	-0.524 (0.368)	-0.569 (0.363)	-0.591 (0.390)	-0.647* (0.388)
Comm. × safe space	0.260 (0.302)	0.218 (0.303)	0.143 (0.417)	0.039 (0.425)
Controls	Baseline	Double lasso	Baseline	Double lasso
Mean of dep. var.	4.564	4.564	4.564	4.564
Neg. vs. SS for triple interaction (<i>p</i> -value)			.163	.195
Number of observations	1,285	1,285	1,285	1,285
Adjusted <i>R</i> ²	0.251	0.258	0.251	0.256
Implied pass-through rate				
Control	0.289*** (0.099)	0.316*** (0.100)	0.356*** (0.138)	0.367** (0.143)
Negotiation	0.471*** (0.151)	0.468*** (0.154)	0.473*** (0.151)	0.468*** (0.154)
Safe space			0.223 (0.166)	0.267 (0.169)

Notes. This table reports the effects of the negotiation and safe space treatments on daughters' propensity to return additional tokens to parents in the two versions of the investment game, with and without communication. The sample excludes girls who were assigned to the dictator game. The bottom panel calculates the implied pass-through rate of a marginal token (i.e., the portion of one additional token that girls returned to parents) in the game with communication using the coefficient estimates from the same column. Baseline controls consist of classroom fixed effects and an information treatment control, our stratification variables. The double lasso specification uses double lasso to choose additional controls among variables for both parents being alive, living with one's biological father, living with one's biological mother, living with both parents, parents paying school fees at baseline, reading and speaking English excellently and well, reading and speaking Nyanja excellently and well, age and age squared, and ethnicity fixed effects. The Neg. vs. SS for triple interaction (*p*-value) row reports the two-sided *p*-value from an *F*-test of the equality of the coefficients for Comm. × extra × negotiation and Comm. × extra × safe space. The sample is restricted to participants with nonmissing baseline data. Standard errors are clustered at the class level. * denotes 10% significance, ** denotes 5%, and *** denotes 1%.

contrast, end the game with fewer tokens. This effect is marginally statistically significantly different from that of negotiation under a two-sided test. Thus, negotiation girls are made better off by the training in a controlled environment where the return to investment is fixed. Altogether, the results provide evidence that negotiation increases σ_i , the feasible contracting space between parents and daughters. Thus, increasing σ_i is a potential mechanism for the negotiation treatment's positive human capital effects.

V.B. Effects of Negotiation within the Household: The Follow-up Survey

In this subsection, we turn to the follow-up survey to further explore how negotiation and safe space affected intrahousehold behavior, including the costs and expected returns of schooling (\tilde{f} and R_i). [Table VIII](#) reports the effect of negotiation on girls' and parents' behavior in the follow-up survey. Altogether, these suggestive results provide further evidence that the negotiation treatment increased girls' ability to strategically cooperate within the household but did not increase parental altruism (δ) or parents' perceptions of daughters' ability (R_i). The follow-up results also shed light on an additional possible channel for negotiation's human capital effects that is consistent with the negotiation curriculum—girls working with parents to reduce the effective cost of schooling, \tilde{f} .

Column (1) reports that negotiation girls were 6.5 percentage points more likely to ask for food, and column (2) indicates that parents were 2.6 percentage points less likely to report it was difficult to get negotiation girls to do chores, although the effect is not significant.²⁷ Recalling [Online Appendix Table A4](#), negotiation also led parents to report that daughters were more respectful and that they cared more about other household members. This pattern of results is consistent with increased strategic cooperation; negotiation led daughters to ask for more investment and to reciprocate in return.

In columns (3) and (4), we test whether negotiation affected girls' behavior in other ways that might affect parents' views of daughters. Columns (3) and (4) show that parents are no more

27. In our baseline survey, one-third of girls report not having enough food to eat at least one day in the last week. In Zambia, if there is not enough food for everyone to have enough, it is common that men and boys will eat first or take more protein while others eat vegetables.

TABLE VIII
EVIDENCE ON MECHANISMS FROM THE FOLLOW-UP SURVEY

	Asks for food (1)	Difficulty getting to do chores (2)	Difficulty controlling temper (3)	Girl is rude (4)	Natural ability (5)	Natural ability (6)	Grade wants to complete (7)
Negotiation	0.065** (0.027)	-0.026 (0.021)	0.006 (0.011)	-0.042 (0.074)	-0.086 (0.065)	-0.081 (0.065)	-0.008 (0.066)
Safe space	0.016 (0.027)	-0.006 (0.020)	-0.016 (0.010)	-0.022 (0.071)	-0.081 (0.065)	-0.073 (0.065)	-0.067 (0.070)
Negotiation × ability						-0.054 (0.089)	
Safe space × ability						-0.122* (0.074)	
Negotiation vs. safe space (<i>p</i> -value)	.111	.338	.040	.748	.947	.356	.457
Mean dep. var.	0.284	0.134	0.022	0.598	3.667	3.667	15.254
Number of observations	1,665	1,564	1,575	1,566	1,562	1,562	1,660
Adjusted <i>R</i> ²	0.016	0.052	0.011	0.003	0.102	0.102	0.053

TABLE VIII
(CONTINUED)

	Chores before school (1)	Chores during school (2)	Chores after school (3)	Total weekday chores (4)
Negotiation	-0.046 (0.032)	-0.069 (0.090)	0.041 (0.089)	-0.287 (0.181)
Safe space	0.027 (0.034)	0.038 (0.090)	0.133 (0.095)	0.103 (0.181)
Negotiation × Friday				0.593** (0.288)
Safe space × Friday				0.253 (0.299)
Negotiation vs. safe space (<i>p</i> -value)	.035	.175	.328	.190
Mean dep. var.	0.488	1.226	2.315	4.029
Number of observations	1,665	1,665	1,665	1,665
Adjusted <i>R</i> ²	0.167	0.260	0.111	0.228

Notes. This table reports the effect of negotiation and safe space on outcomes in the follow-up survey. In Panel A, column (1) reports girls' reports of ever asking for more food (0/1). Columns (2)–(4) report parental assessments of girls' behavior on a 0/1 scale. Column (5) reports the parent's assessment of girls' ability relative to classmates on a 1–5 scale. Column (6) has the same dependent variable but interacts negotiation with the girl's measured ability (based on a factor analysis of baseline ability measures) to see if parental ability estimates become better aligned with true ability. In column (7), the outcome variable is the years of schooling a girl reports wanting to complete. Panel B reports results from a time diary exercise from the girls' survey. The first column is the hours spent doing chores before school, column (2) is hours spent doing chores during school hours, and column (3) is hours spent after school hours. Column (4) is the total number of hours spent doing chores on the most recent weekday. All regressions include controls for the stratification variables (classroom fixed effects and the information treatment). Double lasso is used to choose additional controls among variables for both parents being alive, living with one's biological father, living with one's biological mother, living with both parents, parents paying school fees at baseline, reading and speaking English excellently and well, reading and speaking Nyanja excellently and well, age and age squared, and ethnicity fixed effects. The row Negotiation vs. safe space reports the two-sided *p*-value from a test of the equality of the safe space and negotiation coefficients. The sample is restricted to participants for whom baseline data are available. Standard errors are clustered at the classroom level. * denotes 10% significance, ** denotes 5%, and *** denotes 1%.

likely to report that a girl has difficulty controlling her temper (indicator variable) or is rude (0/1 scale). Altogether, this set of results indicates that negotiation did not negatively affect girls' relationships with their parents.

In columns (5)–(7), we consider the possibility that negotiation affected parents' or daughters' perceptions of daughters' abilities, equivalent to altering R_i in the theoretical framework. Negotiation skills may have either led parents to believe that daughters were higher ability, incentivizing them to invest in the treated daughters, or they may have allowed daughters to inform parents about their ability.²⁸ To test for these two possibilities, we regress the parent's 1–5 rating of the daughter's ability relative to her classmates on negotiation (column (5)) and the interaction between negotiation and the ability factor (column (6)). In column (5), we see that negotiation has no effect on parents' perceptions, and in column (6), we find that negotiation does not lead a daughter's measured ability to be more correlated with the parent's perception of her ability. Finally, in column (7), we regress the number of years of schooling a daughter reported wanting to complete on the treatment. If negotiation increased a daughter's perceived returns to education, including by increasing her real returns to education, negotiation should positively affect the number of years of school a daughter wants to complete. We see no evidence that this is the case.

Panel B provides suggestive evidence that negotiation allowed households to find less costly ways to make educational investments. Directionally, negotiation girls spend less time on chores (measured in hours) before and during school hours and more time on chores after school, as measured using a time diary. In column (4), we exploit the fact that girls were asked to account for their time on the last weekday preceding the survey, introducing random variation in the day they were asked about. We find that negotiation girls spend more hours doing chores on Fridays and less time doing chores on other weekdays relative to other girls. Since Friday is the day girls least need to do homework or study for exams, this suggests that negotiation girls are able to allocate time spent on chores to times when school work has lower returns.

28. This would reduce the misallocation of schooling investments, as in [Dizon-Ross \(2019\)](#).

TABLE IX
SUMMARY OF MODEL PREDICTIONS: FINDINGS

Mechanism	Possible effect		Finding	Source
	Neg	SS		
Increasing σ_i	+	0	✓	Investment game with comm. and survey
Decreasing \tilde{f}	+	0	✓	Chore “swaps” in survey
Increasing R_i	+	+	no	No evidence in survey
Decreasing $c'(\cdot)$	-	-	✓	Investment game with no comm.
Increasing δ	+	+	no	No evidence in dictator game or survey

V.C. Summary of Findings

To summarize our findings, [Table IX](#) reports the empirical evidence from the lab-in-the-field game and follow-up survey on each of the model’s possible mechanisms. For the negotiation but not the safe space group, the evidence is consistent with an increase in σ_i and a decrease in \tilde{f} . Girls reciprocate parental investments by sending more tokens in the investment game and by being more respectful in the follow-up survey. We find no evidence of an increase in parents’ estimation of R_i or an increase in δ . For both treatments, there is evidence of a decrease in the sensitivity to $c(\cdot)$, indicating that individualistic empowerment alone may cause girls to value their own utility relatively more than their parents’. Altogether, we conclude that the positive human capital effects of the negotiation training are most likely driven by an increase in the feasible contracting space with parents.

VI. DISCUSSION AND CONCLUSION

In this article, we study the effect of noncognitive, interpersonal skills on female education in Zambia, a context where—as in much of sub-Saharan Africa—female secondary school enrollment is low. We provided a randomly chosen group of Zambian 8th graders with negotiation skills training. The training significantly increased school enrollment and educational investment, even though it did not relieve households’ financial constraints. In addition to increasing enrollment, negotiation increased girls’ enrollment in high-quality “morning” schooling, and both of these positive effects grew rather than fading out over time.

Like any training intervention, negotiation had multiple components, each of which could have affected girls' outcomes. Beyond measuring the effect of negotiation training, we also examine which elements of the training were effective and particularly, the impact of negotiation skills themselves. To do so, we compare negotiation to two other treatments, information and safe space. We find that information had no effect, and its effect is statistically different from negotiation's. Thus, incidental communication of information about schooling is not the source of the negotiation effect.

The safe space treatment affects individualistic empowerment, which may also have been affected by the negotiation training, without imparting negotiation skills. Although the safe space treatment on its own does not have statistically significant positive effects, we generally cannot reject that the two treatments have the same effect on the average girl for our enrollment measures and shorter-term human capital indices. Thus, the safe space treatment alone could be an effective intervention, although we also cannot reject that it had zero effect.²⁹ Nonetheless, several pieces of evidence lead us to speculate that the negotiation training's effects were due to different mechanisms than any safe space effect. First, negotiation had a statistically significantly larger effect on morning schooling, while the safe space treatment had zero effect. Enrolling in morning schooling is more likely to lead girls to continue their education, as only morning school girls do the test preparation necessary to proceed to college. Second, by exploring heterogeneity detected by machine learning, we find that the negotiation treatment has statistically significantly larger effects on higher-ability girls' enrollment in 10th and 11th grades. Negotiation's differential effect on high-ability girls suggests that negotiation may have helped girls who were good candidates academically to continue in school, but were constrained by external forces, to resolve these constraints. In contrast, both negotiation and safe space appear to have stronger effects on lower-ability

29. Although it may seem like safe space is a possible lower-cost intervention, the cost of running the safe space intervention in this case was very similar to the negotiation program. The same high-skilled coaches served as the supervisors for the safe space program. Any positive effects of the safe space program could be due to prolonged exposure to these educated, dynamic role models in an informal setting. Note, this aligns with [Edmonds, Feigenberg, and Leight \(2019\)](#), who find that a (substantially longer) girls' empowerment program without negotiation skills decreased dropout in India, where schooling is free.

girls in ninth grade, when parents are unlikely to pull a girl out of school. Thus, it is possible that the common individualistic empowerment elements of the two treatments helped girls who were at risk of dropping out due to internal constraints enroll in ninth grade.

Guided by the theoretical framework, we disentangle the mechanisms underlying the negotiation effect, focusing on the possibility that the treatment may have increased the feasible contracting space for girls to reciprocate their parents' educational investments. Consistent with our empirical results, this channel would affect the highest-ability girls more because these are the girls for whom the ability to make transfers is pivotal for parental investment. Further evidence from the lab-in-the-field game supports this mechanism. When girls and parents can communicate, the ability to cooperate strategically with parents appears to yield higher in-game investments. But having the opportunity to use negotiation skills is important. When the ability to communicate strategically is shut down, parents' behavior suggests that they expect negotiation and safe space girls to be less reciprocal. Thus, individualistic empowerment on its own could reduce expectations of reciprocity by disrupting cultural norms of obedience.

The follow-up survey further allows us to open the "black box" of the household and provides additional evidence that negotiation increases the feasible contracting space through strategic cooperation in the household. Girls appear to have found strategic swaps with parents to make schooling less costly to the household, such as through doing chores at times that did not conflict with schoolwork. Parents also indicate that they found negotiation girls more respectful and that these girls cared more about other household members. This suggests that negotiation girls are changing their behavior in ways that elicit more investment and increase household utility.

In terms of increasing schooling, the intervention was also relatively cost-effective. We estimate the cost of the intervention, including staff training, as approximately \$60 per girl.³⁰ Calculating the total increased years of schooling through grades 9,

30. The \$60 cost includes the costs of training and paying facilitators, copies and supplies, lunch on school days, and management and transportation. Many of these costs could potentially be reduced for a scaled-up version, such as by having the trained facilitators reach more girls by working a full year and participating in short refresher trainings. Thus, we expect the cost of scale-up could be lowered

10, and 11 yields an estimate of 0.16 additional years of education per \$100 spent.³¹ The program thus compares favorably to conditional cash transfers and other material ways of increasing schooling.³² Moreover, because the intervention affected the highest-ability girls, it increased educational investment for those who were likely to have the highest returns. Failing to educate this group might present the largest welfare loss to society. Taking the theoretical model seriously suggests that negotiation will only affect education when educational investment is efficient. Only then will a girl be willing to make sufficient transfers to offset the cost to her parents. Thus, negotiation may also be a more attractive choice for increasing education relative to subsidies or conditional cash transfers (which could potentially lead to misallocation via overinvestment) in environments where the supply of schooling is constrained.

In sum, we conclude that it is possible to empower girls to change their educational outcomes through interpersonal skills, even in highly constrained environments. Teaching girls noncognitive interpersonal skills appears to lead to greater human capital investment in part because these skills allow young women to solve inefficiencies in the household. Reflecting these positive findings, the Zambian Ministry of Education has begun adapting elements from our training into the national life skills curriculum for all grade 8 students. However, several important questions for policy remain. First, because our curriculum was taught by highly trained and skilled facilitators, it is important to understand if

to \$50 a girl, and potentially to \$35 a girl if it was taught at a time or in an environment where lunch was not needed.

31. We equate being moved from unenrolled to enrolled for a year as leading to one additional year of schooling. Although some girls may drop out before the completion of the newly enrolled grade, some girls may have also dropped out earlier in the previous year. Note that this result does not account for additional benefits beyond grade 11, and hence, this is a lower-bound estimate for the treatment's cost effectiveness.

32. Evidence from the PROGRESA program in Mexico, for example, shows that schooling increased by 0.01 additional years per \$100 spent (Schultz 2004). Another conditional cash transfer program in Malawi led to 0.09 additional years per \$100 spent (Baird, McIntosh, and Özler 2011). Among interventions that affect schooling by reducing costs specifically, evidence from Kenya show that providing school uniforms generates on average 0.09 additional years for \$100 spent (Duflo, Dupas, and Kremer 2015), while offering scholarships for secondary school in Ghana generated 0.17 additional years per \$100 spent (Duflo, Dupas, and Kremer 2017).

the same results can be achieved at national scale and inside the bounds of a traditional classroom. Second, we know little about the optimal timing of these negotiation trainings. In our setting, adolescence may have been a critical period for the development of interpersonal skills. Given the timing of the intervention, girls had the opportunity to practice and develop their skills in lower-stakes negotiations with siblings and parents during 9th grade, in advance of the peak period for dropout between 9th and 10th grade. Thus, it is important to understand if the girls' negotiation abilities themselves strengthened over time, or if they were simply deployed to greatest effect at the point of the secondary school transition. Finally, if teaching daughters negotiation skills can increase intrahousehold efficiency, endowing negotiating partners (parents) with these skills could yield further gains. However, if part of our educational gains are from girls extracting the surplus they create, the gains to girls may be dampened by training other parties. More broadly, although we showed that training girls in negotiation increased their educational outcomes, the potential for negotiation skills to increase economic surplus within and beyond the household by reducing other inefficiencies is an exciting avenue for future research.

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SUPPLEMENTARY MATERIAL

An [Online Appendix](#) for this article can be found at *The Quarterly Journal of Economics* online. Data and code replicating tables and figures in this article can be found in [Ashraf et al. \(2019\)](#), in the Harvard Dataverse, [doi:10.7910/DVN/IJE4RJ](https://doi.org/10.7910/DVN/IJE4RJ).

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