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Stacey S. MacArthur
4-H & Youth Programs
Utah State University
Logan, UT
stacey.macarthur@usu.edu

Brian J. Higginbotham
Family, Consumer & Human Development
Utah State University
Logan, UT
brian.h@usu.edu

Edward Ho
Research Associate
Bach Harrison, L.L.C.
Salt Lake City, UT
ed@bach-harrison.com

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Stacey S. MacArthur and Brian J. Higginbotham
Utah State University

Edward Ho
Bach Harrison, L.L.C.

Abstract: Mentoring has been shown to positively influence various youth outcomes and developmental assets. The 4-H Mentoring: Youth and Families with Promise (4-H YFP) program is a multi-component program designed to enhance individual, familial, and social assets of at-risk youth. This pilot study examines the effects of participation in the 4-H YFP program on school-related cognitions. Data were collected on 20 mentored at-risk youth and 18 waiting list youth. RMANOVA analyses identified significant differences on one scale and expected trends on five additional scales. Ecological systems theory is used to inform the interpretation of results.

Introduction

Mentoring in community-based settings has emerged as a credible intervention for at-risk youth on a myriad of outcomes. Although similar to school-based mentoring, the focus of community-based mentoring is not primarily academic. Rather, the focus is on enhancing interpersonal skills and developmental assets (DuBois & Karcher, 2005; Rhodes, 2002). Research suggests that community-based mentoring can positively influence self-esteem, social skills (Karcher, 2005), perceived support (Richman, Rosenfeld, & Bowen, 1998), and connectedness to family (DuBois, Holloway, Valentine, & Cooper, 2002; Karcher, Davis, & Powell, 2002). Community-based mentoring may also influence school-related outcomes and additional research has been called for to evaluate the effects of community-based mentoring on academically at-risk students (see Larose & Tarabulsy, 2005). Relatively few studies have examined the connection between community-based mentoring and school-related outcomes using a control group (King, Vidourek, Davis, & McClellan, 2002) or using theory as a framework for understanding outcomes (Karcher, 2005; Rhodes, Grossman, & Resch, 2000). This study addresses both of these gaps in the literature.

Much of what is known about mentoring and school-related outcomes is the result of mentoring programs that contain an academic tutoring component. As a result, the unique influence of non-academic mentoring relationships on school-related outcomes may be confounded by the tutoring element. This study explores school-related cognitions of at-risk youth who participated in a community-based mentoring program without an academic component. The rationale for this exploration is grounded in ecological systems theory as well as the empirical literature, which suggests the multi-component nature (i.e., familial and social) of community-based mentoring programs can positively influence school-related cognitions such as academic self-esteem, attitudes towards school, and academic motivation (see Karcher et al, 2002; Reis & McCoach, 2000; Rhodes et al, 2000).

Multi-Component Community-based Mentoring Programs

Increasingly, youth-serving programs are adopting "multi-pronged strategies" in an effort to provide a more comprehensive approach to youth development (Kuperminc, et al., 2005, p. 314). When it comes to academically at-risk youth, this represents a "philosophical shift from efforts to reduce the incidence of single identified problems in development toward strategies aimed at increasing opportunities and supports that will leave young people fully prepared for the challenges they will face as adults" (Kuperminc, et al. 2005, p. 314). Multi-component programs that incorporate familial and social elements are theoretically consistent with Bronfenbrenner's (1979) ecological systems theory, which accounts for the reciprocal nature of the environment in which youth develop, the contexts of development, and the relationships that aid development.

According to Bronfenbrenner's (1979) Hypothesis 47: "The developmental potential of a setting is a function of the extent to which the roles, activities, and relations occurring in that setting serve, over a period of time, to set in motion and sustain patterns of motivation and activity in the developing person that then acquire a momentum of their own. As a result, when the person enters a new setting, the pattern is carried over and, in the absence of counterforces, becomes magnified in scope and intensity. Microsystems that exhibit these properties and effects are referred to as *primary settings*, and the persisting patterns of motivation and activity that they induce in the individual are called *developmental trajectories"* (p. 285, emphasis in original).

Multi-component programs reach across settings to tap into factors that may be directly or indirectly related to the targeted behavior or outcome (Kuperminc, et al., 2005). Although school based mentoring/tutoring is clearly a reasonable intervention for academically at-risk youth, from an ecological systems perspective, mentoring programs with social and familial components may also "set in motion" or "sustain" desired cognitions and/or trajectory.

Case Study: 4-H Mentoring: Youth and Families with Promise

The 4-H Mentoring: Youth and Families with Promise (4-H YFP) program is an example of a community-based mentoring program that incorporates multiple components to promote positive youth development (Higginbotham, Harris, Marshall, & Lee, 2007). The overarching objective of the 4-H YFP program is to strengthen *developmental assets* in at-risk youth ages 10-14 (Search Institute, 2004). Specifically, the program seeks to improve academic outcomes, interpersonal skills, and family bonds. YFP seeks to achieve these goals through one-on-one mentoring, 4-H participation, and a monthly Family Night Out (FNO) activities for youth

participants and their caregivers. One-on-one mentoring provides the youth with a positive role model and companion for positive activities. 4-H activities offer youth experiential learning opportunities to increase social connection and contribution, personal competence, and character (National 4-H Headquarters, n.d.). The FNO activities foster family cohesion, family communication, and parent-child connection through facilitated monthly activities (Koestler & Betz, 2000).

Bronfenbrenner's (1979) ecological systems theory highlights the developmental advantage that results when multiple settings reinforce positive cognitions and behaviors. The 4-H YFP program taps into this developmental advantage through its multi-component design. The purpose of all programmatic activities is to provide youth with supportive opportunities to "set in motion and sustain patterns of motivation" (p. 285) for productive relationships and behaviors. One-on-one mentoring, 4-H participation, and Family Night Out activities, individually and collectively, serve to set at-risk youth on a developmental trajectory of success by fostering self-confidence, self-worth, interpersonal skills and responsibility.

Despite the program goal of increased academic achievement, there is not an academic tutoring component nor does the program intentionally foster positive school-related cognitions. Notwithstanding the absence of academic mentoring (4-H YFP mentors are not tutors), preliminary evidence indicates that 4-H YFP participants do significantly improve in academic achievement as measured by pre- and post-program surveys (Higginbotham et al., 2007). As a group, 4-H YFP participants have demonstrated statistically significant improvements in core academic subjects. In a recent study funded by the Department of Education, 52% of 4-H YFP youth improved in reading, 46% improved in writing, and 39% improved in math. Additional, during this same time-period the number of unexcused absences declined for 32% of participating youth (Higginbotham, 2006).

Research Questions

Although many youth in the 4-H YFP program show improvements in their academic performance and attendance, the reason for these improvements remains an empirical question. One possibility, based on Bronfenbrenner's theory, is that the positive cognitions about self and life are cultivated and reinforced across 4-H YFP settings and "carried over" into the school settings (Bronfenbrenner, 1979, p. 285; Higginbotham et al., 2007). This pilot study sought to evaluate this possibility, that a community-based mentoring program—without a tutoring component—can improve school-related cognitions. Specifically, our interest was in cognitions that have been found to be predictive of academic achievement including; academic self perception; attitudes toward teachers, classes, and school; and commitment to learn (Broussard, Mosley-Howard, & Roychoudhury, 2006; Klebanov & Brooks-Gunn, 1992; Larose & Tarabulsy, 2005). It was hypothesized that 4-H YFP participants would show improvements, as compared to a control group, on all measures of school-related cognitions.

Methods

Sample

The 38 youth participants for the pilot study were referred by Juvenile Courts, community social service agencies, or parents in three adjacent urban counties of a Western state. The youth had shown problems in one or more of the following areas: poor academics, poor interpersonal relationships, discipline problems, or misuse of alcohol, tobacco, or drugs. Fifty-four percent

were in the 5th or 6th grade, 24% were in 7th grade, and the remaining 14% were in 8th grade (three participants did not indicate grade level or age). The majority of participants were White/Caucasian (55%) or Hispanic/Latino (19%). Other ethnicities included Black/African American (5%), Asian/Pacific Islander (3%), and other (11%) (four participants did not indicate ethnicity). Of the 38 youth, 20 were randomly assigned to the mentor group while the remainder was assigned to the waiting list group. A comparison between the mentor group and the waiting list group revealed no significant differences on demographic characteristics.

Twenty-seven parents participated in the study as well. Of these, 16 were parents of mentor group youth and 11 were parents of waiting list youth.

Design

This study was conducted by Bach Harrison, L.L.C. in collaboration with the sponsoring Land-grant University and the State 4-H office. Pre-test data were collected from youth and their parents via a standardized data collection process. To minimize potential data collection bias at pre-test, determination of a participants' group status (mentor vs. waiting list) was determined after the pre-test data were collected. 4-H YFP site coordinators scheduled a home visit with prospective participants to collect pre-test data. During the visit, site coordinators explained the 4-H YFP program, why evaluation data was being collected, and the importance of the evaluation. Consent forms as well as a commitment to participate fully in the program were then signed by parent and youth prior to pre-test data collection. Posttest data were collected six to nine months after participants entered the program. Program entry was defined as the pre-test data collection date for waiting list participants and as the date of receiving a mentor for the mentor group participants. After the appropriate time elapsed, 4-H YFP Site Coordinators scheduled a second home visit to collect posttest data from parent and youth participants.

Measures

Participants and a parent/guardian completed a battery of instruments. Those that pertain to the current study include:

The YFP School Survey. This scale was made up of five subscales from the School Attitude Assessment Scale-Revised (SAAS-R) (McCoach, 2002). The SAAS-R is a 35-item questionnaire designed to identify youth who underachieve in school. Subscales in this measure include the Academic Self-Perception Scale (e.g., not smart enough; avoid academic challenges), the Attitudes Towards Teachers and Classes Scale (e.g., teacher personality; class organization), the Attitudes Towards School Scale (e.g., commitment to learning; school investment), the Goal Valuation Scale (e.g., assignment value), and the Motivation and Self-Regulation Scale (e.g., personal strategies to facilitate achievement). The SAAS-R has been validated with a sample of 1,738 6-12 grade youth from schools in multiple states and diverse ethnic and socioeconomic backgrounds (McCoach, 2002).

Parent's report of youth's commitment to learning. On this measure, parents report their perceptions of how much their youth enjoys school, values learning, and feels that reading, finishing schoolwork, and doing well in school are important. It also addresses the extent that parents feel the teachers care about their youth. The questions were developed by YFP staff. They were based on the Search Institute's Developmental Assets Model and their indicators of academic achievement (Benson, 1997; Search Institute, 2004).

Youth's report of commitment to learning. This scale addresses how much the youth enjoys school, values learning, and the extent to which the youth feels that reading, finishing schoolwork, and doing well in school are important. The questions were developed by YFP staff and parallel the parent's assessment of their youth's commitment to learning.

Analysis

Repeated measures analyses of variance (RMANOVA) were used to examine youth and parent data, comparing participating families to waiting-list participant families. The analyses assessed whether there were significant differences as a function of

a) time, or differences between pre-test and post-test scores;
b) group assignment, or differences between YFP participants and waiting list participants overall; and
c) the interaction between time and group.

These analyses provided an opportunity to explore if program participants improved to a greater degree than the comparison group and thereby ruling out maturation (or, the simple passage of time) as an alternative explanation for any improvements seen in the mentor group.

Results

Overall, the data produced only one statistically significant interaction. However, several interesting and positive patterns emerged in the data for other scales, assuming they were not the result of chance. Given the small sample sizes in the pilot study and the relatively short window of time between pre- and post-tests these patterns are still discussed because they may be of interest for future evaluation efforts.

YFP School Survey

The data associated with the YFP School Survey provided some support for the hypothesis that 4-H YFP participation influences school-related cognitions. Table 1 presents the pre- and post-test scale means for both the mentor and waiting list groups. On the YFP School Survey, participating youth showed significant improvements on the Motivation and Self-Regulation Scale, $F(1, 33) = 5.888$, $p < .05$, as compared to the waiting list group. Although not statistically significant, three of the four remaining scales revealed data patterns in the expected directions with participating youth improving and waiting-list youth declining on the Academic Self-Perception Scale, $F(1, 32) = 2.525$, $p = .122$; the Attitude towards Teachers and Classes Scale, $F(1, 32) = 1.688$, $p = .203$; and the Attitude towards School Scale, $F(1, 33) = 1.136$, $p = .294$.

Table 1

Pre- and Posttest Means for YFP Participants vs. Waiting List Participants – YFP School, Youth, & Parent Survey Scales

Scale Name	N	Pre-test	Posttest	*F*	*p*
Academic Self-Perception Scale – YFP *Academic Self-Perception Scale – WL*	19 *15*	4.58 *4.59*	4.79 *4.22*	2.53	.12†
Attitude toward Teachers and Classes Scale – YFP *Attitude toward Teachers and Classes Scale - WL*	19 *15*	5.11 *4.87*	5.52 *4.63*	1.69	.20†
Attitude toward School Scale – YFP *Attitude toward School Scale – WL*	19 *16*	5.23 *5.26*	5.31 *4.63*	1.14	.29†
Goal Valuation Scale – YFP *Goal Valuation Scale - WL*	19 *16*	6.08 *6.11*	6.05 *6.04*	.01	.92
Motivation and Self-Regulation Scale – YFP *Motivation and Self-Regulation Scale – WL*	19 *16*	4.64 *5.09*	4.87 *4.31*	5.89	.02*
YFP Parent-Commitment to Learning Scale – YFP *YFP Parent-Commitment to Learning Scale - WL*	15 *11*	3.62 *4.02*	3.73 *3.75*	1.84	.19†
YFP Youth-Commitment to Learning Scale – YFP *YFP Youth-Commitment to Learning Scale - WL*	19 *16*	3.64 *3.67*	3.75 *3.52*	1.18	.29†

* $p < .05$. A statistically significant interaction was revealed for this scale; 4-H YFP participation was associated with more positive outcomes on this scale.

† Although not statistically significant, potentially interesting data patterns are apparent for these scales. In all cases, the 4-H YFP group showed improvement relative to the waiting list group.

YFP Parent & Youth Commitment to Learning Scales

Parents and participants responded to questions about the youth's commitment to learning. As displayed in Table 1, there are some potentially encouraging results on the Commitment to Learning Scale (Parent report), $F(1, 24) = 1.840$, $p = .188$, and the Commitment to Learning Scale (Youth report), $F(1, 33) = 1.183$, $p = .285$. In both cases, the 4-H YFP group showed improvements from pre- to post-test relative to the waiting list group.

Discussion

The purpose of this pilot study was to examine the effects of participation in the 4-H YFP mentoring program on various school-related cognitions. Data revealed significant results for the Motivation and Self-Regulation scale (youth report). In addition, positive trends were found for five other scales: Academic Self-Perception, Attitude Towards Teachers and Classes, Attitudes Towards School (youth report), and Commitment to Learning (youth and parent reports).

These findings provide some indication that multi-component mentoring programs, even those without a tutoring element, may be able to influence school-related cognitions. This possibility is consistent with existing theory and research, which has implicated (a) mentoring from caring non-parental adults and (b) positive activities outside of the home as effective interventions to

promote developmental assets. For example, Bronfenbrenner's (1979) hypotheses #46 states that the "development of the child is enhanced through her increased involvement, from childhood on, in responsible, task-oriented activities outside the home that bring her into contact with adults other than her parents" (p. 282).

Through one-on-one mentoring with an adult mentor, the 4-H YFP program promotes self-confidence. Positive cognitions about oneself, coupled with social support, may then "promote academic resilience and positive educational outcomes for at-risk students" (Richman et al. 1998, p. 311). Similarly, involvement in 4-H, or similar youth groups, theoretically reinforces positive *developmental trajectories* (Bronfenbrenner, 1979). 4-H is designed to "foster innovation and shared learning" by providing opportunities for "*youth* and *adults* to learn, grow, and work *together* as catalysts for positive change" (National 4-H Council, 2005, emphasis added). From an ecological systems perspective, the patterns of motivation, working with adults, and learning carry over from the 4-H context to school settings. The same is possible when patterns of motivation, self-confidence, and a commitment to learning are encouraged and reinforced by caregivers, which occurs in the context of Family Night Out activities.

Taking advantage of the theorized developmental advantage of multi-component interventions, the 4-H YFP program spans across three *primary settings* (mentoring, 4-H clubs, and Family Night Out activities) to "set in motion and sustain patterns of motivation and activity in the developing person that then acquire a momentum of their own." (Bronfenbrenner, 1979, p. 285, emphasis in original). Although each component may uniquely contribute to the explained variance in outcomes, ecological systems theory would stress that "development is enhanced as a direct function of the number of structurally different settings in which the developing person participates in a variety of joint activities and primary dyads with others, particularly when these others are more mature or experienced" (p. 212).

Implications for School Personnel

School personnel strive to facilitate the academic success of their students. In light of ecological systems theory and the pilot data presented here, teachers and administrators may want to consider partnerships with community mentoring programs, in addition to school tutoring and other programs. In this way, schools can offer struggling students additional help without increasing personnel or expending resources.

The success of these partnerships may not be immediately apparent. Consistent with this study's findings, Broussard, Mosley-Howard, and Roychoudhury (2006) suspect that mentoring is likely to affect academic self-concept and motivation before it affects the more often measured academic outcomes like GPA, attendance, and disruptive behavior. They specifically found that mentored youth reported "enhanced academic motivation… [and] increased… achievement efforts" as well as "improved…attitudes toward school" (p. 124). Consequently, the success of school-community mentoring partnerships may need to be evaluated over time or by assessing cognitive variables as was modeled in this pilot study.

Implications for Community Youth Mentoring Programs

Community mentoring programs should consider initiating partnerships and recruiting participants through schools. Rather than waiting for referrals from parents, program staff can highlight to school personnel the benefits of community mentoring for at-risk youth. Academically at-risk students typically have low perceived school competence, a helpless

motivation related to school, and poor coping skills (Larose & Tarabulsy, 2005). Mentoring activities can assist in these areas by cultivating feelings of self-worth and success via 4-H projects and competitions as well as personal encouragement by mentors and other caring adults. Community mentoring programs can provide a supportive after-school setting in which "patterns of motivation and activity" are fostered and reinforced (Bronfenbrenner, 1979; p. 285).

Implications for Parents

Parents struggling to find helpful solutions for academically at-risk youth should consider enrolling their youth in some sort of combination of interventions. Theory and research supports a multifaceted approach to addressing academic deficits and has consistently shown to improve school-related outcomes (see Broussard et al., 2006; Richman et al., 1998). This pilot study adds to that literature by specifically highlighting the potential of one multi-component program to positively influence academic cognitions. Parents should also be aware that parental involvement in these types of programs makes the intervention more effective (see DuBois et al., 2002; Higginbotham, MacArthur, & Dart, 2010).

Limitations

As with many pilot studies, the sample size of this study is a clear limitation. With only 20 mentored youth and 18 waiting list youth, it was not possible to control for confounding variables. Additionally, despite uniform program standards, the youth in this pilot study did not all have the same level of participation in each programmatic component (i.e., mentoring group youth did not receive an equal amount of one-on-one mentoring and 4-H club participation varied). As a result, the lack of significance on most subscales may be due to varying participation levels in the intervention group. Further study is needed to examine participation levels and associated outcomes. This may explain why there are many positive trends in the mentoring group but minimal significant findings.

Another limitation may be the duration of time between pre- and post-testing. The post-test occurred six to nine months after program entry. Optimally, mentoring relationships should last at least one year as positive outcomes from one-on-one mentoring are difficult to detect until that time (Grossman & Rhodes, 2002).

Conclusion

The potential of multi-component programs to foster positive youth outcomes is supported in both empirical and theoretical literatures. In light of the pilot nature of this study, the positive findings presented above should be cautiously interpreted as additional evidence that multi-component, community-based programs influence school-related cognitions. However, notwithstanding the small sample size and duration of the study, the fact that there was one significant result and several variables with trends in hypothesized directions, suggests additional research is warranted. Specifically, research is needed to assess the mechanism and degree to which non-academic mentoring programs "set in motion and sustain patterns of motivation and activity in the developing person that then acquire a momentum of their own" (Bronfenbrenner, 1979, p. 285), and in the case of academically at-risk kids, how that momentum carries over into the school context.

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