



IMPROVING THE WELL-BEING OF ADOLESCENT GIRLS IN DEVELOPING COUNTRIES

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1. Introduction

Adolescent girls are viewed as a key demographic group to target in order to successfully break the intergenerational transmission of poverty in developing countries (Levine et al. 2008). Unfortunately, for many teenage girls in developing countries, adolescence entails a fleeting transition from childhood to adulthood, when they are suddenly expected to “behave as adults even though they are not biologically, cognitively, or emotionally ready to assume adult responsibilities” (Naudeau, Hasan and Bakilana 2015). Adolescence is also a time in which girls face a multitude of hazards ranging from school dropout, child marriage, teen pregnancy, physical and mental health problems, and gender based violence (Baird et al., 2016). Young people’s capabilities and functioning during this period not only have immediate consequences to their own lives (Heckman and Corbin 2016), but also longer-term effects on their offspring and communities at large (Lloyd and Young 2009; Duflo 2012). Interventions that help adolescent girls reach their full potential by increasing their education, improving their skills, and delaying childbearing and marriage have the potential to create a virtuous cycle that improves health, especially child health, and women’s empowerment – ultimately leading to higher economic growth (Canning, Raja, and Yazbeck, 2015).

This report summarizes the state of the evidence and provides policy guidance on interventions that have sought to (1) increase educational attainment, (2) delay childbearing, and/or (3) delay marriage for adolescent girls in developing countries. We focus on these three outcomes for a number of reasons. First, it is believed that altering these outcomes can have lasting effects on an individual’s well-being as well as the well-being of others, for example an individual’s (future) children. This is not to say that improving other outcomes during adolescence (such as mental health or exposure to violence) does not have lasting effects on well-being; rather, for practical purposes, we need to reduce the space of interventions to consider. Second, despite these outcomes having long-lasting effects on lifetime well-being, they can be readily measured in the short-medium term making it easier for researchers to analyze the impacts of different interventions on them.

To begin, we present a conceptual framework highlighting some of the supply- and demand-side constraints that likely hinder girls’ educational attainment, encourage early fertility, and encourage early marriage. This framework then highlights some of the various interventions that seek to relax these constraints and, in turn, improve our three outcomes of interest. Based on this framework, we categorize interventions into several categories and conduct a narrative literature review analyzing the success that each category of intervention has had on changing each of our three outcomes of interest. Using this review, we then provide detailed policy strategies to improve each outcome. Finally, we discuss several promising future research avenues that we believe will help improve policy guidance for enhancing the well-being of adolescent girls in developing settings.

2. Conceptual Framework and Definitions

2.1 Definitions

The first outcome we're interested in is educational attainment, as it is termed in the conceptual framework below. We use this as a catchall term for enrollment, grade attainment (highest attended or completed), and learning (test scores, e.g., mathematics, reading comprehension, cognitive ability, etc.). We do so because studies of interventions targeted to adolescents do not uniformly report impacts on one outcome but on attendance, enrollment, grade/level attainment, and learning.

The second and third outcomes are delayed fertility and delayed marriage. Rather than define early, child, or teenage marriage/pregnancy, we focus on impacts on delaying these outcomes. The reasoning is again primarily practical: studies can define marriage or fertility outcomes for adolescent girls and young women differently. They not only report on different age groups but also definitions of child marriage can vary across settings. We acknowledge that a delay of, say, one year in age at first pregnancy or marriage is not linear in age: a delay during early adolescence can have substantially larger benefits than an equal one in late adolescence. Such nuance is noted when feasible, but our summary of the evidence is necessarily focused on delays in childbearing and marriage/cohabitation during adolescence.

Throughout the document, FP refers to family planning, while SRH refers to sexual and reproductive health. Region codes are as follows: sub-Saharan Africa (SSA); South Asia (SA), Latin America and the Caribbean (LAC), East Asia and Pacific (EAP); Europe and Central Asia (ECA); and Middle East and North Africa (MENA). Finally, LMIC stands for low- and middle-income countries, while HIC stands for high-income countries.

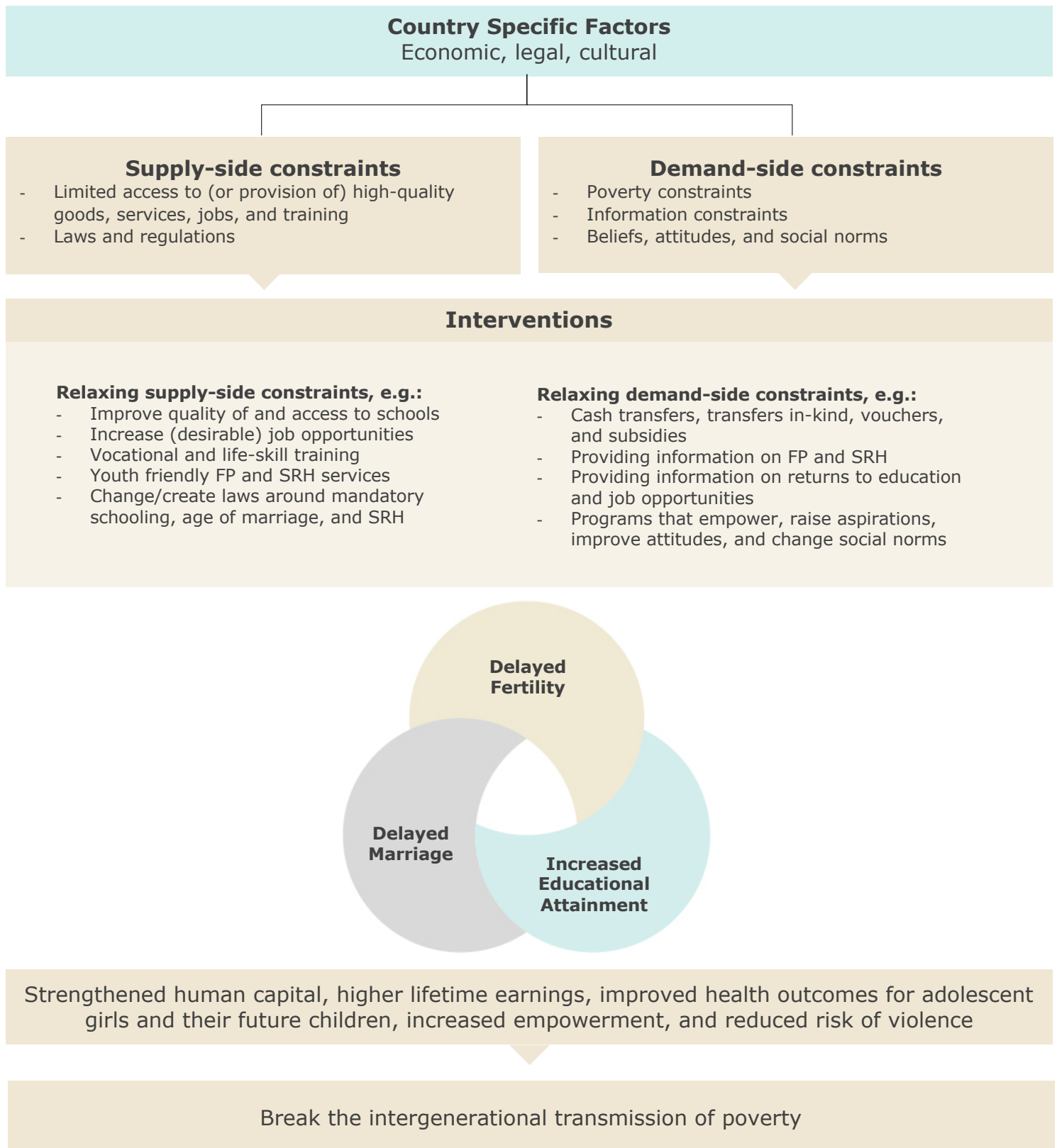
2.2 Conceptual Framework

Figure 1 presents our conceptual framework which highlights some of the supply- and demand-side constraints that likely hinder girls' educational attainment and are factors in early fertility and early marriage. Supply-side constraints include limited access to (or provision of) goods, services, jobs, and training, as well as laws and regulations, while demand-side constraints include poverty constraints, information constraints, as well as attitudes, beliefs, and social norms. Figure 1 then lists some interventions that may help alleviate these constraints; these interventions are split into interventions that seek to alleviate supply- and demand-side constraints. For example, cash transfers are listed as a demand-side intervention as they seek to alleviate poverty constraints. Of course, many interventions considered in this review will be multifaceted and thus will encompass both supply- and demand-side interventions.

Figure 1 then illustrates that education, marriage, and fertility decisions all affect one another (i.e., they are not taken independently). In extreme cases, these decisions can be perfectly related: for example, in several countries in SSA, there exist (or existed) bans on pregnant girls returning to school (Evans and Acosta, 2020a). Finally, Figure 1 illustrates that improved educational attainment, delayed fertility, and delayed marriage can have many potential, positive flow-on effects: women are likely to have higher lifetime earnings; children and mothers are likely to have better health outcomes; girls who delay marriage are less susceptible to intimate partner violence (Malhotra and Elnakib, 2021); and overall female empowerment is likely to improve. Thus, this framework highlights the important role that interventions targeted to adolescent girls can have in both improving the lives of these girls as well as breaking the intergenerational transmission of poverty (Levine et al., 2008).¹

¹ Of course, adolescent girls should not be the only demographic we target policies towards; we simply argue that they should be one of the demographics targeted in policy design. Adolescents, as a demographic group, do not enjoy a comprehensive set of policies designed to suit their complex needs as they transition into adulthood.

Figure 1: Conceptual Framework of Interventions to Improve Educational Attainment, Delay Fertility, and Delay Marriage for Adolescent Girls and the Potential Flow-On Effects.



3. Summary of the Literature

We conducted a large, narrative literature review of the various interventions that either targeted or resulted in increased educational attainment, delayed childbearing, and/or delayed marriage for adolescent girls in low- and middle-income countries.^{2 3} To begin, we started by including relevant studies that we already knew about. We then used references from these studies to expand the search, along with suggestions of studies recommended to us by colleagues, peers, and reviewers. In the end, we included a total of 104 interventions from 70 studies (of which 11 interventions from 7 studies are in HIC settings) - see [Table A1](#) for the list of the interventions and associated studies. To summarize this review, we divided interventions into 16 categories:

Intervention Categories

- (i) improving quality of schools
- (ii) construction of schools
- (iii) mandatory schooling laws and length of school days
- (iv) removing bans on pregnant girls attending school
- (v) raising age of marriage laws
- (vi) job opportunities and information on job opportunities
- (vii) vocational training
- (viii) life skills training, mentoring, and empowerment programs via girls' clubs
- (ix) other life skills training, mentoring, and empowerment programs
- (x) provision of sexual and reproductive health services
- (xi) vouchers and subsidies for FP services and modern contraceptives
- (xii) information on SRH and FP
- (xiii) cash transfers
- (xiv) in-kind transfers
- (xv) information on returns to education and academic performance
- (xvi) other interventions that seek to improve social norms, aspirations, and empowerment

We then allocated each intervention to a category and, *based on our reading of the literature*, summarized the overall effectiveness of each category on our three outcomes of interest. Table 1 below presents our summary, while [Table A1](#) contains a list of all studies used to inform our review, which includes detailed information on each study, such as country, intervention(s), assigned intervention categories, direction and statistical significance of effect size for each outcome variable, and publication status. Moreover, Appendix A provides a more

² For a definition of a narrative review and how it differs from other review methodologies, such as meta-analysis or vote counting, see Evans and Popova (2016).

³ We also include interventions that did not specifically focus on adolescent girls but still included them and interventions that did not include adolescent girls but where we believe the results would likely carry-over to them. When presenting our summary of the success of categories of interventions in Table 1, we note whether a given category of interventions has received limited application to adolescent girls; moreover, in [Table A1](#), we precisely describe the target population of each intervention we reviewed.

descriptive summary of the papers contributing to each intervention-category (each row in Table 1 is linked to the relevant section in Appendix A).

It is important to note a few things about our summaries of the evidence in Table 1. First, it is often the case that a given intervention does not neatly fit into one of our specified categories due to the multifaceted nature of many of the interventions considered. For example, if an intervention consisted of both a CCT for households sending their children to school as well as an increase in supplies for classrooms, then the CCT component of this intervention would fall into “Cash Transfers” while the provision of school supplies would fall into “Improving the Quality of Schools”. Unfortunately, in many cases, the studies we review only evaluate the overall effect of the package intervention and are unable to identify the effects of the subcomponents on our outcomes of interest or interaction effects between subcomponents. Thus, we use our discretion to group such interventions based on what we believe to be the main component of the intervention.⁴

Second, we do not report information on effect sizes. This is due to a number of reasons. First, both measurement of our outcome variables and target populations change across interventions thus making it impossible to directly compare effect sizes across interventions (e.g., one intervention may look at enrollment for girls in grade 8 in Zambia, while another may look at years of education for girls aged 15-17 in Bangladesh). Second, most studies do not report on the costs of interventions. Thus, even if two studies had the same target population and the exact same outcome variable, it would be misleading to simply compare effect sizes because one intervention may have been far costlier than the other. Ultimately, what we would like to construct is a unified welfare metric for each intervention so that we could compare the welfare gain of one intervention vs. another. This, we believe, is an important area for future research.⁵

Instead, we evaluate the success of each category of intervention on each outcome variable using the following classification system:

Classification System

1. Effective: several, rigorous interventions finding consistently positive, significant effects on the outcome of interest.
2. Promising: at most a few rigorous interventions finding positive, significant effects on the outcome of interest.
3. Mixed: at least two rigorous interventions that find a mixture of positive effects and no (statistically significant) effects on the outcome of interest.⁶

⁴ When studies are able to analyze the effect of each subcomponent of an intervention, we then group the subcomponents of the intervention into their relevant categories. [Table A1](#) provides details on the interventions considered in each study along with the intervention category we assign it to.

⁵ Hendren and Sprung-Keyser (2020) create such a metric: The Marginal Value of Public Funds. We discuss implementing such a metric in section 5.

⁶ The classifications of ‘mixed’ and ‘no effect’ include a combination of studies that are adequately powered to detect meaningful effects, i.e., precise null effects, and studies that are underpowered and find potentially sizeable but statistically non-significant effects, i.e., noisy null effects. Ideally, we would

4. No (statistically significant) effect: at least two rigorous interventions finding no (statistically significant) effect on the outcome of interest.
5. Unknown: fewer than two rigorous interventions investigating the effect of the given intervention on the outcome of interest.

Note, that we are purposefully vague about the exact number of interventions that are needed to classify whether an intervention-category is effective, promising, mixed, etc., as our review is not a pure counting exercise. While the number of interventions within a category certainly impacts our judgments, we also consider the quality of the interventions, diversity in the settings of interventions, and our own knowledge from the field of development economics (in line with the strategy of the review piece by the Global Education Evidence Advisory Panel (2020)). Furthermore, some of the studies included in our review are reviews themselves. Despite this, we use color-coding to give the reader an indication of the number of interventions informing our evaluation in Table 1. Cells in light blue indicate there are at least five studies (or at least one large review piece) in the intervention-category in LMIC settings reporting directly on the outcome variable of interest, cells in beige indicate there are 2-4 studies in the given intervention category in LMIC settings reporting directly on the outcome variable of interest, and cells in grey indicate there are less than two studies. Note, however, that there are many other studies that are either in developed settings and/or do not directly report on one of our three outcomes of interest that we nevertheless use to inform our evaluations (for example, papers in this group may be useful for understanding underlying mechanisms at play or may report on an outcome closely related to one of our three outcomes such as take-up of contraceptives). These papers are also listed in [Table A1](#) under “Developed Settings” and “Other papers used to inform Table 1” and are also described in more detail in Appendix A.

have liked to distinguish these two types of studies, but this would require more subjective judgments on our part to decide what meaningful effect is, so we chose to not try to make this distinction in our review. Hence, the readers can conservatively interpret the ‘no effect’ category as “lack of evidence for positive effects,” rather than “evidence of no effects.” For studies in this category, the reader can get a better sense of the evidence by reading our narrative summary in Appendix A and the studies themselves to form a more nuanced opinion on the state of the evidence.

Table 1: Intervention Category vs. Outcomes

Intervention Category (down) vs. Outcomes (across)	Increasing Educational Attainment	Delaying Marriage	Delaying Fertility
<p>Improving Quality of Schools</p>	<p>Mixed. Many different types of interventions and implementation success varies substantially. Most interventions do not focus on adolescent girls. Evidence suggests successful policies are more effective at improving learning as opposed to improving enrolment or attendance. Structured pedagogy interventions seem effective at improving learning. Interventions that <i>solely</i> provide classroom materials seem ineffective. Interventions to make schools more girl friendly, such as gender separate latrines are promising although more evidence is needed. We conjecture that remedial education for at- risk girls could be promising but more evidence is needed.</p>	<p>Unknown. Studies in this literature tend to focus on learning and other educational outcomes and do not typically focus on adolescent girls.</p>	<p>Unknown. See 'Delaying Marriage'</p>
<p>Construction of Schools</p>	<p>Effective. School construction can lead to very large gains in attainment in areas where schools are far away. Caveat: (1) unlikely to see large gains from school building in areas with nearby schools - in these settings, perhaps better to invest in quality of existing schools and transportation to and from</p>	<p>Unknown. None of the studies we consider look at age of marriage except one in Indonesia, which finds no effect. <i>Same caveats in education cell apply.</i></p>	<p>Promising. A couple of studies look at impacts on fertility. They find positive effects on delayed/reduced fertility. <i>Same caveats in education cell apply.</i></p>

Intervention Category (down) vs. Outcomes (across)	Increasing Educational Attainment	Delaying Marriage	Delaying Fertility
	schools; (2) need to ensure new schools are of high quality.		
Mandatory schooling laws and length of school days	Promising. Found to be effective in Turkey. Also effective in HIC settings.	Unknown. Found to be effective in one study in Turkey. We conjecture that given effectiveness on schooling in both LMIC and HIC, and effectiveness on pregnancy in HIC, that will likely be effective at delaying marriage in LMIC.	Unknown. Limited evidence in LMIC settings but effective in Chile, US, and Norway. We conjecture likely effective in LMIC too.
Removing bans on pregnant girls attending school	Unknown. One study of policy changes in nine African countries. Observe more pregnant girls in school after removal of bans. Suggests removal of bans can improve human capital for pregnant girls.	Unknown.	Unknown. From the one study, there is no evidence that removing bans led to increased pregnancies.
Raising Age of Marriage Laws	No Effect in Mexico and mixed results in Ethiopia.	Mixed. Positive effects in delaying marriage in Ethiopia. Decrease in formal marriages in Mexico (although accompanied by increase in informal unions). Laws were not effective in curbing early marriage in Benin, Mauritania,	Mixed. No effect found in Mexico while positive results in Ethiopia.

Intervention Category (down) vs. Outcomes (across)	Increasing Educational Attainment	Delaying Marriage	Delaying Fertility
		Kazakhstan, and Bhutan. Limited effectiveness in Tajikistan and Nepal. Increase in short-run marriage among adolescent girls in Bangladesh when informed about upcoming law changes.	
Job Opportunities and information on job opportunities	Promising. Creating job opportunities for women effective in Bangladesh. In areas where job opportunities exist, providing information on job opportunities appears highly effective in India.	Promising. See 'Increasing Educational Attainment'	Promising. See 'Increasing Educational Attainment'
Vocational Training	No effect. Training offered to older adolescents or out-of-school young adults, so we do not expect improved schooling outcomes. Evidence suggests while programs often improve labor market outcomes, many are not cost effective.	Unknown. Studies tend to focus on labor market outcomes (and occasionally fertility) but not marriage.	Mixed. Weak evidence to suggest training may delay pregnancy while in program.
Life skills training, mentoring, and empowerment programs via Girls Clubs	Mixed. Typically, no effect on educational attainment - considered a success when clubs do not interfere with schooling. However, evidence that girls' clubs may be protective of schooling during crises (e.g., Ebola in Sierra Leone), and cause modest gains in educational attainment in Bangladesh.	Mixed. Beneficial effect in Uganda and Bangladesh; no effect elsewhere.	Mixed. Some beneficial effect in Uganda, no effect elsewhere. Caveat: can be protective of pregnancies out of wedlock during crises, e.g., Ebola in Sierra Leone.

Intervention Category (down) vs. Outcomes (across)	Increasing Educational Attainment	Delaying Marriage	Delaying Fertility
<p>Other life skills training, mentoring and empowerment programs</p>	<p>Mixed. Positive effects of skills training on enrollment in India (life skills training in Rajasthan), Zambia (negotiation training), and Uganda (entrepreneurship training - <i>working paper forthcoming</i>). No effect in Liberia. No effect of in school gender-equality intervention in India. Caveat: (1) interventions differ substantially (thus generalizing across interventions is difficult). (2) Programs that improve gender attitudes, including among males, may produce effects in the longer run.</p>	<p>Mixed. Beneficial effects in Liberia and India (Maharashtra life-skills interventions). No effects in Rajasthan, India life-skills intervention. Potentially positive effects (reported delays in starting family which could imply delays in marriage) in Uganda but working paper forthcoming. <i>Same caveats from education cell apply.</i></p>	<p>Mixed. Reduction in number of sexual partners and improved safe sex practices in Liberia – however, did not translate into reduction in being pregnant. Positive effects in Uganda (<i>working paper forthcoming</i>). <i>Same caveats from education cell apply.</i></p>
<p>Provision of sexual and reproductive health services</p>	<p>Unknown. Evidence from US shows provision of oral contraceptive pill was effective at increasing human capital accumulation of young women. Evidence from LMIC setting lacking, likely due, in part, to the difficulty of offering services to adolescents. We conjecture, however, provision of high-quality services to adolescents (modern contraceptives, safe abortion, counseling) would likely generate beneficial effects on educational attainment.</p>	<p>Unknown. Evidence from US shows provision of oral contraceptive pill for young women and access to confidential abortion for young women was effective in delaying marriage. Evidence from LMIC lacking, likely due, in part, to difficulty of offering services to adolescents. We conjecture, however, provision of high-quality services to adolescents (modern contraceptives, safe abortion, counseling) would likely generate beneficial effects on age of marriage.</p>	<p>Promising. Provision of such services for adolescents in LMICs difficult due to lack of legal reproductive rights for adolescent girls (esp. unmarried or nulliparous). Evidence from US shows provision of high-quality services (contraceptives, safe abortion) has effective results on delaying and reducing fertility. Evidence from LMIC settings shows access to legal and safe abortion reduces fertility although one must mitigate potential sex-selective abortions in son-</p>

Intervention Category (down) vs. Outcomes (across)	Increasing Educational Attainment	Delaying Marriage	Delaying Fertility
			<p>preference contexts. Moreover, LMIC settings show that improvement in services via tablet-based decision support for providers leads to large uptake in modern contraceptives. Provision of home-visits to first-time mothers may be a promising way to increase uptake of contraceptives in some settings.</p>
<p><u>Vouchers and subsidies for FP services and modern contraceptives</u></p>	<p>Unknown. Very little evidence on providing FP vouchers to teens and how this in turn affects schooling. We conjecture, however, that high quality interventions to teens seeking services might be highly effective at reducing pregnancy-related school dropouts.</p>	<p>Unknown. Very little evidence on providing FP vouchers to teens and how this in turn affects marriage. We conjecture, however, that high quality interventions to teens seeking services might be highly effective at delaying marriages related to unintended pregnancies.</p>	<p>Promising. Effects of FP subsidies for adolescents (esp. unmarried) lacking in LMIC settings. Positive results found in Kenya, no effect in Tanzania and promising results in HIC settings. Evidence suggests teens more price sensitive w.r.t. FP services. Provision of subsidies for high quality contraceptives to adolescents <i>seeking</i> these services highly effective in terms of take-up and thus likely effective in reducing teen pregnancies. Challenges still remain to increase take-up of those not seeking services but sexually active. Caveat: if offering to married teens, consider complementing with</p>

Intervention Category (down) vs. Outcomes (across)	Increasing Educational Attainment	Delaying Marriage	Delaying Fertility
			interventions that include and/or inform partners.
Information on SRH and FP	<p>Mixed. Evidence on effects on schooling limited. No effect of abstinence-until-marriage focused HIV training in Kenya, while mixed results on dropouts in Cameroon. We conjecture that, given the mixed results on pregnancy (and risky sexual behavior more generally), there are unlikely to be strong flow-on effects to education.</p>	<p>Unknown. Very little evidence on effects on marriage. We conjecture that, given the mixed results on pregnancy, there are unlikely to be strong flow-on effects to marriage.</p>	<p>Mixed. School-based sex education programs have mixed results on risky sexual behavior and, in turn, teen pregnancy. Evidence suggests the way in which the information is delivered, what information is presented, and potentially who presents it matters (e.g., no effect of abstinence until marriage interventions while age-HIV-risk profile interventions promising; outside consultants delivering information sessions promising as are in-class questionnaires that make risks salient). Interventions for married couples on FP services and maternal risks, <i>while limited</i>, appears effective at reducing pregnancies and desired number of children as well as improving happiness within marriages. Finally, no effect of goal-setting SRH intervention for girls or SRH information intervention for boys in Tanzania.</p>

Intervention Category (down) vs. Outcomes (across)	Increasing Educational Attainment	Delaying Marriage	Delaying Fertility
Cash transfers	<p>Effective. Cash transfers conditioned on schooling and well-targeted are very effective at increasing enrollment & attendance. Still effective if cash is given unconditionally, but less so. Caveat: (1) to improve learning, supply-side interventions to improve school quality may need to take place and/or conditions based on academic performance may also need to be imposed; (2) consider whether the setting has bride-price or dowry. In dowry setting, UCTs could have negative effects on education if parents use them to save for dowry. In bride-price settings, UCTs could help delay marriage, and, thus prevent marriage-related school dropouts.</p>	<p>Mixed (context-dependent). Depends on setting (dowry vs. bride-price), conditionalities, and targeting. In dowry settings, UCTs may be used to pay for dowries (CCTs likely more effective). In bride-price settings, UCTs can be used to delay marriage (but effects stop once grants do). CCTs on schooling effective if they can generate sizeable effects on enrollment (i.e., well targeted to marginal students). CCTs on girls remaining unmarried may be effective in delaying marriages until the cutoff date but may hasten them after the cessation of transfers (with the payments helping save for dowries in dowry settings) – they are unproven as a policy tool to reduce marriages in South Asia.</p>	<p>Mixed (context-dependent). Depends on setting (dowry vs. bride-price), conditionalities, and targeting. In dowry settings, UCTs may be used to pay for dowries and thus increase pregnancies through an increase in marriages (CCTs likely more effective). In bride-price settings, UCTs can be used to delay fertility (but effects stop once grants do). CCTs on schooling effective if they can generate sizeable effects on enrollment (i.e., well targeted to marginal students). CCTs on girls remaining unmarried may be effective in delaying fertility in settings where pregnancy primarily occurs inside of marriage but may hasten marriage (and, likely, pregnancies) after the cessation of transfers.</p>
In-Kind Transfers	<p>Effective. Scholarships and fee reductions seem effective if targeted based on both merit and poverty. Mixed effects if not targeted on merit. Other schooling related in-kind transfers (uniforms, school feeding,</p>	<p>Mixed. Similar to cash transfer cell - results on marriage are mixed. We suspect in-kind provisions would need to generate substantial effects on education to generate positive knock-on effects for fertility and marriage.</p>	<p>Mixed. See Delaying Marriage cell.</p>

Intervention Category (down) vs. Outcomes (across)	Increasing Educational Attainment	Delaying Marriage	Delaying Fertility
	bicycles) appear effective – school feeding programs more so, where enrollment is low and malnutrition is high.		
Information on returns to education and academic performance	<p>Effective. Effects of report cards on performance and/or attendance appear effective at improving at least one of the following: test scores, attendance, or enrollment, although focus of most interventions is not on adolescent girls. Promising evidence also suggests CCTs play a beneficial role in providing parents info on attendance and importance of schooling. Caveat: informing parents on school performance should be accompanied by programs that mitigate unintended negative effects on low-performing students. Informing young women re: skilled job opportunities very effective in India.</p>	<p>Unknown. Evidence is very limited. None of the studies we consider look at effects on marriage (likely because focus of most studies is not adolescent girls) except one in Mozambique which finds no effect (but with very low prevalence in the control group). Informing young women re: skilled job opportunities very effective in India.</p>	<p>Unknown. Evidence is very limited. None of the studies we consider look at fertility (likely because focus of most studies is not adolescent girls). Informing young women re: skilled job opportunities very effective in India.</p>
Other Interventions that Seek to Improve Social Norms, Aspirations and Empowerment	<p>Promising. Reserving seats for women in local government bodies effective at increasing girls' education in India. Introduction of cable television increases girls' education in India. Caveat: category of interventions</p>	<p>Unknown. Reserving seats for women in local government bodies effective at raising age of marriage in India. Effects of other interventions on marriage unknown. Same caveat in</p>	<p>Unknown. Evidence on whether any of these interventions affect fertility in adolescents is limited. Evidence shows that telenovelas in Brazil and cable television in India reduce overall fertility</p>

Intervention Category (down) vs. Outcomes (across)	Increasing Educational Attainment	Delaying Marriage	Delaying Fertility
	is vague → interventions vary substantially within this group → generalizations are difficult to make.	<i>'increasing educational attainment'</i> cell applies.	(although in Brazil this does not appear to be driven by women delaying their fertility). Same Caveat in <i>'increasing educational attainment'</i> cell applies.

4. Policy Strategies

Using our summaries from Table 1, we now discuss policy strategies to improve each of the three outcomes considered. Of course, these are high level strategies and many context specific factors will need to be considered when determining and implementing the set of policies in a given setting. However, before detailing our policy prescriptions, we must discuss two important caveats. First, our policy strategies are based on our summaries in Table 1 (and, to some extent, whether an intervention is likely easy to scale – see Box 2). In an ideal world, however, one should prescribe policies based on which interventions generate the largest gain in welfare (i.e., prescribe the optimal policies) as opposed to prescribing policies based on which interventions have been the most successful in altering a short-term outcome. Unfortunately, as mentioned earlier, comparing interventions based on their (relative) contribution to welfare is not possible with the current state of the literature. We detail why in Box 1 below. Second, many of the interventions we review in the literature are not offered at scale. Thus, our ability to extrapolate whether a successful intervention will remain successful when offered at scale is limited. Box 2 discusses the issue of scaling-up programs and lends insights into which interventions discussed in Table 1 may be more readily scaled-up.

Box 1 *Determining the Optimal Policy Mix:*

Hendren and Sprung-Keyser (2020) develop a methodology to compare the relative welfare gains associated with expanding any set of policies. To implement this framework, one needs to know (a) the fiscal cost of expanding a policy (inclusive of fiscal externalities resulting from the expansion), (b) the beneficiaries' willingness to pay for the policy expansion, and (c) the relative weight society places on giving an extra dollar to the set of beneficiaries. Given our focus is comparing policies targeted to adolescent girls in poor settings, it is unlikely that (c) will vary greatly across policies (within a given country). Thus, we will focus on why we cannot estimate (a) and (b). First, few papers considered in this review report on the cost of implementing their policy. Thus, we cannot estimate (a). We hope that reporting on cost will improve given this recent unifying framework of Hendren and Sprung-Keyser (2020) and the development of program costing tools, such as the [Partnership for Economic Inclusion Quick Costing Tool](#). Second, in order to ascertain the willingness to pay for policies, we typically need to know how a policy affects lifetime well-being.⁷ To estimate this, we need to understand the long-term impacts of policies (and be able to translate these long-term impacts into monetary values). However, most papers estimate the impact of policies on short-term outcomes. This is entirely reasonable – we need to know whether a policy is working soon after implementation – not 60 years down the road. Thus, we need a way to translate these short-term changes into changes in long-term outcomes. This, we believe, is a knowledge gap which we discuss in more detail in section 5.⁸

⁷ For policies that simply deliver cash or provide (inframarginal) market goods in-kind, calculating the willingness to pay is simply equal to the monetary size of the transfer. However, calculating the willingness to pay for other types of policies is more difficult; see Hendren and Sprung-Keyser (2020) for examples on how to do this.

⁸ A recent paper by Athey et al. (2019) shows a way to construct 'surrogate indices' for the long-term outcome of interest using experimental or observational data, so that interventions can be evaluated in

Box 2 *Scaling-Up Programs:*

Many of the interventions that we consider in this review and use to inform our summaries in Table 1 are small and are often implemented by non-governmental organizations. While conducting small interventions is beneficial when trying to learn if an intervention is successful (e.g., keeping programs small reduces risks, keeps budgets small, takes less time, and can be more closely monitored), our ability to extrapolate causal effects from small interventions to scaled-up versions is limited for a number of reasons. Muralidharan and Niehaus (2017) and Cull and McKenzie (2020) note that (1) small study samples may not be representative of the population the government wants to target; (2) implementation may become increasingly difficult as a program grows (e.g., monitoring and oversight may become increasingly hard) – this is particularly true if a government becomes involved in the implementation due to (potential) poor bureaucratic management, capture by vested interests, and low state capacity; (3) small interventions may not capture spillover effects, such as general equilibrium effects; and (4) interventions may become prohibitively expensive as they get scaled up – this is of particular concern for very intensive small-scale programs.

One may then ask, “how can a government go about successfully scaling-up small-scale interventions,” and, based on this, “which interventions discussed above lend themselves to be more readily scaled-up?” Andrews et al. (2021) provide guidance on the first part to this question by investigating successful large-scale economic inclusion programs in many different settings. They note the following findings regarding successful scale-up:

- There is strong potential to scale programs by building on pre-existing government programs, e.g., building on national social safety net programs to create “cash-plus” programs, using school infrastructure or adapting existing curriculum to implement new programs, etc.
- The use of digital technology is critical to overcome capacity constraints and improve program management, e.g., the use of digital payment systems, mobile phone-based monitoring systems, biometric smart cards, creation of digital platforms to access programs, online training programs, use of government databases to create registries.
- Strong partnerships with communities and NGOs are integral: engagement of community groups and local governments is crucial (especially for program delivery), while technical assistance from NGOs can be very beneficial.
- Understanding the basic cost structure of programs (e.g. spending on aid/services received by beneficiaries vs. delivery costs vs. staff costs, etc.) is a vital starting point for analyzing scalability (of course, extrapolating cost structure of small-scale programs to large-scale programs is difficult due to economies of scale and differences in implementation strategy, but this should at least provide guidance on whether programs are likely to involve a lot of overhead costs). The [Partnership for Economic Inclusion Quick Costing Tool](#) is an excellent tool for providing information of cost structure for various economic inclusion programs.
- Program flexibility is integral - the ability to adapt and alter programs based on context and new research is crucial for the successful implementation of programs in new settings.
- Finally, as noted in Cull and McKenzie (2020), it is important to pay attention to the quality and capability of the bureaucracy when considering whether an intervention could be successfully scaled in a given context (the [World Bank’s Bureaucracy Lab](#) is useful for these purposes).

Based on this guidance, we believe the interventions in Table 1 that can be more easily scaled are (a) those that can build/expand on existing government programs, infrastructure, or networks, such as (but not limited to) expanding pre-existing cash transfers to adolescents, expanding pre-existing SRH and FP services to adolescents (if the context allows), and adapting interventions to be offered at schools; (b) those that can be implemented with widespread, low-

the shorter-run to form a good idea about their long-term effectiveness. We discuss this approach in Section 5.

cost technology such as (but not limited to) cash transfers delivered through mobile banking, mobile phone-based information interventions, or smart-phone/tablet SRH apps for trained healthcare professionals; and (c) programs that are not overly intensive for the setting and do not involve large overhead costs. For example, UCTs may be more appropriate than CCTs in settings where monitoring and enforcement of conditions are prohibitively costly (e.g., SSA). Moreover, we believe girls clubs and other complex, multifaceted programs not offered through schools or other existing, safe facilities are unlikely to be easily scalable (especially given the mixed results when replicating small-scale versions of girls' clubs).

Finally, two other pre-existing structures come to mind for delivering services, especially SRH, to out-of-school adolescents in communities. First, in performance-based financing systems (PBF), facilities can be incentivized to reach adolescents in their catchment areas but not clients of the facility. Second, decentralized systems like Social Action Funds, such as NUSAF in Northern Uganda or TASAF in Tanzania, can be used to deliver services like cash transfers or "cash plus" programs to women's groups through existing structures, while utilizing local officials and community health extension workers to deliver services in a flexible manner suited to the local community's needs. As mentioned above, NGOs that are active in the communities can partner in implementation, but group-based training and financial support programs for adolescent girls and young women that utilize existing structures, such as PBF or Social Action Funds, will have a better chance of scaling up successfully.

With these limitations in mind, we now proceed to provide detailed policy strategies to help increase educational attainment, delay fertility, and delay marriage among adolescent girls.⁹

4.1 Increasing Educational Attainment

While a number of tools are available to policymakers to increase educational attainment, cost-effectiveness remains a big question mark. CCTs for schooling, with a solid evidence base, are effective at increasing enrollment/attendance, but targeting the marginal students remains elusive and effects on learning appear limited. Information constraints and lack of desirable jobs for women stifle incentives to invest in girls' education. Finally, there are likely a significant share of school dropouts due to unintended pregnancies and child marriages. The evidence base is lacking on investigating and identifying the knock-on effects to education of interventions that are able to successfully reduce/delay teen pregnancies and marriage.

1. Build schools, make them girl-friendly, and safely accessible:

- a. Building schools in areas with no schools in the community and low enrollment rates, esp. among girls, is very effective increasing enrollment and learning.
- b. Make schools girl-friendly, especially in areas with social norms interfering with girls schooling, where safety is an issue, and curriculum does not reflect local values: compromise...
- c. Invest in making schools accessible safely (transport systems, safety measures, etc.)

2. Give parents (and adolescents) a reason to invest in schooling:

- a. Improve opportunities for female labor force participation (even low-level entry jobs that require basic skills, but decent wages would work)
- b. Provide information to parents and children about returns to schooling, job opportunities, student and school performance. Help parents with monitoring school attendance for their children...

⁹ The suggested policies in this section and the knowledge gaps discussed in Section 5 below can be used in two ways by World Bank task team leaders and policymakers designing interventions. First, our recommendations can provide some nuance to proposed interventions – perhaps by suggesting that they might work better in combination with another intervention or in a certain context. Second, they might spur impact evaluations for project components that are novel and for which evidence of effectiveness is lacking. To provide just one example, a project for girls' empowerment in Angola has many components for which we advocate below (World Bank 2021). However, having access to our review, some components could perhaps be further enhanced or refined: the adolescent health services and information components could further consider including family planning counseling sessions and free/discounted services for adolescent girls. Scholarships for girls enrolling in secondary school could try to experiment with targeting approaches to make the intervention more cost-effective (and evaluate the relative effectiveness of these approaches). Remedial (second chance) education components could consider conditional transfers to increase take-up, and so on.

3. *The evidence on the effectiveness of life-skills training and girls' clubs is mixed:*

- a. Nascent literature on classroom-based interventions on increasing aspirations and improving empowerment are promising but more (and longer-term) evidence is needed on final outcomes.

4. *CCTs and (secondary) school scholarships (merit-based or otherwise) are still the best policy tool across the globe to improve school enrollment:*

- a. However, since their inception, cost-effectiveness of these programs has been an issue: The vast majority of transfers are given to beneficiaries who would have attended school anyway, making these programs expensive per year of attainment gain. There are potentially large gains from improving the targeting of these programs. Moreover, the effects on learning appear limited.
- b. School feeding programs have been shown to be promising in improving learning, although they remain unproven for increasing access (more likely to be successful in areas with very low levels of enrollment).

5. *The effect of information and provision of SRH services on educational attainment remains very much understudied,* as most governments (and policymakers) shy away from targeting such interventions to early-to-mid-adolescents: please see Section 5.4. Interventions in this area have the potential to improve human capital accumulation in a cost-effective manner.

4.2 Delaying marriages

Reducing child marriages is a difficult and thorny issue. There are not a lot of proven policy levers that successfully made inroads against the practice. Part of the problem is economic: as summarized in Appendix A, negative economic shocks to the household during adolescence can hasten (in settings with bride price or no marriage payments) or delay (in settings with dowry payments) child marriages. Part of it is cultural, with various societies putting a premium on early marriage of girls, especially after they have dropped out of school. Finally, part of it is due to the interaction of unintended pregnancies with social norms, causing marriages to occur earlier than desired. There are only a couple of policies that have been shown to be effective against reducing child marriages so far but designs of these interventions will depend heavily on the local context.

1. Schooling and marriage are largely exclusive of each other:

- a. This means that *policies that are successful in increasing school attainment should have knock-on effects to increase age at marriage*. This takes us back to the issue of policy levers to increase school participation through well-targeted programs.
 - i. Policies should further aim to encourage continuation of schooling (and the uptake of modern birth control methods) among married adolescents, especially in settings where pre-marital sex is taboo (e.g. South Asia), as in these settings adolescent girls might like to get married but also continue schooling.

2. Age of marriage laws may make a difference:

- a. The reader might be surprised to see this recommendation here, as we have summarized the evidence on such policies as 'mixed' in Table 1. The reason it is included here is that it can be a low-cost policy and it has the potential to change norms and preferences in the longer run. Moreover, setting even higher age laws, like 21 for males in India, may also be effective at changing norms and preferences.
- b. One key issue with these laws is whether they are enforceable and whether informal unions are an acceptable substitute to marriage. We conjecture that in settings where child marriage in early adolescence is a significant problem, setting modest minimum age of marriage laws (e.g., age 16), enforcing them, and insuring families against negative economic shocks could be an effective way to delay marriage.
- c. Unfortunately, it will be the case that some child marriages will happen, hopefully mostly in late adolescence, and, thus, there should exist policies targeted towards these groups (such as remedial education services for married teens and provision of SRH and FP services targeted to married adolescent/young couples).

3. Cash transfers are the most obvious and promising tool to reduce early marriages in a lot of settings, but policies should be tailored to different contexts:

- a. Give UCTs in *bride price* (or no marriage payments) settings. There is convincing evidence that, in settings where marriage payments do not exist (including in middle- and high-income countries) or marriage payments take the form of *bride price* (i.e. from the groom to the bride), negative income shocks increase child marriages while positive shocks delay them. Therefore, in such settings, small monthly cash entitlements to households for each adolescent girl (or

targeted to adolescent girls directly) can significantly reduce child marriages.

- b. Give CCTs for schooling in *dowry* settings: The problem with UCTs in dowry settings, such as in South Asia, is that they can actually increase child marriages by contributing to household savings for dowry payments. CCTs conditional on not getting married are awkward, to say the least, and it is not clear that governments can credibly adopt these policies. Furthermore, the evidence for their effectiveness (especially relative to CCTs conditioned on schooling) is unproven.

4. Policies that increase job opportunities for women are promising to increase investments in girls.

- a. When parents and daughters know about such opportunities, investments in the human capital of adolescent girls are likely to increase – even without additional financial support.
- b. Interventions that (i) change social norms by making it more acceptable for women to work; (ii) support families financially to invest in the education and health of their daughters; (iii) increase the safety of transportation and workplaces; and (iv) digital payments to women can all complement policies that increase job opportunities for women.

4.3 Delaying fertility

In many parts of the world, dropping out of school and the onset of childbearing are closely linked. In many cases, once a girl drops out of school pregnancies and marriages follow very quickly. Alternatively, unintended pregnancies can also cause school dropouts. While the causality goes both ways, proposed interventions have mostly sought to reduce school dropouts.

1. An explicit focus on family planning and sexual and reproductive health interventions that are targeted to adolescents – inclusive of all ages, parity, and marital status – is long overdue:

- a. Evidence from developed and developing countries shows that adolescents are accepting of effective modern contraceptive technologies under the right circumstances. Such circumstances include:
 - i. High-quality services (competent providers well trained in FP and SRH) with proper follow-up
 - ii. Improved counseling with shared decision-making and without provider bias against recommending LARCs to adolescents and nulliparous women.
 - iii. Discounted or free services

- iv. Integrated services with postpartum and post-abortion care
 - v. Reaching them at school
- b. In an environment where adolescents can conveniently access high-quality counseling and affordable services, the uptake of modern contraceptives can increase substantially among adolescent girls and young women. This, in turn, would reduce unintended pregnancies (and, hence, maternal mortality ratios) and improve human capital accumulation among young women and their children.
- c. In settings with cultural or religious opposition to sex education, counseling, and use of contraception among adolescent girls, it may be helpful to include partners, spouses, or parents and provide information related to the issue of maternal health rather than sexual behavior. Recent evidence suggests that spouses are responsive to information on the risk of maternal mortality, as they not only underestimate the overall risks but are also unaware of the risk factors – such as birth spacing, parity, and age. Innovative compromises in conservative settings may lead to beneficial interventions for adolescent girls who are very vulnerable to teen pregnancies and child marriage.
- d. Married adolescents form a non-negligible share of adolescents in a variety of low-income settings and efforts to increase the adoption of LARCs after the first child are likely to be effective in increasing birth spacing and maternal and child health. There may even be circumstances, where the young couple want to continue schooling and delay the onset of childbearing within their marriage. Marriage can be used as an entry point for the promotion of these services.
- e. Finally, in many countries, there is a void in the understanding of the reproductive rights of adolescents, as they pertain to their ability to consent to certain procedures, adopt contraception, etc. without parental consent or state oversight. Relaxation (and clarification) of laws that govern age of majority and mature minors is likely to have an effect on the behavior of healthcare providers and adolescent girls alike. Making abortions legal and safe would also help (with measures to mitigate sex-selective abortions in son-preference settings), the frequency of which would decline with comprehensive SRH services for adolescents.
- f. There are multiple entry points to reach adolescent girls to promote these services:
 - i. Before sexual debut – at schools, at home or in the community via community health extension workers, at girls' clubs or girls' groups (akin to women's groups in the community)
 - ii. *Before* marriage (to delay the onset of childbearing within marriage) and *during* marriage (to improve spacing of children)

- iii. Through postpartum and post-abortion care that does not discriminate on the basis of age, and
 - iv. Through follow-up FP services for switching methods.
- 2. In settings where risky sexual behavior is highly correlated with economic circumstances, ***cash transfers targeted to adolescents or social protection schemes that insure women against negative shocks are likely to reduce unwanted pregnancies.*** The caveats made above, under 'child marriage' apply.
- 3. ***Interventions that improve schooling substantially are likely to reduce teen fertility.*** Such interventions include ***constructing schools in certain areas, CCTs for particularly vulnerable groups, creating desirable job opportunities for women, and increasing mandatory schooling periods and the length of school days.*** Again, all caveats made above, under 'child marriage' and 'education' apply.

5. Suggested Areas for Future Research

Finally, we discuss some areas for future research which we believe will be particularly useful in helping determine the most effective policies to improve the well-being of adolescent girls.

5.1 Implementing a Unifying Framework to Compare Different Policies

As discussed in Box 1 of Section 4 of this report, Hendren and Sprung-Keyser (2020) have developed a unifying framework to compare the (relative) effectiveness of different policies and interventions. Their framework relies on understanding (typically) the long-term impacts of policies as well as knowing the cost of implementing policies. However, evidence on both of these dimensions is lacking, especially for policies targeting adolescents in developing countries. We therefore propose the following two research avenues.

5.1.1. LONG-TERM IMPACTS AND SHORT-TERM SURROGATE INDICES

One of the shortcomings of the literature on interventions for adolescents in developing countries is that few of them have long-term evaluations. Medium-term evaluations have shown that short-term improvements in important domains may not translate to improved lives in the longer run. Policymakers and program designers need short-term outcome indicators that can serve as reliable surrogates for the longer-term outcome of interest (e.g., empowerment, labor market participation, consumption per capita, etc.). A recent paper by Athey et al. (2019) shows a way to construct these surrogate indices for the long-term outcome of interest using experimental or observational data, so that interventions can be evaluated in the shorter-run to form a good idea about their long-term effectiveness.

For such an approach to be useful for our colleagues and client countries at the World Bank, constructing a “library of surrogate indices” has been proposed. Such a library would be extremely useful, because if, over time, we have estimates of the relationship between a number of short- and medium-term outcomes and the long-term outcome(s) of interest obtained from different settings – from experiments and from observational longitudinal data – then we can collect the components of the surrogate index when evaluating different/competing interventions and compare their expected long-term cost-effectiveness. This is potentially a much more satisfactory way to assess the effectiveness of interventions than focusing on one or two intermediate outcomes. Such

a process of coordinated evaluations would further build the 'library' of knowledge, improving our confidence in predicting the longer-term impacts of interventions during adolescence using short-to-medium-term outcome measures.

5.1.2. REPORTING ON COST AND COST STRUCTURE OF POLICIES AND INTERVENTIONS

The reporting on the cost of policies and the cost structure of policies affecting adolescents is limited. However, knowing the cost and cost structure are vital for comparing the overall effectiveness of different policies and for understanding whether a policy is likely scalable. Fortunately, strides have been made in reporting and comparing costs of economic inclusion policies via the [PEI Quick Costing Tool](#). Expanding this tool to more policies, in particular the policies that affect adolescents, would be extremely beneficial for policymakers to determine the best policies for improving adolescent well-being. Once more costing data is available, we believe it would be highly valuable to categorize interventions targeted to adolescent girls based on their cost-effectiveness in a similar manner to the report from the Global Education Evidence Advisory Panel (2020): "Smart Buys: Cost-effective Approaches to Improve Global Learning Levels".

5.2 Improving Targeting via Machine Learning Methods

In addition to universal programs (e.g., universal free primary school, health care, etc.), governments want to offer policies that are targeted to certain groups of individuals (when budgets are limited, targeting programs can lead to substantial gains in social welfare - Hanna and Olken, 2018). Often, however, it is difficult for governments (especially governments in developing countries) to determine which individuals to target. Better targeting of programs can lead to much larger impacts on the outcomes of interest and is thus an important feature of program design. For example, many CCT programs only generate small (albeit statistically significant) effects on enrollment as many of the recipients are inframarginal. Conversely, Duflo et al. (2021), in the context of Ghana, find substantial gains in enrollment when targeting scholarships to students who gained admission to secondary school but did not immediately enroll. Similarly, Baird et al. (2019) investigate the consequences of offering transfers to girls who are initially out of school vs. those who are in school, finding large increases in educational attainment for the former group only. While these two papers highlight the success of targeting those who are initially out of school, such a strategy cannot be used in the long run given the perverse incentives it will create. Instead, we propose an investigation into whether machine learning techniques can be used to better identify those more likely to drop out of school, or those at higher risk

of teenage pregnancies or child marriages so as to improve efficiency of various programs targeted to adolescent girls.¹⁰ Machine learning methods for improved targeting have been implemented successfully in other settings – for example, there have been recent improvements in poverty mapping methods via the use of big data and machine learning to identify the poorest households which have resulted in better targeting of large government cash transfer programs (Blumenstock et al. 2021, Blumenstock 2021).¹¹ Moreover, Athey et al. (2021) uses an adaptive experiment to identify subgroups that are more strongly affected by improved counseling approaches and price discounts for contraceptives so as to improve targeting of family planning programs to young women.

5.3 Remedial Education as a Tool to get Girls Back into School (and prevent at-risk girls from dropping-out)

It has been shown that getting girls who dropped out of school quickly back into school has many beneficial effects in terms of educational attainment, age of marriage, and age of first birth (Baird et al, 2019). However, getting girls back into school is a difficult task – especially married girls, pregnant girls, or young mothers. Moreover, for some individuals and in some settings, the desire to be both married but also remain in school may be strong (especially in areas where pre-marital sex is taboo such as South Asia); however, the opportunities to do both are limited. While the evidence is limited, we believe one promising avenue to get girls back into school, and prevent at-risk girls (girls identified as lagging behind their peers and/or girls from socially disadvantaged backgrounds) from dropping out is to provide remedial educational services (tailored tutoring services in smaller groups) to them. Lavy, Kott, and Rachkovski (2020) report long-term increases in earnings and intergenerational income mobility for a high school remedial education program in Israel, with the effects primarily accruing to students from poorer families and the program paying for itself within 7-8 years. Snilstveit et al (2016) discuss the varying success of a few of these programs offered to at-risk students, noting the importance of assessing their effectiveness in the medium-long term (as opposed to just the short-term) and the likely importance of the intensity of these services. We believe that investigating how to effectively apply these programs to both at-risk girls in school and girls who have recently dropped out of school is a promising avenue for future research. One interesting proposal in this area might be to repurpose the girls' clubs to help serve this purpose. While it would be critical for governments to

¹⁰ Moreover, machine learning methods are often highly complicated thus making it difficult for households to 'game' the system.

¹¹ However, machine learning methods do not always generate superior predictions. For example, in a study trying to pick winners in a business plan competition, machine learning methods did not offer noticeable improvements in predicting business success over using a few key entrepreneur characteristics (McKenzie and Sansone, forthcoming).

be able to adopt this model and scale it up in an effective manner, perhaps by separating the spaces for different age groups, such programs can be complemented with the life skills training and empowerment interventions that they already aim to deliver.

5.4 Understanding the Relationship Between Teen Fertility and Educational Attainment

While there is convincing evidence that interventions that substantially improve school participation and attainment have knock-on effects on reducing teenage pregnancies, it is not clear that preventing teen pregnancies improves educational attainment. For example, UCTs in Malawi significantly reduced pregnancies among baseline schoolgirls during the two-year intervention but failed to improve schooling outcomes, whereas, in the US, the provision of the oral contraceptive pill to young, unmarried women led to gains in professional education. Meanwhile Psaki et al. (2019) find mixed evidence for the (negative) effect of adolescent childbearing on test scores. Moreover, they argue that there is evidence to suggest negative selection into childbearing with those struggling with school more likely to become pregnant.

However, the studies cited above are either not RCTs or they are not designed to isolate the effect of averted/delayed pregnancies on educational attainment (but are instead designed to evaluate the impact of an intervention on various outcomes for adolescent girls). Thus, the evidence is lacking as to whether preventing unintended pregnancies is a cost-effective way to increase human capital accumulation among adolescent girls and young women. Part of the reason for this lack of evidence is due to the lack of FP and SRH interventions targeted to adolescent girls with robust impact evaluation designs and long-term follow-up. Note, from a technical standpoint, interventions that randomly increase the take-up of contraceptives among adolescent girls are the closest to an instrument to identify the causal impacts of reducing unintended pregnancies on educational attainment and other outcomes of interest.¹²

Given the potential promise of such interventions for cost-effectiveness, their broader effects on maternal mortality and child health, and the lack of experiments studying interventions that target adolescents with long-term follow-ups, there is an opportunity to design and launch some studies to expand the knowledge gap in this area, while at the same time improving the lives of young women. One idea that comes to mind is expanding and altering interventions that deliver behavior change communication (BCC) and cash

¹² For example, the adoption of an implant in the arm for a sexually-active, never-pregnant, 16-year-old girl can be – with some effort – argued to only have an influence on her education through its effect on unintended pregnancies. One can think of clever study designs that equate other potential mediators, such as counseling and information provision, across intervention arms in an attempt to isolate the effect of FP interventions through delayed fertility.

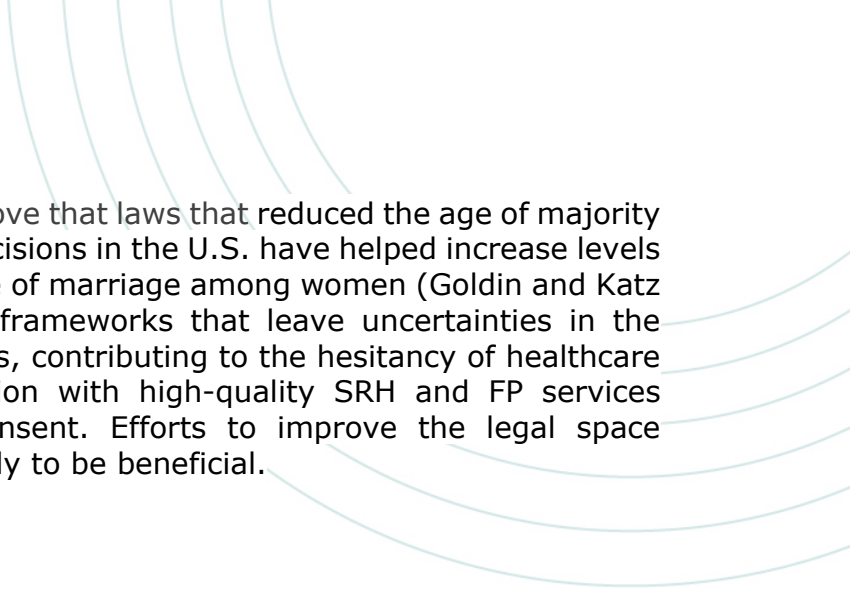
transfers to adolescent girls. Typically, these interventions are targeted to pregnant women and mothers of children under the age of two and have been shown to be effective at improving child nutrition and women's empowerment in settings as diverse as Bangladesh and Nigeria. Innovative policymakers could imagine expanding these programs to adolescent girls and adjusting the BCC curriculum to include adolescent health and nutrition, as well as FP counseling and administration of methods by trained CHEWs. One could then investigate the effect of such *cash plus* programs on human capital accumulation and compare such programs to just cash transfers and FP interventions alone.

5.5 Decomposing the Effects of Multifaceted Programs

In order for interventions to be effective, often policymakers need to intervene on several different dimensions. For example, the literature suggests that CCTs alone may not be enough to increase learning (despite increasing enrollment) and that supply-side interventions to improve school quality and capacity may also be needed. Realizing this, many of the interventions considered in this report are multifaceted and intervene on a number of different margins. While several of these interventions disentangle the effectiveness of various treatment arms (e.g., Buchmann et al. 2018, Baird et al. 2016, Ashraf et al. 2020 to name a few), many do not. However, understanding whether all components of a multifaceted intervention are effective is useful for both minimizing costs and enhancing scalability of programs. Of course, it is expensive to run experiments with many different treatment arms and thus one needs to trade-off the gain in increased knowledge with running a more complicated, involved experiment. Formalizing and analyzing this trade-off is typically not done, but we believe it is an important feature of experimental design. Interestingly, Hendren and Sprung-Keyser (2020) note that their Marginal Value of Public Funds framework facilitates a straightforward method to quantify the value of future research that reduces the statistical uncertainty of current causal estimates. Thus, we conjecture that their framework can be adapted to help analyze this trade-off and guide the optimal design of experiments. We believe this would be a beneficial area for future research.

5.6 Interventions for married adolescents and clarifying the reproductive rights of adolescents.

While many interventions focus on prevention of early marriage and teenage pregnancies, it is important to notice that many adolescents are married and mothers of young children (Naudeau et al. 2015). For some people, this might well be the optimal outcome, even though their circumstances in marriage and motherhood can be improved with appropriate interventions. However, little is known about how to design such 'harm minimization' interventions for adolescent mothers and families in a feasible and cost-effective manner. There are likely to be some tradeoffs with prevention efforts and assessing such tradeoffs is important for intervention design.



Furthermore, we have argued above that laws that reduced the age of majority and extended “mature minor” decisions in the U.S. have helped increase levels of professional education and age of marriage among women (Goldin and Katz 2002). Many LMICs have legal frameworks that leave uncertainties in the reproductive rights of adolescents, contributing to the hesitancy of healthcare providers to serve this population with high-quality SRH and FP services without parental or spousal consent. Efforts to improve the legal space surrounding these issues are likely to be beneficial.

6. Concluding Discussion

We have conducted a narrative review of the literature on interventions that might improve educational attainment and delay marriages and pregnancies among adolescent girls in developing countries. We find that transfer programs, cash or in-kind (including scholarship programs), have strong evidence of effectiveness behind them on **increasing enrollment and attendance** – although design details are important. Providing information on returns to education, providing information on and access to desirable job opportunities for women, construction of schools, and increasing the length of school days and mandatory schooling periods can also be effective in improving educational attainment.

For **delaying marriages**, no category of interventions is clearly proven to be effective. Again, we find promise in transfer programs but such programs need to be carefully designed for the local context. Policies that increase the opportunity cost of marriage, such as desirable jobs for women, are promising, while the evidence is mixed for life skills and mentoring interventions and law changes that increase the age of marriage. There is a yawning evidence gap on whether programs that focus on SRH services, FP counseling, and subsidized contraception targeted to adolescent girls and young women would delay marriages, while at the same time, improve outcomes for adolescents who are already married. The set of interventions that are promising for **delaying pregnancies** is similar to that for delaying marriages: there is no doubt that increased school attainment will have an impact on both of these outcomes, but such gains in education need to be large to have meaningful knock-on effects at the population level. This, in turn, points to the importance of effective targeting of policies to adolescents, many of which treat inframarginal beneficiaries: successfully identifying adolescents at risk of dropping out of school, getting married as a child, and starting childbearing too early is one of the main challenges that is facing researchers interested in human capital accumulation in LMICs.

We propose that future studies should aim to measure short-term outcomes that can form good surrogates for long-term welfare gains and collect detailed cost information (including fiscal externalities of scaled-up policies). In terms of interventions, there is a dearth of interventions that focus on FP and SRH interventions that are targeted specifically to adolescents of different age groups and marital status. Such interventions may be as cost-effective (if not more than) as transfer programs – not just for delaying marriages and pregnancies but also for increasing educational attainment. Studies evaluating such interventions should take a long-term view of impact evaluation (following adolescents into young adulthood, marriage, and labor market) and consider benchmarking them against (and combining with) cost-equivalent transfer policies.

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Appendix A: Review of the Literature

In this appendix, we discuss in more detail the various interventions that have either intended to or have resulted in increased educational attainment, reduced or delayed fertility, and/or delayed marriage for adolescent girls.¹³ We separate these interventions into supply-side and demand-side interventions. However, several interventions will be considered both on the supply- and the demand-side (and will fall into many sub-categories within each side) due to the multifaceted nature of many of the interventions considered in our review.

A.1. Supply Side

A.1.1. IMPROVING QUALITY OF SCHOOLS

There are many interventions that seek to improve the quality of schools. However, because quality of schooling is inherently a multidimensional object, these interventions take many different forms. Here we will summarize interventions that improve quality within schools as opposed to the construction of new schools and transport to and from schools, which are addressed in the next subsection. Moreover, we postpone the discussion of school feeding programs until section 3.2.1. Snilstveit et al. (2016) provide an excellent global review of learning interventions, and some of their summaries will be discussed here. Evans and Acosta (2020b) provide an updated review for Africa, and Evans and Yuan (2021) investigate the most and least successful learning and access interventions for girls globally. Notably, interventions to improve the quality of schooling typically focus on educational outcomes (learning, attendance, and enrollment) and thus, the effects that these interventions have on fertility and marriage are unknown. Moreover, very few studies focus on outcomes for middle- to late- adolescent girls as many of these interventions take place during primary school.

Findings from Snilstveit et al. (2016) suggest that successful educational interventions typically either improve attendance or learning, but not both. They suggest that structured pedagogical interventions (interventions that typically introduce new content and instructional approaches by developing structured lesson content and providing teachers with training in delivering such material, often accompanied with material provision) have the most consistent, positive effects on learning but limited effects on attendance.¹⁴ Similarly, Evans and Acosta (2020b) suggest that multifaceted interventions

¹³ For some categories of interventions, there will be few studies that focus (or include) adolescent girls. We will still discuss these interventions if we believe the results may carry over to adolescent girls; however, we will note that the application to adolescent girls is limited (or missing).

¹⁴ However, Snilstveit also note substantial heterogeneity in effects suggesting intervention design, implementation, and context can play an important role in determining intervention effectiveness.

that involve teacher training, semi-scripted lessons, learning materials, and mother tongue instruction can lead to substantial learning gains in Africa; likewise, Evans and Yuan (2021) find that the best interventions to improve girls' learning typically involved structured pedagogy and interventions that helped teachers to teach at the right level. Moreover, they argue that these interventions do not need to be targeted just to girls in schools to be effective (but rather, can be gender neutral).

Snilstveit et al. (2016) also suggest that remedial education programs (tailored tutoring programs to under-performing students from poor families) may be a promising avenue for (potentially large) improvements in learning although stress that more evidence is needed. They find limited benefits of computer assisted learning interventions or provision of classroom items on learning (although note that many successful learning interventions include material provision so it may be that material provisions are successful at improving learning when accompanied with other interventions). Interventions that improve incentives for teachers have limited effects on student attendance and enrollment and mixed effects on learning. They suggest hiring additional teachers may have beneficial effects on student performance, although such interventions may be met with resistance from existing teachers if interventions create existing job security concerns.

Finally, there exists evidence to suggest that interventions that create more girl-friendly environments in schools (e.g., girl-friendly infrastructure, gender-sensitivity training, rules that accommodate religious practices in conservative areas) can improve educational outcomes. Kazianga et al. (2013) find that a "girl-friendly" primary school expansion program led to large gains in girls' educational attainment and learning in Burkina Faso. Notably, this intervention included the provision of separate latrines for girls and sought to place more female teachers in schools with gender-sensitivity training. While we cannot separate out the effects of school construction from "girl-friendly" school improvements, this is at least suggestive that girl-friendly improvements in schools may lead to gains in attendance and learning. Similarly, Meyersson (2014) finds that Islamic political control in some municipalities in Turkey in the early 1990s (just a few years before the basic education reforms, discussed below in Section 3.1.7, were introduced in 1997) led to an increase of three percentage points (a 20% relative increase) in high school completion among females aged 15-20. The author argues that the effect is through the adoption of pragmatic policies that relaxed the constraints on the 'poor and pious,' such as a ban on headscarves, mixed classes, and a strongly secular curriculum. There is also some suggestive effect of a small reduction in teen marriages in

the longer run (17 years after the election used for the regression discontinuity design).

A.1.2. CONSTRUCTION OF SCHOOLS

A common policy to improve access to schools has been to construct more schools, thereby reducing the distance to and cost of attending school. Well-identified studies on school construction programs have found positive effects of such programs on educational attainment and, in addition, some have found such programs to reduce and/or delay fertility. For example, in the context of Indonesia, Akresh et al. (2021) find that men and women exposed to a large school construction program in the 1970s had higher educational attainment, with these benefits passed onto the next generation (with larger impacts for daughters). They do not find effects of this program on age at first marriage but do find that women exposed to the program had fewer children on average.¹⁵ Ashraf et al. (2020a) examine school construction programs in Indonesia and Zambia and find positive effects of school construction on female education only in ethnic groups that practice *bride price* but not in other groups (see *Box 1* for more on the interaction of cultural factors and social norms with economic interventions). Koppensteiner and Matheson (2020) found that the expansion of secondary education in Brazil between 1997 and 2009 led to both gains in educational attainment and delayed fertility. Moreover, in the context of Nigeria, Osili and Long (2008) find that the universal primary school program in the 1970s, which increased the number of primary schools along with making primary school tuition free, had a substantial impact on female educational attainment and a reduction in early fertility. Burde and Linden (2013) find that a village-based primary school program in Afghanistan led to very large gains in girls school enrollment and improvement in test scores. Similarly, Kazianga et al. (2013), discussed above, find that a 'girl-friendly' primary school expansion program led to large gains in girls' educational attainment and learning in Burkina Faso. Consistent with these studies, Glewwe and Muralidharan (2016), in their review of interventions aimed at improving education outcomes in developing countries, find that increasing primary school construction consistently has positive effects on access to school and learning outcomes, with the effects largest for children without a school in their village or neighborhood.

An alternative to constructing more schools may be to improve the mode of transportation to school. Improving transportation can reduce the time taken to travel to and from school and can improve safety in getting to and from

¹⁵ An earlier paper on this intervention by Duflo (2001) found effects of increased attainment for boys born between 1950-72.

school. Muralidharan and Prakash (2017) find that providing girls with a bike to get to secondary school in the Indian state of Bihar led to large gains in girls' secondary school enrollment and completion. Meanwhile, highlighting the importance of safety in getting to school, Borker (2018) find that women at the University of Delhi are willing to sacrifice the quality of their educational attainment in order to increase the safety of their route to school.

A.1.3. JOB OPPORTUNITIES AND INFORMATION ON JOB OPPORTUNITIES

The evidence on providing jobs opportunities (or information about the existence of job opportunities) for females, while limited, finds positive and significant effects on several outcomes for adolescent females. Jensen (2012), in the setting of rural India, found that informing adolescent women about job opportunities in the business outsourcing processing industry led to a reduction in marriage and childbearing, an increase in working outside the home for money, an increase in schooling and postschool training, and an increase in both health and education investment in younger girls. Similarly, Heath and Mobarak (2015) find that introduction of the ready-made garment sector in Bangladesh reduces early marriage and childbearing (for girls aged 12-18 years) and increases educational attainment. They suggest the increased demand for skills in factories that offer job opportunities for women are likely responsible for the observed educational gains, while staying in school and entering the workforce are responsible for the reductions in early marriage and childbearing.

A.1.4. VOCATIONAL TRAINING

A large number of youth vocational skills training programs have been implemented – particularly in Latin American and the Caribbean. Betcherman et al. (2007) reviews the literature on these interventions, concluding that while many studies find positive impacts on labor market outcomes, for more than half of the studies considered, the programs do not pay for themselves. They also note, however, that the quality of evidence for a number of these studies is low. Attanasio et al. (2008) investigate the impact of a youth training program in Colombia, which involved three months of in-classroom training followed by three months of on-the-job training to individuals aged 18-25 with low-socioeconomic status, finding positive and statistically significant effects on employment and earnings (and stronger effects for women compared to men). They do not investigate the impacts of training on fertility or marriage. Card et al. (2011) investigate the impacts of a job training program in the Dominican Republic for low income youths (aged 18-29), finding no effects on

employment but evidence of modest impacts on earnings.¹⁶ Adoho et al. (2014) investigate the impacts of a six-month technical and life skills training intervention, with a focus on skills with high market demand, followed by six months of follow-up support to enter wage employment or start a business for young women (aged 16-27) not in school in Liberia. They find significant increases in their employment and earnings, although find no conclusive impacts on fertility (there is no evidence that the program reduced fertility, but potential evidence of delayed pregnancy while in the program). Chakravarty et al. (2016) investigate the impacts of a technical and life skills training program (AGEI) for adolescent females (aged 16-24) in Nepal, finding significant positive impacts on earnings and employment for young women although no impacts on pregnancy or actual fertility. Chakravarty, Haddock, and Botea (2015) conclude that the evidence on the effects of skills training on early marriage and pregnancy is mixed and still too limited to draw conclusions. They argue that the substantial heterogeneity of what constitutes a skills intervention contributes to the uncertainty, while noting that the strongest evidence is for community-based multifaceted programs using financial incentives, provision of information, and attempts to change social norms.

A.1.5. LIFE-SKILLS TRAINING, MENTORING, AND EMPOWERMENT PROGRAMS

Life skills, or 'soft skills,' are "...a comprehensive set of universal cognitive and noncognitive skills and abilities, connecting behavior, attitudes, and knowledge" (International Youth Foundation 2014). Life skills, including workplace readiness, emotional regulation, and interpersonal skills, are strongly correlated with labor market outcomes (Heckman and Kautz 2012). There are many interventions that seek to deliver life-skills training to girls. These interventions also often seek to mentor and empower girls, raise their aspirations, as well as improve social norms and attitudes regarding gender equality. Naturally, these interventions are multifaceted in nature and will often overlap with other categories of interventions considered in this review (for example, these interventions can sometimes be accompanied by cash or in-kind transfers, or involve skills training for income-generating activities and/or sexual and reproductive health training).¹⁷ We categorize these interventions into two groups: girls' clubs and other life-skill interventions.

Girls' Clubs: An increasingly popular model for the delivery of life skills involves groups of girls led by female mentors, who meet regularly over several weeks

¹⁶ Ibarraran et al. 2014 echo these findings on earnings and report a decrease in pregnancies among females, aged 16-19

¹⁷ Moreover, it is not obvious whether policies that seek to improve social norms, aspirations and/or empowerment fall into supply- or demand-side policies. However, we decided to include these programs in supply-side given that a substantial focus of these interventions is to provide girls with life-skills training and mentoring.

or months. These groups serve two critical functions: First, they offer 'safe spaces,' in which girls are organized and can be reached with a variety of interventions and educational topics. Second, they build social assets, including friendships, trusting relationships, and self-esteem, which can have a positive influence on girls' livelihoods and health (Chakravarty et al 2015). We refer to these interventions as 'girls' clubs.' Given the multifaceted nature of these interventions, it is difficult to disentangle the effects of various components on our outcomes of interest. Ultimately, however, the effect that these clubs have on schooling, skills accumulation, pregnancy, and marriage are mixed. While some studies show very promising results on a variety of outcomes, the ability to replicate and scale these programs in different settings appears difficult.

Bandiera et al. (2020) study the ELA program in Uganda, which provides adolescent girls with life- and hard-skill training. They find significant increases in the likelihood that treated girls engage in income-generating activities, no reduction in school enrollment, and significant reductions in marriage/cohabitation and teen pregnancy. Bandiera et al. (2019) also consider the ELA intervention in Sierra Leone during the Ebola outbreak. They find that safe spaces provided by the program protected girls against some of the adverse outcomes resulting from the Ebola shock; in particular, program beneficiaries in areas affected by Ebola were less likely to become pregnant and drop out of school. They suggest that this is a result of safe spaces reducing the amount of time girls spent with men during the crisis. However, the effects of these clubs were mixed in areas not affected by Ebola. Buehren et al. (2017a) consider the ELA intervention in Tanzania, including an additional treatment arm: ELA + microfinance. The authors find no effect of these clubs on the outcomes considered in Bandiera et al. (2020), however, they do find that the presence of microfinance increases participation in the clubs and increases savings. Finally, Buehren et al. (2017b) consider a very similar intervention to the ELA intervention in South Sudan. While they find positive effects of participation in income-generating activities for girls in non-conflict areas, they also find that marriage and pregnancy increased for treated girls those areas. Moreover, as in the Sierra Leone example discussed above, they find evidence to suggest that treated girls in areas affected by the conflict were less likely to drop out of school.

Moving away from the ELA program, Austrian et al. (2020) investigate the effects of the Adolescent Girls Empowerment program (AGEP) in Zambia, where girls met weekly with female mentors to receive curricula-guided sessions on sexual and reproductive health, HIV, life skills and financial education. Additional treatment arms received health vouchers and access to

an adolescent-friendly savings accounts. The intervention had modest, positive impacts on sexual and reproductive health knowledge and reduced the likelihood of engaging in transactional sex after two and four years. There was no effect of AGEF on schooling or fertility outcomes, nor on norms regarding gender equity, acceptability of intimate partner violence, or HIV knowledge.

Amin et al. (2016) explore the impacts of the BALIKA program in Bangladesh, which offered girls aged 12-18 educational support and skill building programs (tutoring in mathematics and English for in-school girls, computing and financial training for out-of-school girls, livelihood training, and gender-rights awareness training) in girl-only BALIKA centers (located in primary schools but offered during after-hours). They find that, after 18 months, girls in BALIKA communities were significantly less likely to be married as children (between 23%-31% less likely) and significantly more likely to be attending school with improved math scores. Buchmann et al. (2018) find that the empowerment arm of their intervention in Bangladesh (which included safe-spaces for girls to meet, socialize and receive educational support, life skill training, and, in some areas, financial literacy training and encouragement to pursue income-generating activities) increased the probability of adolescent girls being in school, had positive effects on income-generating activities, but had no effect on teenage marriage or childbearing. Moreover, they find that a transfer in-kind (conditional on remaining unmarried) had larger, positive effects on schooling, reduced teenage marriage and childbearing. Interestingly, they find no difference in effect sizes between the transfer-in-kind arm and the transfer-in-kind plus empowerment arm (on marriage, enrollment, or teen pregnancy), suggesting the effects from the empowerment intervention are crowded out by the transfer-in-kind.

Other life skill training, mentoring, and empowerment programs: A number of interventions also seek to provide girls with life-skills but are not delivered through girls' clubs. These interventions either take place in the classroom or in other spaces in the community that are only available to girls during the training sessions. We now review these papers.

Pande et al. (2006) investigate the effects of a life-skills training intervention where unmarried adolescent girls in Maharashtra, India (aged 12-18, targeted especially to girls who were out-of-school or working) would attend one-hour sessions every weekday for a year. They find significant reductions in child marriages with median age of marriage rising from 16 to 17 years of age. Edmonds et al. (2021) investigate the effect of a life-skills training program conducted during two class periods over the span of a month to girls in the 6th and 7th grade in Rajasthan, India. They find an improvement in girls' non-

cognitive skills and a substantial reduction in school drop-out rates. However, the authors find no significant impacts on girls' cognitive skills, time allocated to academic work, or the probability of marriage. Meanwhile, Chioda and Gertler (working paper forthcoming) investigate the effect of *Educate! Experience Program*, a leadership and entrepreneurship-skills training program implemented during the last two years of secondary school in Uganda. While the results are still to be published, in a summary piece, they state that they find significant improvements in soft skills, limited impact on hard skills, and significant increases in high-school completion and tertiary enrollment – especially for girls. Moreover, they find that program graduates reported having fewer sexual partners, being less sexually active, and waiting longer to start a family than non-graduates. Dhar et al. (2021) investigate the effect of a school-based program in Haryana, India for seventh to tenth graders, which involved classroom discussions about gender equality during a 45-minute session held every three weeks for two and a half school years. They find that the intervention made gender attitudes more progressive (even in the medium run) but had no impacts on girls' educational or professional aspirations (however, these aspirations were already relatively high to begin with) and only marginally significant effects on girls' education outcomes. However, self-reported behavior became more aligned with progressive gender norms, particularly among boys, which lasted two years after the program had ended and could have effects in the longer run on young men's preferences for their wives' education, labor force participation, utilization of SRH services, and empowerment.

Ashraf et al. (2020b) investigate a two-week negotiation training targeted to eight-grade schoolgirls in Lusaka, Zambia and find that it led to increased enrollment and human capital accumulation (even a year after the training) but had no effect on teenage pregnancy. Interestingly, they also have a treatment arm that simply offered a safe-space to girls, in which to meet and socialize (for the same amount of time as the negotiation training), so they can isolate the effect of negotiation training over and above safe spaces. They find that providing girls with a safe space had positive but insignificant effects on enrollment, human capital accumulation, and pregnancy thus suggesting that the effects of the negotiation training treatment are due to the skills learnt in these sessions as opposed to providing these girls with a safe space to meet. Özler et al. (2020) investigate the effects of *Girl Empower*, a mentoring intervention offered to young adolescent girls (13-14 years of age) in Liberia. The girls met weekly with a trained female mentor for 32 weeks in a community designated safe-space. In a separate treatment arm, caregivers of the girls were offered small incentives for the girls' participation in the program (approximately \$1.25 per weekly session). The program reduced the likelihood

of ever being married, reduced the number of sexual partners, and increased safe sex practices (but did not reduce the number of pregnancies). Stronger effects were seen for mentoring plus cash as opposed to just mentoring. No effects were seen on schooling.

A.1.6. OTHER INTERVENTIONS THAT SEEK TO IMPROVE SOCIAL NORMS, ASPIRATIONS AND EMPOWERMENT

As mentioned above, many of the life-skill training interventions discussed in Section A.1.5 seek to empower girls, raise their aspirations, and change social norms around gender equality. As discussed in that section, the effects those programs have on educational attainment, teenage marriage, and teenage pregnancy are mixed. There are additional interventions that policymakers could consider to improve empowerment, aspirations and social norms. Two classes considered here are edutainment interventions and female role-models.

Edutainment: Edutainment consists of media programs, usually radio, television or film, that aim to change attitudes and behaviors by getting the viewer immersed into an entertaining narrative where the educational messages are presented as an integral part of a bigger story (Banerjee et al, 2019). There is limited evidence on the effect of edutainment on adolescent girls' schooling, age of marriage or age at first pregnancy. However, there is promising evidence that such programs are capable of changing behaviors and attitudes, and, moreover, there is evidence that non-educational television shows that were not geared towards being educational are also capable of changing behaviors and attitudes. Thus, we conjecture that edutainment interventions geared towards increasing educational attainment and/or delaying marriage or pregnancy are promising despite the lack of direct evidence. Banerjee et al (2019) investigate the effect of a popular show, MTV Shuga, in Nigeria on attitudes and behaviors relating to HIV and risky sexual behavior. They find that treated individuals' knowledge about HIV and attitudes towards HIV+ individuals improved substantially, and they find that the reported incidence of concurrent sexual partners significantly decreased and the likelihood of testing positive for Chlamydia also fall. However, they did not find an increase in condom usage (and did not investigate use of other contraceptive methods or pregnancy) so it is unclear if we can speculate whether such a show would have reduced unintended pregnancies (although that was not the focus of the show or the study). La Ferrara et al. (2012) investigate the impact of soap operas in Brazil on fertility decisions finding that exposure to soap operas leads to a significant decline in fertility – although this decline in fertility is due to a change in childbearing stopping behavior as opposed to changes in age at first birth. Jensen and Oster (2009) investigate the effect that the introduction of cable television in rural India had on attitudes towards and behaviors of women. They find significant decreases in the

reported acceptability of domestic violence toward women and son preference, as well as increases in women's autonomy and decreases in fertility. They also find suggestive evidence that exposure to cable increases school enrollment for young children.

Role Models: A couple of papers investigate the effect that female role models have on girls' education, aspirations, and marriage outcomes. Beaman et al. (2012) show that reserving positions for women on village councils in India increased girls' aspirations and educational attainment – with no effects on labor market outcomes for young women indicating that the effects are likely due to role models. Similarly, Castilla (2018) finds that reserved seats for women in local governments in India significantly reduce the likelihood of child marriage.

A.1.7. PROVISION OF SEXUAL AND REPRODUCTIVE HEALTH SERVICES

In the U.S., the oral contraceptive pill spread quickly among married women after its approval by the Food and Drug Administration. However, it did not diffuse among young, single women until after state law changes reduced the age of majority and extended “mature minor” decisions (Goldin and Katz 2002), which helped increase levels of professional education and age of marriage among women. Later, Myers (2017) argued that it was liberalized access to abortion that was primarily responsible for the delays in marriage and motherhood in the 1960s and 1970s.¹⁸ Increased age at first marriage can improve the quality of marriage matches and reduce the likelihood of divorce, increase women's decision-making power in the household, reduce their chances of experiencing domestic violence, and improve health care practices among pregnant women (Goldin and Katz 2002; Jensen and Thornton 2003; Field and Ambrus 2008).

Although low- and middle-income countries have increasingly recognized adolescent fertility as a major concern, sexual and reproductive health education is not universally available, and contraceptive use in these countries is low, despite evidence that access to contraception is key in reducing adolescent fertility (NASEM 2021). A multitude of barriers (such as supply-side

¹⁸ While we do not discuss the issue of abortion policy in detail in this review, we believe that providing access to safe and legal abortions (and appropriate post-abortion care) to be critical for reducing fertility and improving the health of adolescent girls and young women. For example, Clarke and Mühlrad (2021) find that legalization of abortion in Mexico brought about a sharp reduction in fertility, hemorrhage in early pregnancy, and abortion-related morbidity. Brooks et al. (2019) find that The Mexico City Policy of the U.S., which prohibits U.S. foreign assistance to any organization that performs or provides counseling on abortions (these organizations often provide modern contraceptives too), *increased* abortion prevalence, reduced modern contraceptive use, and increased pregnancies in the sub-Saharan African countries most affected by the policy. However, one should be careful about potential unintended effects of sex-selective abortions in settings where social norms favor having a son (Anukriti et al. 2021a). In these settings, it will be integral to complement safe and legal abortion policies with policies that aim to improve gender-related norms and increase investment opportunities in girls.

problems that affect availability of products and high-quality services, misinformation, worries about side effects, opposition of partners, religious beliefs, etc.) to the uptake of modern contraceptives exist for women in LMICs but these are magnified for adolescents, who lack the autonomy and financial resources to make their own decisions, and often face provider bias. A legal framework for the reproductive rights of adolescents is often lacking in many settings, causing healthcare providers to be risk averse against backlash from parents, male partners, religious leaders, and/or law enforcement. The socially, culturally, and often times even politically sensitive nature of interventions to increase the uptake of family planning services among adolescent females and young women, especially unmarried or nulliparous women, implies that many policymakers avoid designing interventions and programs that go beyond the provision of basic information to adolescents – often through girls’ clubs, mothers’ groups, or classroom-based sessions. While disinhibition towards risky behaviors is often the cited or implicit reasoning behind reluctance, there is no evidence that SRH education programs targeted to adolescents cause such unintended consequences (Gruneit et al. 1997).

Gage et al. (2020) study the MOMENTUM program in Kinshasa, DRC, which utilizes nursing students to make prenatal and postnatal home visits to first-time mothers aged 15-24, delivering community-based and integrated family planning, maternal, and newborn health services (information and referrals), along with providing support groups for them and their male partners. They find similar increases in the use of modern contraceptives in program areas at two, six, and 12 months postpartum among teenagers (15-19) and adults (20-24) but baseline imbalance between the matched treatment and control groups means that the reported impacts may be overestimated.

Athey et al. (2021) study the effect of a tablet-based job-support tool that they developed for nurse counselors to help them provide FP counseling to women. The tool guides the provider and the client through a structured discussion, which elicits the client’s past experiences with contraception, their fertility goals, preferences towards side effects, desires to exclude or favor specific modern methods, and their medical eligibility – i.e., the elements necessary to make an informed choice for a contraceptive method to adopt. The authors conduct an experiment within this platform after the elicitation of these data, by randomly assigning some clients to the *status quo* counseling method, which asks the client which method they would like to discuss first vs. an alternative counseling approach (*ranked recommendation*), in which the nurse counselor suggests to the client to start by discussing the method that is deemed most suitable for her by the job-support tool based on their discussion. They find that only 7.5% of the clients who receive *status quo* counseling adopt a long-acting reversible contraceptive (LARC), while this share jumps to 37.3% among those who receive the *ranked recommendation* style of counseling, making the odds of LARC adoption more than 7 times

higher under the improved counseling regime. The *ranked recommendation* arm also makes the clients price insensitive, indicating that it increases their willingness to pay above the regular price of LARCs – making it more cost-effective than offering discounts for FP services.

There is a growing literature tackling the issues of under-provision of more effective modern contraceptive methods from both developed and developing countries. In the U.S., counseling interventions, which included peer counseling, a “waiting room app” for contraceptive counseling, and motivational interviewing techniques allowing the client to articulate goals and discuss plans, showed promise in leading to higher levels of knowledge of contraceptive effectiveness, increased interest in adopting the implant, and higher rates of LARC uptake (Gilliam et al 2014; Wilson 2014; Tomlin et al. 2016). Use of tablet-based decision-support tools for family planning and provision of information to young people via SMS have been tried in various countries, such as Tanzania, but the evaluations of these tools are generally to assess feasibility and acceptability, rather than larger causal impact evaluations to gauge effects on take-up and fertility (Agarwal 2016; Braun et al. 2013, 2016; Vahdat et al. 2013).¹⁹

Cherewick (2017) summarizes the international evidence on interventions promoting the adoption of LARCs. Among HIV-discordant married adults who received counseling in Rwanda and Zambia, increases in age and current use of injectable contraception (Depo-Provera) decreased the likelihood of LARC uptake – indicating the importance of counseling women at young ages and avoiding provider bias in recommending long-acting methods to adolescent, unmarried, and nulliparous females. Various training, task shifting activities that target health providers at facilities and community-health extension workers (CHEWs) improved performance among staff, who were happy to have additional skills. Integrating FP service delivery into post-abortion and postpartum settings is also important.

A.1.8. LAWS

Raising Age of Marriage Laws: Investigating a law change in Ethiopia, where the age of marriage for girls was raised from 15 to 18 but with an exception for marriage at age 16 with parental consent, McGavock (2021) finds modest effects of the law (10% reduction overall, about 15% in areas with the highest

¹⁹ Examples of similar smartphone-based job-support tools exist elsewhere. For example, in Nigeria, an initiative by the International Committee of the Red Cross, Swiss Tropical and Public Health Institute, and the Adamawa State Primary Health Care Agency developed a smartphone-based tool, called the Algorithm for the Management of Childhood Illnesses is an electronic upgraded version of the more commonly used IMCI (Integrated Management of Childhood Illnesses), which improves both preventive efforts and curative care for children under 5. <https://www.icrc.org/en/document/nigeria-smartphone-technology-help-tackle-child-mortality-conflict-areas>

prevalence of child marriage) on marriages before 16, shifting them to ages 16-17. There are no effects on schooling or employment, with mixed evidence on fertility and other health outcomes.²⁰ Bellés-Obrero and Lombardi (2020) find that a Federal law increasing the minimum age of marriage to 18 years in Mexico had substantial effects on reducing *formal* marriage before 18, with no effects on schooling or fertility. The authors provide evidence that an offsetting increase in *informal unions* among girls below 18 years of age is the reason behind the lack of impacts on school participation and childbearing. This suggests that the effectiveness of marriage laws on adolescent wellbeing may be limited in the presence of strong social norms toward early marriage/cohabitation (Acemoglu and Jackson, 2017) – although one must also consider the possibility that law changes can influence norms (Adams and Andrew 2019, Benabou and Tirole 2011).²¹ Consistent with this view, Das Gupta et al. (2008) argue that, in addition to law enforcement mechanisms, implementing laws and policies around child marriage will require a concerted effort to work with communities to change attitudes and norms.

Mandatory Schooling Laws and Length of School days: Berthelon and Kruger (2011) find that a Chilean school reform that lengthened the school day from half- to full-day shifts led to significant reductions in the probability that adolescent girls become mothers. Moreover, in two developed country settings, Black et al. (2008) find that increased compulsory schooling laws in the US and Norway both led to a reduction in teenage childbearing. They suggest this effect is driven both by an ‘incarceration effect’ and increased human capital. Erten and Keskin (2019) show that a large basic education reform that took place in Turkey in 1997, increasing the number of mandatory schooling years from five to eight (and was accompanied by large investments in school building, restoration, teacher hiring, transport to schools in rural areas, and free books and meals for low-income students) increased years of schooling by more than one year among women exposed to the reform. The reform also reduced (a) acceptability of domestic violence among mothers of girls exposed to the program (Gulesci et al. 2020); (b) child abuse among rural

²⁰ García-Hombrados (2018), however, finds that raising the legal age of marriage in Ethiopia was effective at reducing child marriages and that the resulting delay in the age of cohabitation decreased infant mortality. Rokicki (2021) studies the same law change but seems to disagree on whether the law allowed exceptions after age 16 with parental consent for ‘serious cause.’ She finds that the law reduced adolescent births, child marriage, and sexual debut by age 18 for exposed cohorts of females aged 15-18. Batyra and Pesando (2021) examine laws in six countries and conclude that they are not effective in curbing child marriages.

²¹ Amirapu et al. (2020) finds that when parents, especially fathers or elders, were informed of the tougher new minimum age laws in Bangladesh, adolescent marriages increased in the short-term. They speculate that this was due to a perceived increase in future enforcement of the law. Their evidence also points to intrahousehold issues, related to divergent preferences and information asymmetries between spouses (and extended family).

women who had experienced abuse themselves as a child (Erten and Keskin 2020); and (c) propensity to enter into a consanguineous marriage among women exposed to the program (Akyol and Mocan 2020).

Removing bans on pregnant girls attending school: A number of countries, especially those in sub-Saharan Africa, ban pregnant girls from attending school. Evans and Acosta (2020a) investigate the effects of these bans on teenage pregnancy in nine African countries by comparing pregnancy rates two years before and after the removal of these bans. Their findings suggest that letting pregnant girls attend school does not increase teenage pregnancy and likely boosts their human capital.

A.2. Demand Side

A.2.1. CASH TRANSFERS

A large body of empirical work explores the effects that cash transfers (both unconditional and conditional on school enrollment or attendance) have on adolescent outcomes. There is strong evidence that such programs have positive effects on school enrollment and attendance (Schultz 2004; Baird et al. 2011; Baird et al. 2013, and many others), with larger effects seen for transfers made conditional on school enrollment relative to unconditional grants (Akresh et al. 2016, Baird et al. 2011, Baird et al. 2013). What is less clear is the extent to which these programs affect learning outcomes. Baird et al. (2011) find positive impacts of CCTs on learning outcomes in Malawi but no impacts of UCTs. Gazeaud and Ricard (2021) find small and seemingly negative effects of a CCT in Morocco on end-of-primary school exam scores suggesting that increases in class size without accompanying increases in supply-side interventions might be to blame. Glewwe and Muralidharan (2016), in their review, find that the effect of CCTs on learning is mixed, while other types of transfer programs (UCTs, labeled cash transfers, financial aid, free uniforms) are either ineffective or they do not report learning outcomes.

Effects of cash transfers on delaying pregnancy and marriage are typically positive, although not uniformly so.²² Baird et al. (2011) find large reductions in teen pregnancies and marriage for schoolgirls receiving a UCT in Malawi but smaller and non-significant effects among those receiving a CCT. They provide evidence to suggest that UCTs outperform CCTs in preventing teen

²² While not an outcome considered in this report, it is important to understand whether cash transfers have any unintended consequences on violence towards women. Fortunately, there does not appear that cash transfers increase IPV; if anything, evidence suggests cash transfers lead to reductions in IPV, or at least have no effect (Hidrobo et al., 2016; Buller et al., 2018; Roy et al., 2019). However, research on this topic is still in its relative infancy, and, thus, it is important that researchers and policymakers continue to investigate and mitigate any unintended consequences of cash transfers on IPV and GBV more generally.

pregnancies and early marriages primarily through their effect on girls who drop out of school during the program – indicating that cash transfers confer protective benefits to out-of-school girls.²³

CCT programs in Bangladesh, Mexico, and Pakistan led to delayed marriage and fertility (Hahn et al., 2018; Araujo and Macours, working paper forthcoming; and Alam et al., 2011).²⁴ On the other hand, Cahyadi et al. (2020) find insignificant effects of the PKH CCT program in Indonesia on delaying marriage or fertility, while Millán et al. (2020) find that the PRAF II CCT program in Honduras led to an increase in teenage pregnancies for girls exposed to a mixture of nutrition and health based conditional cash transfers and educational based conditional cash transfers but find no effect on fertility for older girls exposed to only the education based conditional cash transfers. Potential reasons to explain this increase in pregnancies for this younger group could be that transfers improved nutrition and lowered the age of menarche (as seen in the “late-treatment” vs. “early-treatment” groups in Barham et al, 2018 in Nicaragua; although overall, using non-experimental variation, Barham et al 2018 find that the CCT program in Nicaragua reduced the probability of teen pregnancy and marriage) or that these girls reached their desired level of education faster and made an earlier transitions to the next phase in their life cycle. As for UCT programs, there are only a few studies that report effects on teen pregnancies and child marriages. Handa et al. (2015) find a Kenyan UCT to orphans and vulnerable children led to a significant delay in fertility but not in marriage; Dake et al. (2018) find limited effects of UCTs to ultra-poor in Malawi and Zambia on early marriage and fertility. In summary, cash transfers targeted to adolescent females, conditional on schooling or unconditional, can reduce teen pregnancies and child marriages: UCTs may be more effective in certain contexts, especially in sub-Saharan Africa, while CCTs for schooling may be more appropriate in others but need to cause large shifts in school participation to have meaningful knock-on effects on marriage and fertility (see *Box A1*).

²³ Using the same experiment, Baird et al. 2019 show large and sustained reductions in marriage and pregnancy two years after the end of the CCT intervention among girls who were out of school at baseline – due to the fact that CCTs were very successful in allowing this group to return to school and complete their primary education. We return to this point in Section 5 when we discuss the importance of targeting in interventions.

²⁴ Please note, however, that the Female Secondary Stipend Program in Bangladesh was made conditional on attending secondary school, remaining unmarried, and scoring at least 45% in the annual school exam.

Box A1 *The interaction of economic policies with norms and institutions in determining age at marriage:*

The effect of cash transfers on marriage (and, in turn, fertility and schooling) will likely depend on the system of marriage payments (if any) in that setting. Corno et al. (2020) finds that negative economic shocks increase child marriages in areas of sub-Saharan Africa (SSA), where *bride price* is the norm (payments from groom to bride), while they decrease them in India where *dowry* is prevalent (payment from bride to groom). They conclude that unconditional cash transfers could therefore decrease child marriages in SSA, while possibly having the opposite effect in South Asia. Interestingly, such findings were predicted by Baird et al. (2011) a decade earlier, which stated: "In southern and eastern Africa, where ...decisions regarding sexual behavior and marriage among adolescent girls are influenced by poverty, UCTs may indeed be more effective than schooling CCTs in reducing teenage marriage and pregnancy. In countries like Bangladesh, where dropout and marriage rates among adolescent girls are also high but, unlike Sub-Saharan Africa, dowry payments are made from the bride's family to the groom's, UCTs may have no effect, or perhaps even the opposite effect, on the timing of marriage. In such settings, CCTs for schooling or for staying unmarried may be more effective than UCTs." Relatedly, Corno and Voena (2021) argue that a significant cause of child marriage in Tanzania is adverse income shocks where bride price is customary. Using model-based simulations, they find that CCTs conditional on girls remaining unmarried until age 18 would be as effective as enforceable minimum marriage age laws, while UCTs targeted to poor households would also be effective but at a higher cost per child marriage averted.

Finally, a similar point comes across in Ashraf et al. (2020a), who study the effects of school construction on female educational attainment in two different settings – Indonesia and Zambia. They argue that parents are more likely to invest in the education of their daughters in ethnic groups that practice *bride price*, as it is positively correlated with the bride's education. Consistent with this observation, they find positive effects of school construction on female education only in ethnic groups that practice *bride price* but not in other groups. Elsewhere, in a *dowry* setting, Adams and Andrew (2019) argue that parents in Rajasthan, India put little intrinsic value in their daughter's education and consider age to be negatively correlated with her marriage prospects – leading to a rapid transition into marriage once an adolescent girl drops out of school. Hence, policies that successfully increase school attainment among girls would reduce child marriage. The heterogeneous effects of income shocks and cash transfers on teen marriage and fertility highlight the importance of considering the interaction of (economic) policies with norms and institutions.

A.2.2. IN-KIND TRANSFERS

Transfers to households do not always need to be in the form of cash, but instead can be in-kind. In-kind transfers are defined by Currie and Gahvari (2008) as the "physical provision of a good, targeted subsidy programs in which government pays some fraction of the market cost of the good, and vouchers." Based on this definition, in-kind transfers include (but are not limited to) programs that reduce school fees or provide scholarships to students to, partially or fully, cover school fees or provide them with uniforms

or meals at school for free.²⁵ We now review the effects of some of these programs on adolescent outcomes.

School Fee Reductions and/or Scholarships: The effect of reducing school fees and/or providing scholarships on school enrollment is typically positive, although, to some extent mixed. The effect on learning is also mixed, with positive effects typically found for merit-based scholarships (where we define merit-based transfers to be ones either made conditional on passing an entrance exam and/or conditional on satisfactory future academic performance). The effects on pregnancy and marriage are less studied, but for the few papers that do investigate them, the results are mixed. Osili and Long (2008) find that the universal primary school program in the 1970s, which made primary school tuition free (along with increasing the number of primary schools), had a substantial impact on female educational attainment and a reduction in early fertility. Glewwe and Muralidharan (2016), however, find that interventions that reduce school fees have a mixed track record in South Africa and China with little or no gain in enrollment or learning, while suggesting that merit-based scholarships may be effective in improving enrollment and test scores. Echoing this finding, Barrera-Osorio et al. (2018) find that two scholarship programs in Cambodia – one based on merit and another based on poverty – both led to increases in attainment but only the merit-based one increased cognitive skills.

Another merit-based scholarship intervention is examined in Duflo et al. (2021), which finds large, long-term effects of providing secondary school scholarships to girls in Ghana on educational attainment, cognitive ability, fertility, and ever living with a partner. In part, the success of the intervention is due to successfully identifying the marginal students by only offering scholarships to girls who passed the entry exam but did not initially enroll.²⁶ In this sense, their finding is like that of Baird et al. (2011, 2019) on the large and lasting effects of CCTs for those who were out of school (but not for those enrolled in school) at baseline, and points to the importance of targeting to make CCTs and scholarship programs cost-effective.²⁷ Similarly, Filmer and Schady (2014) look at the medium-term effects of a scholarship program in Cambodia that was targeted to students eligible to attend lower secondary

²⁵ In a simple theoretical model, the effect of reducing school fees should be analogous to a cash transfer of equivalent size made conditional on schooling. However, in reality, the effects of these programs may differ for a variety of reasons including (but not limited to) the fact that CCTs can go beyond school fee reductions and make the cost of schooling negative, conditions on CCTs may not be perfectly enforced, CCTs may differentially affect perceptions on the return to education relative to school fee reductions, CCTs may provide parents with additional information on their child's attendance, and/or the household member(s) who benefits from the monetary gain from CCTs vs. school fee reductions may differ.

²⁶ They estimate that making secondary school free would result in paying for 15 years of secondary school for every additional year of education generated by marginal students.

²⁷ While Duflo et al. (2021) and Baird et al. (2019) highlight the gains from targeting marginal students, targeting students based on whether they are initially enrolled is unfortunately not incentive compatible in the long-term. Developing strategies to target marginal students in incentive compatible ways, we believe, is an important area for future research and is discussed further in Section 5.

school but deemed to be at higher risk of dropping out (via the use of a “dropout-risk” score). Two years after the end of the program, the authors find a substantial effect on school enrollment and grade attainment, the latter of which increased by 0.6 years.²⁸ Thus, these results further highlight the cost-effectiveness of targeting marginal students. However, Filmer and Schady (2014) find no effects on test scores, marriage or teen pregnancy (perhaps indicating that larger effects on enrollment are needed to have meaningful knock-on effects to these other outcomes).

Other School Related In-Kind Transfers: There are other in-kind transfer programs (beyond school fee reductions and scholarship programs) that are conditional on going to school and/or are only valued if children attend school (e.g., school uniform provision, provision of bikes to girls attending secondary school, and school feeding programs). The effects of these programs on enrollment and learning are typically positive, while the effects on fertility and marriage are less understood.

Duflo et al. (2015) study the provision of free school uniforms to 6th graders in Western Kenya (mean age 13) with the promise of another uniform 18 months later if they are still enrolled at the same school. They find small but sustained effects of the program on dropout, grades completed, ever pregnant, and ever married at three-, five-, and seven-year follow-ups, with no effects on STI prevalence. They argue that the monetary value of the subsidy is too small to cause an income effect on these outcomes and point to the price effect as the underlying mechanism. The sustained longer-term effects also rule out ‘incarceration effects’ of education on marriage and pregnancy and are consistent with the effects of CCTs on baseline dropouts in Baird et al. (2019) – in the sense that reductions in dropouts having knock-on effects of teen pregnancies and child marriages. Muralidharan and Prakash (2017) find that providing girls who continued to secondary school with bicycles increases both enrollment and the number of girls showing up and passing a high stakes secondary-school certificate exam but do not investigate the effects on marriage or fertility.

Finally, school-feeding programs have recently been categorized as promising for improving both school participation and learning, but the evidence is mixed. Snilstveit et al. (2016) reviews 16 studies and finds positive but imprecise effects on enrollment, likely because the success of these programs is context-specific and they are more likely to succeed in attracting children to schools and preventing dropouts when malnutrition rates are high and school participation is low. The evidence base on learning and test scores is a little more promising – with two reviews suggesting that school meals can help

²⁸ While this impact on grade attainment may initially seem small, it is worthwhile to note that it is about twice the size of that seen in PROGRESA (Behrman et al. 2011, pp 112-13) despite the scholarship being an order of magnitude smaller than the PROGRESA grants.

improve test scores, albeit modestly (with standardized effect sizes around 0.1-0.2 SD), at least in some settings (Snilstveit et al. 2016; Glewwe and Muralidharan 2016). The evidence base is lacking on the effects of these programs on teen pregnancies and marriages, but the modest effects on enrollment and learning do not provide a basis for substantive knock-on effects on these outcomes.

Box A2 *Does the identity of the transfer recipient matter?*

It is worthwhile briefly discussing whether recipient of the transfer (e.g., parents or child) matters. Baird et al. (2011) find no evidence to suggest differential effects on marriage or pregnancy when giving cash transfers to adolescent girls vs. their parents/guardians in Malawi. Similarly, Berry (2015) finds no difference on average educational outcomes when either a monetary prize is given to parents or a toy is given to children in India when the child achieves a literacy goal. However, heterogeneity in treatment effects suggests children with lower pre-test scores perform better with the child-incentive, while the reverse is true for children with higher pre-test scores. Meanwhile, de Walque and Valente (2018) find that vouchers to children in Mozambique generate larger enrollment and learning effects than equivalent cash transfers to parents. This evidence suggests that transfers to children (which parents cannot appropriate – e.g., in-kind transfers that children value) may have differential effects to monetary transfers to parents, but more research is needed. Akresh et al. (2016) find that giving CCTs to mothers vs. fathers has no differential effect on education outcomes for children aged 7-15.

Box A3 *Transfer Programs Conditioned on Delaying Marriage:*

Most conditional transfer programs targeting children and adolescents (both cash and in-kind) are conditioned on school attendance/enrollment. However, there are a few exceptions, where transfers are conditioned on the marital status of the targeted adolescent girls. For example, Buchmann et al. (2018) offer cooking oil to parents of adolescent girls in Bangladesh conditional on these girls remaining unmarried. They find that these transfers lead to significant reductions in adolescent marriage and pregnancy and increases in school enrollment (with marriage rates converging between treatment and control by age 22). Hahn et al. (2018) find the FSSP program in Bangladesh (which was targeted at adolescent girls who were already in secondary school and conditioned on attendance and test scores, as well as remaining unmarried) led to delayed marriage and fertility. However, Nanda et al. (2016) find that a long-term CCT program in India (ABAD) with the condition that girls remain unmarried until the age of 18 had no effect on girls getting married before age 18. Moreover, they find evidence to suggest the program increased marriage among beneficiaries in girls' 18th year potentially due to many beneficiary households viewing the transfer as a way to cover dowry and other marriage related expenses. Lastly, as mentioned in section 3.1.5, Erulkar and Muthengi (2009) find that the Berhane Hewan program in Ethiopia (which involved transfers of school materials and other in-kind transfers conditional on girls remaining unmarried) led to a reduction in marriage for girls aged 10-14 exposed to the program and an increase in enrollment, but an increase in marriage for girls aged 15-19.²⁹

²⁹ There are also cash transfer programs, in China and India, that are aimed at resolving the fertility-sex ratio tradeoff by providing incentives to parents to have smaller families and a better sex ratio at

The evidence presented above does not strongly support the idea that cash transfers conditioned solely on staying unmarried until a certain age, such as 18, are preferable to other interventions that can be used to target adolescent females to increase their educational attainment, improve their SRH, and empower them as young adults, especially in South Asia. Our reading of the evidence suggests that, at least in South Asia, a combination of interventions to make schools more attractive to adolescent females and their parents would be more effective than CCTs to stay unmarried, which is an awkward policy for a government to put in place. We believe that CCTs for secondary schooling, remedial education support for struggling students to prevent dropouts, programs targeting recent dropouts to quickly return to school, interventions that improve safety of going to school (both safe transport options and demonstrably girl-friendly schools), along with raised (or better enforced) age of marriage laws, would be more effective in reducing child marriages and teen pregnancies, as well as increase human capital accumulation and female empowerment.³⁰ As most girls in school are unmarried, a successful CCT program for secondary schooling would delay marriages. And, for the minority of adolescents who are married, it is important to have programs that encourage completing secondary school (and even continuing on to university) and help the young couples with family planning to delay first pregnancies and space births properly. The package of policies would need to be tailored when applied elsewhere: e.g., UCTs would deserve more serious consideration in sub-Saharan Africa (Corno et al. 2020).

A.2.3. VOUCHERS AND SUBSIDIES FOR FP SERVICES AND MODERN CONTRACEPTIVES

Cost is an important barrier to the adoption of contraceptives, perhaps especially for adolescents, who may not independently have the means to adopt methods that are not free or very cheap. The literature on increasing the uptake of FP services and modern contraceptives by reducing the financial costs primarily concerns women and married/partnered couples, with little evidence on the effectiveness of such interventions on adolescents. Part of the reason for the lack of evidence is the general absence of FP programs targeted to teenagers, especially single and nulliparous ones.

While large changes in prices of contraceptive methods were found to have little impact on contraceptive use in Indonesia during the 1998 financial crisis (McKelvey, Thomas, and Frankenberg 2012)³¹, more recent studies indicate that women, unmarried young women in particular, may be more responsive to contraceptive prices (Lindo and Packham 2017; Rau, Sarzosa, and Urzúa

birth. Studying one such program in Haryana, Anukriti (2018) finds that while the program reduces fertility, it also worsens the sex ratio at birth – due to the presence of high son-preference families unwilling to forgo a son and, hence, a substantial stream of income (approximately half of Haryana’s per capita monthly consumption expenditure) for a period of 20 years.

³⁰ In India, the age of marriage for males, at 21 years, is higher than that for females, which is 18. Given parents strong preference for not having their daughters be married before the age of 18, especially if they are in school, despite the fact that the law is hardly enforced, increasing the age of marriage to 21 for everyone might increase female school attainment and change parental norms surrounding age of marriage (Adams and Andrew 2019).

³¹ This lack of a price effect in Indonesia may be due to relatively strong preferences for smaller families in Indonesia (for example, in 1990, the average family size was 3.33; Bulan Samosir et al, 2018).

2017). In the U.S., adolescents who receive comprehensive counseling and face no cost barriers preferentially select long-acting reversible contraceptive methods (LARCs) and continue to use them long-term (Mestad et al., 2011). In Colorado, U.S., funding provided to Title X clinics on the condition that they stock and provide free LARCs to low-income women not only caused many facilities, which had never offered these methods before, to start providing them for free, but also decreased teen birth rates substantially, with the effect being largest in the poorest counties of the state (Lindo and Packham 2017). In a partially randomized patient preference trial among women arriving at facilities operated by Planned Parenthood in North Carolina, U.S., seeking a short-acting method, 57% chose to be in the preference cohort and 43% agreed to be randomized into receiving a short- or long-acting method. Those agreeing to be randomized received their methods for free while those choosing the preference cohort paid for services as usual. Those choosing the randomized assignment were more likely to cite cost as a reason for not having tried a LARC previously. The same study showed significantly higher continuation rates and lower unintended pregnancies after 12 months among the randomized LARC group than both the randomized short-acting method group and the preference short-acting method cohort (Hubacher et al. 2012, 2015, and 2017). These studies suggest that, at least in the US, many women, including young women, are amenable to adopting LARCS with low discontinuation rates and unintended pregnancy rates but are sensitive to the prices being charged for these services.

A recent study by Athey et al. (2021) confirms these findings from the U.S. in the context of Cameroon: teenagers counseled and offered random discounts at a women's and children's hospital in Yaoundé, Cameroon are not only substantially more likely to adopt a LARC when they are offered for free but they are also significantly more price sensitive than adults. These results, from settings as diverse as Colorado and Yaoundé, indicate that not only do adolescents *not* have an inherent opposition to adopting long-acting methods to delay the onset of fertility and properly space births once they start childbearing but also that they are highly motivated to exercise control of their reproductive health when high-quality services are available and affordable to them.

Shah et al. (2021) study the effect of having FP nurse counselors to visit BRAC ELA clubs in Tanzania four to five times over a 10-month intervention period to offer counseling and free modern contraceptives to adolescent girls. They find that this 'supply' intervention had no effect on any outcome of interest, mainly because there was no effect on the take-up of modern contraceptives, the prevalence of which remained very low after the intervention. These findings are seemingly in contrast with the findings above on the effects of providing high-quality, subsidized FP services to adolescents and young women but they highlight a distinction between intensive- and extensive

margin impacts. Improved counseling and subsidies are highly effective in increasing the adoption of modern contraceptives among adolescent females and young women *seeking* maternal health or FP services at health clinics. The challenge is designing programs that can successfully increase the share of sexually active (or sexually intent) adolescents who seek and receive improved FP counseling and are empowered (financially and otherwise) to adopt effective methods.

Related to this last point, Anukriti et al. (2021b) studies the effects of a 'bring-a friend' FP voucher package that exploits young women's social networks to reduce barriers and to improve access to high-quality FP services. The study aims to evaluate whether enabling a woman to recruit a friend to accompany her to the clinic leads to a greater shift in family planning practices and attitudes than targeting both of those women individually. Preliminary findings from the study suggest that both 'solo' and 'bring-a-friend' vouchers increased visits to a FP clinic and the use of modern contraceptives compared to a control group with no differential effects between the two groups.

Bellows et al. (2016) review voucher programs for FP in LMICs, which includes 16 studies, the majority of which were deemed by the authors to have low-quality designs. They find that vouchers, not surprisingly, generally increase contraceptive use. There were too few studies that reported changes in fertility, contraceptive (dis)continuation, or effects among adolescents.³² Ashraf, Field, and Lee (2014) find, at a large FP clinic in Lusaka, Zambia, that offering vouchers to married women (aged 18-40) alone leads to a higher take-up of injectables and leads to a 3-to-4-month delay in births compared with women who were offered vouchers in the presence of their husbands. However, the former group also reported lower levels of subjective wellbeing – possibly due to the psychosocial costs of using concealable contraceptive methods. Ashraf et al, (2020c), discussed below, found that informing husbands about maternal mortality risks led to reduced pregnancies and happier marriages. Thus, interventions that offer FP services to married women might consider incorporating information interventions for their husbands or partners.

Finally, it should be noted that vouchers play another important role in demand generation for modern contraceptive methods and FP services: while subsidies and reduced prices at facilities are adequate for clients of healthcare facilities, vouchers are also a convenient way to try to attract people counseled outside of healthcare settings (such as home, school, workplace, or in their

³² Cherewick (2017) also finds that vouchers promoted and distributed, sometimes door to door through community-awareness campaigns, in Cambodia, Yemen, and Pakistan increased the take-up of LARCs. It should be noted, however, that causal identification in these studies is weaker than (quasi-) experimental studies – generally relying on before after comparisons without proper counterfactual comparison groups.

community). They introduce a management tool for interpersonal communication interventions at the community level, which gives visibility into the activities of community health (extension) workers and their success. In this way, vouchers help with the implementation fidelity issues of managing at scale this complex and expensive form of demand generation over and above their role in targeting subsidies.

A.2.4. RELAXING INFORMATION CONSTRAINTS

Information on returns to education and academic performance: the evidence of relaxing education information constraints on adolescent outcomes in developing countries is limited – especially for adolescent girls. The most promising results are likely that of Jensen (2012) (discussed above in section 3.1.3), who finds that providing parents and young women in rural India with information on job opportunities in the business process outsourcing industry led to an increase in schooling and postschool training, and an increase in both health and education investment in even younger girls in exposed villages. Similarly, Jensen (2010) and Nguyen (2008) both find positive effects on educational attainment when relaxing information constraints on the return to schooling, however the former investigates this only for boys in the Dominican Republic, while the latter investigates this only for primary school age children in Madagascar.

Providing information on children’s academic performance to parents seems to also have positive effects on enrollment (at least for those children who are performing well). Andrabi et al. (2017) found that by providing households in Pakistan with information on test scores at the child and school level led to an increase in primary school enrollment, an increase in learning, and a reduction in private school fees for low performing private schools. Meanwhile, Dizon-Ross (2019) found that providing parents in Malawi with information about their primary-school-aged child’s academic performance led to an increase in school enrollment for higher-performing children, although a decrease in enrollment for lower-performing ones.

Finally, there is evidence to suggest schooling conditions on cash transfers can provide valuable information to parents and, in turn, increase children’s educational attainment. Benhassine et al. (2015) find that cash transfer programs with an emphasis or condition on school enrollment can lead to an increase in parents’ beliefs about the return to education and, in turn, an increase in enrollment. Moreover, there is evidence from an experiment in Brazil that one of the functions of (and the rationale for) attendance conditions in cash transfer programs is the monitoring they provide to the parents (Bursztyn and Coffman, 2012). Supporting this, de Walque and Valente (2018) find that providing parents weekly information on child attendance is almost as effective as information plus a CCT to the parents.

Most of these studies do not examine effects on child marriage and teen pregnancy, with two exceptions: Jensen (2012) finds very promising reductions in marriage and child bearing, while de Walque and Valente (2018) present null findings on ever married in their sample (grades 6-7 in Mozambique, although only 3% of the control group is married at follow-up). In summary, the effects of providing information to children and/or parents seem promising to deliver decent one-off gains in schooling outcomes. Until recently, the small number of studies conducted for this demographic made the evidence tentative (Snilstveit et al. 2016; Glewwe and Muralidharan 2016; Evans and Acosta 2020b), but recent studies cited above have increased our confidence in the effects of providing information on returns to schooling, job opportunities, student and school performance, as well as school attendance monitoring. Effects on fertility and marriage remain understudied.

Finally, while their experiments are not about providing parents with information but rather eliciting their beliefs and preferences about their daughters' educational attainment, age at marriage, and the choice of groom, Adams and Andrew (2019) find that parents of adolescent girls in Rajasthan, India have a dislike of college education in their preferences (and generally put little intrinsic value in the education of their daughters), they also believe that college education has large returns in the marriage market. This might imply that groom-side preferences for education may have effects on parents' preferences and, hence, on the educational attainment of adolescent girls. The small number of interventions that aim to change attitudes and social norms around female education and empowerment among boys were discussed in Section 3.1.5 above.

Information on SRH and FP: Evidence on the effects of school-based sex education is mixed: systematic reviews of the effects of HIV education programs in Sub Saharan Africa reveals great heterogeneity in effectiveness (Paul-Ebhohimhen et al., 2008; Gallant and Maticka-Tyndale, 2004). However, evidence suggests that the way in which information is presented is important. For example, Dupas (2011) find that a 45-minute session delivered by an outside facilitator with a focused message on the heightened risk of HIV faced by girls having sex with older partners was effective at reducing unprotected sex and consequently pregnancy among adolescent girls in Kenya, while the regular HIV and sexual education curriculum delivered by trained teachers and focusing on abstinence and faithfulness promotion had no impact. Similarly, the government's HIV curriculum in Kenya did not reduce pregnancies or STIs among sixth-grade students (Duflo et al. 2015). Moreover, Dupas et al. (2018), in the context of Cameroon, find that a one-time, one-hour group-administered questionnaire on HIV and sexual behavior had an equally large reduction in teen pregnancy in the following 9-12 months as sexual education sessions delivered to students over multiple weeks.

Ashraf et al. (2020c), in the context of two clinics in Lusaka, Zambia, document that (a) men hold (incorrect) negative beliefs about modern contraceptive methods; (b) are less likely to identify age, parity, and low birth spacing as risk factors for complications; and (c) less likely to have friends (close or distant) who died from maternal complications. Combined with husbands having a higher number of ideal children *ex ante*, these information asymmetries about the risk of maternal mortality widen the gap in desired children between spouses. Using an information session on maternal health risks, randomly offered to the husband or the wife, they show that the incidence of pregnancies declines in both cases and that both spouses report declines in future likelihood of having more children. There are no differences in these outcomes between the two treatment arms. Furthermore, however, treated husbands are less likely to (a) want more children, (b) believe their spouse wants another child, and (c) believe their spouse wants more children than they do. They are also more knowledgeable about risk factors for maternal complications, more likely to communicate with their wives about these issues, and are happier with their marriages. Information diffusion from the husband to wife is present while it is limited from wife to husband. While this study, like many others discussed in this review, is not about adolescents *per se*, it contains potential lessons for married/partnered adolescents: for example, family planning counseling sessions, especially postpartum ones, can be designed to include husbands and partners, potentially facilitating a higher adoption rate for modern contraceptives among women.

Finally, Shah et al. (2021) study an experiment which provided a goal-setting intervention to girls aged 11-22 in Tanzania (using BRAC's ELA clubs as a platform) and behavior-change programming to their male partners through a 10-week soccer program. The former emphasized staying healthy and STI/HIV free for a year and helped girls to identify strategies (such as abstaining, being faithful, using condoms, HIV testing, and so on), while the latter had a curriculum that included topics related to risky sex, IPV, respecting females, and alcohol abuse. Both programs had small effects on reducing IPV – the goal setting program caused females to have less risky partners while the soccer program shifted male attitudes around violence and reducing their sexual activity. However, neither program had an effect on STI prevalence, take-up of contraceptives, pregnancies, or an education index.