Protection for the lifecourse:
Enhancing health, social and economic capabilities of highly vulnerable adolescents

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This paper presents baseline findings from a research intervention in KwaZulu-Natal, South Africa that reaches school-going young people in grades 10 and 11. The intervention is designed to provide vulnerable young people residing in poor, peri-urban, HIV/AIDS-affected communities with increased capabilities for building health, social and economic assets for the lifecourse. The strategic skills proposed are particularly geared to help offer protective strategies against HIV and early pregnancy and to build economic assets. This project will provide quantifiable evidence about a program that could be adopted into a school- or community-based project setting to reach young people at a critical period of their development.

Adolescence is a particularly critical period that can set the stage for enhancing or diminishing well-being throughout the various stages of adulthood. Socially and economically disadvantaged young people in South Africa, especially females, experience the highest risk for HIV, early pregnancy and parenthood, premature school leaving and severe lack of livelihood opportunities. With sharp rises in prime-age mortality due to AIDS, many already at-risk adolescents face the prospect of falling even further behind socially and economically due to the loss of one or both parents, teachers and other key adults, which weakens their social support systems. It is crucial to look beyond national-level data to understand the areas and populations at highest risk and in greatest need. Early risk environments and outcomes these young people experience are likely to have persistent effects over the lifecourse and impact not only health and well-being, but also future family formation, marriage, labor force participation and accumulation of savings and other assets.

In South Africa, disparities in HIV prevalence rates begin to emerge during adolescence. Among 15-24-year-olds rates are highest among residing in in KwaZulu-Natal (KZN) Province: approximately one in four are living with HIV; levels here are even higher among girls who are poor and African (Shisana et al., 2009). Teen childbearing is high—34 percent of 15-24 year-olds have been pregnant (Pettifor et al., 2004). Orphanhood rates are greatest for Africans, residents of KZN, and those living in informal neighborhoods (ibid), leaving these youth with severely weakened social support systems. Population-based studies of young people within KZN find that being female, poor, orphaned or having low levels of social capital contribute substantially to the risk of a number of unsafe sexual behaviors (Hallman 2005, 2008a, 2008b, 2009) and teenage pregnancy (Grant and Hallman, 2008). The latter found that one-third of 18-19-year-old females had already given birth; three quarters of those births were reported as unwanted and the vast majority of those young women had neither completed secondary school nor returned to school after the birth of their child. With South Africa Department of Education recommendations that may make it more difficult in the future for pregnant girls to remain in school (SA DOE 2007), the potential negative repercussions of an adolescent pregnancy could become even greater. In South Africa, pregnancy is also a strong predictor of HIV infection (Pettifor 2004). Though recent studies (Shisana et al., 2009) show that some progress has been made in South Africa with regard to HIV among adolescents,

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prevalence in KZN remains the highest of any province among 15-24 year olds, and is one of only 2 provinces (along with Mpumalanga) that showed no reductions in prevalence among this age group since the related 2005 study.

The triple disadvantages conferred by age, poverty and gender inequality increase HIV risks that poor young females face. Young women's higher relative risk of HIV infection in developing countries is due to a number of factors, both physical and social/structural which have been explored in more detail elsewhere. These include: higher physiological susceptibility of infection of females during heterosexual intercourse (Stanton 2002; UNAIDS 2004); sexual violence against females, including the fact that 15-30% of first female sexual experiences are nonconsensual (Varga 1997; Wood et al. 1998; Human Rights Watch 2001; Jejeebhoy and Bott 2003); a high value placed on female virginity at marriage, with girls attempting to preserve the image of their virginity by engaging in unsafe sexual and reproductive health practices such as anal sex and avoiding reproductive health services (Gupta 2000; Health Systems Trust 2001); norms of appropriate sexual behavior that lead young men to downplay the threat of HIV/AIDS and engage in sexual conquests that weaken the ability of young women to negotiate safe sex (Baylies 2000; UNAIDS/Panos 2001; Varga 1997; Varga 2003); age, education, and economic differences resulting in power imbalances between sexual partners (MacPhail et al. 2002; Gregson et al. 2002; Luke and Kurz 2002; Quisumbing and Hallman, 2005); social norms that encourage young women to 'prove' their fertility, which may increase the frequency of unprotected sexual encounters (Rutenberg et al. 2003); and female economic dependence on males (Gregson et al. 2002; UNAIDS 2004).

In addition to these underlying factors that result in greater susceptibility to HIV, many young people in developing countries, especially females, also lack accurate information about HIV transmission. In 17 countries surveyed by UNICEF (2001), over half of adolescents were unable to name a single method of protecting themselves against HIV. In all instances, girls knew less than boys. Moreover, in many countries where HIV prevalence is high (as in South Africa), a surprising number of young people who have gained some knowledge of the virus—and who are sexually active—think they face little or no risk of becoming infected (UNAIDS 2003).

Although there are several large HIV/AIDS prevention programs in South Africa aimed at young people, targeted and more comprehensive programs to build the capacity of young people with regard to their health, social and economic futures are scarce. The paucity of programs taking a lifecourse approach is potentially harmful to young people. The associations between low aspirations and HIV risk behaviors among young people have not been explored to a sufficient extent in settings like South Africa, where economic inequality and HIV prevalence are both high. Barnett (2008) has proposed that hope for the future and goal-directed thinking are possible explanatory variables for sexual decisionmaking. According to a recent report by the ILO, unemployment among young people in South Africa is very high: 60% compared to 11.5 % of youth in sub-Saharan Africa overall (ILO 2008). The many who reside in impoverished communities also lack access to skill-building programs, recreational opportunities, job and saving mechanisms. Richter and colleagues (2005) found that socially disadvantaged youth in South Africa do not receive, in school or elsewhere, the information required to access available training or further education opportunities. These young people, particularly females, are at higher risk for early (and often forced) sexual initiation, coerced sex and exchange of sex for money or gifts (Shisana et al., 2005; Hallman, 2005; Campbell, 2003; Gregson et al., 2004).

The majority of youth-oriented HIV and RH programs do not target the most at-risk nor do they include components tailored to address the specific circumstances of the most vulnerable, which include poverty, orphanhood, various African ethnicities, female gender, and low social

connectedness. Formal financial services also fail to reach large sections of the population and this, along with the country's political history, has helped fuel the view that instruction in finance and budgeting is seen as beyond the grasp of the most disadvantaged (ECI*Africa*, 2004). This unfortunate stereotype impedes young people's ability to become fully functioning members of their families, communities and society. Informal financial strategies exist and are used, but carry high risks for the individual (e.g., robbery and/or pressure from family and friends) and for the community through loss of group funds due to the large number of funerals families are asked to contribute to and covariate risks such as climate events and food shortages (FinMark 2006). It is more typical that the poor find safe places to store money for short periods of time, but not actually develop savings strategies that are safe and effective to protect them against the many potential economic risks and shocks they face (ibid).

Although there is a wide range of social grants available in South Africa– for example, disability grants for people with HIV/AIDS, child support grants for impoverished children, foster grants for caretakers of orphaned children and school fee waivers – uptake of some of these is low in comparison to those who are eligible. Among the eligible, those less likely to apply for and ultimately receive these benefits are the very individuals who need them most, i.e., those who are poorly educated, reside in rural areas, have low socialcapital - and consequently lack the knowledge and means required for access (Giese et al., 2003; Case et al., 2003; Booysen, 2003; among others).

The common thread tying together personal health risks (specifically HIV and RH) and economic disadvantage is the need to increase personal knowledge and skills and build positive social networks so that young people can put information acquired into practice. Young people's lives are multidimensional and bundling topics of interest and benefit to them, and which have shared underlying skills-building aspects, sets the stage for an intervention that is both efficient to deliver and well-received by youth. Work that has been done by the authors in KZN gives a strong indication that it is possible to develop such educational materials and deliver them to at-risk adolescents.

Findings from the quantitative survey we did for a pilot study that preceded this one indicate (to high statistical significance) that among 16-24 year-olds:

- Females had less social capital (e.g. social networks and friends they can rely on) than males ($p \leq 0.01$). Among females, low social capital was associated with less exposure to media-based HIV messages ($p \leq 0.001$), more sexual partners in the year before the survey ($p \leq 0.05$), and a lower likelihood of having had an HIV test ($p \leq 0.05$). Females had less knowledge of social grants than males even though females had vastly greater eligibility (because many of them are already mothers and residing in poor households, and hence qualify for the child support grant).
- Females were less likely to have financial goals than males ($p \leq 0.001$). Having a financial goal was associated with (a) greater female exposure to media-based HIV messages ($p \leq 0.001$), (b) more realistic HIV risk perceptions among females ($p \leq 0.001$), and (c) greater male knowledge of HIV transmission modes ($p \leq 0.01$).

Project aims and objectives:

This paper describes participants in a program that aims to reach young women and men with a comprehensive package of skills that are not only HIV-related but also designed to address gendered social and economic inequalities. The program, "Siyakha Nentsha," was developed to respond to the unmet needs of young people in KZN using a comprehensive approach to address the real-life economic, social and health challenges they encounter on a daily basis. The participatory curriculum was developed out of a pilot intervention carried out by the study team from 2005-2007 in a similar

nearby area. [1] Lessons learned in the pilot inform the current program, which includes financial education, social capital building, information about formal employment and entrepreneurship, HIV/AIDS information, knowledge of contraceptives, pregnancy, etc., and interpersonal skills to enable young people to continually acquire information and know-how to make use of it in their daily lives – today and going forward.

The educational program developed for the intervention is accredited by the South African Qualifications Authority (the national government body that accredits education and training curricula). As post-apartheid education curricula are only slowly transforming to strike a balance between theory (formerly and still heavily emphasized due to its colonial history) and practicable knowledge and experience, supplemental programs such as the one being undertaken are actively sought out - by educators, community groups, caregivers and adolescents themselves - and viewed as desperately needed to help bridge this gap (Rule, 2006).

It is clear that young people who are still in school need to develop these skills to help them navigate the social, health and economic challenges of the transition into adulthood. We are employing local young adult post-secondary participants as mentors to the project's classroom-based groups, adding further to the stock of human capacity within study communities. The mentors were chosen via a competitive process and receive continuous training throughout the intervention. The mentors are from the same communities in which the intervention is being carried out, and are fluent in both English and isiZulu. The mentors range in age from 20-24 and include 5 males and 17 females (recruiting was gender-neutral). Sessions with students occur 2-3 times per week in classrooms during school hours and each session is approximately one hour in length.

The long-term objective of the program is to improve lifelong functional capabilities and well-being of adolescent females and males who face high risks for HIV, teenage pregnancy, school dropout, and unemployment, coupled with the actual or potential loss of one or both parents and subsequent care responsibilities for self and siblings (and frequently their own infants). The skills are geared to help offer protective strategies against HIV and mechanisms for coping with and mitigating the impacts of AIDS, with the eventual goal of building human, social, health and economic assets.

This study and the data from it are unique. We are aware of only one other randomized control trial of a livelihoods support intervention for young people in sub-Saharan Africa: the SHAZ! program in Zimbabwe that targets orphaned adolescent girls and emphasizes microcredit. Early lessons from that program indicate that context-specific vulnerabilities were not paid sufficient attention for the intervention to be effective or replicable (IPPF/UNFPA/YOUNG POSITIVES, 2007). Questions, therefore, remain as to how such programs should be operationalized with young people in different social, economic, and cultural settings—particularly those characterized by rapid economic, demographic, and family change as in southern Africa.

Study design:

The intervention targets students in grades 10-11 and is randomized to classrooms in secondary schools in several peri-urban communities in the Durban metro area. As the vast majority of adolescents in South Africa attend secondary school, testing an intervention in a school setting is an effective and replicable strategy for reaching a representative group and reducing the possibility of selection bias. The study has three intervention arms: adolescents in one set of classrooms will

[1] Further description of the pilot program can be found here: (http://www.popcouncil.org/pdfs/TABriefs/PGY_Brief04_SafeSpaces.pdf)

receive economic skills, social capital building activities, and HIV/AIDS-SRH education; those in the second arm will receive only social capital building and HIV/AIDS-SRH education; while those in the third arm will receive the intervention in 2010 and currently serve as controls. The program has been randomized to classrooms in 7 secondary schools. The study will be 36 months in duration, and began in January 2008. The intervention activities will last for eighteen months, with longitudinal measures on individual students and their households at baseline and eighteen months post-baseline. (We hope to access funding that would enable us to follow these young people further into the future, as a number of the outcomes the intervention is designed to change may not be affected until well after the second survey round.)

Methods and measures:

Findings from out pilot study (quantitative and qualitative) inform our data collection approach. Care has been exercised to ensure that measures are appropriate for the age group, context, intervention design, and data collection method. We are conducting a longitudinal survey, assessing target outcomes and determinants thereof, in particular the impact of the intervention on:

(a) formation of aspirations; economic skills, in particular the ability to plan and manage personal and familial finances, and identify and access available social services and benefits;

(b) social capital, in particular social networks, including adult role models and individuals/groups who can assist with crisis management and accessing training opportunities;

(c) HIV/AIDS and RH knowledge, prevention behaviors, and adoption of safer sex strategies.

The baseline field work was carried out with male and female learners over a period of 8 weeks starting in April 2008. Interviews were carried out in the respondents' homes, and care was taken to ensure privacy. Endline data will be collected November-December 2009. We also plan to conduct focus groups with participants, their guardians, and with project mentors to assess the acceptability and comprehension of the intervention components, feasibility of where and when the intervention was delivered, and beliefs regarding the efficacy of the intervention for the desired outcomes. Prior to program initiation, program staff met with students, explained the project and introduced the informed consent (student and parent/guardian versions) that was required for participation in the study. All such discussions were held in private and data are kept in strict confidence. Program consent forms and other monitoring data are kept in locked cabinets at the offices of the Isihlangu Health and Development Agency in Durban. Evaluation consent forms and data are stored in locked cabinets at the office of AccuData (our survey research partner) in Johannesburg. The protocol for the project, data collection and accompanying consent forms have passed through ethical review. Data was analyzed using STATA.

Sample Description:

Table 1: Description of sample

	Females (n=492)	**Males** (n=496)
Mean age **	17.2	17.8
% describing household as poor or very poor	64.8	62.3

Mean # household assets	9.4	9.7
Mean # personal assets *	3.2	3.4
% having lost at least one parent	40.9	44.1
Maternal orphan	7.1	10.1
Paternal orphan	25.3	25.3
% having lost both parents	8.7	8.8
Has a South African ID card (of those 18+) (%)	50.7	51.5
Has a birth certificate (%)	66.5	64.8
Has a CV	5.3	7.7
Mean # close friends **	2.6	3.2
Mean # co-resident household members	7.8	7.4
Has a boyfriend or girlfriend**	37.9	54.7
Ever tried to start income generating activity	21.9	22.9
Ever actively looked for work**	7.2	15.4
Ever worked for pay **	10.3	20.2
Is saving*	17.3	23.6
Ever unwanted sexual touching	16.7	17.9
Ever had sex **	19.6	31.7
Mean age at first sex **	16.9	15.0
First sex was tricked or forced **	17.2	2.0
First sex partner - age difference from self **	+2.8	-.46
Mean number lifetime partners **	1.3	4.2
Mean number partners in last year **	1.0	2.0
Reportedusing a condom at last sex *	59.4	75.0
Heard of FP methods**	72.6	51.8
Know can get pregnant if have sex only once*	85.0	78.7
Ever talked to partner about avoiding/delaying sex*	64.7	48.3
Ever had an HIV test **	17.3	7.4
Know at least 2 ways HIV is transmitted	76.0	74.5
Know at least 2 ways to prevent HIV	71.2	67.2
Think close friends are at no risk for HIV	78.8	72.6
Friends pressure to have sex**	6.2	18.1
Ever had a virginity test**	41.9	5.6
Females, ever been pregnant %	14.5	---
Males, ever made anyone pregnant %	--	7.6
Mean score on gender attitudes scale**	8.3	7.1
Mean score on self-esteem scale*	5.6	5.9
Belongs to at least one social organization	75.3	76.3
Has a role model*	86.3	81.7
Sometimes feels worthless*	23.7	18.2
Has no hope for the future	20.5	20.5
Optimistic that will have better life than parents'	94.1	91.4

* difference between males and females significant at p<.05

**difference between males and females significant at p<.001

Our sample of 993 learners ranges in age from 12-28 years at baseline, with a mean age of 17.5 years. Ninety-eight percent come from isiZulu-speaking households, with the remainder speaking isiXhosa at home. The study population is a quite vulnerable group: Over half the sample describes their household as being very poor (either not having enough money for food, or having some money for food but for no other basics). In addition to this self-report, we also assessed each household's wealth status via a series of questions assessing asset ownership of items from a list of 22, which included goods like kitchen appliances, agricultural equipment, and the home of residence.[2] Households possessed an average of 9.6 items of the 22 listed, with the most common items owned being a cell phone (owned by 89% of households), a radio (84%), and the home they live in (84%). Ninety-five percent of respondents' homes are connected to electricity, but reports of frequent electricity outages are common. Respondents were also asked about items they personally owned, from a list of 11 items that included things like jewelry, cell phone, and cell phone airtime.[3] These two asset lists were used to create household and personal asset indices.

The social conditions of young people's homes may also confer vulnerability. These young people live in densely populated homes; respondents were living in households with an average of 7.7 people. Additionally almost half of males (44%) and females (41%) have lost at least one parent to death, with nearly 9% of males and females having lost both parents. Although over 90% of young people claim to be optimistic that they will have a better life than their parents have, 20% of both males and females say they have no hope for the future. Almost one-quarter of females and one-fifth of males say they sometimes feel worthless.

Many of the young people in the sample lack the basic building blocks for a successful transition to adulthood: Only about half of eligible males and females (those aged 18 or older) have a South Africa identification card, and only about two-thirds of the total sample even has a birth certificate. These forms of identification are required to access social benefits, open a bank account and compete for formal sector employment. In fact, the ability to take the "matric" exams to attain a secondary school completion certificate requires having a South African ID card. Not having these documents is a serious impediment to development and advancement. Despite these obstacles some of the sample has worked for pay (10% females and 20% males) and many males (23%) and females (22%) have tried to start an income-generating activity.

About three-quarters of both males and females belong to at least one community social organization. The most common types of groups are sports groups and study groups for males, and church groups and study groups for females. Females have smaller social networks than males (a mean of 2.6 friends compared to 3.2 friends for males).

Questions on sexual and reproductive health also formed an important part of the survey. We are aware of possible underreporting (or over-reporting) due to the sensitive nature of the questions asked, but we present the following self-reported data with that caveat in mind. Sex is sometimes a negative experience, especially for young women; 17% of females in the sample who have experienced sex describe their first sexual experience as having been tricked or forced. Among all young people there

[2] The full list of possible items owned by the household is: radio/stereo, tv, VCR, landline telephone, mobile phone, refrigerator, gas/electric stove, microwave, washing machine, any furniture, bicycle, motorcycle, car, computer, house they live in, large or small agricultural equipment, small/medium/large livestock, savings in a bank or other investments

[3] The full list of possible items owned by the respondent is: perfume, designer/brandname shoes, designer/brandname clothing, makeup, jewelry, hi-fi/music, MP3 player, computer, cell phone, cell phone airtime, designer/brandname sunglasses.

are reports having experienced unwanted sexual touching, with 16.7% of females and 17.9% of males reporting such an experience. Consistent with all other surveys of young people in South Africa, males report earlier and more sexual activity than females. One-fifth of females and one-third of males report having had sex, with the average age of debut being 15 years for males and 17 years for females. Compared to females, males also report having more sexual partners in their lifetimes and in the last year, and younger partners. Almost one fifth of males say their friends pressure them to have sex. Fifteen percent of females who have had sex have also been pregnant, though only 6% of those young women said they had wanted to become pregnant at the time they did. About 8% of males report having made someone pregnant. Again in line with other South African adolescent surveys, males are more likely than females to report having used a condom the last time they had sex, but females are more likely to have heard of family planning methods and to know it is possible to become pregnant if you only have sex one time.

Regarding HIV, about three-fourths of males and females can correctly name at least 2 ways HIV is transmitted, and slightly smaller percentages can accurately state at least 2 ways to prevent HIV. Very few students in the sample (less than 20% of females and less than 10% of males) have ever had an HIV test. Shockingly high percentages (79% females, 73% of males) think their friends are at no risk for HIV. The most popular responses when asked why this is the case were that their friends are abstinent, always use condoms, or only have one sexual partner. A handful gave other answers, saying it was because their friends were still young, used traditional medicine, have sex with a virgin, or don't "have sex all the time." Two male respondents said there was no such thing as AIDS, and one person declared their friends were safe because "this is a farm area." Those who did think their friends might be at some risk cited reasons such as having multiple partners, drug use, unprotected sex, traffic accidents, and rape.

Findings:

After experimenting with the comparison of outcomes by a number of binary categories (by gender, orphanhood status, etc.), we used multiple logistic and linear regression (as appropriate for the dependent variable) to determine possible predictors of the outcomes of interest for this manuscript. Three models were run. The first included only age, orphan status (either yes/no or by category of orphan type), household wealth status, and personal assets as explanatory variables. In a second model, sets of key independent variables from each of three main categories of interest for the intervention were included — financial/economic, and social capital, and HIV/AIDS and RH knowledge. Final models are being developed from the second set of models, using predictors found to be statistically significant when added to the basic model.

Dependent variables examined include ever having had sex, age at first sex, # sex partners in lifetime and in the last year, condom use at last sex, frequency of condom use, confidence in ability to use a condom, having ever had an HIV test, HIV and reproductive health knowledge, and having talked with their sexual partner about topics like avoiding HIV or pregnancy. Independent variables included age, orphan status, household assets, personal assets, having close friends, having a boyfriend or girlfriend, belonging to organizations, having a birth certificate, having savings, having ever worked, friends pressuring to have sex, having a role model, feelings about the future, self-esteem, and gender attitudes. We checked for collinearity among explanatory variables using the entire sample and also splitting by gender, but further analysis is required to determine possible collinearity within particular subsamples. Gender attitudes were assessed as an average score given based on responses to a series of questions, with a higher score resulting from answers to gender relations questions that indicate

more progressive views.[4] Self-esteem was assessed similarly, using answers to a series of questions and taking the average score, giving a possible score from 0-7.[5] We acknowledge that a number of the explanatory variables listed above are outcomes of interest in and of themselves for the evaluation of the program once we have a second round of data. Moreover, they may be considered as endogenous in the regressions presented here; this issue will be explored more deeply in future versions of the manuscript. The current analysis is intended to draw out by gender the relationships among HIV/RH behaviors and the social and economic characteristics, knowledge and behaviors and HIV/RH knowledge of the adolescents in the sample.

We have found a number of statistically significant associations A summary of the multivariate results with +/- indicating the direction of the statistically significant relationship is presented in Tables 2a-b for females and males, respectively.

[4] The specific questions were: 1.women and girls are not as good/clever as boys in school. 2. when money is scarce and parents cannot send all children to school, boys should be sent before girls, 3. some females who are raped deserve it because of the way they dress or talk to males, 4. boys should do as much domestic work as girls, 5. girls can make as good leaders as boys, 6. men who force girls to have sex should be sent to jail, 7. men rape girls because they can't control themselves, 8. boys should not be asked to help their mothers prepare food, 9. men are better at managing money than women, 10, husbands should be allowed to stop their wives from working, 11. a husband should be allowed to beat his wife

[5] Questions were: 1. I feel I am as important as other members of my family. 2. I feel as capable of doing many things as other people. 3. I feel like I have a number of good qualities. 4. I am inclined to think I am a failure. 5. Many times I feel like I am not important.6. I can express my ideas to others. 7. People like me can make an impact on the community if they want to.

Table 2a. Significant (p<.05) predictors of outcomes, females

Females										
Outcomes / **Re-gressors**	Ever had sex (all)	Age at first sex (deb uted)	*Not* confident knows how to use condom correctly (all)	Ever have an HIV test (all)	Think there is time in woman's cycle when more likely to get pregnant (all)	Heard of FP methods (all)	# sex partners lifetime (debuted)	*Rarely or never* uses condoms (had sex in past 12 mos)	Know can get pregnant if have sex once (all)	Talked to partner about avoiding or delaying se (had sex in past 12 mos
Mean age	+		-	+	+	+				
HH asset group 2 (vs poorest)						+				
HH asset group 3 (vs poorest)				+						
HH asset group 4 (vs poorest)		+								
Personal assets group 2 (vs poorest)						+	+			
Personal assets group 3 (vs poorest)							+	+		
Orphan (yes/no)								+	+	+
Maternal orphan								+		+
Paternal orphan							+		+	
Mean # co-resident household members			+						-	
Know at least 2 ways HIV transmitted			+							
Know at least 2 ways to prevent HIV						+		-		
Has many friends in community			-			+				
Has a boyfriend/ girlfriend	+		-	+		+				
Belongs to at least one org							-			
Has a role model							-			
Gender attitudes	+				+					

Mean score on self-esteem scale				-						-
Sometimes feels worthless				+						
Has no hope for the future										-
Optimistic will have better life than parents									+	
Ever tried to start income generating activity	+		-		+	+				
Safety in neighborhood		-		-						
Think close friends are at small risk for HIV				+						
Friends pressure to have sex			-							
Ever had virginity test					-					
Someone expects you to share money with them	+								+	
Ever had HIV test	+									
If family member had HIV would want to be secret									-	

The models above show variables, including various measures of assets and capabilities, that were significant predictors of various sexual and reproductive health outcomes (at $p < .05$) when controlling for age, household asset quartile, personal asset tertile, and orphan status (the basic model). The multivariate results for females indicate:

- Older girls were more likely to have had sex (OR=1.8), to have had an HIV test (OR=1.3), to have heard of family planning methods (1.3), to be confident in their ability to use condoms correctly (OR=1.5), and to think there is a time in a woman's menstrual cycle when she is more likely to become pregnant (OR=1.1).

- Household assets: Relative to the poorest quartile, those girls in the third quartile were likelier to have had an HIV test (OR=2.3), and those in the wealthiest quartile had sex for the first time at older ages (HR=2.4).

- Personal assets: Relative to those with the fewest personal assets, girls in the middle tercile were more likely to have heard of family planning methods (OR=2.0), but also had had more sexual partners in their lifetime (coeff=.35). Girls with the most personal assets had more sexual partners than girls with the fewest personal assets (coeff=.45) and were among those who reported rarely or never using condoms (OR=13.2). There were no statistically significant differences for girls by personal asset tertile regarding whether their partners sometimes or often gave them gifts in exchange for sex, but for each group at least half the respondents said this was the case.

- Orphan status: Among sexually active girls, orphans were much likelier than non-orphans to have talked to their partner about avoiding or delaying sex (OR=44.3), but also more apt to rarely or never use condoms (OR=6.0).

    - Maternal orphans (those who had lost only their mother) were much more likely than other types of orphans or than non-orphans to have talked to their partner about avoiding or delaying sex (OR=21.4) but also to rarely or never use condoms (OR=33.3).

    - Paternal orphans (those girls who had lost only their fathers) knew that it is possible to become pregnant after only having sex once (OR=3.1) but also had more sex partners in their lifetime than other girls (coeff=.37).

    - Being a double orphan (having lost both parents) did not show any significant effects.

- Girls who had someone who expected them to share money with them were more likely to know that one can get pregnant if by having sex only once (OR=3.1), but were also more likely to have sexually debuted (OR=2.4).

- Having many friends in the community was a significant predictor of knowing that family planning methods exist (OR=1.9) and having confidence in how to use a condom correctly (OR=2.0).

- Girls who lived in more densely populated households had less confidence in their ability to use a condom correctly (OR=1.25) and were less likely to know it is possible to become pregnant after only having sex once (OR=.9).

- Girls with boyfriends were more likely to have had sex (OR=6.5), to feel confident they know how to use a condom correctly (OR=2.1), to have had an HIV test (OR=2.4), and to have heard of family planning methods (OR=2.3).

- Girls who had ever tried to start an income generating activity were more likely to have had sex (OR=1.9), to report confidence in using a condom correctly (OR=2.4), knowing that there is a time in a woman's cycle when she is more likely to get pregnant and when that time is (OR=1.8) and having heard of family planning methods (OR=3.7).

- Knowing about HIV prevention is associated with having heard about family planning (OR=2.5) and more frequent condom use (less likely to report "rarely or never" using condoms) (OR=9.7).

- Those who think their friends are at some risk for HIV are more likely to have had an HIV test than those who think their friends are at no risk (OR=2.4). This perception, however, did not influence condom use among girls who have had sex recently. Among those had had sex recently, the perception that friends are at great risk (versus no risk) is associated with only slightly (OR=0.1) higher chances of condom use at last sex.

- Girls whose friends pressure them to have sex, report being more confident in their ability to use condoms than girls whose friends do not (OR=3.1).

- Girls who have had a virginity test are less likely to think there is a time in her cycle when a woman is more likely to get pregnant than girls who have not been subjected to such tests (OR=0.6).

- Girls with more egalitarian gender attitudes were more likely to have had sex at all (OR=1.2) and also to know there is a time in the monthly cycle when a woman is more likely to become pregnant (OR=1.2).

- Among all girls, those with higher self-esteem were somewhat less likely to have ever had an HIV test (OR=0.8). Among those who had had sex in the 12 months before the survey, those with higher self-esteem were less likely to have talked with their partner about avoiding or delaying sex (OR=0.6). This is a counterintuitive finding and warrants further investigation; it could be due to the discussion variable being conditioned upon any recent sexual activity – which may be influenced by self-esteem.

- Among girls who have sexually debuted, those who belonged to at least one social organization (coeff= -0.53) and girls who had a role model (OR= - 0.77) had fewer lifetime sexual partners than other girls.

- Among girls who had a partner in the year before the survey, those who had no hope for the future were less likely to have talked with their partners about avoiding or delaying sex (OR=.08).

Table 2b. Significant (p<.05) predictors of outcomes, males

Males										
Outcomes / **Re-Gressors**	Ever had sex (all)	Age at first sex (debuted)	Not confident knows how to use a condom correctly (all)	Ever have an HIV test (all)	Think there is time in woman's cycle when more likely to get pregnant (all)	Heard of FP methods (all)	# sex partners lifetime (debuted)	Rarely or never uses condoms (had sex in past 12 mos	Know woman can get pregnant if have sex once (all)	Talked to partner abou avoiding or delaying sex (had sex in past 12 mos
Mean age	+				+		+			
HH asset group 4 (vs poorest)							-			
Personal assets group 2 (vs poorest)	+				+					
Someone expects you to share money with them	+			+	+	+				
Has many friends in community			-							
Double orphan								+		
Has money in case of emergency						+				
Has savings				+						+
Know at least 2 ways to prevent HIV						+				
Belongs to at least one org							-		-	
Has a boyfriend / girlfriend	+		-			+				
Has role model								-		
Gender attitudes					+	+	-	-		
Has no hope for the future				+						-
Ever tried start income generating activity	-									
Safety in neighborhood		-								

Talk to family about money					+					
Friends pressure to have sex	+									
Ever had virginity test					+			+		
Think friends at small risk for HIV				+						
Think friends at high risk for HIV								+		
Think HIV+ person should be allowed in school							+			

As with the presentation of results for females, the table for males shows results that are significant at the p <.05 level or greater. The results for males also show interesting findings, some of them similar to those for females and others that are strikingly different.

- Older males are unsurprisingly more likely to have had sex (OR=1.3) ; they are also more aware there is a time in a woman's cycle when she is more likely to become pregnant (OR=1.3). Among those who have sexually debuted, older age is associated with more lifetime partners (coeff=0.6).
- Among sexually debuted males, those from households in the wealthiest category had fewer lifetime sexual partners compared to males from homes in the poorest category (coeff= - 2.5).
- Males in the middle group of personal assets were more likely to have ever had sex (OR=2.0) and also to know there is a time in a woman's cycle when she is likelier to get pregnant (OR=2.0).
- For males with recent sexual activity, being a double orphan strongly predicted (OR=6.3) rarely or never using condoms. No other orphanhood category was predictive of the list of outcomes.
- Having someone who expected the respondent to share money with them was positively associated with ever having had sex (OR=2.7), with having ever tested for HIV (OR=2.4), and with greater reproductive health knowledge, such as having heard of family planning (OR=2.1) and believing there is a time in a woman's cycle when she is more likely to become pregnant than other times (OR=2.1).
- As with females, having many friends in the community was associated with males being more confident in their ability to use a condom correctly (OR=2.1).
- Following a similar pattern to that for females, males who had a girlfriend at the time of the survey were dramatically more likely to have had sex (OR=23.0), to be confident in their ability to use a condom correctly (OR=2.7) and to have heard of family planning methods (OR=2.0).

- Males who had ever tried to start an income-generating activity were less likely than other males to have sexually initiated at the time of the survey (OR=.64).
- Saving was positively associated with having had an HIV test (OR=2.7). Among those with partners in 12 months before the survey, those saving money were more likely to have discussed avoiding or delaying sex with their partners (OR=2.7), indicating that responsible financial behavior may possibly relate to responsible sexual behavior.
- Males who report having money in case of an emergency also have greater chances of having heard of family planning methods (OR=3.0).
- Males who think their friends are at least some risk for HIV are more likely to have had an HIV test themselves than males who think their friends are at no risk (OR=2.6).
- On the other hand, among males who reported recent sexual activity, those who believe their friends are at great risk for HIV are more apt to report rarely or never using condoms (OR=8.6); perhaps reflecting a fatalistic attitude toward HIV acquisition and/or lack on faith in the efficacy of condoms (a common attitude in South Africa).
- Males whose friends pressure them to have had sex are indeed likelier to have had sex (OR=2.8).
- Males with more egalitarian gender attitudes have more reproductive health knowledge, as well greater awareness that women are more fertile sometimes than others (OR=1.2) and of family planning methods (OR=1.2). Among the sexually initiated, this group has fewer sexual partners (coeff=-0.4). Within the group of males having had sex in the 12 months before the survey, those with more egalitarian views are less likely to report rarely or never using condoms (OR=0.7) and have greater chances of reporting condom use at last sex (OR=1.4).
- Males who belong to at least one social organization are less likely to know that a woman can become pregnant if she only has sex once (OR=0.2). Among the sexually debuted, they have fewer lifetime sexual partners (coeff=-1.8).
- Among males with sexual partners in the year before the survey, those who having a role model are less likely to report rarely or never using condoms (OR=0.1).
- Males who say they have no hope for the future are more likely to report have had an HIV test (OR=2.5). Among those with partners in the 12 months before the survey, they are less likely to report having discussed avoiding or delaying sex with them (OR=0.4).

Discussion

Analysis of the baseline data for this randomized experiment among grade 10 and 11 secondary school learners in KwaZulu-Natal shows that the program participants are a vulnerable group, facing situations of orphaning, poverty, and often lacking supportive structures to deal with such circumstances. However, these factors seem to have a variety of relationships to behaviors and experiences related to sexual and reproductive health and HIV. In some cases protective factors for females and males are common but their influence may be upon different behaviors. Some important characteristics that confer protection and support healthier behaviors among males and females include:

- living in an asset-rich household
- having more friends
- belonging to a community organization
- having a role model
- having tried to start an income-generating activity.

For females, self-esteem appears to be a protective factor. For males, additional protective factors include having savings and having more progressive gender-related attitudes.

Some of the results, however, are mixed. Having lost one or both parents is one situation in which the influence is less clear, and some differences are seen depending on which parent is no longer alive. While orphaned females seem to have greater knowledge of reproductive health and family planning, they are the least able to act upon it. Females who had lost their mothers reporting rarely or never using condoms at high levels, while females who had lost their fathers reporting having had more lifetime sexual partners compared with other females. These results are highly consistent with analysis by the authors using representative data from KwaZulu-Natal collected from adolescents in 2001 (Hallman 2008a; Hallman 2008b; Hallman 2009.)

Relative wealth is another crucial factor influencing young people's lives. Among all females in the sample, those residing in the wealthier households within the sample (which are not well-off by national standards) were more likely to report having had an HIV test and have greater awareness of family planning methods. Of those girls who had had sex at the time of the survey, those in the wealthiest households had an older age of sexual debut. Among sexually-initiated boys, those residing in the wealthiest households in the community had fewer lifetime sexual partners.

Controlling for household wealth and all other factors, a pattern similar to that for orphaning emerges among females in the group who possess the most personal assets. Although this group has more awareness and knowledge HIV and RH, the subset that is has sexually debuted have more lifetime sexual partners, and among the debuted those with recent sexual partners have less frequent use of condoms with those partners. Given that the personal assets named by girls are luxury items, it could well be the case that these were obtained as a result of having sex with more sexual partners and without a condom. Clearly, non-luxury assets owned by girls should also be investigated in our future research.

Having an income or some assets may also lead to negative experiences for young people. Among both females and males, those who faced pressures from others to share money had greater awareness of family planning and reproductive health, but were also more likely to have already initiated sexually even after controlling for age, orphan status, and household and personal assets. While females who have tried to begin an income-generating business have

greater reproductive health knowledge, they were also more apt to have begun their sexual lives earlier than females who had not. The timing of these regressors and outcomes warrants further inspection as those who have sexually debuted may have different reproductive health outcomes and labor force attachment. Among males, this behavior had the opposite relationship and was associated with later sexual onset. (Note that age was controlled for in both regressions).

Some situations are clearly negative, and these include having little hope and having neither parent alive. Those males and females who have no hope for the future are more prone to report engaging in high risk sexual behaviors. Being a double orphan appears to be closely related to risky sexual experiences for males.

We acknowledge that the causal direction of these relationships cannot be determined solely from the cross-sectional baseline data. We will be able to better assess the directions of these relationships after the second round of data is available. The second round of data will also allow us to control for unobserved individual heterogeneity, as well as to assess changes in outcomes over time among young people exposed to the three different arms of the intervention – which is the overall aim of the project.

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