Chapter Seven

Impact of the MEMA kwa Vijana Intervention

Within the MEMA kwa Vijana trial, multiple research methods were used to assess intervention impact, including biomedical surveys, face-to-face questionnaire interviews, assisted self-completion questionnaire interviews, semi-structured in-depth interviews, group discussions, simulated patient exercises, and participant observation. The general strengths and weaknesses of these methods and the particular ways they were employed within the trial are detailed in chapters 1 and 2.

This chapter will draw on all of the MEMA kwa Vijana research methods to assess the impact of the intervention on theoretical determinants of sexual behavior, on actual sexual practices, and on pregnancy and sexually transmitted infections. It will begin by examining the consistency and validity of trial participants’ self-reported sexual behavior, because most intervention impact evaluations are based on such self-reported information. It will then describe the preliminary qualitative evaluation of intervention impact, which was completed prior to analysis of the trial’s quantitative data. That section will be followed by a summary of trial findings of intervention impact on participant knowledge, attitudes, behavior, and biological markers. The next sections then will detail findings from the in-depth qualitative data analysis that took place after the trial results were known, particularly examining intervention impact on the theoretical determinants of abstinence, low partner number, fidelity, and condom use. The chapter then continues with an introduction to “positive deviants” in intervention communities, that is, unusual young people who actively tried to practice low-risk sexual behaviors, partly due to their intervention experience. The chapter will conclude with a comparison of the MEMA kwa Vijana intervention process and impact findings with those of the Stepping Stones randomized controlled trial in South Africa, which to date is the only sexual health
intervention trial for young people in Africa to have found a statistically significant impact on a biological outcome (Jewkes et al., 2008).

**THE VALIDITY OF SELF-REPORTED DATA
IN THE MEMA KWA VIJANA TRIAL**

As noted in chapter 1, self-reported sexual behavior can be inaccurate due to a number of reasons, including poor recall, misunderstanding, or intentionally false statements made to avoid anticipated criticism or embarrassment (Catania et al., 1993; Huygens et al., 1996; Brewer, Garrett, and Kulasingam, 1999; Gersovitz et al., 1998; Stycos, 2000; Fenton et al., 2001; Hewett, Mensch, and Erulkar, 2004; Gersovitz, 2007; Palen et al., 2008; Beguy et al., 2009; Turner et al., 2009; Koffi et al., 2012). The latter issue is a particular concern within intervention evaluations, as participants are aware of promoted behaviors and may be biased toward falsely reporting them. Within the MEMA kwa Vijana trial, the validity of self-reported information was scrutinized in two ways using data collected during the first half of the trial (Plummer, Ross et al., 2004; Plummer, Wight, et al., 2004). First, the consistency of self-reported sexual behavior was assessed by comparing the logic of individuals’ reports within and between surveys and in-depth interviews. Second, reported experience of sex was examined for those young people who tested positive for pregnancy or sexually transmitted infection.

In the 1998 MEMA kwa Vijana trial survey, for example, 9,283 trial members participated in a face-to-face questionnaire survey, and a sub-set of 4,958 boys (average age sixteen) and girls (average age fifteen) also completed an assisted self-completion questionnaire survey on the same day (table 1.1). For that sub-set, overall reports of sexual experience appeared very similar in both surveys. In the face-to-face and assisted self-completion questionnaire interviews, for instance, 52 percent and 56 percent of males reported having had sex, respectively, while 23 percent and 22 percent of females reported the same (Plummer, Wight et al., 2004). However, when these data were analyzed at an individual level, 40 percent of the males and 59 percent of the females who had reported sex only did so in one of the questionnaires, and not the other questionnaire. In addition, 1 percent (twelve males, forty-nine females) of the sub-set of 4,958 trial participants tested positive for one or more biological markers, but only 58 percent of those boys and 29 percent of those girls reported ever having had sex in both interviews (Plummer, Ross et al., 2004). Most of the remaining youth with biological markers denied having ever had sex in both surveys.

The in-depth interview respondents provided the greatest opportunity for comparison of data validity across several research methods. From 1998
Impact of the MEMA kwa Vijana Intervention

To 2000, seventy-three trial participants participated in as many as five interviews, that is, in 1998 and 2000 face-to-face questionnaire and assisted self-completion questionnaire interviews, as well as in 1999–2000 in-depth interviews (table 1.1). For those individuals, responses to questions about whether they had ever had sex were considered “consistent” if they were consistently affirmative or consistently negative over time, or if they were first consistently negative and then became consistently positive. Thirty-two percent of these respondents provided inconsistent responses, while an additional 8 percent provided consistent but invalid responses, because they consistently denied ever having had sex but they were pregnant or had a sexually transmitted infection during the first survey (Plummer, Ross et al., 2004). It is possible that some of the HIV-positive adolescents contracted HIV from their mothers during pregnancy or soon after birth, and indeed had never had sex. However, only one of the six female in-depth interview respondents with HIV or another sexually transmitted infection reported sex in any of the four surveys, while five reported it in in-depth interviews which took place contemporaneously or prior to some of their survey interviews.

The findings above raise concerns about the accuracy of self-reported sexual behavior in general and particularly in surveys. The few other studies which have scrutinized the consistency and validity of adolescent sexual behavior reports in surveys in sub-Saharan Africa have identified similar problems (e.g., Palen et al., 2008; Beguy et al., 2009; Cremin et al., 2009). This poses challenges for evaluations of intervention impact. Nonetheless, the vast majority of evaluations of adolescent sexual health interventions assess program effectiveness based on such self-reported information (Gallant and Maticka-Tyndale, 2004; Michielsen et al., 2010).

PRELIMINARY QUALITATIVE IMPACT EVALUATION

At the end of the MEMA kwa Vijana trial and HALIRA fieldwork in mid-2002, the MEMA kwa Vijana trial director (David Ross) requested that the HALIRA research team draft a report describing their impressions of intervention content, delivery, and impact, based on preliminary qualitative data analysis. This was done in advance of quantitative analysis of intervention impact on knowledge, attitudes, behavior, and biomedical markers to avoid the possibility that awareness of trial results would bias the qualitative analyses (Oakley et al., 2006). To create this report, this book’s author requested that the lead principal investigator (Daniel Wight) and each of the HALIRA field researchers at the time (Neema Busali, Gerry Mshana, Joyce Wamoyi, and Zachayo Salamba Shigongo) independently write responses to a series of questions related to intervention process and impact, without discussing them
with other team members until they had finished. At the same time the author independently drafted a more detailed and lengthy report addressing the same questions. All of the HALIRA researchers then reviewed and gave feedback on one another’s responses, and the author integrated all responses into a final 8,600 word report. There were few discrepancies of opinion between the HALIRA researchers, and they were noted in the final report. In 2002, this report was only read by the HALIRA team and the MEMA kwa Vijana trial director. It was otherwise kept confidential until early 2003, when preliminary analysis of the trial impact data had been completed. This confidentiality was maintained to reduce the possibility that preliminary qualitative findings might unduly influence the formal quantitative analyses.

The preliminary HALIRA findings were largely confirmed by subsequent in-depth qualitative analyses. For example, the preliminary process evaluation of each intervention component identified many of the same strengths and weaknesses described in detail in chapters 4–6 after more in-depth analyses. The preliminary HALIRA report also identified participants’ knowledge as the most likely area where the intervention had had substantial impact. An excerpt from the preliminary report:

Sexual and reproductive health knowledge seems to have greatly improved in the intervention side of the MEMA kwa Vijana cohort in the course of the trial. The dearth of basic information prior to the trial meant there was potential for a very high learning curve. Indeed, the simple presentation of key concepts, and their frequent reinforcement over the years of the intervention, seems to have succeeded in educating cohort members about basic reproductive biology, the nature of AIDS and other sexually transmitted infections, and the value of abstinence, reduction of partners, and condom use. (HALIRA, 2002, 13)

However, the preliminary HALIRA report noted that there was less evidence of substantial, genuine change to participants’ attitudes and skills in the areas targeted by the intervention. Another excerpt from the preliminary report:

It seems quite possible that reported knowledge, attitude, and behavior measures will show statistically significant improvement amongst intervention cohort members relative to control cohort members over the course of the trial. A challenge will then be to distinguish between those attitude and behavior results which are valid, and those which are biased self-reporting, given intervention participants are aware of the desired responses. . . .

For example, attitudes toward gender rights and roles have a strong cultural and social basis and seem unlikely to change. . . . Girls’ assertiveness is generally disapproved of within the predominant local ethnic group, the Sukuma, because girls are considered to be of low status in terms of both age and sex.
Girls are particularly discouraged from looking males directly in the eye, so intervention messages stressing assertive, direct eye contact during sexual refusal may be culturally inappropriate and misconstrued. Thus while there is evidence from participant observation that some girls have adopted and used the assertive behaviors taught in MEMA kwa Vijana classes, [many] do not seem comfortable with them.

Other attitudes, such as the fatalistic belief that disease avoidance is out of a person’s control (for young people) or that sexually active young people should be chastised (for health care workers) may have been improved by the intervention to a moderate extent. A few attitudes seem to have improved substantially, such as young people’s comfort and openness in talking about sexual and reproductive issues. For example, participant observation research and in-depth interviews with eighty-eight young people in 2002 found that intervention participants were much more inquisitive and comfortable using sexual vocabulary than their control counterparts. (HALIRA, 2002, 13–14)

The preliminary HALIRA report found that significant positive intervention impact on youth sexual behavior was unlikely. First, the issue of abstinence:

Abstinence until marriage was one of the strongest intervention messages, and it was undoubtedly the most socially acceptable amongst parents, teachers and the broader community. However, it does not seem to be a realistic option for more than a very small minority of young people. Just as young people already widely disobey the orders of their parents and teachers not to have sex, it is likely they will treat the MEMA kwa Vijana advice in the same way: as an injunction from adults that does not fit with young people’s reality . . .

[By the end of the trial] the vast majority of cohort members appear to be sexually active, many having reportedly started sex at ages as young as ten or twelve years. Sexually active young people commonly report that it is extremely difficult to stop having sex once they have started, for financial (female), prestige (male), and biological (male, and to a lesser extent, female) reasons. Most youth see their elder brothers and sisters, friends, relatives, and parents engaged in sexual activities, and it becomes difficult to perceive or choose a different path. Thus while a few individuals who have already had sex may have decided to abstain until marriage after participating in the intervention, it seems highly unlikely that this represents a general trend. (HALIRA, 2002, 11)

The preliminary HALIRA report also addressed the likelihood that significantly higher proportions of intervention participants than control participants might practice monogamy, partner reduction, or partner selectivity:

There is evidence to suggest that both multiple, concurrent partnerships and serial monogamy with frequent partner change are fairly common among adolescents in rural Mwanza, particularly as opportunistic or casual sexual partnerships may be fairly common. Frequent partner change and serial monogamy is
a particular concern because the long-term danger is relatively abstract, and the
target population may have difficulty conceptualizing it, particularly as they
are adolescents and may be focused on immediate, short-term goals. Similarly,
some respondents report multiple, concurrent relationships are necessary for
sexual satisfaction (male and female), financial need/desire (female) and/or
prestige (male), although some male respondents instead report that they cannot
afford to have multiple partners, as it is too expensive to provide money or gifts
to more than one partner. . . .

[Nonetheless], some respondents reported having reduced partners as a re-
sult of the intervention, and many reported that this was the most feasible and
realistic of the targeted behavior changes, because it is culturally sanctioned, it
allows for reproduction and sexual satisfaction, and/or it does not involve learn-
ning an alien practice like condom use. This message may have been especially
effective in combination with risk information that makes young people select
their partners more carefully. The curriculum repeatedly stressed that a person
with HIV can appear healthy, and that adults are more likely to be infected with
HIV and other sexually transmitted infections than a young person. However,
the curriculum did not address some other potentially high-risk partners, e.g.,
travelers and urban dwellers, and this is unfortunate given such individuals are
often perceived as desirable partners in villages due to relative wealth or modern
appearance. (HALIRA, 2002, 11–12)

Finally, the preliminary HALIRA report addressed the likelihood of sig-
ificant intervention impact on condom use:

For sexually active youth, the intervention strongly encouraged condom use
. . . but this message was necessarily limited due to national and local regulation.
Nonetheless, the general condom use message appears to have been repeatedly
reinforced within and across school years, and it is likely that the vast majority
of intervention cohort members know that condoms prevent pregnancy as well
as HIV and other sexually transmitted infections. However, the limited nature
of in-school condom information may have led some pupils to pick up patchy
and ultimately incorrect information.

Some intervention participants report having used condoms, and some of
these reports seem plausible (e.g., school girls reporting occasional condom use
to avoid pregnancy). However, it seems unlikely that more than a very small
proportion of intervention participants have ever truly used condoms, and of
those only a much smaller proportion is likely to have used them consistently.
This is not to say that the condom use intervention message failed. The environ-
ment into which condoms were introduced was confused and hostile, and access
was very limited; given those obstacles, the intervention may have achieved
an important, long-term step in raising condom awareness and availability in
general. (HALIRA, 2002, 12–13)
The preliminary HALIRA report concluded by saying that there did not seem to have been much intervention impact on sexual behavior in the course of the trial, so significant impact on pregnancy or sexually transmitted infections seemed unlikely. These findings were largely borne out in subsequent trial analyses, as will be described in the next section.

**QUANTITATIVE IMPACT EVALUATION**

The impact of the *MEMA kwa Vijana* intervention was primarily evaluated through the trial, in which twenty communities were randomly assigned to either the intervention or a control group (Hayes et al., 2005). During the trial, three surveys were conducted with 9,645 young people between 1998 and 2002, as described in chapter 1 (table 1.1). The 2001–2002 survey found that intervention participants had significantly better sexual health knowledge and were significantly more likely to report some desirable attitudes and behaviors than control participants (table 7.1) (Ross et al., 2007). However, there was no statistically significant and positive intervention impact on pregnancy, HIV, or other sexually transmitted infections.

The *MEMA kwa Vijana* intervention was continued and expanded in the same districts after the trial ended in 2002 (Renju, Andrew, Medard et al., 2010; Renju, Andrew, Nyalali et al., 2010; Renju, Makokha et al., 2010). From 2007 to 2008, a follow-up cross-sectional survey evaluated possible long-term intervention impact in a cohort of 13,804 young people aged fifteen to thirty years, all of whom had attended intervention or control schools during the trial but were not necessarily members of the original trial cohort (Doyle et al., 2010). That survey was conducted to evaluate whether greater time and broader population exposure had a greater impact on knowledge, attitudes, behavior, and biological outcomes. It found that, at an average of five years after school program participation, intervention participants still had significantly improved sexual health knowledge and were significantly more likely to report some desirable behaviors than control participants. However, the survey found that the intervention neither had a significant long-term impact on reported sexual attitudes nor on the prevalence of HIV or other sexually transmitted infections.

To describe these findings in more detail, the following sections summarize the results documented in the several publications for the 2001–2002 survey (Ross et al., 2007) and the 2007–2008 survey (Doyle et al., 2010; Doyle, Weiss et al., 2011). These and other results are also detailed in table 7.1.
### Table 7.1. Impact of the MEMA kwa Vijana Intervention on Select Outcomes by Sex in the 2001–2002 and 2007–2008 Surveys

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Males</th>
<th>Females</th>
</tr>
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<tbody>
<tr>
<td>HIV acquisition</td>
<td>65</td>
<td>45</td>
</tr>
<tr>
<td>STI acquisition</td>
<td>52</td>
<td>40</td>
</tr>
<tr>
<td>Pregnancy prevention</td>
<td>84</td>
<td>50</td>
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<tr>
<td>Attitudes b</td>
<td>22</td>
<td>12</td>
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<tr>
<td>Attitudes towards a girl’s right to refuse sex</td>
<td></td>
<td></td>
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<tr>
<td>Sexual debut during the trial c</td>
<td>60</td>
<td>72</td>
</tr>
<tr>
<td>Age at first sex &lt;16 years</td>
<td>—</td>
<td>25</td>
</tr>
<tr>
<td>Partner Number Limitation</td>
<td>19</td>
<td>28</td>
</tr>
<tr>
<td>&gt;1 partner in last 12 months</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>&gt;2 (female) or &gt;4 (male)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>lifetime partners</td>
<td>—</td>
<td>29</td>
</tr>
<tr>
<td>&gt;1 partner in same time period</td>
<td>—</td>
<td>11</td>
</tr>
<tr>
<td>in past 12 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;1 partner in past 4 weeks</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Condom Use</td>
<td>39</td>
<td>28</td>
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<tr>
<td>---------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>First used condom during the trial</td>
<td></td>
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<tr>
<td>Used condom at last sex</td>
<td>29</td>
<td>20</td>
</tr>
<tr>
<td>(1.12, 1.93)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used condom at last sex in past 12 months</td>
<td>—</td>
<td>34</td>
</tr>
<tr>
<td>(0.91, 1.54)</td>
<td></td>
<td></td>
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<tr>
<td>Used condom at last sex in past 12 months with non-regular partner</td>
<td>—</td>
<td>50</td>
</tr>
<tr>
<td>(0.97, 1.36)</td>
<td></td>
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<tr>
<td>Treatment Seeking</td>
<td></td>
<td></td>
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<tr>
<td>Went to health facility for most recent STI symptoms within past 12 months</td>
<td>29</td>
<td>35</td>
</tr>
<tr>
<td>(0.50, 1.41)</td>
<td></td>
<td></td>
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<tr>
<td>Biological Outcomes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIV incidence (/1,000 person years)</td>
<td>0.4</td>
<td>0.3</td>
</tr>
<tr>
<td>HIV prevalence</td>
<td>—</td>
<td>2.0</td>
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<tr>
<td>(0.50, 1.65)</td>
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<tr>
<td>Herpes prevalence</td>
<td></td>
<td>25.0</td>
</tr>
<tr>
<td>(0.69, 1.22)</td>
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<tr>
<td>Syphilis prevalence</td>
<td>1.4</td>
<td>1.8</td>
</tr>
<tr>
<td>(0.46, 1.30)</td>
<td></td>
<td></td>
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<tr>
<td>Chlamydia prevalence</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>(0.53, 2.43)</td>
<td></td>
<td></td>
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<tr>
<td>Chlamydia prevalence</td>
<td></td>
<td>2.1</td>
</tr>
<tr>
<td>(0.66, 2.33)</td>
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<tr>
<td>Chlamydia prevalence</td>
<td></td>
<td>2.6</td>
</tr>
<tr>
<td>(0.87, 1.86)</td>
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Table 7.1. (continued)

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<tbody>
<tr>
<td></td>
<td>I (%)</td>
<td>C (%)</td>
<td>aRR (CI)</td>
<td>I (%)</td>
</tr>
<tr>
<td>Biological Outcomes (continued)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Gonorrhea prevalence</td>
<td>0.4 0.1 NA</td>
<td>0.3 0.4 0.71 (0.21, 2.41)</td>
<td>2.4 1.2 1.93 (1.01, 3.71)</td>
<td>0.3 0.4 0.73 (0.20, 2.63)</td>
</tr>
<tr>
<td>Trichomonas prevalence&lt;sup&gt;h&lt;/sup&gt;</td>
<td>—</td>
<td>—</td>
<td></td>
<td>28.6 25.8 1.13 (0.92, 1.37)</td>
</tr>
<tr>
<td>Pregnancy (test) prevalence&lt;sup&gt;h&lt;/sup&gt;</td>
<td>—</td>
<td>—</td>
<td></td>
<td>19.2 18.0 1.09 (0.85, 1.40)</td>
</tr>
<tr>
<td>Reported pregnancy during trial&lt;sup&gt;h,i&lt;/sup&gt;</td>
<td>—</td>
<td>—</td>
<td></td>
<td>46.9 45.5 1.03 (0.89, 1.20)</td>
</tr>
</tbody>
</table>

aPR = adjusted prevalence ratio; aRR = adjusted relative risk; C = control; CI = confidence interval; I = intervention; NA = Not applicable as number of cases too small to justify comparison (<10 in each group); STI = sexually transmitted infection; — = not measured.

<sup>a</sup>Adjusted for: age group (2001–2002: ≤17, 18, ≥19 years old at survey; 2007-2008: <21, 21-22, 23-24, ≥25 years old at survey), ethnic group (Sukuma vs. non-Sukuma), and trial stratum (low, medium, or high HIV risk). Community categorization within trial strata was based on HIV prevalence in 15–19 year olds in a 1997-1998 survey (Obasi et al. 2001), and geographical characteristics of the communities, e.g., whether villages were remote or close to towns, major roads, or gold mining areas (Hayes et al. 2005). 2001–2002 data are also adjusted for number of lifetime partners at baseline in 1998 (0, 1, 2, ≥3).

<sup>b</sup>Proportion who answered all three variables for each category correctly or desirably.

<sup>c</sup>Among those who reported never having had sex at the 1998 baseline survey.

<sup>d</sup>Among those who reported having had sex.

<sup>e</sup>Among those who reported having had sex in the past 12 months.

<sup>f</sup>Among those who reported having had sex with a non-regular partner in the past 12 months.

<sup>g</sup>Among those who reported sexually transmitted infection symptoms (genital discharge or genital ulcer) within the past 12 months.

<sup>h</sup>Females only.

<sup>i</sup>Among those who reported never having been pregnant at the 1998 baseline survey.

Adapted with permission from Ross et al., 2007 and Doyle et al., 2010.
Knowledge
The 2001–2002 MEMA kwa Vijana trial survey assessed participants' knowledge of pregnancy prevention, HIV acquisition, and the acquisition of other sexually transmitted infections by asking three questions about each topic, and then determining the proportion of participants who answered all three questions correctly for each topic. These questions were very basic, such as, “Can a person who looks strong and healthy have the AIDS virus?” and, “Is it possible for a person to prevent pregnancy by using a condom while having sex?” For each of the topics, significantly higher proportions of intervention participants than control participants answered all three questions correctly; this was true for both males and females (table 7.1).

In 2002 the intervention’s impact on knowledge was independently confirmed by responses to the sexual health questions placed within the national Year 7 examination in trial schools, as described in chapter 5. Those questions were answered by 4,707 intervention and control participants in the school year below the trial cohort, so they had not participated in trial research. However, all of those in intervention schools had participated in three years of the MEMA kwa Vijana school program. Tests were administered under examination conditions and were supervised by a teacher from a different school. In that examination, 88 percent of male and 80 percent of female intervention participants answered half or more of the sexual health questions correctly, compared to only 59 percent and 41 percent of male and female control participants, respectively. In addition, 32 percent of male and 20 percent of female intervention participants answered 80 percent or more of the sexual health questions correctly, compared to less than 1 percent of both male and female control participants. For both males and females all of these differences were statistically significant by intervention status.

The 2007–2008 long-term cross-sectional survey assessed participant knowledge about pregnancy prevention, HIV acquisition, and the acquisition of other sexually transmitted infections by asking the same questions that had been asked in the 2001–2002 trial survey. For almost all of the knowledge questions, higher proportions of both intervention and control participants gave correct answers than had been the case in 2001–2002. For several of these, significantly higher proportions of intervention participants than control participants answered correctly, namely for HIV acquisition (females), sexually transmitted infection acquisition (males), and pregnancy prevention (males and females) (table 7.1).

In both the 2001–2002 and the 2007–2008 surveys, males and females who had participated in two or three years of the intervention, rather than one only, were more likely to answer knowledge questions about pregnancy prevention correctly. In 2001–2002, this was also true for male responses to questions about HIV acquisition.
The consistent finding of significant and long-term intervention impact on knowledge is important, given improved understanding of sexual and reproductive health is considered to be a crucial step in risk reduction, and substantial knowledge gaps still exist in sub-Saharan Africa even thirty years into the AIDS epidemic (e.g., Uiso et al., 2006; Bastien, Sango et al., 2008; Dixon-Mueller, 2009; Ezekiel et al., 2009; Robins, 2009; Mkumbo, 2010; UNAIDS, 2010; Dimbuene and Defo, 2011). Critically, the trial demonstrated that a low-cost, large-scale participatory school program could achieve this impact despite great resource limitations. However, the surveys only assessed very basic knowledge about HIV, AIDS, and other sexual health issues. They thus did not reveal much about the depth, complexity, or extent of intervention participants’ improved knowledge.

Attitudes

In both the 2001–2002 and the 2007–2008 MEMA kwa Vijana surveys, participant attitudes were assessed by asking whether they agreed, disagreed, or did not know how to respond to each of three statements. Intervention impact was then determined by comparing the proportions of intervention and control participants who responded to all three statements in the way desired by the intervention. Those statements addressed a girl’s right or ability to refuse sex if a boy or man is older than her, if he is her lover, or if she has already accepted a gift from him. In the 2001–2002 survey, the overall proportion of trial members who gave the desired responses to all three of the statements was low. Nonetheless, significantly higher proportions of intervention participants than control participants gave the desired responses to all three statements, and this was true for both males and females (table 7.1). In addition, males who had participated in two or three years of the intervention were more likely to report the desired attitudes than males who had only participated in one year of it.

For males in the 2007–2008 survey, slightly higher proportions of both intervention and control participants consistently gave the desired responses to these statements, and there were no significant differences by intervention status. For females, in contrast, the proportion of intervention participants who consistently reported the desired attitudes decreased from 27 percent in 2001–2002 to 11 percent in 2007–2008, and similarly for control participants decreased from 19 percent to 10 percent; there were no significant differences by intervention status (table 7.1). It is striking that, with increased age and experience, markedly lower proportions of female intervention and control participants believed a girl has the right or ability to refuse sex in all of the three circumstances specified. Nonetheless, there was some evidence of intervention impact on women’s attitudes based on the extent of their participation in the MEMA kwa Vijana program. Specifically, women who had participated
in two or three years of the intervention were more likely to report the desired attitudes than women who had only participated in only one year of it.

**Behavior**

In the 1998 *MEMA kwa Vijana* baseline survey, 49 percent of males (average age sixteen) and 79 percent of females (average age fifteen) reported they had never had sex (Todd et al., 2004). As discussed earlier in the chapter, however, triangulation of different data sources suggests that this variable was underreported, particularly for females (Plummer, Ross et al., 2004; Plummer, Wight et al., 2004). Of those trial participants who reported they had never had sex at the beginning of the trial, approximately two-thirds said they had become sexually active by the 2001–2002 survey at the end of the trial (table 7.1). For this and other abstinence variables measured in the 2001–2002 and 2007–2008 surveys, there were no significant differences by intervention status.

The *MEMA kwa Vijana* intervention did, however, have a limited impact on male participants’ reported partner number (table 7.1). In 2001–2002, a significantly lower proportion of male intervention participants (19 percent) than control participants (28 percent) reported they had had more than one sexual partner in the last twelve months. In addition, males who had participated in two or three years of the intervention were significantly less likely to report more than one partner in the last twelve months than males who had only participated in one year of the program. For females there was no significant difference by intervention status for this variable (9 percent and 8 percent, respectively), and also no significant difference by years of program participation amongst intervention participants.

In 2007–2008, there was no significant difference for this variable for either males (41 percent intervention, 45 percent control) or females (both 10 percent) (table 7.1). However, at that time a significantly lower proportion of male intervention participants (37 percent) than control participants (44 percent) reported more than four partners in their lifetimes. No similar difference was observed by intervention status for females for a similar variable, that is, more than two lifetime partners (34 percent and 37 percent, respectively). In addition, no significant difference by intervention status was observed for either males or females for another partner number variable (i.e., more than one partner in the last four weeks) or a concurrency variable (i.e., more than one partner during the same time period in the last twelve months).

The *MEMA kwa Vijana* intervention also had limited impact on some condom use variables reported by males and females (table 7.1). In 2001–2002, significantly higher proportions of both male and female intervention participants (39 percent and 38 percent, respectively) than control participants (both
28 percent) reported first use of condoms during the trial. In addition, significantly higher proportions of male intervention participants (29 percent) than control participants (20 percent) reported condom use at last sex. For females there was no significant difference by intervention status for this variable (27 percent and 22 percent, respectively). In contrast, in 2007–2008 there was no significant difference in reported condom use for males by intervention status, either for condom use at last sex in the past twelve months, or specifically for condom use at last sex in the past twelve months with a non-regular partner. Females did not show a significant difference by intervention status for the former variable, but female intervention participants (45 percent) were significantly more likely than their control counterparts (31 percent) to report condom use at last sex in the past twelve months with a non-regular partner.

**Biological Markers**

In the 2001–2002 survey, 14 percent of males (average age nineteen) and 45 percent of females (average age eighteen) tested positive for trichomonas, herpes, syphilis, chlamydia, gonorrhea, and/or HIV (Helen Weiss, personal communication). The incidence and/or prevalence of each of these infections is shown by sex and intervention status in table 7.1. Intervention status was not significantly associated with any infection or with pregnancy, except that gonorrhea was slightly higher among female intervention participants. This association was only of borderline statistical significance, and it was only seen in the school year that had had the least exposure to the intervention, suggesting that it was due to chance rather than intervention participation. Similarly, there were no significant differences in either direction by intervention status for any of the five sexually transmitted infections tested in the 2007–2008 survey (table 7.1).

In both the 2001–2002 and the 2007–2008 surveys, the proportions of male and female respondents who reported experience of abnormal genital discharge during the past year was lower in intervention communities than in control communities, sometimes significantly so. For males and females reporting symptoms of sexually transmitted infection, however, there were no significant differences by intervention status in the proportions who reported seeking care at a health facility for their most recent outbreak during the past year.

**IN-DEPTH QUALITATIVE IMPACT EVALUATION**

As discussed in chapter 4, the MEMA kwa Vijana school curriculum (Appendices 1–3) and other intervention components were based on two behavioral theories, the Social Cognitive Theory and the Theory of Reasoned Action. Those theories identify largely overlapping sets of factors which are believed
to determine behavior, including knowledge of the risks and benefits of behaviors, perception of personal risk, anticipated outcomes, intentions or goals, sense of self-efficacy or control, observational learning or modeling, and contextual facilitators and impediments (Bandura, 2004; Michie et al., 2005; Aarø, Schaalma, and Åström, 2008). Overall, the qualitative evaluation suggests that the intervention did have an impact on many of those determinants, but that this was only to a mild extent for most intervention participants, and/or to a great extent for a few, and this was insufficient to result in a significant and sustained impact on the trial population’s behavior, unintended pregnancy, or sexually transmitted infections. The next three sections will examine these findings in more depth by considering the intervention’s impact on each of the theoretically defined behavioral determinants of abstinence, low partner number, and condom use.

Theoretical Determinants of Abstinence

Knowledge of the Risks and Benefits of Abstinence

In the course of participating in the MEMA kwa Vijana school program, the vast majority of intervention participants’ knowledge of the risks and benefits of abstinence improved. Almost all understood that unprotected vaginal intercourse could result in pregnancy, infection, and other reproductive health problems, and that abstinence was the only certain way to avoid such consequences. Male pupils generally seemed to understand and retain this information in greater detail than female pupils, which may reflect how boys were typically favored and encouraged more in their learning. In addition, the approximately 12 percent of the trial population who were peer educators had a particularly good understanding of these issues, which reflected their participation in the special training course as well as the school program.

Abstinence-Related Risk Perception

While almost all pupils’ abstract understanding of sexual risk improved with intervention participation, this usually did not result in more accurate personal risk perception related to abstinence. Many intervention participants abstractly associated sexually transmitted infections with substantially older people, urban residents, and/or people with obvious symptoms, all of whom were indeed more likely to be infected with sexually transmitted diseases. However, in practice pupils rarely avoided older men and urban visitors as sexual partners, and on the contrary often considered them to be particularly desirable partners because of their perceived wealth, modernity, and/or style. In addition, although the biological surveys revealed that sexually transmitted infections were fairly common, many infected youth probably did not experience symptoms. Even
if they did experience symptoms, however, they might not have recognized
the condition as a sexually transmitted infection, or if they did they might not
have revealed it in order to avoid stigma. Negative consequences related to
unintended pregnancies were more visible in rural Mwanza, and female pupils
were more likely to fear this than infection. Nonetheless, many girls felt preg-
nancy was a low risk—especially if they had already had sex without becoming
pregnant—and some were ambivalent about potential pregnancy because they
expected to leave school, marry, and have children soon regardless.

In the qualitative research it was very rare for pupils to give plausible
reports of intentionally abstaining after sexual debut (i.e., secondary absti-
nence) in order to avoid infection or pregnancy. When they did, this almost
always resulted from a frightening personal experience of negative conse-
quences of sexual activity, as seen in examples provided by both intervention
and control participants in case studies 1.3, 1.4, and 3.3.

**Outcomes Expected from Abstinence**

Intervention participants’ limited ability to accurately assess their personal
risk influenced their abstinence-related outcome expectations. For most, the
immediate benefits of sex outweighed the possibility of pregnancy or other
consequences later. Importantly, adolescents may have a limited ability to
anticipate long-term behavioral outcomes, and their exploratory behaviors
also may have had an impulsive component (Johnson et al., 2003; Breinbauer
and Maddaleno, 2005). In addition, however, the MEMA kwa Vijana program
only superficially addressed intervention participants’ overriding motivations
to have sex, that is, sexual desire for boys and material gain for girls. If par-
ticipants’ main incentives to have sex are not addressed in depth, they may
mistrust the intervention and feel its goals are unrealistic.

It is not unusual for adolescent sexual health programs in Africa or else-
where to avoid discussion of sexual pleasure, and also not to acknowledge
masturbation as a safe way to satisfy sexual desire, because these are po-
tentially controversial topics (Pattman and Chege, 2003; Mkumbo, 2009).
However, in a context where masturbation may be perceived as more harm-
ful than unprotected intercourse (e.g., where it may be believed to reduce a
man’s virility or his potential to reproduce), it is important to acknowledge it
is a safe way to manage sexual desire. This acknowledgement may not only
be relevant to primary and secondary abstinence but also to monogamy and
condom use, as masturbation can also be a safe way to satisfy sexual desire
when a monogamous person is separated from a partner, or a condom user
does not have access to a condom.

Unlike sexual pleasure for boys, during the trial the MEMA kwa Vijana
intervention increasingly addressed girls’ expectation that they would receive
money or materials in exchange for sex. As discussed in chapter 4, the school curriculum initially addressed material exchange for sex by encouraging girls to reject male offers of gifts and money, and providing them with opportunities to practice their refusal skills. The final version of the curriculum additionally acknowledged that girls might be motivated to have sex due to material gain, and might encourage one another to do so. However, the curriculum was not able to address the centrality of transactional sex in adolescent girls’ lives and the frequent, fundamental dilemmas they faced in having few other ways to obtain basic necessities, such as underwear and soap. In addition, the final curriculum only superficially engaged with some deeply imbedded cultural beliefs about material exchange, reciprocity, and self-esteem, for example, beliefs that a girl who received a gift from a boy or man was indeed obliged to have sex with him, and that a sexually active girl who did not receive something in exchange for sex had little self-respect.

**Abstinence Goals**

Within the school program, pupils were encouraged to make goals to be abstinent while schooling and/or until marriage. Reflective exercises were intended to help participants focus on their short-term and long-term goals to guide them in their behaviors. The qualitative research suggests that sexual health intervention participation influenced a small minority of adolescents to actively set abstinence as a personal goal, particularly those who were highly motivated to go far in school and/or to establish financial independence before starting a family. This can be seen in the description of the MEMA kwa Vijana intervention participant in case study 1.2, as well as the two young people in case studies 1.3 and 2.2 who—unusually for pupils in trial control communities—had also participated in sexual health education while in school. These young people believed abstinence would help them achieve their ambitions, because they would not be distracted by sex and/or they would not have to leave school due to pregnancy. Some girls also had a goal to be abstinent to maintain their good reputations, as this had implications for their self-esteem, community regard, and future marriage prospects, as can be seen in case study 2.1. However, the qualitative research found that most intervention participants did not consider abstinence to be a realistic or feasible goal in either the short-term or the long-term. The following examples from an in-depth interview with an eighteen-year-old married woman and a participant observation group discussion with young men were typical:

*R*: Some people can reduce partners, some can use condoms. To abstain completely, I have never seen someone who has abstained completely. Very few abstain completely. . . .
Chapter Seven

I: Why do you think they don’t abstain completely?

R: Maybe tamaa (literally “desire,” “longing,” “greed,” or “lust”; colloquially often used to describe male sexual desire and female desire for nice commodities). (I-02-I-290-f)

P: As I see it, it is better that they stop shouting at people and telling a person not to have sex when his organ is fine and he is physically fit. I would suggest that they leave that and think of another plan, like teaching and convincing them to just reduce their partner number, and perhaps to be faithful to one lover. . . . It would even be better if you told a person to try to use condoms, to do it with condoms, but not to stop completely. That is impossible. (GD-02-I-1-1m)

Self-Efficacy to Be Abstinent

Almost all of the skills-building exercises in the school curriculum focused on abstinence, and particularly on girls’ abilities to resist sexual advances from boys and men, and boys’ abilities to resist peer pressure to have sex. The intervention participants who had the greatest perceived self-efficacy to be abstinent—that is, those who believed they could control themselves and successfully abstain—were almost always those who had never had sex. For some of these young people, strong intervention emphasis on abstinence and sexual refusal skills may have reinforced their sense of control and helped delay their sexual debut. However, the qualitative research found that widespread and persistent pressures and temptations for young people to have sex typically wore down the resistance of all but those most highly motivated to abstain. Notably, adolescent girls who abstained were often considered the most “hard-to-get” and desirable partners, so boys and men intensively targeted them with sexual propositions.

Adolescents who had already become sexually active rarely believed they had sufficient self-control to become abstinent again. Young men typically believed they had a natural, biological drive that they could not overcome once they had experienced sex. In contrast, once adolescent girls had had sex, it quickly became the main way for them to obtain basic needs and small luxuries and very few perceived abstinence as a feasible option any longer. In practice, many pupils who had already experienced sex, particularly school boys, did go through abstinent periods of weeks or months in length. However, for boys this typically was not voluntary or intentional and when they again had the opportunity to have sex—as most often happened around special events, such as a sports competition or ngoma celebrations—then they felt they could not abstain.

Modeling Abstinence

Within the school curriculum, abstinence was modeled in stories and dramas in which abstinent characters remained in school and healthy while some
pupils who had sex became pregnant, contracted an infection, and/or dropped out of school (e.g., box 5.1). However, the intervention did not have much success in modeling abstinence in real life, that is, in providing new opportunities for pupils to learn how to abstain by observing others. In addition to talking about their abstinence goals and life priorities, for example, male role models might demonstrate abstinence skills by declining to participate in sexual pursuit of young women with their peers, while female role models might refuse to engage in sexual negotiation when approached by men and boys at special events or festivals. Peer educators were intended to be such role models, but the qualitative research suggests only a small minority of peer educators seemed to practice lower risk behaviors than other pupils, including abstinence. Abstinence also was not a behavior that adults modeled for adolescents, as abstinence was only perceived as a goal for unmarried youth. Virtually all adults of reproductive age were sexually active in rural Mwanza, whether they were married or not.

**Contextual Impediments of Abstinence**

Many of the social, economic, and cultural influences on young people’s sexual behavior described in chapter 3 and this book’s companion volume (Plummer and Wight, 2011) were contextual impediments of abstinence, and the intervention had very little impact on them. This included girls’ low and subservient social status, which made it difficult for them to resist sexual pressure from men who approached them for sex and from female intermediaries who were authority figures. As already noted, girls’ economic dependence on boys and men was also a great impediment to abstinence, because it contributed to sex being an important economic resource for them. For boys, contextual impediments to abstinence included the widespread beliefs that sexual activity was central to masculine identity and that continued sexual activity was inevitable once a boy had experienced sex.

**Contextual Facilitators of Abstinence**

The intervention’s promotion of abstinence was in line with some contextual facilitators of abstinence, such as the common adult ideal that school pupils should be abstinent, especially pupils who hoped to go further in formal education. However, the intervention was not able to strengthen or reinforce such beliefs by making them more feasible to achieve. This was largely due to structural impediments such as poverty and gender inequality. For example, although intervention teachers repeatedly encouraged pupils to abstain so they could pursue further schooling, intervention participants knew that only a minority of Year 7 pupils ever won a place in secondary school, and that few girls who achieved this were supported by their parents to pursue secondary education.
Theoretical Determinants of Low Partner Number and/or Fidelity

Knowledge of the Risks and Benefits of Having Few Partners and/or Being Faithful

Young people’s knowledge of the risks and benefits of having few partners and/or being faithful improved with MEMA kwa Vijana intervention participation. School sessions focused on reproductive anatomy, the local prevalence of sexually transmitted infections, disease transmission simulation exercises (box 4.1), dramas, and stories conveyed the basic principle that unprotected sex with multiple partners was associated with increased risk of infection.

However, the relationship between sexual partner number and infection transmission is complex and depends on many factors, such as the frequency of sexual encounters, the type of sexual activity, the rate of partner change, the overlap of partnerships, and the type of infection (Caldwell, Caldwell, and Quiggin, 1989; Halperin and Epstein, 2004; Buvé, 2006; Harrison and O’Sullivan, 2010). Given the low education levels of both teachers and pupils in rural Mwanza, the school program did not attempt to convey such concepts in their complexity. Instead, it noted that the protective potential of monogamy is difficult to assess, particularly as a sexual partner might begin a relationship already infected with a sexually transmitted disease, or might contract it from unacknowledged partners during the relationship. The curriculum also repeatedly stressed that HIV-positive people usually appear healthy for many years before developing symptoms. Intervention participants were thus encouraged to be abstinent until marriage, but if they could not be, they were encouraged to be monogamous and to use condoms. Mutual HIV testing prior to starting a sexual relationship was not addressed, because such services were hardly available in rural Mwanza at the time of the trial. Even if they had been more available for the general population, however, it may still have been very difficult for unmarried adolescents to access such services, given their sexual activity was very hidden.

Risk Perception Related to Having Few Partners and/or Being Faithful

While pupils’ abstract understanding of the risk of multiple partnerships improved with intervention participation, their personal risk perception related to this often remained limited, for several reasons. First, very few villagers had ever had any biology education, and it was commonly believed that illnesses were cured once symptoms were gone. Although intervention participants developed a basic understanding that some infections can be asymptomatic for a long period, this was difficult for them to fully conceptualize and apply. Most still felt they were not at risk if a sexual partner appeared healthy and they had agreed to be faithful to one another. Second, concurrent
sexual partnerships were fairly common but well hidden, so it was difficult to know when a partner had other partners. Third, while adolescents typically expected their partners to be faithful—and ended relationships if a partner’s infidelity was discovered—they often did not hold themselves to the same standard and were not as concerned by the risk posed by their own infidelity. Fourth, many young people considered themselves to be safely monogamous, even if they had a series of monogamous relationships with only short gaps in between them over a period of months or years.

Despite these limitations, the intervention did seem to influence a small minority of pupils—particularly males—to become concerned about risk related to their multiple partnerships, or those of a partner. The few individuals who intentionally tried to reduce such risk usually tried to be mutually monogamous in their premarital relationships and then to marry and have a long-term, mutually faithful relationship. Some of these individuals also tried to be selective in who they chose as sexual partners, studying potential partners before choosing one who they believed had had few prior partners and who they believed would be faithful to them. Case study 3.3 provides one example. This attempt to reduce risk depends on subjective impressions and imperfect risk assessment, but nonetheless sometimes may have been protective.

Outcomes Expected from Having Few Partners and/or Being Faithful

The qualitative research found that some young people perceived immediate, positive benefits to having multiple partners, and the intervention did not have much impact on those expectations. Many young men sought new partners to maximize their sexual pleasure. Some young women instead took new sexual partners to maximize what they received in exchange for sex, because men typically offered the most money or gifts for sexual encounters early in a relationship. Such outcome expectations contributed to opportunistic sexual relationships (particularly when traveling or attending special events), serial monogamy, and concurrency.

Nonetheless, of the three low-risk sexual behaviors promoted by MEMA kwa Vijana, intervention participants typically perceived partner reduction and monogamy as involving the least sacrifice and thus being the most feasible and desirable. Unlike abstinence and condom use, these behaviors could still satisfy young people’s main motivations to have sex, that is, the pleasure of unprotected intercourse for boys and the receipt of money or gifts for girls. Both also allowed for pregnancy, if desired. Fidelity was also a social ideal in rural Mwanza, and as such it was positively reinforced by sexual partners and the broader community, especially for girls. Thus, intervention participants often expected some positive personal, physical, and social outcomes related to partner reduction and monogamy.
Goals to Have Few Partners and/or Be Faithful

As noted above, the school program primarily promoted low partner number and fidelity for sexually active youth by stressing the increased risk involved in multiple partnerships. Most curriculum exercises focused on building skills and setting goals for abstinence, not reducing partner number and/or being faithful. For example, there were no exercises addressing how to discuss risk or how to negotiate mutual fidelity with a sexual partner. Critically, however, safe practice of monogamy does not rely solely on an individual’s decision to be monogamous and his or her ability to follow through on that decision, but also on a partner’s intention and restraint.

When the MEMA kwa Vijana intervention was developed in 1998, very few HIV prevention interventions in sub-Saharan Africa focused on fidelity and related interpersonal skills in depth. Even today few such interventions exist, and they mostly target married couples (e.g., Parikh, 2007). This evaluation suggests that intensive promotion of low partner number and/or fidelity with unmarried young people has promising potential, because those practices are social ideals shared by many youth and adults in rural Africa, and adolescents reported they were more feasible than either abstinence or condom use. Nonetheless, such intervention work is likely to be very challenging, for several reasons. First, if local authorities and adult community members require that an intervention primarily promotes abstinence, as was the case for MEMA kwa Vijana, it can become very difficult to have in-depth and complex discussions about pupil sexual relationships, which are typically hidden. Indeed, as noted in chapter 5, MEMA kwa Vijana teachers frequently said they found it challenging and contradictory to advise pupils to be abstinent while also promoting monogamy and condom use if pupils were sexually active. Other school-based interventions have had similar findings (e.g., Helleve et al., 2009; Njue et al., 2009).

Second, it may be difficult to promote fidelity and/or low partner number with adolescents because adolescence can be a time of personal exploration and transitory sexual relationships. Many youth in rural Mwanza entered into new sexual relationships with few specific goals for how the relationships would develop beyond the first encounter, but they were open to multiple possibilities and eventually hoped to find a suitable spouse. It was thus not unusual for young people to have overlapping, open-ended relationships in which partners did not necessarily plan to continue the relationship, but they had sex when circumstances were conducive and the opportunity arose. During such a life stage, it is unclear how to effectively promote mutual and long-term monogamy.

Third, it is not possible to unequivocally promote partner reduction and monogamy as behavioral goals because it is difficult to assess the extent to
which these practices are protective in the absence of condom use. Practicing these behaviors in a safe way can be a complex, challenging, and ongoing process. If a couple does not use condoms, for example, fidelity is only protective against disease if both are uninfected and monogamous. Their relationship could instead be high risk if one or both individuals enters the relationship infected or is not faithful during the relationship. So while the MEMA kwa Vijana intervention stressed the risks involved in multiple partnerships, it could not unequivocally promote monogamy as low risk, particularly in a context where HIV testing was largely unavailable.

**Self-Efficacy to Have Few Partners and/or Be Faithful**

It is unclear whether the MEMA kwa Vijana intervention had much impact on participants’ self-efficacy to have few partners and/or be faithful, for several of the reasons already discussed. On the one hand, intervention participants typically perceived these options as more realistic and feasible than abstinence or condom use. On the other hand, they may have felt little control over critical factors which made these practices safe, such as whether a partner entered a relationship with an infection, whether a partner was faithful during the relationship, and whether condoms were used. This may have reinforced a broader cultural belief that risk is inevitable and unavoidable, justifying high-risk practices. Importantly, the increased availability of HIV testing in Mwanza and elsewhere in sub-Saharan Africa today could partially address such fatalism and reduce the risk involved in monogamous relationships, if couples were to test themselves for HIV before having unprotected intercourse and then test again at routine intervals afterward.

**Modeling Low Partner Number and/or Fidelity**

In dramas and stories within the school program, characters with many partners developed sexually transmitted infections, while those who only had one partner long-term usually remained healthy. Those few monogamous individuals who did contract infections either had a series of monogamous relationships or had a partner who was not faithful, and their storylines were used to illustrate the importance of condom use even within monogamous relationships. These dramas were entertaining and popular among intervention participants, and many youth remembered details about them a few years later, suggesting that they were useful in modeling the practices of having few partners and/or being faithful. However, as noted earlier, the qualitative research found that only a small minority of the peer educators who performed the dramas actively reduced their sexual partner number and/or were faithful due to their intervention participation, suggesting they
were not able to model those new behaviors for their peers in real life. For example, a sexually active male peer educator could have modeled these skills and behaviors if he made a personal commitment to have only one mutually faithful sexual relationship, if he explained his intention to his friends, and if he then did not succumb to pressure or temptation to have new partners when such opportunities arose.

**Contextual Impediments to Having Few Partners and/or Being Faithful**

As was the case with abstinence, some of the social, economic, and cultural norms and expectations described in chapter 3 and this book’s companion volume (Plummer and Wight, 2011) were barriers to low-risk practices such as having few partners and being faithful, and the intervention did not seem to have an impact on them. Many intervention participants continued to manage contradictory social norms and expectations by hiding their sexual relationships from adults. This practice often also concealed an individual’s partners from one another, helping to maintain concurrency and inhibiting realistic risk perception. The intervention also was not able to enhance adolescent girls’ limited alternatives to sex to obtain basic supplies, and this economic dependence sometimes contributed to girls seeking new serial or concurrent sexual partners. Finally, the intervention only superficially addressed a common belief amongst young men that seducing new and/or multiple partners demonstrated masculinity. It also did not promote alternative ways to establish masculinity, such as through sports, disciplined employment, or entrepreneurship.

**Contextual Facilitators of Low Partner Number and/or Fidelity**

In rural Mwanza, several contextual facilitators encouraged low partner number, particularly for women, but they mainly related to adulthood and marriage. By primarily promoting abstinence until marriage and fidelity after marriage, the MEMA kwa Vijana intervention was broadly in line with social ideals related to marriage. However, such ideals may not have seemed immediately relevant to school pupils who were at an exploratory stage of their sexual lives and whose premarital sexual relationships were hidden. Only a small number of intervention participants reported that the program influenced them to have one low-risk, long-term premarital partner with whom they had unprotected sex, as seen in case study 3.3.

Most intervention participants left school during the trial and about one-third of female participants were married by the end of it (Lutz, 2005). Young people chose to marry for many reasons, including a desire for offspring, economic security, adult status, or legitimate sexual access to a
partner. Some also married to ensure a partner’s sexual fidelity and/or to reduce their sexual risk related to multiple sexual partnerships. Marriage was considered protective because it involved an overt commitment of mutual fidelity, even if this was not always fully achieved in practice. In addition, marriage was perceived as protective because young people typically chose spouses who they believed were low risk, as opposed to partners who they believed had many prior or current partners, with whom they might enjoy sex but not want a more serious commitment. These issues will be discussed in more depth in chapter 9.

Theoretical Determinants of Condom Use

Knowledge of the Risks and Benefits of Condom Use

At the end of the trial, the vast majority of intervention participants had better knowledge of the risks and benefits of condom use than their control counterparts. Most knew that condoms protect against pregnancy and sexually transmitted infections, and most rejected common false beliefs, such as beliefs that new condoms have HIV or have holes in them. Health workers played an important role in teaching pupils correct information about condom use, for several reasons. Their prior training and experience made them unusually aware of youth sexual health needs and confident in teaching about condom use; other adult community members were usually comfortable with them in that role; and institutionally they were not constrained from engaging in explicit sexual discussion in the way that teachers were. Among pupils, intensive peer educator training helped peer educators have a relatively good understanding of the value and practice of condom use, even though this was still limited as they were not shown condoms during their training courses.

Educational authorities did not allow condoms to be shown within the school curriculum either, and proper condom use was not explained in detail until the last session of Year 7 (box 4.2), if teachers and schools elected that option. In addition, while class visits to health facilities were strategic in enabling many pupils to see condoms and a condom demonstration, most pupils only participated in such a visit once or twice. If teachers did not organize such a visit or pupils missed school that day, those pupils typically only had a vague idea of what condoms looked like and how they were used. Intervention participants’ understanding of condom use thus varied greatly, with many having a positive but somewhat confused and incomplete understanding of it. Notably, an international review of adolescent HIV prevention interventions found that the more time programs devoted to condom instruction and training, including skills to negotiate and use condoms, the more likely participants were to later report condom use (Johnson et al., 2003). Similarly,
in a study of four African countries Bankole, Ahmed, and colleagues (2007) found that adolescents who had seen a condom demonstration were two to five times more likely than others to know correct condom use.

During the MEMA kwa Vijana trial, educational authorities’ increasing willingness to provide primary school pupils with detailed information about condom use illustrates the value of ongoing advocacy to support and improve adolescent sexual health programs. The final 2002 MEMA kwa Vijana curriculum had more condom-related information than the early trial versions, but it still had less than intervention implementers ideally would have included from the onset had they not been constrained by local and national policies. Recent research suggests that Tanzanian adults have become more open to the idea of teaching adolescents about condoms. For example, the 2004–2005 Tanzanian Demographic and Health Survey found that 65 percent of women and 72 percent of men aged eighteen to forty-nine years agreed that twelve- to fourteen-year-old children should be taught about using a condom to avoid AIDS (National Bureau of Statistics and ORC Macro, 2005). The proportions were even higher (80 percent and 82 percent respectively) in the Lake Zone, which includes Mwanza Region.

Similarly, a 2007 study of 86 parents of ten- to thirteen-year-olds in one of the MEMA kwa Vijana districts found that 73 percent supported the idea of sex and relationships education in primary schools (Mkumbo and Ingham, 2010). When compared to parents from an urban area who had participated in a different primary school sexual health program, the parents in the MEMA kwa Vijana district categorized far more topics as “very important” to address within a curriculum, and were more likely to identify potentially controversial issues as “important” or “very important,” such as condom use (Mkumbo and Ingham, 2010). Parental preferences did not differ significantly by sex, education level, employment status, or religion, but younger parents were significantly more supportive of school programs than those forty-five years old or older. Over time, local attitudes and guidelines may become more permissive of previously controversial material, which highlights the need to routinely review and improve the content of school curricula in Tanzania and elsewhere in sub-Saharan Africa.

**Risk Perception Related to Condom Use**

As noted earlier, at the end of the MEMA kwa Vijana trial many intervention participants abstractly associated sexually transmitted infections with substantially older people, urban residents, and/or people with obvious, severe symptoms, but often in practice both older men and urban visitors were sought-after sexual partners. Condom-related personal risk perception skills remained limited and very few sexually active intervention partici-
pants were concerned enough about their risk of infection or pregnancy to use condoms. Those young people who did use condoms were extraordinarily fearful of infection (typically out-of-school young men) or pregnancy (typically school girls), such as male youths who had already experienced symptoms of sexually transmitted infection, or girls who were unusually determined to go to secondary school.

After leaving school, some male intervention participants said they sometimes used condoms with women who they considered to be high risk, such as bar maids, guesthouse staff, and other women who were reputed to have many partners. Case study 3.3 provides an example of this. Such selective condom use suggests there was some intervention impact on young men’s personal risk assessment skills. This subjective approach to risk reduction is problematic, given someone can falsely conclude a healthy-looking HIV-positive person is low risk. Nonetheless, young men who tried to reduce their risk in this way considered it a feasible and practical strategy, and when compared to no condom use at all, it may indeed have reduced exposure to HIV sometimes. However, even this intervention impact was quite limited, as youths rarely continued to use condoms beyond a few sexual encounters with a new partner, even if the man had initially been concerned about the woman being unfaithful or having an infection from a prior relationship. Typically, when individuals began to trust a partner’s current fidelity they also began to perceive the partner’s risk as low, or as an acceptable trade-off for the emotional intimacy and physical pleasure of unprotected intercourse, as has also been found in other research with African youth (e.g., Hattori, Richter, and Greene, 2010).

**Outcomes Expected from Condom Use**

The *MEMA kwa Vijana* intervention had some influence on participants’ condom use outcome expectations. At the end of the trial, most intervention participants expected condom use to be safe and that it would protect them against pregnancy and sexually transmitted infection. In addition, most female intervention participants seemed to perceive the potential physical experience of condom use neutrally, expecting that it would not affect their comfort or pleasure either negatively or positively. Most male intervention participants instead continued to expect that—as widely rumored—condom use would somewhat reduce their sexual pleasure. This was reported by male intervention participants in general as well as those few who had tried to use condoms. In contrast, control participants were more likely to expect condom use to be very unpleasant, harmful, and/or inadequate protection against pregnancy or disease.

As noted earlier, sexual pleasure was hardly discussed within the school program, even though this was the main motivation for male youth to have
sex. In the first versions of the curriculum, the possibility of reduced pleasure during condom use was not addressed, although this was an oft cited reason why boys and men rejected condoms in rural Mwanza. Based on HALIRA feedback on this issue, the final version of the curriculum briefly acknowledged condoms might somewhat affect pleasure for some people, but stressed that the value of condom use in preventing pregnancy and infection made this an acceptable trade-off or compromise.

By only marginally addressing boys’ and men’s central concern about the possibility of reduced pleasure during condom use, some male participants may have felt the intervention was out of touch with their reality and their concerns. However, intervention teachers’ feedback suggests that it would have been very difficult for them to engage with young people about ways to make condom use more pleasurable. Given health workers were generally more comfortable and accepted by the community when speaking frankly about youth sexuality, they may have been better placed to take on such a responsibility.

**Condom Use Goals**

While many pupils became neutral or positive toward condoms through their intervention exposure, few seemed to perceive condom use as realistic enough to plan to use them, even with high-risk partners. This related to multiple factors, including a limited sense of personal risk, low self-efficacy (especially for girls), and poor condom access. The MEMA kwa Vijana curriculum repeatedly recommended that sexually active young people use condoms, but personalization and reflective exercises within the curriculum did not focus on pupils actively setting a goal of condom use. Just as some teachers felt a conflict between the promotion of abstinence and premarital fidelity with school pupils, some felt a conflict between the primary promotion of abstinence and intensive promotion of condom use for sexually active pupils. It was not unusual for teachers to manage this by insisting that pupils abstain but also telling them that—once they left school and became sexually active adults—they could use condoms to protect themselves. Some other school-based HIV prevention programs in sub-Saharan Africa have encountered similar conflicts (e.g., Brouillard-Coyle et al., 2005; UNESCO, 2008; Ahmed et al., 2009). Within the MEMA kwa Vijana intervention, such statements seemed to confuse some sexually active pupils, and/or they used them to justify having unprotected sex, claiming that their teachers told them they were not allowed to use condoms until they had left school.

**Self-Efficacy to Use Condoms**

It is difficult to assess the impact of the MEMA kwa Vijana intervention on male participants’ self-efficacy to use condoms, that is, on the belief that
they had enough control over their behavior to use condoms. Even in optimal circumstances, when teachers taught the detailed condom session at the end of Year 7, practical instruction and exercises related to condom use only addressed how to obtain, put on, and dispose of condoms, not broader behavioral issues, such as negotiation with a partner, or strategies to use condoms consistently and long-term. It was not unusual for male intervention participants to say that they knew how to use condoms and where to buy them, and that they had enough money to purchase them and would not be inhibited in doing so. Many reported they would be able to use condoms if they wanted to do so, but they said they simply did not want to use them. Some said it would be very difficult to convince a girl to let them use a condom, and a few said they could not use condoms because, once aroused, they did not have the self-control to pause to put a condom on. Those few who did report condom use typically had enough control over their behavior to use them occasionally, but very few demonstrated self-efficacy to use them consistently with all partners, or with one partner beyond the first few encounters.

The MEMA kwa Vijana intervention seemed to have almost no impact on female participants’ self-efficacy to use male condoms, that is, their belief that they could persuade and assist their partners to use them. Female intervention participants were more likely than female control participants to say they would agree to use condoms if a new sexual partner suggested it. However, very few young women ever reported initiating or insisting upon condom use, and even those who did report this said they had not obtained the condoms themselves, because it would have been embarrassing or inappropriate for them to do so. Case study 3.2 provides one example. Many intervention participants also reported that material exchange reduced a woman’s ability to negotiate condom use, because a boy or man would demand his money or gift back if a partner insisted on condom use.

Modeling Condom Use

Intervention developers hoped that MEMA kwa Vijana peer educators and condom distributors would not only broadly promote condom use for sexually active youth, but also use condoms themselves and acknowledge this openly and positively with their peers, in this way becoming role models of condom use. It seems likely that most, if not the vast majority, of condom distributors tried using condoms after receiving their brief intervention training. However, many of them found that condom use reduced their pleasure to an unacceptable extent, so they soon stopped completely or only used condoms in certain circumstances, such as when they considered a sexual partner to be high risk. While most condom distributors continued to promote condom use as a way for their peers to reduce their sexual risk, their own ambivalence was likely evident.
As school pupils, peer educators had far less access to condoms than condom distributors. Some had never seen a condom or a condom demonstration themselves, and their peers knew that their attempts to promote condoms usually were not based on personal experience. Most peer educators’ sexual behavior seemed similar to those of their peers, as discussed in chapter 5, but after their intervention training a minority actively tried to reduce their risk by using condoms, at least for a short period. For example, the few school girls who initiated and insisted upon condom use were disproportionately peer educators; case study 3.2 provides one example. However, even when a female peer educator negotiated condom use with a partner she was unlikely to discuss it widely, and in that way be a role model of condom use, as acknowledgement of any sexual activity could damage a girl’s reputation, and condom use was particularly stigmatized in the broader community. Similarly, the qualitative research suggests that a small minority of male peer educators tried condom use while still in school. Case study 3.1 describes an example of an unusually old (twenty-two-year-old) pupil who seemed to use condoms consistently. However, most male peer educators who used condoms used them inconsistently, depending on several factors, such as their sense of risk at the time, their access to condoms, and a partner’s agreement. Chapter 10 will describe their motivations and experiences in more detail, within the broader description of atypical trial participants who used condoms.

Contextual Impediments and Facilitators of Condom Use

The MEMA kwa Vijana intervention only had a very limited influence on contextual facilitators and impediments of condom use. The most obvious impediment was the difficulty intervention participants had in accessing condoms. Prior to the intervention, condoms were entirely unavailable in some villages, and in others they were only available in very small numbers in a few village kiosks. The MEMA kwa Vijana condom distribution initiative was intended to improve condom access for sexually active pupils, but in practice most condom distributors established very small clienteles which mainly consisted of out-of-school male youths and adults. By the end of the trial few intervention participants knew a condom distributor and very few had ever obtained condoms from one.

Similarly, the intervention team ensured condoms were available in both intervention and control health facilities during the trial, and intervention health workers were more likely than control health workers to promote and distribute condoms to unmarried young people. This probably contributed to the significantly higher distribution of condoms recorded in intervention health facilities during the trial, but the absolute numbers of condoms distributed remained extremely low (Larke et al., 2010).
Impact of the MEMA kwa Vijana Intervention

An international review of adolescent HIV prevention programs found that intervention participants who received condoms did not later report more sexual risk behaviors, such as earlier sexual debut or higher numbers of partners (Johnson et al., 2003). However, at a later date they were more likely to report condom use. Nonetheless, improving adolescent access to condoms continues to be a challenge for school-based sexual health programs in sub-Saharan Africa (e.g., Njue et al., 2009). In South Africa, for example, where the Children’s Act provides youth with the right to access condoms, government policies and public pronouncements regarding condom provision in schools have been confusing and contradictory, so few schools have taken the option to provide youth with condoms (Han and Bennish, 2009).

In addition to the logistical issue of condom access, there were other important contextual impediments to condom use in rural Mwanza which the MEMA kwa Vijana intervention was not able to address effectively. Many intervention participants came to perceive condoms as potentially valuable protection, but in the broader community negative attitudes toward condoms continued to be powerful and widespread. Adolescents—particularly adolescent girls—had such low social status relative to adults that even if condoms had been accessible to them it is unlikely that large numbers would have begun to use them consistently, given their out-of-school peers, sexual partners, and family members would not understand or support such a practice.

“Positive Deviants”: Intervention Participants Who Reported Behavior Change

Despite the discouraging findings described above, there was some evidence of MEMA kwa Vijana intervention impact on sexual behavior at the individual level. Some intervention participants reported that the MEMA kwa Vijana program was useful for certain types of pupils, even if not for most pupils. A former peer educator and secondary school student explained: “MEMA kwa Vijana education helps people with good behavior. Pupils with good behavior are those who sit down and contemplate the importance of what they are being taught, even in other lessons” (PO-01-I-4-5f).

In in-depth interviews at the end of the trial, many intervention participants initially reported that the intervention had motivated them to reduce their sexual risk behavior, at least for a short period. Very few intervention participants in participant observation villages reported the same thing. Most of the in-depth interview respondents who reported this said that the intervention convinced them to abstain until marriage and to be monogamous after marriage. However, such reports of abstinence were sometimes contradicted by what respondents said later in an interview, or by positive biological test results. For example, a seventeen-year-old secondary school
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student (Debora) said she had never had sex and attributed this to her MEMA kwa Vijana participation:

I: When do you think you will begin to have sex?

R: [Laughter] I have not thought of that. . . . I don’t even want to have sex. . . . I am afraid of getting pregnant. And sexually transmitted infections and AIDS.

I: Was there a person who taught you about that?

R: Yes, I was taught by MEMA kwa Vijana. . . . Different stories were read to us. . . . Like there was a girl who was in Year 5, she had sex and got pregnant, and she was expelled from school. . . . And another story, there was also a girl who had sex, she contracted AIDS. . . .

I: Do young people usually use the methods you mentioned earlier [abstinence and condom use] to avoid getting sexually transmitted infections?

R: There are some who use them, but I don’t know about others. . . . I use them myself. I use that method of abstaining from sex. (II-02-I-300-f)

Despite Debora’s convincing reports of never having had sex, four days prior to her in-depth interview she had provided a survey sample that subsequently tested positive for pregnancy and gonorrhea.

At the end of the trial, some in-depth interview respondents instead reported that the intervention had influenced them to be monogamous. For example, a twenty-two-year-old farmer named Nyamhanga:

I: Do you think that education has helped you?

R: Me? Of course it has helped me. . . . I have learned not to have many women. That you must remain with one only. Yes, because some people always have sex with different women. (II-02-I-297-m)

Nyamhanga may have been sincere in his intention to be monogamous, and his intervention experience may have helped him have fewer partners than he might otherwise have had. Nonetheless, when he participated in another interview seven years later, he was in a polygynous marriage with two wives. At that time, Nyamhanga explained that he had had two extramarital sexual relationships after he married his first wife. When his first wife did not become pregnant in the first years of their marriage, he then decided to marry one of his extramarital partners also (Wamoyi and Mshana, 2010). Importantly, although polygynous marriages consist of concurrent sexual relationships, polygyny is not necessarily high risk. Indeed, it may be lower risk for the individuals involved than other forms of concurrency, if no spouses have sexually transmitted infections and their sexual network is closed, that is, none of them have extramarital relationships. Nonetheless, Nyamhanga
initially aspired to be monogamous, and his subsequent extramarital relationships and polygynous marriage indicates he did not succeed in that goal.

Finally, at the end of the trial some sexually active in-depth interview respondents said that the intervention had convinced them to use condoms. For example, several months after completing the intervention, a sixteen-year-old farmer and former peer educator (Kashindye) provided a confident, detailed description of his use of condoms. He explained that he had witnessed a condom demonstration during a class visit to a health facility and he subsequently used condoms twice, with two of his three sexual partners. Kashindye described the school program and its influence on him:

R: They used to teach through dramas. People used to act out plays and then were asked questions about the actors. How you saw them and the words you heard, and the topic itself. . . . We were taught things about AIDS . . . how it is passed from person to person. . . . The most important thing we were taught is to use protection or to abstain from sex completely. That was the important thing for me. . . . It helps me not to enter into the danger of being infected. . . . It has helped me personally to use protection [condoms], so that I don’t get diseases, or else I should abstain completely. (II-02-I-295-m)

Each of the individuals described above was articulate in discussing the positive ways that the MEMA kwa Vijana intervention had influenced them. Similar testimony is the main evidence used in determining intervention effectiveness all over the world. What the MEMA kwa Vijana trial made clear, however, is that such reports should not be taken at face value. To ensure intervention effectiveness, it is critical to also examine the extent to which such reports represent genuine and consistent long-term behavior change, as well as significant and positive impact on sexual health.

**DISCUSSION**

When a carefully designed and implemented intervention does not have its intended impact, there is a critical need to learn from and build upon what worked well within it, and to improve upon what did not. As DiClemente and Wingood (2003, 319) comment in their editorial on HIV prevention with adolescents:

[There is] a growing body of evidence indicating that HIV prevention interventions can effectively enhance the acquisition of preventive skills and behaviors. . . . It is unclear, however, whether the changes observed, particularly for HIV-preventive behaviors, are of sufficient magnitude to substantially affect the HIV epidemic among adolescents from a public health perspective. . . . As the lessons of history have shown, there are unfortunately no magic bullets or easy answers.
To date, few randomized controlled trials other than the MEMA kwa Vijana trial have evaluated the impact of a behavioral intervention on adolescent sexual health in sub-Saharan Africa (e.g., Cowan et al., 2002; Jewkes et al., 2006; Jewkes et al., 2008; Cowan et al., 2010). Of those, only the 2002–2006 Stepping Stones intervention trial in South Africa found a statistically significant impact on a biological outcome (Jewkes et al., 2008). That intervention did not have an impact on its primary outcome, HIV incidence, but it did have a significant positive impact on its secondary outcome, herpes incidence. In examining the limited impact of the MEMA kwa Vijana program here, it is thus worth exploring how its context, content, and impact contrasted those of the Stepping Stones intervention. The description of the Stepping Stones trial and context below draws on multiple sources (Jewkes et al., 2006; Jewkes et al., 2008; Jewkes, Nduna, and Jama, 2010; Jewkes, Wood, and Duvvury, 2010).

Comparison with the Stepping Stones Intervention Context and Process

The goal of the Stepping Stones intervention is to “improve sexual health through building stronger, more gender-equitable relationships with better communication between partners” (Jewkes et al., 2006, 5). Both Stepping Stones and MEMA kwa Vijana targeted rural African youth with an intensive, large-scale intervention that was well implemented and evaluated. However, unlike MEMA kwa Vijana, which was developed and tested over one year before the trial began, the Stepping Stones intervention was tested and modified over seven years before its evaluation in a trial. Specifically, it was developed in Uganda in 1995, adapted in South Africa in the Xhosa language in 1998, and then implemented for four years there before being revised for a second South African edition, which is the version that was implemented and evaluated in the trial.

The MEMA kwa Vijana trial took place in a generalized epidemic, where nationally 9 percent of fifteen- to forty-nine-year-old adults were estimated to be HIV-positive at the end of the trial in 2001 (UNAIDS, 2004). In that setting, AIDS was relatively uncommon and was further obscured because it often went undiagnosed, so few trial participants believed that they had been affected by it personally. At baseline, two males and six females (0.1 percent) of the 9,283 trial members were HIV-positive (Plummer, Ross, et al., 2004). In contrast, Stepping Stones was evaluated in a highly generalized or hyper-endemic setting, where 21 percent of fifteen- to forty-nine-year-olds were estimated to be HIV-positive at the end of 2001, before the trial there began (UNAIDS, 2004). At baseline, 2 percent of male and 11 percent of female
trial members were HIV-positive, and almost all participants had close first-hand knowledge of someone with AIDS. In addition, while both trials took place in settings where there were few if any other HIV prevention programs, it is likely that the quality and reach of national mass media interventions in South Africa (e.g., Soul City and Lovelife) were much greater before and during the trial there than the equivalent before and during the trial in Tanzania (e.g., Taylor et al., 2010).

In both the MEMA kwa Vijana and Stepping Stones communities, concurrent sexual relationships were common, condom use was low, transactional sex was frequent, and girls and women often had older sexual partners. However, the trial settings differed greatly in terms of crime, armed violence, intimate partner violence, and rape, which were all common in Stepping Stones communities but uncommon in MEMA kwa Vijana communities. Nonetheless, in MEMA kwa Vijana communities it was not unusual for men and boys to coerce girls to have sex through bullying, pressure, or tricks, and in most schools there was evidence that one or two male teachers had sexually abused female school pupils.

The design and implementation of the two interventions were also quite different. Stepping Stones was implemented by paid facilitators who were slightly older than trial participants, who had post-secondary school qualifications, and who were selected in part for their open-mindedness and gender sensitivity. This contrasts with the main MEMA kwa Vijana implementers, that is, older government health workers and teachers who carried out the intervention in addition to their regular duties, and who typically had not completed secondary school themselves. The Stepping Stones facilitators were trained for three weeks and then had monthly, day-long in-service trainings, instead of the one-week initial training, occasional supervision, and shorter annual refresher training courses experienced by MEMA kwa Vijana implementers. While MEMA kwa Vijana was carried out through existing government institutions, Stepping Stones was designed to be implemented by a non-profit organization, such as the Planned Parenthood Association. However, Stepping Stones participant selection and intervention implementation usually took place at secondary schools outside of school hours.

The MEMA kwa Vijana intervention involved all Year 5–7 pupils in intervention primary schools (mainly fourteen- to seventeen-year-olds). In contrast, in each Stepping Stones community forty sixteen- to twenty-three-year-old students in Years 9–11 of secondary school were selected from a group of about sixty volunteers to participate, because they lived relatively close to the school and they were considered more likely to attend than other volunteers. The Stepping Stones curriculum consisted of same-sex sessions and approximately twice as many session hours as MEMA kwa Vijana, but
was carried out in a shorter period of time, that is, fifty hours over six to eighty weeks, compared to twenty-one hours over three years in the final trial versions. There were more participatory and interactive sessions in Stepping Stones, and more sessions focused on critical reflection, assertiveness, and communication skills building. Given intimate partner violence was common in the Stepping Stones context, and this is widely recognized as a risk factor for HIV infection, that intervention also focused heavily on reducing male aggression and promoting more caring and gender equitable relationships.

It is not possible to know exactly which of the different aspects of intervention context, content, or design described above contributed to the different impacts observed in the *MEMA kwa Vijana* and Stepping Stones trials. However, the HALIRA findings suggest that Stepping Stones had several strengths relative to *MEMA kwa Vijana*. These include that participants were substantially older, more educated, and more likely to have close experience of AIDS, all of which may have contributed to deeper understanding of risk and greater personal concern about it. In addition, Stepping Stones participants were self-selected volunteers and thus presumably were more motivated to reduce their sexual risk from the onset. The HALIRA study also found that internal motivation was critical for young people who actively tried to change their behaviors; this will be discussed more in the next three chapters. Stepping Stones facilitators probably also were more capable and motivated to implement a complex and skills-based intervention than *MEMA kwa Vijana* teachers, because they were more educated, had more training and supervision, and were paid for those responsibilities.

In addition, in the Stepping Stones trial, educational authorities did not restrict the discussion of young people’s sexual behavior, and particularly condom use, so intervention implementers could acknowledge and address young people’s sexual relationships and risk practices much more openly than in the *MEMA kwa Vijana* trial. The Stepping Stones curriculum had several other strengths, including being developed and tested over many years prior to trial evaluation; having twice as many session hours; and devoting more time to gender relations, critical reflection, and skills building. The HALIRA findings suggest that each of those characteristics also would have made the *MEMA kwa Vijana* intervention more effective.

**Comparison with the Stepping Stones Intervention Impact**

The Stepping Stones trial found there was intervention impact on male intervention participants’ partner number and partner selectivity. Specifically, twelve months after intervention participation, male participants reported significantly fewer partners and less experience of any casual partners than their
control counterparts. There was no evidence of intervention impact on any of the other ABC behaviors. There were no significant differences between intervention arms in partner number or experience of casual partnerships for females, and also none for reported condom use for either males or females. The trial did not measure abstinence.

However, the Stepping Stones trial found there was intervention impact on other types of risk behaviors. Significantly lower proportions of male intervention participants than control participants reported transactional sex, violence against an intimate partner, attempted rape, problem drinking, or misuse of drugs. Amongst women, in contrast, a significantly higher proportion of intervention participants than control participants reported transactional sex post-intervention. It is difficult to know how to interpret the latter finding, as it may have reflected underreporting at baseline and more forthright reporting after Stepping Stones participation.

Many of the outcomes above support the HALIRA findings which have already been described, or which will be detailed in the coming chapters, including that partner number reduction and partner selectivity may be the most likely ways for young Africans to try to reduce their sexual risk, and that interventions which promote alternative forms of masculinity and heightened male risk perception are likely to be most effective in protecting both young men and young women. In their qualitative evaluation of the Stepping Stones intervention, Jewkes, Wood, and Duvvury (2010, 9) highlight that the intervention’s in-depth communication and skills-building exercises seemed to contribute to men improving their relationships with women:

. . . there was evidence that the combination of communication/assertiveness skills sessions and the experience of group discussion over several weeks built the participants’ confidence and gave them skills that they used in a range of different settings and with different people. Stepping Stones also provided an opportunity for participants to reflect on their identity and essentially who they wanted to be. . . . there was evidence that after the workshops men became more caring and less violent, and a couple of the women became much more assertive in their relationships.

Jewkes, Wood, and Duvvury (2010, 9) further argue that the intervention had a critical impact on male risk perception and concern:

In men . . . Stepping Stones instilled a clear and new perception of risk and desire to avoid it. This was manifold and apparently stemmed from the critical reflection exercises. There was no parallel discourse in the women’s interviews, although some evidence of HIV risk reduction was evident. It seems likely that this reflects constraints women perceive on their agency. In other words, it was more difficult for them to be concerned about things over which they perceived
they lacked control. . . . The position of men was somewhat different as they were empowered to change their behavior and aspects of their worldview, [and] had considerable confidence that they could either persuade their girlfriends to agree to this or at least find a new girlfriend if she did not.

The authors thus propose that the Stepping Stones intervention would be more effective if it were implemented on a wider scale within each community, including adults and influencing gender attitudes more broadly. They also postulated that the intervention would be more effective for women if it were combined with other structural interventions, such as the Intervention with Microfinance for AIDS and Gender Equity (IMAGE) program, which focuses on microcredit, community action, and gender empowerment (Pronyk et al., 2006).

The impact of the Stepping Stones intervention on herpes incidence in young adults argues for its replication, adaptation, and further evaluation in other settings. However, the limited nature of the intervention’s success suggests it is necessary to continue pursuing other, complementary approaches with the same target group of young adults, as well as with other groups, such as younger, less educated adolescents; young adults who do not seek out intervention participation; and older adults. It is generally recommended, for example, that interventions target young people before they become sexually active and before they have established sexual risk behaviors, which in many African contexts means prepubescent and early adolescent children (Gallant and Maticka-Tyndale, 2004; Van den Bergh, 2008; Michielsen et al., 2010). Government school systems are still likely to provide the most affordable, feasible, and sustainable way to reach such young people on a large scale. Importantly, the lessons learned from Stepping Stones outlined above can help inform and improve such school-based programs. Improvement of the broader school environment may also be essential to make such programs more effective, so this will be discussed more in the final chapter.

The next three chapters will draw on data from both intervention and control communities to describe young people who provided some of the most consistent, detailed, and plausible accounts of practicing low-risk sexual behaviors within the MEMA kwa Vijana trial. Each chapter will focus on a particular behavior and will be preceded by a case study series that gives an in-depth description of individual young people who practiced that behavior. Chapter 11 will then return to the findings presented in this chapter to consider how the MEMA kwa Vijana program and other HIV prevention interventions for adolescents in sub-Saharan Africa might be improved.