Building an Effective Primary Prevention Program for Adolescent Girls: Empirically Based Design and Evaluation

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This article describes the process of building an effective primary prevention program using existing knowledge about developmental processes of adolescent girls. While many programs are described as “empirically based,” the process of developing an empirically based program often goes unreported. Using a primary prevention program for early adolescent girls, this article describes the cumulative results over time. Results are presented for three phases of program development: pilot testing, quasi-experimental design, and randomized design. Each phase contributed to the next development of the program. Results from the pilot testing enhanced the program’s design and delivery. Results from the quasi-experimental design established some preliminary results on selected measures. Finally, the randomized study documented change on various outcome measures that improved upon the previous quasi-experimental design. Results revealed significant improvement in the treatment group and significant differences between the treatment and control groups on the key outcome measures. The study suggests that a primary or universal prevention program can produce meaningful effects.

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There is an increasing emphasis on the need for programs and service delivery to be empirically supported, evidence based, or at least based on rational program theory. These notions express reasonable appeals to make decisions about programs through an explicit and judicious use of research or best evidence. Indeed, such efforts can accomplish important social objectives, such as more effective use of resources, rational social policy planning, and improved programs using the best-identified methods.

These empirically based efforts for children have exploded in the last few years. Reviews and summaries such as those by Carr (2000) and Fonagy, Target, Cottrell, Phillips, and Kurtz (2002) have summarized the literature and provided guidelines for practitioners looking to implement evidence-based findings in their practice.
Although there are now numerous resources guiding efforts at implementation of evidence-based practice, much less has been written on the process of building an empirically based intervention. For the most part, researchers report on their results and the program becomes identified as empirically based. However, how one designs a program that eventually meets the empirically supported criteria has not be widely discussed. Indeed, too often program designs do not use existing social science research in their conceptualizations for initial program design. One purpose of this article is to describe the effort to build an effective primary prevention program using existing knowledge about developmental processes of adolescent girls.

Primary Prevention and Adolescent Girls

Why prevention programming for adolescent girls? This relevant question is easily answered when turning to the social science literature to examine contemporary issues facing them. After conducting an exhaustive review, eight major issues emerged as critical in the effort to build competencies for a successful transition of women from adolescence to adulthood (see Table I below). And with these competencies come reduced risks and the promotion of healthy development, the essential objectives in primary prevention programs.

There is empirical support for the observation that social changes in contemporary society have had an enormous impact on adolescent girls. Female adolescents today face a multitude of issues, such as rising cigarette and drug use, body dissatisfaction and body image disorders, academic underachievement, problems associated with sexual behaviors, and high rates of depression and unhappiness. Gender-specific programs are needed to address these unique issues that adolescent girls face. In particular, primary prevention offers one response to the growing concerns raised by many practitioners and researchers (Denmark, 1999; Tanenbaum, 1999).

It is important for gender-specific programs for adolescent girls to take into account their unique aspects of development (LeCroy & Daley, 2001a). For example, the empowering adolescent girls curriculum “Go Grrrls” (LeCroy & Daley, 2001b) is informed by understanding the timing of the intervention and the selection of relevant issues and having a focus on reducing identified risk factors. In this manner the program is both developmentally appropriate and gender specific, since it addresses some of the unique aspects of adolescent development. Adolescence is a period of human development that represents changes in physical, emotional, cognitive, and social arenas. There are critical risk behaviors that emerge during early adolescence (Brindis et al., 1997) that can lead to a greater likelihood of negative behaviors in the future.

Gender-specific programs are important because of the biological, psychological, and social changes that take place in adolescence. For example, physical maturation can be a negative experience for girls (Benjet & Hernández-Guzmán, 2002). Research has established that early adolescent girls report being dissatisfied with their bodies and dislike changes associated with puberty (Brooks-Gunn & Paikoff, 1997; Striegel-Moore & Cachelin, 1999). Early maturation is a significant risk factor for girls. Studies have found it related to multiple risks such as eating problems and body image disorders (Attie & Brooks-Gunn, 1989), depression and low self-esteem (Brooks-Gunn & Reiter, 1990; Fabian & Thompson, 1989), and delinquency (Caspi, 1995). Body image is often linked to low self-esteem and can account for the large percentage of girls who begin to experience depression (Furnham & Greaves, 1994). Normal, healthy girls often perceive themselves as overweight and develop negative body images.
<table>
<thead>
<tr>
<th>Developmental Issues</th>
<th>Developmental Process</th>
<th>Program Implementation &amp; Empowerment Objectives</th>
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<tbody>
<tr>
<td>Gender role identification</td>
<td>At puberty, gender-intensification theory suggests that gender-related expectations influence behavior.</td>
<td>Enhance positive messages about gender roles. Promote a more positive sex role self-image.</td>
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<td>Body image</td>
<td>Adolescent girls are at risk of developing a negative body image, which leads to self-esteem declines, depression, body image disturbance, and eating disorders.</td>
<td>Promote understanding of the changes that take place during puberty. Promote positive body image and body acceptance.</td>
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<td>Self-acceptance</td>
<td>In early adolescence, girls have a drop in self-esteem, accompanied by increased self-criticism, negative mood states, and, for some girls, depression.</td>
<td>Promote a positive self-image in response to the biological, psychological, and social changes girls confront. Reduce self-criticism and promote positive mood states.</td>
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<td>Peer relationships</td>
<td>Membership in the peer group is a major developmental task. Adolescents who fail to develop positive peer relationships are at greater risk of developing problems like substance abuse and depression. Conformity and peer pressure can lead to bad choices made by young people.</td>
<td>Promote positive peer relationships. Build on the relational quality many girls have in friendships to strengthen positive reasons for friendship. Build sharing and mutual understanding for enhanced companionship, support, and empathy.</td>
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<tr>
<td>Responsible decision making</td>
<td>Most adolescents in today’s society will confront decisions that could have lifelong if not lethal consequences. The cognitive development of young people has important implications for adolescent risk taking.</td>
<td>Promote responsible decision making by teaching problem-solving skills. In conjunction with decision making, encourage personal assertiveness.</td>
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<tr>
<td>Sexuality</td>
<td>Girls’ sexuality is a major issue because of the potential consequences associated with high-risk behaviors. As girls develop sexually, they need information and skills to prevent unwanted sex, unwanted pregnancies, and sexually transmitted diseases.</td>
<td>Promote awareness and understanding of sexuality issues. Enhance responsible decision making and safe sex. Broaden girls’ understanding of sex so that it isn’t seen only as intercourse. Address the special risks for younger girls.</td>
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<td>Accessing resources</td>
<td>Adolescent girls face multiple risks and a full one third are estimated to be at high or very high risk. Along with having problems (like depression) that may seem invisible, girls vastly underutilize systems of care.</td>
<td>Reduce barriers to services and help prepare girls to find and accept professional help when they need it.</td>
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TABLE 1 continued. Developmental Issues, Process, and Program Objectives for the Empowering Adolescent Girls Program

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<th>Developmental Process</th>
<th>Program Implementation &amp; Empowerment Objectives</th>
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<tbody>
<tr>
<td>Planning for the future</td>
<td>Adolescent girls often experience a crisis in confidence that undermines their educational and career decisions for later life.</td>
<td>Enhance girls’ achievement motivation. Build their confidence for educational and vocational aspirations. Teach a mastery orientation, as opposed to a learned helplessness orientation.</td>
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(berg, 1992). One study (eisele, hertsgaard, & light, 1986) found that a majority (78%) of adolescent girls aged 13–19 were dissatisfied with their weight. Adolescent girls are afflicted with negative ruminations, an avoidant coping style, and increased sensitivity to the opinions of others (nolen-hoeksema & girus, 1994; seiffge-krenke & stemmler, 2002). The impact of the media is worth noting, as the messages delivered to girls often translate to a negative sex role image (wylie, 1979). All these factors support the notion that gender-specific prevention training is called for if we want to promote a healthy transition for adolescent girls into adulthood. Prevention research should address these factors in order to build an effective developmentally based intervention.

This background of research lays the foundation for a developmentally based gender-specific program for adolescent girls. Table I describes the developmental issue, developmental process, and the program objectives for empowering the adolescent program. The remainder of this article will describe the cumulative results from three studies to establish the empirical support for the program.

Method

Pilot Testing and Program Development

As the previous section outlined, the initial focus of the program emerged largely from a systematic review of social science research. At the same time that this review was being conducted, pilot testing of a “girls curriculum” was taking place. The origin of the program was in substance abuse prevention. With a 5-year grant from the Center for Substance Abuse Prevention, an effort was made to focus on the most effective aspects of implementation. A review of program data found that female-only groups conducted by female MSW students obtained the best implementation and outcome data.

Delivering prevention programs is a significant programmatic issue because often dropout/attrition is a serious problem, particularly in voluntary after-school groups. After some initial experimentation with the program in two schools, it became clear that the girls enrolling in the after-school program liked their experience, and there was far less attrition than had been previously experienced with mixed-sex and male-only groups.

As we worked on defining the critical aspects of the program, we also experimented with various ways to implement the curriculum. Exercises were developed and process data were collected from group participants. We learned from the group members what they liked best about the curriculum and what they thought was the worst part of it. We gathered data on what exercises they found the least interesting. For example, in the self-image part of the curriculum, we had a detailed
psychoeducational component about self-criticism. The process data pointed clearly to our failure here. This section was revised with new exercises and a demonstration to liven up the material and help the girls learn the concepts more from “doing” exercises.

Supervision with group leaders and focus groups with both participants and leaders gathered more systematic data upon which to base our judgments about what to include and exclude in the curriculum. Outcome data consisted of pre- and posttests on various measures. Most of the measures showed within-subject change, indicating that changes were occurring for the majority of girls who were participating in the program. After a year of refinement, we were ready to move to the next stage of empirical testing.

Quasi-experimental Study

While focus groups, process data, and pre-to-post changes provided some evidence for the program’s outcome, such a design could not answer the fundamental question of whether the program was effective. To address this, some form of comparison was needed—a control group vs. an experimental group. Good relationships with pilot sites led to the opportunity to conduct a small quasi-experimental outcome study.

The study was able to recruit 54 volunteers from the school. The girls had an average age of 12.7 and were culturally diverse, with 64.8% white, 18.5% mixed race, 11.1% Hispanic, 3.7% African American, and 1.9% Asian American. The groups were led by two female graduate students who had received intensive training. The intervention was described in a detailed curriculum (LeCroy & Daley, 2001b). Matched girls from a physical education class constituted the comparison, no-treatment group. The treatment groups (7–8 girls assigned to one of three groups) met after school for 12 weeks.

A total of five measures were used to evaluate the program: a 5-item body image scale (Simmons & Blythe, 1987), a 10-item peer esteem scale (Hare, 1985), a 24-item common beliefs scale (Hooper & Layne, 1983), an 18-item depression self-rating scale (Birleson, 1981), and a 15-item help endorsements scale (LeCroy & Daley, 2001a). A sixth measure was a 3-item gender role attitudes scale ($r = .36$) (Simmons & Blythe, 1987), which, however, did not obtain adequate reliability on the study sample.

Table II presents the outcome results based on a comparison of mean scores between the intervention and comparison groups using a one-way analysis of covariance (ANCOVA) that used the pretest scores as a covariate. The measures were considered independent, as they measured different aspects of the program. As the data show, three of the five measures produced a significant Group $\times$ Time effect in spite of the low power involved in the experiment due to small numbers. The effect sizes ranged from small, .01, to medium, .06

<table>
<thead>
<tr>
<th>Variable</th>
<th>df</th>
<th>$F$</th>
<th>$p$</th>
<th>Effect Size</th>
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<tbody>
<tr>
<td>1. Irrational beliefs</td>
<td>(1, 48)</td>
<td>5.19</td>
<td>.03</td>
<td>.09</td>
</tr>
<tr>
<td>2. Body image</td>
<td>(1, 52)</td>
<td>3.42</td>
<td>ns</td>
<td>.006</td>
</tr>
<tr>
<td>3. Help endorsements</td>
<td>(1, 52)</td>
<td>3.49</td>
<td>.03</td>
<td>.03</td>
</tr>
<tr>
<td>4. Friendship esteem</td>
<td>(1, 53)</td>
<td>4.74</td>
<td>.01</td>
<td>.08</td>
</tr>
<tr>
<td>5. Depression</td>
<td>(1, 50)</td>
<td>1.70</td>
<td>ns</td>
<td>.02</td>
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</table>

*The measure of gender role attitudes had a reliability of .36 and was not used as an outcome measure.*
Randomized Experimental Study

Following the promising results presented in the quasi-experimental design, the next stage in empirical testing was to conduct a randomized study. A total of 118 girls were recruited to participate. The mean age of the sample was 13.5 years. Similar to the previous study, the sample was culturally diverse, with 62.4% white, 19.7% mixed race, 13.7% Hispanic, 32.6% Native American, and less than 2% African American. Program implementation followed the same procedures as described for the quasi-experimental study, except that participants were randomly assigned to either the no-treatment control group or the experimental group. Three of the measures used in the quasi-experimental study were used again: the body image scale, the peer esteem scale, and the help endorsements scale. Several new scales were added to this study in order to examine the outcomes in a more detailed manner. The new measures were a 7-item assertiveness scale (Center for Substance Abuse Prevention, 1993), an 8-item attractiveness scale (LeCroy & Daley, 2001a), a 9-item girls’ self-efficacy scale (LeCroy & Daley, 2001a), a 20-item self-liking/self-competence scale (Tafarodi & Swann, 1995), and a 17-item hopelessness scale (Kazdin, Rogers, & Colbus, 1986). All measures were found to have acceptable reliabilities of .72 to .94 for the study population.

Table III presents the statistical results using an ANCOVA, with the pretest as a covariate. Five of the outcome measures were significant in the between-group analysis. Two measures, hopelessness and help endorsements, would be significant if the criteria were lowered to the .10 level. Given the low power of the experiment, researchers may want to suspend judgment regarding significance (Keppel, 1991). One measure clearly did not show significant results and that was friendship esteem. The effect sizes ranged from .01 to .07 for the different measures. More details of the experiment and the results are reported elsewhere (LeCroy, in press).

Discussion

Over 10 years of effort combined to build the empirical base for the empowering adolescent girls program. In the initial study the focus was on the implementation process and making sure the curriculum was well received by the participants. Data were gathered from focus groups, observations, and interviews of program participants and group leaders. This critical data helped the program developers revise and improve the overall program. An initial test of improvement (pre- to posttest...
change scores) produced results indicating that the program was promising.

The quasi-experiment and the randomized experiment established the empirical foundations of the program. With the initial quasi-experimental study, we were able to show significant changes in comparison with a no-treatment group on some of the key measures. Although the findings were modest, they did offer promise for continued development and refinement of the program. The three measures that found positive results included those of irrational beliefs, help endorsements, and friendship esteem. Help endorsements and friendship esteem reflected only one aspect of the curriculum. As noted earlier, the measure for gender role attitudes had to be thrown out because of poor reliability. The strongest finding is reflected in the irrational beliefs measure, as this was a component that cut across the many aspects of the curriculum. Also, this appeared to reflect a more basic outcome. Still, this was not a “cognitive-behavioral” curriculum per se incorporating detailed content on addressing irrational self-statements. The most disappointing finding was the absence of any significant results on the body image scale. This is more central to the overall program because the curriculum addresses media messages, pressure to conform to unrealistic models, and body acceptance. After this study, we reevaluated our curriculum and strengthened the parts that promoted a more positive body image. We also recognized that the media messages around body image for adolescent girls were overwhelming and that we might not have a strong enough program to have any effect there.

Upon reflection and critical review, we concluded that the “measurement model” for evaluating the outcomes was quite limited and needed to be reconceptualized. Thus, a major effort for the more rigorous randomized study was to identify a better set of measures against which the program could be evaluated. Although the program was based on a research review of “critical issues,” its overall theme and intent are more elusive. To capture the central aspect of the program, we used three new measures—self-liking/self-competence, girl’s self-efficacy, and assertiveness. If the program is successful, it should have an impact on girls’ positive sense of themselves and their competence. Also, as a direct measure, we created the self-efficacy scale to tap into the program’s intent to influence girls’ empowerment or general effectiveness. Also, empowerment and self-efficacy should influence girls’ overall assertiveness, so we included this measure as well.

It was important to keep the same body image scale because we wanted to test whether our changes in the curriculum might now have an influence on this measure. However, to better understand outcomes in this area, we added a measure of girls’ attitudes toward attractiveness. This would allow us to see whether their attitudes might be an underlying aspect of body image. We were not sure we could turn the tide and have any impact on how much value girls put on “being attractive” as opposed to “being oneself,” but this seemed like a critical issue in ultimately impacting body image.

Lastly, we replaced the depression measure from the earlier study, which had shown no significant impact. We substituted the hopelessness scale, thinking that perhaps this measure would be more appropriate, since our program was more oriented to negative mood states than depression per se.

The results from the randomized study were more encouraging than those of the previous study. All measures except one showed significant between-group changes or strong trends in that direction. The effect sizes supported the conclusion that the program was influencing the outcomes we had selected to evaluate it. The effort to identify more “core” measures
appeared to work, as the self-liking, self-efficacy, and assertiveness measures all showed significant between-group changes, in contrast to the control group. Encouragingly, the body image scale showed significant change. Associated with this was a change in girls’ attitudes toward attractiveness. This was the most surprising finding, because in early adolescence the influence of paradigms of attractiveness is extremely strong (LeCroy & Daley, 2001a). Striegel-Moore and Cachelin (1999, p. 86) note that “the combination of the cultural prescript for girls to care about others’ opinions and to define themselves through their physical appearance, and the particular beauty ideal of extreme thinness, creates a powerful motivational force for girls to pursue thinness.”

It is unclear why the friendship esteem measure did not show any significant change, when it had in the previous study—perhaps because it is only one aspect of the overall curriculum, and that part of the program is not strong enough to engender change. Also, the hopelessness measure did not show the strong result we had expected ($p < .08$). Initially this was disappointing because dissatisfaction with body image is associated with higher levels of depression (Fabian & Thompson, 1989). However, postpubertal girls have higher depression rates (Hodges & Siegel, 1995), and many of the girls in this study had not yet reached the age of menarche. Furthermore, a review of relevant literature finds that many girls do not develop depressive symptoms until they reach middle or late adolescence (Radloff, 1991), and this study was focused on early adolescence. Finally, lack of a stronger effect on hopelessness may reflect the preventive nature of the program (LeCroy, in press).

This article demonstrates the process of building an effective preventive intervention for adolescent girls. The cumulative evidence finds generally positive results for early adolescent girls in the short term. As a beginning step in intervention development, the studies conducted suggest that a universal gender-specific prevention program can produce meaningful effects. However, future studies must be done to document the potential of longer-term impact and assess potential effects across an even broader range of outcomes. The ultimate goal is to produce a program that can address a wide range of critical issues to promote the healthy development of adolescent girls as they make the transition into adulthood.

References


Hare, B. R. (1985). *The Hare general and specific (school, peer, and home) self esteem scale.* Unpublished manuscript.


