

School-Based Skills Training to Prevent Aggressive Behavior and Peer Rejection in Childhood: Evaluating the *Making Choices* Program

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This paper reports findings from an evaluation of a school-based prevention program, called Making Choices, which was designed to decrease childhood aggression and peer rejection by teaching children social problem solving and relationship enhancement skills. Using a pre- to post-test control group design, 51 third graders received the intervention program and 50 received the no-intervention control condition. Controlling for pretest scores, children who received the Making Choices intervention had significantly higher scores on social contact, cognitive concentration, and displayed significantly lower overt aggression. Important moderation effects surfaced, indicating that the intervention differentially benefitted high-risk children.

KEY WORDS: aggressive behavior; universal prevention; skills-training; peer rejection.

Although there is no single pathway that leads to violence, substance abuse, and other poor developmental outcomes, a number of studies have implicated the early onset of stubborn, defiant, impulsive, and aggressive behavior as a precursor of later fighting, drug involvement, and violence (Deater-Deckard, Dodge, Bates, & Pettit, 1998; Loeber, Farrington, Stouthamer-Loeber, & Van Kammen, 1998; Tolan & Gorman-Smith, 1998). “Early start” youth tend to use overt force to solve social problems, reside in families where parent-child exchanges are coercive, demonstrate poor school adjustment, and become rejected by prosocial peers (Farrington, 1998; Fraser, 1996a; Hanish & Guerra,

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2002; Miller-Johnson, Coie, Maumary-Gremaud, Bierman, & the Conduct Problems Prevention Research Group [CPPRG], 2002; Patterson, Reid, & Dishion, 1992). Youth who are “early starters” are at heightened risk for embarking on a life-course-persistent trajectory of criminal offending (Loeber & Farrington, 2001; Patterson, Forgatch, Yoerger, & Stoolmiller, 1998). These youth represent less than 10% of the youth population, but over their careers they perpetrate nearly half of all adolescent offenses, including youth violence (CPPRG, 1999a).

The purpose of this paper is to report on the effectiveness of a school-based, social skills training program designed to interrupt—at least in part—developmental trajectories that lead from early aggressive behavior and peer rejection to more serious conduct problems. The program, called *Making Choices*, targets two critical risk factors in the development of conduct problems—childhood deficits in social information processing skills and social rejection by prosocial peer groups.

The *Making Choices* Program

The purpose of the *Making Choices* program is to teach children social problem-solving skills and to reduce peer rejection. The program is based on social information processing (Crick & Dodge, 1994; Huesmann, 1998), social preference (Coie, Terry, Zakriski, & Lochman, 1995), and social skills training research (Lochman, 1992; Lochman, Coie, Underwood, & Terry, 1993; Pepler, Craig, & Roberts, 1995; Prinz, Blechman, & Dumas, 1994). Children who become more skillful in solving social problems usually improve their ability to establish and maintain relationships with peers and authority figures.

The *Making Choices* curriculum (Fraser, Nash, Galinsky & Darwin, 2001) outlines a specific skill-building program that is designed to help children build enduring friendships, work more productively in groups, and respond positively to new social situations. A teaching manual describes a series of 31 lessons guiding instructors through the problem-solving sequence. An explicit goal guides each lesson and activity, including how aggressive children may be deficient in skills needed during each problem-solving step. Because of its reliance on group activities and discussion, the manual includes tips on group process and class development.

Making Choices is appropriate for use in classroom or small group settings. Sessions are typically facilitated by teachers, school counselors, psychologists, or social workers. The curriculum is adaptable for use with children from early elementary through early middle school. The manual contains copy-ready materials for each activity, making the curriculum inexpensive and easy to replicate. Little facilitator training is necessary because the manual fully articulates the content of each lesson.

Based on elements of social information processing, the program is designed to equip children with alternatives in how to think about social situations and in how to formulate social goals and social responses. An important goal of this curriculum is to teach children ways to interact with others in a collaborative manner. The curriculum focuses on a sequence of problem-solving skills that has been linked to aggression and other developmental outcomes in children.

Social Information Processing

Developmental deficits in cognitive processes are associated with early aggressive behavior, school failure, sexual precocity, drug abuse, and delinquency (for reviews see, Crick & Dodge, 1994; Fraser, 1996b; Huesmann, 1998). A child's mastery of six social information-processing (SIP) skills—encoding, interpretation, goal formation, response formulation, decision-making, and enactment—is thought to define his or her ability to navigate new social situations. These skills determine, in part, whether a child will encounter new situations with a sense of hope or a sense of suspicion and hostility. Moreover, they dispose children to interactional styles that affect opportunities for future social participation and success. Mastery of these skills is related to a child's overall social involvement, social adjustment, and life course (Pakaslahti, 2000). The units of the *Making Choices* program correspond to these skills:

Encoding

Aggressive children appear to attend to fewer environmental cues in general, and when they do identify cues, they miss important ones. They tend to make use only of more recent and stimulating cues (Gouze, 1987). Compared with nonaggressive children, aggressive children tend to rely more on “schemata” or generalized memories that allow them to structure new information. Aggressive children make sense of the world by skipping over situation-specific cues to which nonaggressive children attend and thus encode fewer cues before they conclude that they understand a social situation (Dodge & Tomlin, 1987; Garrison & Stolberg, 1983).

Interpretation and Hostile Attribution

Aggressive children often make thinking errors by erroneously assigning hostile intent to neutral social cues (Dodge, 1991; Kaplow, Curran, Dodge, & the CPPRG, 2002). Aggressive children commonly interpret neutral interactions as threatening and then respond defensively with aggression. They perceive hostility when it is not there (Pakaslahti, 2000) and respond aggressively. A relationship

between aggressive behavior and attribution of hostile intent has been found in many studies of both boys and girls in kindergarten through eighth grade (Feldman & Dodge, 1987; Pakaslahti, 2000; Quiggle, Garber, Panak, & Dodge, 1992; Steinberg & Dodge, 1983).

Goal Formation

Aggressive children tend to define goals that are inappropriate or damaging to their social relationships, ignoring the long-term consequences of brute-force solutions to social problems. They regard winning, securing control over an object, and social dominance as ends without perceiving or attending to consequences (Crick & Dodge, 1989, 1994; Renshaw & Asher, 1983; Slaby & Guerra, 1988).

Response Formulation

Compared with other children, aggressive children identify fewer alternatives (Pettit et al., 1988; Slaby & Guerra, 1988; Spivak, Platt, & Shure, 1976) and generate relatively more confrontational and coercive responses (Asher, Renshaw, & Geraci, 1980; Quiggle et al., 1992). It is not clear whether aggressive children are simply victims of family and community circumstances in which many responses to social opportunities are impoverished or whether individual cognitive deficits prevent aggressive children from recalling or constructing more diverse and prosocial response repertoires (Crick & Dodge, 1994).

Decision-Making

Aggressive children tend to assign higher value to physically and verbally coercive responses (Dodge et al., 1986; Graham & Hudley, 1994; Quiggle et al., 1992). From elementary through high school, aggressive children focus on short-run material gains and fail to estimate the long-run costs of aggressive behavior. When asked what might happen as a result of alternative responses, aggressive children report less favorable expectations for social outcomes based on bargaining, ignoring provocation, or giving compliments and are more confident carrying out verbally or physically aggressive responses (Crick & Dodge, 1989; Quiggle et al., 1992).

Enactment

Aggressive children are often less adept at joining groups, offering/receiving positive statements, negotiating “deals,” and bargaining for the exchange of social opportunities (Lochman & Dodge, 1994). Because they are less skillful in

sequencing behaviors to achieve a goal, they tend to rely on force to solve social problems. Over time, the use of force as a social strategy places a child outside the skilled peer group in a sort of “social limbo” (Patterson, Capaldi, & Bank, 1991, p. 149).

Peer Rejection

As early as kindergarten and the first grade, social problem solving begins to be predictive of both friendship patterns and developmental outcomes (Dodge, Coie, Pettit, & Price, 1990; Kaplow, Curran, Dodge, & the CPPRG, 2002; Miller-Johnson et al., 2002; Underwood, Coie, & Herbsman, 1992). Among children who are rejected by their peers, aggression is more likely to be used to achieve social goals (Bierman, Smoot & Aumiller, 1993; Miller-Johnson et al., 2002). In addition, rejected children are more likely to escalate aggression when they are the targets of aggressive acts such as teasing or taunting. They are quick to fight and slow to employ negotiation, bargaining, and other forms of problem solving. For both girls and boys, the result is increasing rejection by other children (Hanish & Guerra, 2002). Because they are often beyond the influence of prosocial peer groups, these isolated children are at increased risk of problems in the school and community (Coie et al., 1992; Kaplow, Curran, Dodge, & the CPPRG, 2002; Kupersmidt, Coie, & Dodge, 1990). In the long run, rejection by prosocial peers also heightens the probability of the child associating with delinquent peers, a predictor of later crime and substance use (Cairns & Cairns, 1994; Fergusson, Swain-Campbell, & Horwood, 2002; Hanish & Guerra, 2002).

PREVENTING AGGRESSIVE BEHAVIOR USING *MAKING CHOICES* SKILLS TRAINING

Cognitive problem solving skills training approaches have received encouraging evaluations in recent studies and literature reviews (e.g., see Frey, Hirschstein, & Guzzo, 2001; Greenberg, Kusche, Cook, & Quamma, 1995; Lochman, 1992; Moote, Smythe, & Wodarski, 1999; Prinz, Blechman, & Dumas, 1994). Even so, the impact of school-based skills training appears to be promising, yet modest (US DHHS, 2001). Evaluations have shown some programs to be effective across gender, racial, and risk groups, while others display differential efficacy for high risk groups (US DHHS, 2001; Reid, Eddy, Fetrow, & Stoolmiller, 1999). No published study that we are aware of has used a SIP theoretical perspective both to link problem-solving skill to developmental outcomes and to undergird specific intervention activities. Consequently, the development of elementary school skills-based training programs that are rooted in recent theory and research, cost-effective, easily replicable, and have universal appeal across gender, racial, and

risk groups is warranted. This led us to develop and test the *Making Choices* program.

Fraser, Day, Galinsky, Hodges, and Smokowski (2004) evaluated the *Making Choices* program, along with an in-home family intervention called *Strong Families*, as a violence prevention program for high risk youth. Compared to 41 children randomized to a waitlist control condition, data analyses examining the combined programs indicated that 45 intervention children displayed greater social competence and increased their social contact with peers. Intervention was also associated with significant improvements in cognitive concentration, a measure of classroom comportment. This study provided encouraging information about the use of the *Making Choices* program as part of a multi-component prevention initiative with youth who are referred for early aggressive behavior problems. At the same time, this pilot study did not disaggregate the effects of *Making Choices* from those of the companion *Strong Families* program.

The purpose of the current study was to extend the findings with high risk youth noted above by evaluating the *Making Choices* program as an elementary school-based universal prevention initiative to decrease conduct problems in childhood, to enhance social skills, and to increase attachment to prosocial peers. Our primary hypothesis was that children who received the program would perform better on measures of social behavior than children in a routine services control group. We also believed that the program might prove more beneficial for children experiencing early behavioral problems (i.e., children who are considered at risk on baseline behavioral ratings). And we believed that social skills training provided in a classroom setting would have—at a very minimum—no adverse effects on socially competent, non-aggressive children. It was our goal to enhance social information processing skills in third grade children and, for some third-graders, to interrupt risk mechanisms associated with peer rejection. Using *Making Choices* as a universal prevention initiative, we sought to do this without stigmatizing children with behavioral problems by taking them out of their classrooms for special services. Further details about the program content or implementation are available from the authors.

RESEARCH DESIGN

Sample

This pilot study was conducted in one mid-sized elementary school that was situated in a rural county of a Southeastern state. Approximately one quarter of the students in this school qualified for a free or reduced lunch subsidy and one third of the students were considered racial and ethnic minorities. Four third-grade classrooms were randomly assigned to either a treatment or a control condition. Fifty-one children were in two classrooms that received the *Making Choices*

program as a part of the Health curriculum. Meanwhile, 50 third-graders attended two classrooms that were randomized to the control condition. These classes received the standard Health curriculum without the *Making Choices* program content.

The mean age of the children was 8.5 years and the percentage of boys and girls in the sample was roughly equivalent, slightly favoring girls (54% female, 46% male). The majority (68%) of children in the sample were European American, not of Latin origin. Twenty-two percent of the children were African American, 5% were Latino, and 3% were Native American or Asian. Statistical tests comparing groups indicated that there were no significant demographic differences between children in the *Making Choices* intervention group and children in the routine services control group.

Procedures

Children in the treatment group classrooms received weekly lessons in class. A Masters-level social work student, hired and trained by the research project, taught lessons for 45 minutes each week from September to May. The group-leader followed the *Making Choices* manual (Fraser et al., 2000), that outlines 25 sequential skills-building lessons. These lessons are organized around one unit on emotions and six units on the sequential steps of social information processing. Lessons were taught in one or two weekly sessions, depending on class progress. The *Making Choices* manual outlines the objectives for each lesson, provides a list of required materials, reviews previous material (the skills build on each other), and suggests one or more activities. New concepts are introduced with didactic instruction, and then group-oriented techniques are used to reinforce the content. The teaching methods in the manual include: group activities and discussion, games, stories, and role-plays. Teachers were encouraged to use the problem-solving techniques of *Making Choices* when disputes arose between children during the school day. Every lesson was presented during at least one full class period.

Dependent Measures

Teachers evaluated all children in their classrooms at the beginning and end of the school year. These teacher ratings served as dependent measures.

The Carolina Child Checklist—Teacher Form (CCC-TF) was developed to measure risk and protective factors related to aggressive behavior in children ages six to twelve. The CCC-TF is a 42-item instrument, which has acceptable construct and concurrent validity (Macgowan, Nash, & Fraser, 2002). Macgowan, Nash, and Fraser report that the CCC-TF has a Cronbach's alpha of .95 for the

entire instrument with both boys and girls and test-retest correlation of .75 or higher over a three-month period.

The CCC-TF is a risk-based elaboration of the 37-item Social Health Profile (SHP, Fast Track, 1997) which, in turn, is an adaptation the 26-item Teacher Observation of Classroom Adaptation-Revised (TOCA-R, Werthamer-Larsson, Kellam, & Wheeler, 1991; see also Ialongo et al., 2001). Previous research supported the dimensionality, internal consistency, and test-retest reliability of the TOCA-R, as well as its concurrent and predictive validity (Fast Track Project, 1997; Werthamer-Larsson, Kellam, & Wheeler, 1991). The CCC-TF relies on teachers and workers to estimate peer sociometry on the basis of observed behaviors in the structured class environment and in unstructured play environments. Work with similar instruments has found that teacher ratings of peer sociometry can be highly reliable and valid, especially when related to aggressive behavior (Huesmann, Eron, Guerra & Crawshaw, 1994).

The CCC-TF includes several scales that are the focus of this analysis. Scale items are measured on a scale of 0 (“Almost Never”) to 5 (“Almost Always”) and the scales are computed by averaging the item scores. *Social Contact* is a four-item scale that measures the child’s extent of interaction and play with others. The internal consistency reliability of the scale items is .843. *Cognitive concentration* is a twelve-item scale that measures school comportment—the child’s ability to concentrate, stay on task, be self reliant, and complete school assignments. The internal consistency reliability of the scale items is .954. *Social competence* is measured with a nine-item scale that asks about the child’s ability to; understand other people’s feelings, control his or her temper during disputes, resolve peer problems, be friendly, and express needs and feelings appropriately. The internal consistency reliability of the scale items is .912. *Aggression* was measured with the aggression subscale from the Child Behavior Check List. This ten-item scale asks about behavior such as fighting, breaking things, harming others, breaking rules, and lying. Item anchors range from 0 (“Not True”) to 2 (“Very True”) and higher scores indicate more problematic behavior. The internal consistency reliability of the scale items is .907. Finally, *peer acceptance* was measured by the teacher’s evaluation of how much the child is liked by his or her classmates. This single-item scale ranged from 0 (“Almost Never Liked”) to 5 (“Almost Always Liked”).

Independent Measures

Treatment condition scored as a dichotomous variable (0 = routine services, 1 = *Making Choices*), was the primary independent variable. Gender, minority status, and pretest score were controlled as covariates in regression models. Interactions between treatment group and sex, treatment group and minority status, and

treatment group and pretest scores were calculated and used to assess moderation effects in the regression analyses.

Analysis

Analyses were conducted in SPSS version 11.0, using an Attributes-Treatments-Interactions design (ATI; Pedhazur & Pedhazur Schmelkin, 1991). First, bivariate correlations were used to examine the associations among independent and dependent variables. Then, stepwise multiple regression analyses were performed to examine the percentage of variation explained by attributes (e.g., pretest scores, gender, and minority group status), intervention, and the interactions between the attributes and intervention. Pretest score was entered as the first step in a stepwise multiple regression equation. Gender and minority status covariates were entered in the second and third steps, followed by intervention condition in the fourth step. Interaction terms for intervention group-by-pretest score, intervention group-by-gender, and intervention group-by-minority status were entered individually in step five, six, and seven. Because interaction terms can introduce problematic levels of multicollinearity into regression equations, creating high variance inflation factors (VIF) and low tolerances, all of the pretest score variables were centered before calculating interaction terms (Neter, Kutner, Nachtsheim & Wasserman, 1996). This centering procedure (e.g., taking the difference between observed scores and the grand mean) helps to limit problems with multicollinearity that arise when independent variables and interaction terms are highly correlated and is a standard procedure used when conducting regression analyses with interaction terms (Tabachnick & Fidell, 2001). This procedure lowered collinearity, rendering acceptable VIF and tolerance diagnostics.

Interaction terms enabled us to assess whether the impact of the *Making Choices* program differed by gender, minority status, or level of performance on the pretest. The pretest-by-intervention interaction term is especially important because it helps to determine whether higher risk children (i.e., those rated as having more problems on pretests) differentially benefit from program participation. Moderation effects are as common as significant main effects in prevention trials, and including pretest-by-intervention group interaction terms accounts for some of the classroom level variance (Brown & Liao, 1999). Accounting for some of the classroom level variance in this way was necessary because the study's clustering in one school and four classrooms provided no statistical power to conduct more sophisticated multi-level modeling analyses (Brown & Liao, 1999).

After significant covariates and interaction effects were examined in the stepwise regression models, estimated marginal means, adjusted for the effects of significant covariates, were generated by the General Linear Modeling procedure in SPSS version 11.0. Adjusted means were used to calculate program effects sizes. Significant moderation effects called for special subgroup analyses. When

significant pretest-by-intervention group interactions surfaced, high-risk children were identified by selecting children who scored below the standardized mean (0) on pretest measures. This was above the mean for overt aggression. Adjusted means and estimated program effect sizes were then calculated for these high-risk children. Effect sizes were calculated in the conventional manner by taking the difference between the adjusted mean scores for intervention and control groups and dividing this by the average of the two groups' standard deviations (Pedhazur & Pedhazur Schmelkin, 1991).

The data were screened to make sure that all of the assumptions for multiple regression analyses were met. Issues concerning linearity, normality, homoscedasticity, multicollinearity, singularity, and independence of residuals were all considered. Missing data were not a problem. Residual outliers greater than 3 *SDs* from the mean, Mahalanobis Distance scores, and Cook's Distance scores were all examined. Two outliers surfaced in the analyses, one on social contact and one on aggression. Mahalanobis Distance scores were significant for these cases, but Cook's Distance scores indicated that they did not influence regression results. These two cases were retained in the analyses. Colinearity diagnostics, normal probability plots, and studentized residual by standardized predicted value plots showed no serious problems. Thus, all of the multiple regression assumptions were met.

RESULTS

Table I shows the Pearson's bivariate correlations between the independent and dependent variables. In general, the independent variables were not significantly correlated with one another; however, they were significantly correlated with the dependent variables.

The results of stepwise regression analyses are shown in Table II. As expected, pretest scores explained the most variation in posttest scores for every dependent variable. Minority group status also was a significant predictor of social competence, cognitive concentration, and overt aggression. As a group, minority children had lower mean teacher rating scores on social competence and cognitive concentration, and higher mean teacher rating scores on overt aggression. Controlling for pretest, gender, and minority status, results indicated that *Making Choices* intervention had a significant direct effect on social contact (R^2 Change = .059, $F_{1,94} = 9.026$, $p < .01$), cognitive concentration (R^2 Change = .018, $F_{1,94} = 4.290$, $p < .05$), and overt aggression (R^2 Change = .024, $F_{1,94} = 4.569$, $p < .05$).

The interpretation of these direct effects was complicated by significant interaction terms in the regression models, indicating that the intervention had a disparate effect across the continuum of the dependent variable. Main effects are not directly interpretable in the context of significant interaction terms (Pedhazur &

Table I. Bivariate Correlations

	Treatment condition	Gender	Minority group status	Cognitive contact posttest	Social contact posttest	Social competence posttest	Aggression posttest	Peer acceptance posttest
Intervention group (1 = MC)	—	-.049	.099	.281**	.418**	.324**	-.131	.339**
Gender (1 = male)		—	.041	-.163	.081	-.070	.078	.033
Minority group status (1 = Yes)			—	-.344**	.019	-.298**	.352**	-.151
Cognitive concentration posttest				—	.360**	.715**	-.515**	.571**
Social contact posttest					—	.453**	-.125	.564**
Social competence posttest						—	-.753**	.808**
Overt aggression posttest							—	-.571**
Peer acceptance posttest								—

**Correlation is significant at the 0.01 level (2-tailed).

Table II. Percentage of Variance Explained by Intervention Group, Pretest, Gender, Minority Status, and Interaction Terms

Change in R^2 by variable	Social contact	Social competence	Cognitive concentration	Overt aggression	Peer acceptance
1. Pretest	.308***	.489***	.548***	.399***	.536***
2. Minority (1 = minority)	.014	.038**	.034**	.069**	.000
3. Gender (1 = male)	.003	.011	.003	.006	.006
4. Intervention (1 = Making choices)	.059**	.009	.018*	.024*	.017
5. Pretest \times Group	.046**	.029*	.024*	.009	.035**
6. Group \times Gender	.001	.011	.018*	.013	.000
7. Group \times Minority	.002	.001	.000	.041**	.013
$F_{(7,91)}$	9.98	18.54	23.70	16.70	19.83
p	<.001	<.001	<.001	<.001	<.001
Adj. R^2	.391	.556	.618	.529	.576

Note. The change in R^2 for group may be considered an estimate of the program effect size. F -value is given for final step.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Pedhazur Schmelkin, 1991). Turning our attention to these interaction or moderation effects, steps 3, 4, and 5 in the models reported in Table II show these linear interaction effects. Interaction terms between the intervention and pretest score were statistically significant in predicting social contact (R^2 Change = .046, $F_{1,93} = 7.596$, $p < .01$), social competence (R^2 Change = .029, $F_{1,93} = 6, 247$, $p < .05$), cognitive concentration (R^2 Change = .024, $F_{1,93} = 6.086$, $p < .05$), and peer acceptance (R^2 Change = .035, $F_{1,93} = 7.865$, $p < .01$). The regression coefficients for all of these interaction terms were negative, indicating that children who scored lower on the pretest and who participated in the *Making Choices* program demonstrated the largest posttest gains.

The intervention-by-pretest term in the regression equation for overt aggression was not statistically significant. However, the intervention-by-minority status interaction was statistically significant (R^2 Change = .041, $F_{1,91} = 8.550$, $p < .01$). As noted above, minority children had higher teacher ratings of overt aggression on the pretest. The negative regression coefficient for this interaction term indicated that minority children who received the *Making Choices* intervention had lower posttest ratings on overt aggression than minority children who did not receive the intervention. Finally, the intervention-by-gender interaction term was statistically significant for cognitive concentration (R^2 Change = .018, $F_{1,92} = 4.636$, $p < .05$). The negative regression coefficient for this interaction term indicated that girls who received the *Making Choices* intervention had higher posttest ratings on cognitive concentration than girls who did not receive the intervention. The non-significant interactions between intervention and gender and intervention and minority status indicated that program effects did not vary for boys versus girls or for minority children as compared to Euro-American children on these dependent variables.

Table III. Estimated Marginal Means at Posttest by Group Adjusted for Significant Covariates

Outcome measures	<i>Making choices,</i> <i>M(SD)</i>	Routine services, <i>M(SD)</i>	<i>F</i>	Partial η^2	Effect size
Direct effects—Full sample (<i>N</i> = 98)					
Social contact ^a	.388 (.62)	-.110 (1.1)	9.201**	.088	.57
Social competence ^b	.298 (.84)	.134 (.97)	1.291	.014	.18
Cognitive concentration ^b	.188 (.95)	-.074 (.97)	3.965*	.041	.27
Overt aggression ^b	-.136 (.79)	.169 (1.2)	4.708*	.048	.31
Peer acceptance ^a	.226 (.12)	-.202 (.12)	6.853**	.067	.45
Moderation effects					
High Risk on Pretest (sample size varies)					
Social contact ^a	.127 (1.0)	-.785 (1.1)	7.002*	.146	.88
Social competence ^b	-.047 (.94)	-.484 (.94)	3.707	.072	.46
Cognitive concentration ^b	.188 (.92)	-.074 (.82)	5.767*	.100	.56
Peer acceptance ^a	-.241 (.92)	-.856 (.86)	6.701*	.127	.69
<i>Girls only</i> (<i>n</i> = 54)					
Cognitive concentration ^b	.445 (.79)	-.041 (1.0)	9.610**	.164	.54
<i>Minority children only</i> (<i>n</i> = 32)					
Overt aggression ^b	.128 (.85)	1.05 (1.65)	5.429*	.162	.73

Note: All scores are standardized. Standard deviations come from unadjusted group means. Partial η^2 is interpreted as the proportion of the total variability in the dependent variable that is accounted for by variation in the independent variable. It is the ratio of the between groups sum of squares to the total sum of squares. Effect size was calculated as the difference between the two groups' estimated marginal mean scores divided by the average of their standard deviations. High-risk effect size was estimated by selecting children who scored below the standardized mean (0) on pretest measures and performing the same calculations. For overt aggression, children who scored above the mean were selected.

^aEstimated marginal means were evaluated when pretest scores were in the model.

^bEstimated marginal means were evaluated when pretest scores and minority group status were in the model.

p* < .05; *p* < .01.

Table III shows estimated marginal mean scores on posttest measures for the intervention and control groups. Estimated marginal mean scores were evaluated with significant covariates in the model (see Table II—pretest for all dependent variables, pretest and minority group status for social competence, cognitive concentration, and overt aggression). Relative to routine services participants, children in the *Making Choices* group had significantly higher teacher ratings of social contact, cognitive concentration, and peer rejection. They also were reported to display significantly lower amounts of overt aggression. Program effect sizes ranged from .57 for social contact to .18 for social competence.

These effects for the entire sample need to be discussed based upon the statistically significant interaction effects. To estimate program effect sizes for moderation effects between the program and the pretest, children who were rated below average (0 on the standardized measures) on pretest measures were identified as high risk. Comparisons of estimated marginal mean scores for high risk children rendered program effect sizes that were substantially higher than the ones

calculated for the entire sample. For children considered to be at risk on pretest measures, the estimated program effect sizes were .88 for social contact, .46 for social competence, .56 for cognitive concentration, and .69 for peer acceptance. In addition, the program effect size for girls was .54 for cognitive concentration, and was .73 for minority children for overt aggression.

DISCUSSION

The purpose of this study was to provide an initial evaluation of the *Making Choices* program as a universal prevention initiative to decrease conduct problems in childhood, to enhance social skills, and to increase attachment to prosocial peers. Our research hypothesis that children who received the program would perform better in these areas than children in a routine services control group was largely supported. Program participation was associated with significantly higher scores on several factors that protect children against the development of serious conduct problems (e.g., having social contact with prosocial children, demonstrating cognitive concentration to enhance performance in school, displaying less overt aggression, and establishing prosocial peer acceptance).

These findings are consistent with previous work by the authors and by others. In our previous study with high risk youth ($N = 103$) and the intervention package consisting of *Making Choices* and *Strong Families*, the combined programs demonstrated significant effects on social contact, social competence, and cognitive concentration—just as *Making Choices* alone did in the current study (Fraser et al., 2002). While this pattern of results needs to be further confirmed, finding approximately the same pattern of significant outcomes across studies is encouraging.

Other authors have also shown the importance of these outcome variables. In a study of distal outcomes of the Baltimore public schools classroom intervention, Ialongo et al. (2001) recently showed grade 1 social contact, social competence, and cognitive concentration to mediate grade 6 school suspensions, use of school mental health services, diagnosis of conduct disorder, and teacher ratings of conduct problems. Thus, the intervention appears to have made changes in variables that have construct validity for future conduct problems.

Evaluating the importance of program effect sizes has been controversial because different opinions of what constitutes “large” or “small” effects exist. Even so, this study’s results are as strong as or stronger than previous results from studies of social skills training programs (Moote, Smyth, & Wodarski, 1999). Cohen (1988, quoted in Pedhazur & Pedhazur Schmelkin, 1991) suggested that the difference between means of .2 of a standard deviation should be considered small, .5 medium, and .8 large. Using this scale, the full sample effects estimated in Table III would be considered medium for social contact and peer acceptance, and small for the other outcomes. At the same time, effects for the subgroup analyses would be large for high risk children on social contact, and clearly medium for the rest of the effects. The Surgeon General’s report on youth violence

(US DHHS, 2001) also established guidelines for “model” and “promising” prevention programs. According to the report, “model” programs should demonstrate effect sizes of .30 or higher, and “promising” programs should demonstrate effect sizes of .10 or greater. Full sample estimated program effect sizes would be considered in the model range for social contact, overt aggression, and peer acceptance and “promising” for cognitive concentration, and social competence. Subgroup analyses for high risk children show the program to be in the “model” range for all of the outcomes.

Our findings are promising in several ways. First, there is no evidence that children who were doing well were harmed from the program. Given the main effects, it is likely that the program improved most children’s skills. Second, from the tests for interactions, the positive program effects appear to be driven by disproportional improvements among high-risk children. Substantively, this is important because these higher risk children are potentially quite costly to society and need prevention efforts that interrupt risk trajectories associated with serious social and health problems (US DHHS, 2001). Third, universal prevention programs, if shown effective, are especially important because they avoid iatrogenic effects associated with selective prevention programs where high risk children are identified for special services (Dishion, McCord, & Poulin, 1999). Using *Making Choices* as a universal prevention initiative, we sought to avoid the problem escalation—recently described as “deviancy training”—that can occur from aggregating high-risk youth into groups (Dishion, Poulin, & Burraston, 2001; Tremblay et al., 1995). Approaching aggressive behavior and peer rejection from a universal prevention perspective also allowed us to circumvent the labeling problems related to traditional “pull-out” programs (when high risk children are removed from the regular classroom to receive special services). The program utilized the prosocial children in the classroom as models for skills development and positive relationship formation. The significant pretest-by-intervention interaction effects and the high risk subgroup analyses suggest that the program did indeed differentially affect high risk children, and the universal prevention design avoided both the deviancy training and stigmatizing effects of selective prevention.

Of course, this investigation had limitations and weaknesses. Two classrooms, one experimental and one control, were dropped from the study because of complications with teachers who failed to support the program. Classroom-based prevention programs require ipso facto teacher participation, and implementation issues in delivering prevention intervention often compromise findings. These data describe findings from a study in which teachers fully participated. The study’s sample size was small and longitudinal follow-up assessments were not performed. Large-scale replications with longitudinal follow-up assessments must be carried out before the generality of treatment effects can be estimated. A broader measurement package that involves peer sociometry, parent reports, behavioral observation, and child self-report is desirable. The current findings are based only on teacher reports. With randomization of classrooms within one school, teachers

were not blind to who was in the intervention. While this may have introduced bias into the experiment, it is important to note that teachers would need to accurately remember pretest ratings for nine months in order to systematically undermine posttest scores.

Although the findings are encouraging, further study with larger, racially diverse samples is needed. This work is currently in progress. Our analyses would also benefit from more sophisticated statistical techniques. There is a clustering of children within classrooms in the sample. Because of the small sample and number of classrooms, the effects of this intraclass clustering could not be estimated and controlled using statistical procedures such as hierarchical linear modeling (for a discussion of power and sample size limitations in prevention trials, see Brown, & Liao, 1999). Randomization of participants, rather than classrooms, would also help to guard against cohort and clustering effects confounding the analyses. With all of these caveats in mind, this study provides useful initial information about the efficacy of the *Making Choices* program and sets the stage for future research.

CONCLUSIONS

Analyses indicated that the *Making Choices* program was effective in enhancing social contact, cognitive concentration, and peer acceptance, and in decreasing overt aggression. Important moderation effects surfaced, indicating that the program was particularly effective for high risk children. Studies suggest that the intervention targets that the *Making Choices* program influenced are related both to future school performance and conduct (Ialongo et al., 2001; Loeber, Farrington, Stouthamer-Loeber, & Van Kammen, 1998). Although these initial results are encouraging, further replications with larger, racially diverse samples and measures from multiple sources are warranted.

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