

# **The Effects of Developmental Mentoring on Connectedness and Academic Achievement**

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## **Abstract**

Concerns about adolescent risk taking and school underachievement remain high. Such problems are increasingly viewed as products of students' disconnectedness from school, teachers, peers, and parents. One response to this crisis of disconnection is to develop programs that promote youths' sense of belonging and keep them connected during periods of transition. This article reports a one-year longitudinal study of developmental mentoring, a school-based intervention that enlists high school students as mentors to elementary school students. The findings from this study suggest that the developmental mentoring program promoted conventional connectedness to parents, school, and the future, and that program effects on spelling achievement scores were mediated by maintenance of parental connectedness into middle school. Implications for school programs to involve families as a way to promote connectedness and achievement in schools are discussed.

## **Introduction**

When children's environments, abilities, or behaviors threaten to jeopardize their developmental processes or academic success, they are viewed as being at risk for interpersonal problems and underachievement. Increasingly, society recog-

nizes that at-risk youth are developing within a crisis of disconnectedness (Chaskin & Hawley, 1994). Many youth are becoming more isolated from the larger community of consistent and supportive relationships that are so pivotal to social and emotional development. Sociocultural changes that include diminishing family roles, the transfer of family caretaking responsibilities to already overburdened schools, and the lack of community resources for youth suggest that there is a growing need to provide youth with more meaningful relationships as a way of creating a sense of community within schools (Dryfoos, 1991; Hamburg, 1994; Jason & Kobayashi, 1995).

Promoting connectedness has become an important focus of school-based intervention programs (e.g., Allen, Kuperminc, Philliber, & Herre, 1994) and a promising mechanism for promoting school achievement among high-risk youth (Bonny, Britto, Klostermann, Hornung, & Slap, 2000; Hendry & Reid, 2000; Resnick et al. 1997). Connectedness reflects youths' time spent with others and their attitudes toward those in their schools and families (Karcher, 2001). Connectedness conveys the degree to which youth find the people and places in their lives personally meaningful and important (Kohut, 1971; Lee & Robbins, 1995). Therefore connectedness may explain the effectiveness of prevention and intervention programs like mentoring.

## **The Impact of Mentoring on Children's Achievement and Connectedness in Schools**

Mentoring is one vehicle for alleviating this disconnection by providing a meaningful, ongoing relationship between a child and an older, caring person (Walker & Freedman, 1996). Through role modeling and discussions of values, mentors can promote their mentees' connectedness by increasing the mentees' activity with and caring for other people and particular social worlds, like their schools, their families, and their futures. Mentoring as a form of prevention in the schools, however, has only recently become the focus of systematic study (DuBois, Holloway, Valentine, & Cooper, 2002; DuBois & Neville, 1997; Rhodes, 1994; Rhodes, Grossman, & Resch, 2000).

### **Developmental Mentoring in the Schools**

In response to the need to develop both adolescents' and children's connectedness, we have been investigating the use of a form of student-to-student mentoring in which high school students volunteer to mentor elementary or middle school students either after school or on weekends. We call this the developmental mentoring program (Karcher, 2000). The program is developmental because it

promotes the psychosocial development of both adolescent mentors and preadolescent mentees in two ways. First, both mentors and mentees develop social skills and experience interpersonal support that serves to promote their self-esteem and connectedness to school. Second, elementary student mentees can continue in the program for several years, developing into protégés (mentors-in-training) in middle school, and into mentors themselves in high school.

Developmental mentoring also provides school personnel better control over the mentoring process and increases the likelihood of successfully implementing mentoring best practices in the schools. Developmental mentoring was organized around the need to have mentoring programs that could structure mentoring activities, provide ongoing supervision for the mentors, monitor program development, control the frequency of contacts, and facilitate parent involvement, all of which have been found to reflect best practices in mentoring (DuBois et al., 2002). Schools provide a perfect context for developmental mentoring because of the availability of high school mentors, the availability of a common place for the two to meet, and the opportunity for school personnel to structure the mentoring.

There are at least two reasons why school personnel might choose high school students to serve as mentors instead of adults from the community, at least with low to medium risk youth. First, developing programs based on adult volunteerism is a complex and challenging task. Many schools have mentoring programs in which businesses or community organizations send adult mentors into schools to work with students. Such programs, however, are increasingly hard to organize, supervise, and maintain in the face of supervision (i.e., liability), financial, and time constraints that arise when schools bring nonparental or nonemployee adults into the schools. Most mentoring programs find that locating, training, and supervising adult volunteer mentors in the community is a challenging, recurring, and complex problem.

Second, serving as a mentor provides high school students with wonderful opportunities for social development and social connectedness and can provide an excellent context for service learning courses (Stukas, Clary, & Snyder, 2000). Most mentoring programs that use volunteer mentors, such as Big Brothers and Big Sisters, relegate students to the role of mentee despite the many anecdotal and empirical reports that volunteers and mentors benefit as much or more than their mentees (Stukas et al., 2000).

### **Using Developmental Mentoring in the Schools to Promote Connectedness and Achievement**

Developmental mentoring is structured in a way to promote both connectedness and academic achievement. The mentors use a curriculum that is designed to

promote the development of both the mentee and the mentor by providing them with activities that promote aspects of connectedness relevant to their developmental needs. For example, through structured teacher interviews, the mentees become more familiar and comfortable with their teachers. At the same time, mentors experience the process of setting up the interviews as opportunities to experience teachers as colleagues. In this way, both the program curriculum and the mentoring relationships serve to increase connectedness in ways that facilitate gains in achievement and that can generalize beyond the context of the mentoring relationship to other important relationships, such as a student's relationship with his or her parent (e.g., Rhodes, Grossman, & Resch, 2000).

### **Mentoring and Connectedness**

In developmental mentoring, connectedness is viewed as both a main outcome variable by itself as well as an enabling outcome, that is, a mediator that facilitates other outcome variables like achievement. This perspective stands in contrast to the problem-reduction focus of many program evaluations in the field of prevention (Albee, 1982). The connectedness-promoting approach is important because the term "at-risk" assumes that the children are presently doing well or good enough (i.e., are not yet disordered) and that the goal of prevention should be to maintain and further promote their connectedness and development. Thus, problem reduction usually is not the most appropriate outcome measure for studying the effects of bona fide primary prevention programs, such as mentoring, because the populations served by primary prevention programs initially should report low rates of problem behavior. The goals should be to maintain protective processes and to facilitate development (Garmezy, 1981; Seligman & Csikszentmihalyi, 2000).

From a developmental perspective, mentoring serves to promote social bonding and a sense of belonging that helps youth develop stronger connectedness to self, others, and society. According to the framework of adolescent connectedness (Karcher, 2001), it is the generalization of this connectedness that helps youth achieve socially and academically. For example, heightened connectedness serves to keep children motivated to excel academically and invested in school by maintaining those forms of connectedness that are most under assault between the elementary and high school years (Eccles & Midgley, 1993). Yet no studies have directly examined connectedness as a mediating process in children's achievement nor as the central goal of mentoring.

### **Mentoring and Academic Achievement**

Previous research suggests that mentoring serves to promote academic achieve-

ment. For example, students with mentors report better school attendance than do their counterparts who do not have mentors; they report feeling more competent in their academic work; and children with mentors have been found to have better relationships with their parents and friends than do those students without a mentor (Tierney & Branch, 1992; Tierney, Grossman, & Resch, 1995). These studies of the Big Brothers and Big Sisters mentoring program suggest that the connectedness which develops within mentoring relationships may transfer to other important relationships, like those with parents and teachers, and thereby facilitate academic achievement (Rhodes, Contreras, & Mangelsdorf, 1994).

The current study tested several assumptions about the processes and outcomes of developmental mentoring. The main research question asked if changes in connectedness that resulted from mentoring could explain the effects of mentoring on academic achievement. This question required answering two more specific questions: Can developmental mentoring promote connectedness to the socially conventional ecologies of family, school, and the future? Can developmental mentoring effect changes in academic achievement?

## Methods

### Participants

#### *Mentees*

The participants were 30 fifth grade students from a public elementary school who were randomly stratified by grade and gender and assigned to one of two groups: mentoring and comparison. At the one-year follow-up, 26 of the fifth graders were available for post-assessment. Attrition in the sample resulted from families moving out of the district. The 26 youth in the two groups were from the same public school and were statistically equivalent across age, gender, and ethnicity. There were six boys and seven girls in the comparison group, and nine girls and four boys in the mentoring group. These differences were not significant ( $X^2 = .92, p > .05$ ). The participants were African American (42%), Mexican American (39%), and Caucasian (19%). All youth were identified by their teachers as functioning at or a standard deviation above grade level in their schools. The school districts from which the mentees came were selected because they had the highest high school dropout rates in the city. Thus, the children doing well in these schools are at greater risk for school failure and dropout than are comparable youth in other schools. Therefore, this sample does not reflect a population of mentees at academic or behavioral risk (Blechman, 1992), but a group with high potential who are at environmental risk.

### *Developmental Mentors*

The mentors were 18 high school students at the St. Stephen's Episcopal School who made a two-year commitment to participate in the program. Those students who clearly could commit to only one year, such as seniors, assisted in classes, covered for absent mentors, and participated as informal mentors. Four eighth-grade students also were included as mentors. Mentors receive a two-day training at the beginning of the program and monthly one-hour group supervision. The mentors participated in the selection of their mentees, and all mentors worked with the same mentees for the one-year period of the study. Their ethnic backgrounds were African American (29%), Mexican American (22%), and Caucasian (49%). Twelve were female.

### **Measures**

The Hemingway: Measure of Pre-Adolescent Connectedness (Karcher, 2001) is a 40-item measure of the strength of the connection or relationship between the adolescent and friends, parents, and teachers as well as the degree of their caring for school, culture, religion, and their futures. Specifically, the Hemingway was developed with subscales at three ecological levels: connectedness to others [i.e., (a) parents and (b) friends], to society [i.e., (c) culture, (d) future, (e) religion, and (f) school] and to oneself [i.e., (g) self-esteem and identity]. The most recent version of the measure has generated internal subscale reliability alpha coefficients between .72 and .93 (Karcher, 2001). However, because four of the eight subscales in the current study did not have interitem subscale reliabilities above .60, only the remaining four subscales were included in the analyses presented below. Connectedness to self (both scales), religion, and culture were omitted. Item responses used a Likert type scale from 1 (always untrue about me) to 5 (always true about me). Each subscale (e.g., "School" or "Friends") produced a mean scale score. Validity estimates of the measure are good in terms of the measure's ability to discriminate between adjudicated and academically successful youth and in terms of convergent validity correlations with other assessments of self-esteem, future orientation, and school attitude (Karcher, 2001).

The Wide Range Achievement Test (Jastak & Wilkinson, 1994, 3rd revision), or WRAT-3, is a commonly used measure of academic achievement. This measure includes achievement assessments for math, spelling, and reading. However, only math and spelling can be administered in a small-group format and thus were the two subscales used in this study. Expressive abilities in spelling are central dimensions of most achievement measures because of their importance in verbal comprehension (e.g., Dunn & Markwardt, 1970; Kaufman & Kaufman, 1985).

The WRAT-3 was normed on ethnically diverse populations of youth and is generally considered to be a reliable and valid assessment of academic achievement. Raw scores were used for this study in order to maximize variation in scores for each group.

### Preliminary Analyses

Despite randomization of the original sample, tests of equivalency on pretest assessments were conducted. An omnibus test of differences in connectedness subscales and achievement scores between control and intervention groups revealed two pretest variable differences,  $F(3, 22) = 4.87, p < .01$ . At pretest the mentees reported lower connectedness to friends ( $M = 3.89; SD = .55$ ) than the control group ( $M = 4.42; SD = .55$ ),  $F(1, 24) = 5.25, p < .05$ . The control group demonstrated higher math achievement ( $M = 35.23; SD = 3.87$ ) than the mentees ( $M = 30.08; SD = 2.50$ ),  $F(1, 24) = 15.25, p < .001$ . Given these differences, the likelihood of regression to the mean effects, and the statistical power necessary to control for these differences, both math achievement and connectedness to friends were omitted from the analyses. Thus the scales included in the current study were Spelling Achievement and the Connectedness to School, Future, and Family subscales.

### The Developmental Mentoring Program

The developmental mentoring program was developed at St. Stephen's Episcopal School, a nationally recognized private boarding and day school with a middle and high school population of about 600 students. The Stephen's Kids Developmental Mentoring program was developed by Jim Crosby, the Reverend Pat Gahan, Brad Powell, and Rebecca Sharpe along with Michael Karcher. The developmental mentoring program is a year-round program that provides children (a) both recreational and academic activities; (b) opportunities to develop academic and social skills, attitudes, and knowledge; and (c) exposure to a variety of activities, people, and cultures within the context of an adolescent-with-child mentoring relationship.

During the current study, the mentors worked with the children monthly during daylong Stephen's Kids Saturdays and then more intensely during a two-week summer day program. Between September and May there were nine Saturday meetings with the children and their parents that served to prepare youth for the two-week summer program. The Saturday meetings provided academic enrichment classes in the morning which typically involved individual or group writing projects. Each afternoon the mentees participated in social connectedness activities (like hiking or a trip to a museum) with their mentor and the other

adults in the program. The two-week summer program was eight hours a day for six consecutive days and served as an intensive capstone to the Saturday meetings. During the summer enrichment program, the children participated in morning classes integrating math, science, writing, and computer activities that built up over the two-week period into one final project. Examples of such projects in the current study were (a) projecting oneself into a future job, family, and home; (b) negotiating a field trip and working cooperatively to conduct it; and (c) creating a hypothetical culture, complete with symbols, laws, and social activities.

Parental involvement was encouraged during the summer and monthly Saturday events. Parents were involved in recreational activities with their children and the mentors in order to facilitate communication between mentors and parents. Some parents volunteered to help with transportation and food preparation at Saturday picnics.

### **Procedures**

The connectedness survey and achievement tests were conducted in the children's schools in a large group format with both mentees and the comparison youth in the same room. The pretests were conducted in the spring prior to group assignment. Posttests were conducted the following spring, one year later. All youth were given movie passes for participating and the assessments were collected by a researcher who was not involved in coordinating the program.

### **Results**

The results suggested that modest but significant changes in connectedness occurred during this one-year period, and increases in connectedness were greater for the mentored youth than the comparison group. Changes in spelling achievement also were found, and these changes in spelling achievement were related to changes in connectedness to parents and connectedness to school but not connectedness to the future. The mediator model analyses revealed that once changes in connectedness to parents were included in the regression model explaining changes in spelling achievement, the effect of program participation was no longer significant. This suggests that changes in connectedness to parents accounted for the program's effects on changes in spelling achievement.

## Effects of Program Participation on Changes in Connectedness at One Year

An examination of change scores on the subscales of connectedness to school, parents, and the future indicated that after a one-year interval the mentored youth reported gains in connectedness to parents and the comparison group reported decreases in connectedness to parents. Table 1 presents the overall multivariate analyses of variance for change scores on the three connectedness scales, separate univariate tests for each connectedness subscale, and a univariate test of program effects on spelling achievement. Gains in connectedness to school and to the future were greater for the mentees than the comparison group (see eta-squared,  $\eta^2$ , or effect size estimates) but did not reach the .05 level of significance. There appeared to be insufficient statistical power to detect the small effect size for gains in connectedness to school and future. Table 1 also presents zero-order correlations between program participation, spelling gains, and connectedness gains scores, which illustrate that changes in both connectedness and program participation were related to gains in spelling achievement.

**Table 1.** Means, Standard Deviations, One-way Analyses of Variance (ANOVA), and Zero-Order Intercorrelations for Change Scores and Group Participation After One Year ( $n = 26$ )

	Multiple analyses of variance						Zero-order correlations			
	Mentee group		Comparison group		ANOVA		Connectedness subscales			
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i> (2, 24)	$\eta^2$	<i>Spelling</i>	<i>School</i>	<i>Parents</i>	<i>Future</i>
1. Spelling	1.54	2.25	-.77	3.37	4.21*	.15				
2. School	1.23	2.05	-.15	2.03	2.99†	.11	.30*			
3. Parents	.15	1.68	-1.77	2.13	6.56**	.22	.57**	.32†		
4. Future	.54	1.13	-.15	.55	3.95†	.14	.18	.29	.33†	
5. Program							.39*	.33†	.46**	.38†

Notes.  $\eta^2$  = eta squared. Program = program participation (no = 0/yes = 1). Spelling = Changes in spelling achievement. School, Parents, and Future are change scores for their respective connectedness subscales. Multivariate Analysis of Variance for Connectedness Subscales (3) by Program Participation (2) overall,  $F(3, 22) = 3.05, p < .05$ .

†  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ .

### Connectedness as a Mediator of Program Effects on Academic Achievement

To test the hypothesis that program effects could be explained as a function of gains in connectedness, a mediator model was constructed. Although correlation cannot confirm causation, intervening variables (changes in connectedness) that explain the correlations between the proximal goals (program participation) and

distal intervention goals (spelling achievement) can reveal important intervention change processes. Both the finding that changes in connectedness to parents were greater for the mentored youth (our first research question) and that changes in connectedness to parents gains were correlated with changes in spelling achievement support the hypothesis that the program effected changes in spelling achievement through increases in parental connectedness that resulted from program participation.

To test this mediation hypothesis, Baron and Kenny (1986) suggest conducting three hierarchical regression models. The first model tests the effect of the predictor variable (program participation) on the hypothesized mediator variable (gains in parents connectedness). The second regression model regresses the predictor variable (program participation) on the criterion variable (gain in spelling achievement) to test the relationship between the predictor and the criterion variable. The third model regresses both the predictor (program participation) and the mediator (change score on connectedness) on the criterion variable (achievement).

The three regression models presented in Table 2 reveal full mediation of the relationship between program participation and spelling achievement gains by increases in parental connectedness. For these analyses, program participation was dummy coded (no = 0; yes = 1). Model 1 in Table 2 demonstrates that program participation explains spelling achievement gains. Regression Model 2 in Table 2 replicates the ANOVA in Table 1, testing increases in connectedness as a function of program participation. Model 3 illustrates that when the mediator and predictor variables (program participation) are included in a hierarchical regression model simultaneously, only gains in connectedness to parents explain gains in spelling achievement. This supports the hypothesis that the mentoring program contributed to changes in spelling achievement to the extent that it promoted connectedness to parents.

**Table 2.** Mediation Model Testing Changes in Parental Connectedness as Mediator of Program Effects on Spelling Achievement (n = 26)

Model	Criterion Variable					
Predictor Variable(s)	Spelling Achievement Gains (criterion)					
	B	SE B	$\beta$	t	R <sup>2</sup>	
Model 1					.15*	
Program participation (no/yes)	2.31	1.13	.39	2.05*		
	Changes in Connectedness to Parents (mediator)					
	B	SE B	$\beta$	t	R <sup>2</sup>	
Model 2					.22*	
Program participation (no/yes)	1.92	.75	.46	2.56*		
	Spelling Achievement Gains (criterion)					
	B	SE B	$\beta$	t	R <sup>2</sup>	$\Delta R^2$
Model 3					.34***	.19*
Program participation (no/yes)	.95	1.14	.16	.83		
Changes in connectedness to parents	.71	.28	.49	2.57*		

\* $p < .05$ . \*\*\* $p < .005$ .

## Discussion

These findings support previous work by Rhodes, Grossman and Resch (2000) by suggesting that spelling achievement gains resulted from the mentoring program's capacity to promote or sustain interpersonal connectedness in the family. Connectedness to parents declined for the comparison group, as would be expected during the transition from elementary to middle school (Eccles & Midgley, 1993). Therefore, it appears it is not just the mentoring relationship that matters but also the degree to which the mentoring program as a whole promoted family involvement.

Informal interviews with mentees' parents suggested that the use of activities, both to engage mentors academically and to involve parents in the mentoring, were critical to program effectiveness. It is likely that some combination of engaging school activities, the presence of a mentor who values and helps make school activities fun, and an intensive focus on learning each played a part in promoting the connectedness and achievement gains. Several parents commented that the program kept parents and youth connected by involving families in the Saturday events and by giving the mentees and their parents something to talk about.

## **Specific Versus General Effects of Mentoring: Towards a Developmental Approach**

The findings in this study support the likelihood of general versus specific effects of mentoring. Mentoring likely promotes psychosocial or developmental changes in addition to prescribed academic goals simultaneously and interactively. Our findings suggest that mentoring should be considered a broad, development-promoting intervention. In fact, DuBois et al. (2002) found that the outcomes of mentoring programs did not differ depending on whether the program goals and outcome measures were prescriptive (e.g., behavioral or academic goals) or developmental (e.g., psychosocial or attitudinal)—mentoring was equally effective in promoting both. Mentoring is most likely a two-way street, with neither specific academic achievements nor psychosocial gains being more important than the other or functioning in isolation.

The decision about which goal a program should focus on may reflect the values of the school, program director, or community stakeholders, but it may be more appropriate to view these two goals as interdependent contributors to the mentees' development. For example, it is fair to ask which came first, connectedness to parents or achievement in spelling? We assumed that connectedness led to academic changes, but the reverse may be true: it may be that increased connectedness to parents resulted from the mentees' experience of academic successes. The connectedness that was promoted in mentoring may have led to achievement gains by increasing school attitude and self-esteem. Conversely, the academic skills learned through mentoring and the resulting gains in achievement may have led the mentees to feel better about school and about those adults who value school (parents and teachers). Regardless, understanding better exactly how mentoring links the school and the family should be studied further.

### **Limitations and Necessary Future Research**

This study has several limitations that suggest several areas for future research and replication. Sample size compromised statistical power, limiting the study to revealing several non-significant trends. The groups differed at pretest on two important variables, connectedness to friends and math achievement, which limited their use in the analyses. To rectify these problems, larger samples should be included in future studies to have sufficient statistical power to test the modest-sized effects reported here (which were similar in size to those reported by DuBois et al., 2002). These statistical limitations warrant cautious interpretation of the results.

*The Need to Study Developmental Mentors*

The study also examined only one side of the developmental mentoring coin—the effects on mentees. The high school mentors volunteered substantial time, energy, and caring over a sustained period of time. Research on the effects of mentoring on adolescent mentors remains at an early stage. Developmental mentoring provides an excellent opportunity to study the effects of mentoring on adolescent mentors. The developmental mentoring program presented here was found to be effective for the mentored children, but it also provided a venue for high school students to reach out beyond the confines of their campus and peer networks to help promote connectedness among children within the larger community. Mentor involvement may be considered one of the developmental and community-building benefits of mentoring that should be the focus of future research.

*The Need to Study Processes and Activities Within Mentoring Relationships*

This program, although described in some detail, is far more complex than could be conveyed in this article. It includes curriculum to structure the mentor-mentee relationships, activities to encourage these dyads to reflect on their relationship, and procedures for matching, monitoring, and terminating mentoring relationships (Karcher, 2000). The complexity of this program allows it to include several best practices of mentoring programs, but also clouds direct interpretation of the processes and specific activities that contributed to the program's effectiveness. Future studies should attempt to identify the essential elements of effective developmental mentoring programs.

*The Need to Study Other Outcome Variables and Mediators of Change*

Although spelling achievement would be considered an important distal outcome by most researchers, teachers, and parents alike, other outcomes, such as grades or other indicators of social success (e.g., sociometric measures of peer status or extracurricular involvement), may serve to better explain the broad effects of mentoring. Other mediators should also be examined in future research. This study examined the mediating process of connectedness as a variable that explains the effects of mentoring on one of several indicators of achievement, but there may be other important mediators (e.g., mentor attitudes, length of mentoring) and impacts on other dimensions of academic achievement. It may be that particular activities, experiences, or relationship variables better explain the effects of developmental mentoring than does a self-reported measure of connectedness. The more we know about the processes involved in successful mentoring, the more effectively we can intervene. Therefore, researchers should attempt to identify other important enabling processes and outcomes.

## Summary

The developmental mentoring program serves as one way for school personnel to promote children's connectedness to others. Between elementary and middle school the structure of schooling changes in ways that invite disconnection. Developmental mentoring in schools can promote or sustain connectedness by providing opportunities for self-understanding, social skills development, and active participation in groups, all alongside a supportive mentor. The findings from this study suggest that structured, youth-to-child mentoring may facilitate connectedness in relationships beyond the mentoring dyad, and that this generalization of connectedness may provide fertile soil for other forms of growth, such as academic achievement.

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