Evaluation of Go Grrrls

Outcome Results at 6 Month Follow Up

Gender Specific Programming and Prevention: The Effect of Go Grrrls on Early Adolescent Pregnancy Prevention

LeCroy & Milligan
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Acknowledgments:

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Gender Specific Programming and Prevention: The Effectiveness of Go Grrrls on Early Adolescent Pregnancy Prevention

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Research has shown that the transition from elementary to middle school is a critical point for early sexual activity vulnerability. In early adolescence, girls face a number of social and developmental obstacles, among them a school transition, physical changes to their bodies, difficulties in developing an acceptable body image, increased friendship and peer conflict, increasing difficulty with gender role development, and cultural pressures to remain passive, all of which have the potential to impact early sexual activity and other life outcomes.

Recent research has begun to explore gender-specific programming in the areas of substance-use prevention and juvenile justice, with studies demonstrating the efficacy of gender-specific programming for early adolescent prevention (Di Noia & Schinke, 2007; Schinke, Cole, & Fang, 2009). However, there is little examination of the effectiveness of gender-specific programming for pregnancy prevention in early adolescence. A recent study of seventh graders exposed to a mixed gender curriculum to postpone sexual involvement found that within the intervention group there were differences by sex in statistically significant findings (Aarons, et al., 2000). In the study by Aarons and colleagues examining differences between genders in groups exposed to pregnancy prevention curriculum, female participants had a higher report rate of virginity, birth control use, and knowledge of reproductive health while male participants scored higher on knowledge of birth control method efficacy. These results, as well as the statistically significant differences between sexes at baseline in sexual knowledge, suggest a need for gender-specific programming related to sexual knowledge and behaviors that can provide developmentally appropriate programming to each sex rather than a "one size fits all" approach.

Young adolescent females face specific challenges that may be better addressed in a single-sex format. Current studies demonstrate that females who experience sexual intercourse at younger ages are more likely to have higher numbers of sexual partners and are more likely to engage in non-relationship sexual intercourse (Elo, King, & Furstenberg, 1999; Manning, Longmore, & Giordano, 2005). Risky sexual encounters, such as engaging in unprotected sexual intercourse, are more likely in non-relationship sex acts (Manning, Longmore, & Giordano, 2005). Adolescent females engaging in risky sexual behaviors are at a higher risk than their peers for unintended pregnancy and sexually transmitted infections (Reichstein, 2010).

In addition, there are racial and ethnic differences in safe sexual behavior among young female adolescents. Recent data from female adolescents ages 15-19 indicates that 37% of white adolescents, 46% of Hispanic, and 58% of African American adolescents have engaged in sexual intercourse in the past twelve months (Martinez, Copen, & Abma, 2011). This same study reported the use of contraception at first sexual intercourse experience by adolescent females was 78% overall, with the two most common methods being condom (68%) and hormonal pill (16%). The rates of Hispanic and white use of contraception at first sexual intercourse event did not vary significantly vary, however African American females had significantly lower (11%) rates of use than their Hispanic or white peers. As current research has demonstrated, learning how to use a condom in advance of sexual intercourse initiation may play a key role in likelihood of use in sexual encounters and adolescents' feelings of condom-use self-efficacy predicts condom use in sexual intercourse (Baele, Dusseldorp, & Maes, 2001). It may be that tailoring risky sex prevention curricula to single-sex programming may increase safe sex outcomes for these minority groups.

Current research also recognizes intention as a predictor for behavior and supports prevention efforts that focus on intention as the locus of behavior change (Carmack, Lewis, & Roncancio, 2015). From this perspective, intention is viewed as attitudes, subjective norms, and self-efficacy. Addressing these components may be an effective intervention for intention to have risky sexual encounters and thus decrease risk of unintended pregnancy and transmission of sexually transmitted diseases.

In this study, the effectiveness of a gender-specific program for pregnancy prevention for early adolescents was investigated. The gender-specific programming for this study intervention, the Go Grrrls program, was developed over 15 years ago and has been implemented across the country and internationally. The curriculum has been recognized by the Rand Corporation under their "programs that work" designation. From a theoretical standpoint, the *Go Grrrls* curriculum is based on a developmental framework and thus is designed to address tasks that are considered critical for the healthy psychosocial development of early adolescent girls. As tasks are mastered, new competencies are acquired that build protective factors that help girls reduce their exposure to risky behaviors. The program is "gender-specific," taking into account the unique tasks that early adolescent females need to master to make a successful transition to responsible adulthood. This broad-based approach provides a more universal prevention program within which to offer teen pregnancy prevention elements. The program targets knowledge, attitudes, intentions, and behaviors. A recent randomized control trial found significant differences between the *Go Grrrls* and a control group in preventative knowledge and attitudes (LeCroy, 2004).

Methods

Data for this study were taken from six month post program assessments from an eight-cohort, four year study between August 2010 and December 2014. During this study, participants were randomly assigned to either treatment or comparison group at study enrollment. Treatment participants received the Go Grrrls programming. Comparison group participants received TECHgyrls programming. All participants took a pre-assessment at the start of curricula dissemination, and a post-assessment at completion of programming.

Programming Curricula

The treatment group in this study received the *Go Grrrls* program. This program was specifically designed as a broad based or holistic prevention program for early adolescent females (LeCroy, 2008). The *Go Grrrls* intervention included a 14-hour curriculum that focused on critical developmental tasks for early adolescent girls including: developing one's gender role identity, establishing a positive body image, establishing a positive self-image, implementing responsible decision-making, engaging in healthy sexuality, making and keeping friends, accessing resources when needed, and planning for the future. The program emphasized pregnancy prevention in the broader context of universal prevention for early adolescent girls. Facilitators of the treatment curriculum reported an 84.4% rate of implementing intervention curricula according to the facilitators guide without any changes. This high level of implementation fidelity ensures the treatment participants received comparable intervention regardless of cohort or site.

The comparison group is an attention-placebo condition, TECHgyrls, which includes a curriculum that focuses on learning technology. The goal of TECHgyrls is to promote competence and educational success of early adolescent girls. The program promotes the acquisition of technology skills and promotes the use of these skills for academic achievement and as a 21st century competency. The program includes an instructional program, practice and exercises that promote effective use of technology. TECHgyrls curricula does not contain any content on sexuality.

Participants and Recruitment

Recruitment efforts were targeted at middle schools within the Tucson metro area. Outreach to recruit included conducting parent information sessions, holding informational school assemblies for girls in the appropriate age group, and informational tables at middle schools during lunch periods.

All girls ages 11-15 who assented to participation and whose parents consented to their participation were eligible to participate in the evaluation. Girls whose parents decline to

offer consent for their participation or who themselves decline to assent to participation were also not included in the study. Additionally, girls younger than 11 and older than 15 years of age were not eligible for participation.

A total of 4,130 girls were approached to participate, of whom 161 were ineligible for participation due to prior participation, 35 already had commitments for the time program sessions were held, 4 could not participate due to unavailability of transportation at the time program sessions occurred, and 3 girls and/or their parents declined participation due to perceived inappropriateness of program curriculum. Of the girls approached, 3,073 did not pass screening criteria. A total of 854 female participants were enrolled in the study. At the six-month follow up, 535 participants completed assessments.

Randomization

Following the completion of the assent/consent process, all participants were randomly assigned to either the Go Grrrls (treatment) or TECHgyrls (comparison) group within each site. The study was implemented in eight Cohorts. In cases in which siblings joined the study, the siblings were assigned as a unit to the same group but only one was randomly chosen to complete assessments.

Program staff created a database to contain the names and contact information of all girls enrolled in the study, by each site. When assent/consent was obtained for a girl, project staff added her name to the enrollment list for her site. Random number generation software was utilized to create a database containing a list of random ID numbers for each site. The researchers then used the Statistical Package for the Social Sciences Version 20 (SPSS) computer program to randomly generate ID numbers for the treatment (Go Grrrls) or control group (TECHgyrls). Each name was entered in the order it appeared in the database into the randomized ID database. Thus, the first name on the enrollment list for a site was assigned the first ID on the randomized ID list for the same site, and so forth. On the initial day of programming, participating girls completed a pre-survey before learning of their program assignment.

Measures

Assessments were administered in a group-classroom type format by program facilitators. Assessments collected information about demographics; sexual knowledge; sense of self-efficacy about pregnancy and STI prevention strategies; attitudes about sexual behaviors; intention to engage in sexual behaviors; and engagement in sexual behaviors.

Demographics. The participants completed a section of the questionnaire that collected information on age, race, ethnicity, language spoken at home, housing situation, foster care, and juvenile justice status.

Sexual Knowledge. The assessment was developed using previously validated constructs from DiClemente, Wingwood, & Harrington (2004) and includes knowledge of STDs, pregnancy prevention, birth control, and condom use technical skills. (See Exhibit 1). The condom technical skills scale (adapted from DiClemente, et al, 2004) measures confidence in the respondents' condom application skills (original nine item scale, α = .88). The adapted seven item scale used in this assessment yielded an alpha of .95. A sample question is "Unroll a condom fully to the base of the penis."

Exhibit 1. Knowledge Outcome Variables

Construct	Measure	Questionnaire items
STD Knowledge	Total scale score	A person can get an STD from the use of drugs or alcohol. A person with an STD can have no symptoms at all. All STDs can be cured with antibiotics or some other medicine. If condoms are used every time and correctly, they reduce the chance a person will get STDs.
Pregnancy Prevention Knowledge	Total scale score	A teenage girl can get pregnant the first time she has sex. Condoms always keep a person from getting pregnant. Pulling the penis out of the vagina before ejaculation is effective in preventing pregnancy.
Birth Control Knowledge	Total scale score	Combining two methods, such as a condom with another method like birth control pills, is the safest way to have sex. If a girl uses birth control pills, it lowers her risk for getting STIs.
Condom Technical Use Skills Scale	Total scale score	Put a condom on a hard penis. Unroll a condom down correctly on the first try. Start over using a new condom if you placed it on the wrong way. Unroll a condom fully to the base of the penis. Take a condom off without spilling the semen. Know where to get/buy a condom.

Attitudes Toward Condom Use Scale. Adapted, in part, from DiClemente, et al, 2004, the attitudes toward condom use scale contains four items measuring attitudes related to using condoms (original scale eight item scale, α = .68). Each item within this instrument has response choices that ranged from 1 = *strongly disagree* to 5=*strongly agree.* A sample question from this instrument is "Condoms are hard to use." (See Exhibit 2).

Exhibit 2. Self-Efficacy and Attitudes Outcome Variables

Construct	Measure	Questionnaire items
Condom Belief Scale	Total scale score	Condoms should always be used if a person your age has sexual intercourse. Condoms are hard to use. Condoms are important to make sex safer. Using condoms means you don't trust your sexual partner.
Condom Use Self-Efficacy Scale	Total scale score	I feel confident in my ability to discuss condom usage with any partner I might have. I feel confident in my ability to suggest using a condom with a new partner.

Condom Self-Efficacy. This measure, adapted from a scale by DiClemente, Wingwood & Harrington (2004), measures the comfort a respondent has in discussing condom usage with their partner. The original five item scale yielded an alpha of .82. The adapted scale used in this assessment yielded an alpha of .88. Each item within this instrument had response choices that ranged from 1 = *strongly disagree* to 5=*strongly agree.* Condom self-efficacy was measured using two items. A sample question is "I feel confident in my ability to discuss condom usage with any partner I might have." (Exhibit 2).

Intention and Behavior. The intention measure was devised to assess participants' intentions to engage in sexual intercourse in the upcoming year, and regardless of actual intention to have sex, if they would theoretically use some method of birth control were they to have sex (Exhibit 2). Participants rated how likely they were to have sex in the next year using four options: yes definitely, yes probably, no probably, and no definitely. The same scale was used to measure intention to have sex using a condom in the next twelve months and intention to have sex using birth control in the next twelve months. (See Exhibit 3). The Behavior measure was devised to assess participants' actual engagement in sexual activities. (See Exhibit 4).

Exhibit 3. Intention Outcome Variables

Construct	Measure	Questionnaire items
Intention to have sex	Rate of reported intention to have sex.	Do you intend to have sexual intercourse in the next year? -Yes, definitely -Yes, probably -No, probably not -No, definitely not
Intention to use a condom	Rate of reported intention to use a condom.	If you did have sexual intercourse in the next year, would you use a condom? -Yes, definitely -Yes, probably -No, probably not -No, definitely not

Construct	Measure	Questionnaire items
Intention to use contraception	Rate of reported intention to use a contraceptive method.	If you did have sexual intercourse in the next year, would you use one of following methods of birth control? -Yes, definitely -Yes, probably -No, probably not -No, definitely not

Exhibit 4. Behavior Outcome Variables

Construct	Measure	Questionnaire items
Any sex	Self-reported sexual activity	Have you ever had sexual intercourse? Now please think about the last 3 months. In the last 3 months, how many times have you had sexual intercourse? (None / # of times)
Condom use	Self-reported use of condom in recent sexual intercourse	In the past 3 months, how many times have you had sexual intercourse <u>without</u> using a condom?
Contraceptive use	Self-reported use of birth control (other than condom) in recent sexual intercourse	In the past 3 months, how many times have you had sexual intercourse <u>without</u> using one of the following methods of birth control?

Demographic Comparability of Research Groups

Although participants in the study were randomly selected to each of the research groups, analyses were conducted to confirm the comparability of the treatment and comparison groups on demographic indicators and sexual behaviors reported at baseline. Analyses were also conducted to compare the treatment and comparison groups on the following indicators: age, gender, Hispanic ethnicity, race, ever had sexual intercourse, ever been pregnant, number of pregnancies, sexual intercourse in prior three months frequency, sexual intercourse in prior 3 months without a condom frequency, and sexual intercourse in prior three months without birth control frequency. Preliminary analyses were conducted to analyze the comparability of the two research groups and indicated a statistically significant difference in age between the two groups (t=3.254, p=.0012).

Analyses were also conducted to confirm the comparability of the treatment and comparison groups on demographic indicators and sexual behaviors reported at 6-month follow-up. Analyses of variance of variables of interest at 6-month follow up again found a significant difference between groups in age (p=.0026). Examination of data found the treatment group was significantly older (mean age =13.31) than the comparison group (mean age =13.08). The majority of the participants in both groups, 61% of the treatment

group and 72% of the control group, reported that they were 12 or 13 years old at the time of the 6-month follow-up assessment. No other demographic differences among groups at the six-month follow-up were found. Both the treatment and control group for this study were majority Hispanic/Latino (66.5% of the treatment group, 68.4% of the control group); there was not a statistically significant different between the groups in ethnicity. Results of a multiple regression analysis indicated that age at the time of the 6-month assessment predicted intention to have sex in the next twelve months (p=.008). While a difference of an estimated three months of aging is likely not clinically significant, we controlled for the effect of age by using age as a covariate in all subsequent analysis.

Analysis

This study uses intention-to-treat analysis, and as such, all randomized participants' assessment data is analyzed together regardless of program dosage. All statistical analysis was completed in SPSS 22. Analysis were run using Pearson's Correlation Coefficient to determine the nature of relationships between outcome variables. To examine the differences between the treatment group and comparison group on the outcomes of interest, univariate analyses were conducted for each of the outcomes in the study, controlling for age at the time of assessment. Effect size is also an important element of analysis as it gives increased meaning to statistically significant findings by describing the magnitude of the effect of the relationship between variables. For this study, effect size was analyzed using Cohen's d.

Results

Relationships Between Outcome Variables

Analysis of correlational relationships between the studies variables found many statistically significant relationships between sexual knowledge variables. <u>Intention</u> to have sex in the next year was correlated with knowledge of pregnancy prevention (r=.093, p=.041), condom technical skills (r=.173, p<.001), and condom belief scale (r=-.098, p=.035).

Exhibit 5. Relationships Between Outcome Variables

		A.	B.	C.	D.	E.	F.	G.	H.	I.	J.
A. Attitudes towards condoms	r	1									
	Sig.										
	N	470									
B. STD Knowledge	r	-.042	1								
	Sig.	.481									
	N	279	290								
C. Knowledge of Birth Control	r	.309**	.343**	1							
	Sig.	.000	.000								
	N	464	285	491							
D. Knowledge of Pregnancy Prevention	r	.244**	.257**	.545**	1						
	Sig.	.000	.000	.000							
	N	466	287	488	494						
E. Condom Negotiation Scale	r	.346**	-.111	.145**	.060	1					
	Sig.	.000	.062	.002	.192						
	N	456	282	466	469	478					
F. Condom Technical Skills	r	.332**	.131*	.248**	.275**	.362**	1				
	Sig.	.000	.029	.000	.000	.000					
	N	434	277	446	447	446	454				
G. Condom Belief Scale	r	.708**	-.185**	.138**	.096*	.365**	.230**	1			
	Sig.	.000	.002	.003	.038	.000	.000				
	N	470	279	464	466	456	434	470			
H. Intention to have sex in next year	r	.030	.099	.061	.093*	.048	.173**	-.098*	1		
	Sig.	.525	.093	.181	.041	.302	.000	.035			
	N	465	286	483	486	472	447	465	501		
I. Intention to use a condom if you were to have sex in next year	r	.212**	-.246**	.073	.050	.262**	.111*	.378**	-.037	1	
	Sig.	.000	.000	.111	.273	.000	.020	.000	.420		
	N	457	283	474	476	464	443	457	483	487	
J. Intention to use birth control if you were to have sex in next year	r	.215**	-.243**	.084	.054	.296**	.118*	.397**	-.011	.774**	1
	Sig.	.000	.000	.068	.242	.000	.013	.000	.803	.000	
	N	457	282	472	474	464	441	457	480	480	484

*indicates significance at the p=.05 level (2-tailed)
** indicates significance at the p=.01 level (2-tailed)

Effects of Curriculum on Sexual Knowledge

There was a statistically significant effect of the Go Grrrls curriculum on outcomes related to knowledge of sexually transmitted diseases (F(1, 287) = 8.70, p =.003), knowledge of birth control (F(1,487) = 30.17, p<.001), knowledge of preventing pregnancy, (F(1, 490) = 19.10, p<.001), condom negotiation skills (F(1,466) = 25.62, p<.001), condom technical use skills

(F(1, 452) = 37.54, p<.001), and attitudes about condom use (F(1,467) = 26.58, p<.001). (See Exhibit 6).

Exhibit 6. Effect of Treatment Intervention on Sexual Knowledge

	F	Sig.	df1/df2	Mean Square
STD Knowledge	8.70	.003	1/287	2.18
Birth Control Knowledge	30.17	.000	1/487	45.74
Pregnancy Prevention Knowledge	19.10	.000	1/490	39.40
Condom Negotiation Skill Scale	25.62	.000	1/466	555.86
Condom Technical Use Skill Scale	37.54.	.000	1/452	3150.26
Attitudes Towards Condoms	26.58	.000	1/466	426.37

Analyses were conducted to calculate the effect sizes, which are reflected by Cohen's d. Most of the effect sizes were medium with the largest effect size from *Condom Technical Skills* (*d=.59).* Medium effect sizes were seen for pregnancy prevention knowledge (d=.41), condom self-efficacy scale (d=.49), and attitudes toward condoms scale (d=.47). The smallest effect size for reported sexual knowledge was in STD knowledge (d=.35).

Exhibit 7. Reported Sexual Knowledge

	Group	N	Mean	Std. Deviation	Cohen's d (effect size)
STD Knowledge	Treatment	170	4.03	1.33	.35
	Comparison	119	3.50	1.66	
Birth Control Knowledge	Treatment	260	1.78	1.31	.55
	Comparison	229	1.08	1.23	
Pregnancy Prevention Knowledge	Treatment	260	2.45	1.45	.41
	Comparison	232	1.86	1.45	
Condom Self-Efficacy Scale	Treatment	251	14.41	4.45	.49
	Comparison	217	12.12	4.91	
Condom Technical Use Skill Scale	Treatment	246	22.63	9.19	.59
	Comparison	207	17.18	9.13	
Attitudes Towards Condoms Scale	Treatment	251	14.41	4.80	.47
	Comparison	217	12.12	4.91	

Effects of Curriculum on Behavioral Intentions

Behavioral intentions were measured by asking participants their intention to have sex in the next year, have sex with a condom in the next year, and have sex using birth control in the next year. Analysis of covariance of these indicators found there was not a statistically significant difference between groups on intention to have sex in the next year after controlling for the covariate of age at the time of assessment ($F(1, 496) = .467$, $p=.495$). There was also not a statistically significant difference between the groups on participants' intention to use a condom if they were to have sex in the next year ($F(1, 482) = 1.577$, $p=.210$). Similarly, there was not a statistically significant difference between groups on participants' intention to use birth control if they were to have sexual intercourse in the next year, ($F(1, 479) = 1.590$, $p=.208$).

Self-Reported Sexual Behavior

Of the respondents, 3.8% of participants in the treatment group (n=10) and 2.8% of participants in the comparison group (n=7) reported ever having had sexual intercourse. Asked whether they had had sexual intercourse *in the past three months*, 1.9% of participants in the treatment group (n=5) and 1.6% of participants in the comparison group (n=4) positively endorsed this item. When asked whether they had had sex *with a new partner* in the last three months, .4% of the treatment group (n=1) and .8% of the comparison group (n=2) positively endorsed this item.

Discussion

Girls exposed to Go Grrrls programming, relative to those girls exposed to STEM-based programming, increased their knowledge of condom use, birth control use, and pregnancy prevention. There was a statistically significant effect of the Go Grrrls curriculum on outcomes related to knowledge of sexually transmitted diseases, knowledge of birth control, knowledge of preventing pregnancy, condom negotiation skills, condom technical use skills, and attitudes about condom use. The largest effect size was in regards to knowledge of condom technical skills, suggesting that the Go Grrrls curriculum was particularly effective in increasing knowledge in this area. Smaller but still meaningful effect sizes were also evident for pregnancy prevention knowledge, condom self-efficacy scale, and attitudes toward condoms scale. These findings suggesting that a developmental theory-based and gender-specific holistic pregnancy prevention program can increase protective knowledge, attitudes, and utilitarian skills for reducing teen pregnancy in early adolescent girls.

With regard to behavioral intentions, after controlling for age at the time of assessment there was no difference between groups on any of the intention variables: intention to have sex in the next year, intention to use a condom if they were to have sex in the next year, or intention to use birth control if they were to have sexual intercourse in the next year. This may be a true limitation of the intervention or an artifact of the measurement strategy; asking young adolescent females about their intentions to engage in sexual intercourse over the next year, as well as hypothetical behavior, may be too abstract for the developmental stage of this group. In early adolescence, substantial cognitive development is taking place as individuals move from concrete thinking to abstract reasoning. It may be that this age group do not yet have the cognitive "infrastructure" to accurately assess future behavior. With analysis showing age as a significant predictor of intention, it may be that the treatment group will be better prepared for safe sexual intercourse than the comparison group as they age. By considering the statistically significant preventative indicators as proxies for future sexual behavior, we could then infer which pregnancy prevention efforts may benefit from gender-specific early adolescent programming focused on holistic developmental curricula.

Very small numbers of participants reported ever having had sexual intercourse, having had sexual intercourse *in the past three months*, or having had had sex *with a new partner* in the last three months. These findings were consistent with other findings for early adolescent girls. Current CDC estimates find the mean age of vaginal sexual intercourse for females is 17.1 years old (Centers for Disease Control and Prevention, 2010). Future analyses of later follow-up data will help us examine whether increases we are seeing in knowledge of sexually transmitted diseases, knowledge of birth control, knowledge of preventing pregnancy, condom negotiation skills, condom technical use skills, and attitudes about condom use translate to greater intention to avoid sexual activity, greater intention to engage in safe sex practices, greater actual avoidance of sexual activity, and greater actual engagement in safe sex practices.

Using intention to treat analysis, though considered best practice for research, may be a conservative approach to understanding effects from the intervention programming as the model does not consider dosage. Further analysis taking into consideration dosage may be appropriate in future research to further illustrate impacts from the intervention.

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