

The Effects of a Cross-age Peer Mentoring Program on School Connectedness with Rural Populations

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Abstract

School-based mentoring continues to attract both attention and criticism among school leaders and researchers. This practitioner-university collaboration examined mentees' reported levels of school connectedness after a nine-week cross-age mentoring intervention. This study of 47 mentees attending a rural, low socioeconomic status (100% FRL) school investigated participants' school connectedness scores. Global school connectedness mean scores increased for all participants. Participants in the experimental group demonstrated statistically significant increases on the "Self-in-Future" subscale.

events (e.g., pregnancy, unemployment, trauma) as well as salient indicators that, if noticed by schools, faculty, administration, families, and communities, can potentially ameliorate conditions leading towards dropping out of high school (Balfanz, 2009; Neild, Balfanz, & Herzog, 2007). Research exploring such indicators crucial for high school completion has identified factors such as course completion, discipline, and attendance (Allensworth & Easton, 2005; Heppen & Bowles Therriault, 2007; Neild et al., 2007). In their exploration of predictors of high school dropout Maclver and Maclver (2009) recognize common "ABC" (i.e., absenteeism, behavior problems, and course failures) factors, but turn the discussion of high school dropout prevention towards addressing student disengagement or, student-school disconnectedness.

The Effects of a Cross Age Peer Mentoring Program on School Connectedness with Rural Populations

In the United States, high school dropout rates continue to be a formidable concern, with some characterizing the problem as a national crisis (Heppen & Bowles Therriault, 2008). A review of the literature recognizes the role of significant life

According to Karcher, Davis, and Powell (2002), poor attendance, behavior problems, and low course completion are increasingly viewed as products of student disconnectedness to/from school, teachers, peers, and parents. One

response to this crisis of disconnection has been to develop programs that promote students' sense of belonging and keep them connected during periods of transition. Specifically, such programs often target early middle grades for building a sense of school connectedness in hopes such efforts will begin to have the most significant effect on continued student performance, attendance, behavior, and (ultimately) graduation. Karcher's (2008a) cross-age mentoring program (CAMP) specifically addresses increasing school connectedness among students at risk of dropping out. The program facilitates high school students mentoring younger (e.g., middle school) students. The CAMP program has demonstrated positive effects for mentees as well as for mentors, including increased student leadership, collaboration skills, student connectedness, self-esteem, and academic achievement (Karcher, 2008a; 2008b; 2009).

Despite the benefits of mentoring interventions, educational leaders and administrators may be hesitant to dedicate requisite time and resources to such programs noting scant statistically significant findings for whole samples (Bernstein et al., 2009). However, as Grossman, Chan, Schwartz, & Rhodes (2012) point out, secondary analyses of such data often reveal noteworthy variability underscoring the importance of continuing research exploring different subgroup populations (i.e., youth subgroups).

The current study sought to examine student connectedness using a modified version of the CAMP program (Karcher, 2008a). Participants were seventh grade students from a small middle/high school in rural southeast Georgia. In addition to

furthering the CAMP research base (i.e., with rural populations), the researchers hoped the intervention would have a significant positive effect on school connectedness for participating students.

Definition of School Connectedness

Karcher, Holcomb, and Zambrano (2006) define connectedness as being a "movement towards others through positive affect and activity" (p. 2). Karcher et al. further describe it as "a student's response to feelings of relatedness and belonging . . . reflect[ing] adolescents' perception of their own involvement in and affection for others, activities, and organizations" (p. 2-3). This feeling of connection and association creates a sense of belonging for adolescents (as well as other ages within PK-12) with school being one of the most important organizations with which to be involved and associated (Karcher et al., 2006; Karcher, 2007).

Catalano, Haggerty, Oesterle, Fleming, and Hawkins (2004) use the term "school bonding" for this condition of being connected to school, and include two elements in their definition: attachment and commitment. Attachment is described by the degree of affective relationships with others at school, while commitment is characterized by personal investment. This personal investment is two-fold, pertaining to both school (e.g., the school as entity) and doing well in school (e.g., experienced success in academic, personal/social, college/career-readiness, and/or other domains). Thompson, Lachan, Overpeck, Ross, and Gross (2006) identified indicators of school connectedness including: a sense of belonging at school, active engagement in school activities, and maintaining positive relationships with others. Finally, the Centers for Disease Control and

Prevention (CDC, 2009) describe school connectedness as the “belief by students that adults and peers in the school care about their learning as well as about them as individuals” (p. 3).

Thus for the purposes of this study, a working definition of “school connectedness” would be comprised of both intra- and inter-personal components. Intra-personal aspects would include students’ perceptions of relation, belonging, and commitment to both the school as an entity and the process of schooling (i.e., engaging in educational duties and responsibilities). Inter-personal aspects would address the degree to which students exhibit action towards establishing and maintaining relationships with others in the school (e.g., peers, faculty, staff, etc.).

The Effects of Student School Connectedness

A review of the literature suggests healthy effects associated with positive school connectedness (Catalano et al., 2004; King, Vidourek, Davis, & McClellan, 2002), as well as school connectedness serving as a protective factor against negative developmental outcomes (Whitlock, 2006). The CDC (2009) found school connectedness “to be the strongest protective factor for promoting positive academic and nonacademic outcomes for youth” (p. 3). Resnick et al. (1997) found that young people who reported feeling connected to their school were less likely to engage in many risky behaviors.

Similarly, multiple studies have detailed positive benefits associated with increasing students’ school connectedness (Gordon, Downey, & Bangert, 2013; Karcher 2003; 2005; 2008a). Karcher et al. (2006) noted positive outcomes from increased school

connectedness, suggesting that youth actively connected with school were less likely to engage in substance abuse, violent behavior, and other activities resulting in negative developmental consequences. Developmental mentoring programs are one approach that have been successfully employed to increase students’ school connectedness (Karcher, 2008b; Karcher et al., 2002).

Cross-age Mentoring Programs

Karcher (2007; 2008a) defined “cross-age mentoring” as any school-based mentoring program that involved pairing older students (typically high school age) with younger students (typically seventh grade and under). Cross-age mentoring programs have reported positive results both intra-personally as well as outwards action exhibited (inter-personally). These results included increased positive learning experiences, positive attitude towards school, connections with peers, sense of agency, as well as improved attendance, academic skills, and statistically significant reductions in disciplinary referrals (Converse & Lignurgaris/Kraft, 2009; Dopp & Block, 2004; Karcher et al., 2002; 2009; King et al., 2002; Willis, Bland, Manka & Craft, 2012). These results all fit within the working definition of school connectedness as previously defined.

Research Question

This study was guided by the following research question: What differences in school connectedness exist between groups of middle school students when a cross-age peer mentoring program has been applied? Anecdotally, the researchers were interested in the feasibility of implementing a cross-age mentoring program within a rural school district.

Methodology Participants

Participants for this study were seventh grade (mentee) and high school (mentor) students in a middle/high school in rural southeastern Georgia. The school provides instruction for students in grades sixth through twelfth, with a total population of approximately 600 students (47% female and 53% male). The racial composition of the school consisted of 62.1% Caucasian, 35.7 % African American, 0.2% Multiracial, 1.5% Hispanic, and 0.5% Asian students. Within public education, the free or reduced lunch (FRL) statistic is often used as an approximate indicator of student socioeconomic status (SES). For this study, 100% of students attending the school were eligible to receive free or reduced lunch, reflecting high levels of economic disadvantage. Two of the four seventh grade homerooms in the school were the focus of this study, with selected high school students serving as mentors. The treatment group was made up of the homeroom assigned the intervention of a cross-age peer mentor ($n = 28$), and the waitlist control group consisted of one of the other seventh grade homerooms ($n = 19$).

Research Design

This study used a quasi-experimental design to examine the effects of a cross-age peer mentoring program on participants' reported level of school connectedness. The study received full institutional IRB approval. All participants completed the Hemingway: Measure of Adolescent Connectedness (MAC) survey. One seventh grade homeroom was assigned to receive the intervention of a cross-age peer mentor, and participated in assigned peer mentoring activities for nine weeks. The other seventh grade homeroom served as a waitlist control

group receiving the intervention following the study. It should be noted that the other two homerooms not participating in this study also received the intervention after the conclusion of the study.

Instrumentation

The researchers used the Hemingway: Measure of Adolescent Connectedness Survey (MAC) Adolescent Version 5.5: Grades 6–12 Short form (Karcher, 2001) to collect data regarding students' self-reported perceptions of connectedness. The instrument was administered to participants both before and after the cross-age peer mentoring program. As noted in Gordon et al. (2013), the Hemingway was designed to measure student perceptions of connectedness to four important adolescent worlds: Self, Family, School, and Friends. The Hemingway is a 40 item self-report survey that measures the degree to which adolescents care for and are involved in particular relationships and activities. The survey has 10 sub-scales, rated on a 5-point Likert-type scale ranging from 1 (not at all true), to 5 (very true). This study looked at the six subscales Karcher (2003) related to school connectedness, namely: School, Teachers, Peers, Culturally Different Peers, Reading, and Self in the Future. The Hemingway has demonstrated test-retest reliability ranging from .69 to .91 (Gordon et al., 2013), and is characterized as displaying adequate internal consistency (Karcher, 2003; Karcher et al., 2008). Karcher (2001) confirmed the 10 construct factor structure with subscale Cronbach alphas ranging from weak to strong (i.e., $r = .60$ to $r = .94$).

Procedures

After verifying school administration interest, institutional IRB approval was

secured. Next, school counselors had permission forms sent home with each potential participant. Individual participant surveys received identification markers to maintain confidentiality while aiding the researchers in tracking participants' data. CAMP intervention activities facilitated by school counselors addressed connectedness to school, teachers, peers, culturally different peers, reading, self in the future, attendance, behavior, and grades. These activities took place during the middle school exploratory period. Weekly classroom activities included an icebreaker, a school connectedness lesson, snack, and a group activity. This format had mentors and mentees working in pairs, but also engaging as a part of a larger group towards the end of the class period. The connectedness to peers, friends, family, self, parents, school, and reading curriculum was developed to include peer mentor activities to promote connectedness (Karcher, 2008a). Cross-age peer mentors received training and followed a structured list of mentoring activities at each meeting once a week. Students met with their mentor for nine weeks, once a week.

Upon completion of the intervention, participants completed the Hemingway again. Pre- and post-test data were compared after the intervention in order to compare the effects the cross-age peer mentoring program had on school connectedness. The independent variable was defined as students' participating in mentoring/non-mentoring groups. The dependent variable was school connectedness (MAC). Both treatment and control groups completed the Hemingway, before and following the cross-age peer mentoring period.

Data Analysis

Data analyses included a review of descriptive statistics assessing the normality of the data set and group mean scores. All statistical calculations and tests were conducted at $\alpha = 0.05$.

Result

Preliminary analyses began with a review of the descriptive statistics for all Hemingway items. First, mean, median, mode, standard deviation, skewness, and kurtosis statistics for each item on the Hemingway were reviewed, considering both pre- and post-test administrations. Histograms for each Hemingway item (again, both pre- and post-test administrations) were then consulted. Results of this analysis indicated that while some items displayed skewness or kurtosis slightly beyond general expectations, none were beyond reasonable limits (Field, 2009; Gall, Gall, & Borg, 2007; Tabachnick & Fidell, 2012). The researchers determined that the data met the assumption of normality.

Next, the reliability of the dataset was assessed using Cronbach's Alpha. Reliability values for pre-test data are presented in Table 1 and post-test data in Table 2. Pre-test scores demonstrated low reliability for "School" and "Self-in-Future," while scores for "Teachers," "Reading," and "Peers" demonstrated moderate reliability. Post-test scores for "School," "Peers," and "Self-in-Future" demonstrated low reliability, while "Teachers" and "Reading" scores demonstrated moderate reliability. Overall, Hemingway global scores for both pre- ($\alpha = .763$) and post-test ($\alpha = .852$) demonstrated moderate to high reliability (Field, 2009). Most Hemingway subscales demonstrated moderate reliability with some demonstrating low reliability.

Descriptive statistics for the Hemingway, both global and subscales, were reviewed and are presented in Table 3. Overall, both global and subscale mean scores continued to meet the assumption of normality. Additionally, mean scores increased between pre- and post-test administrations in both intervention (mentoring) and waitlist (non-mentoring) groups.

Finally, t-test analyses were used to investigate statistically significant differences in means between mentoring and non-mentoring groups. While both groups saw increases in mean differences, scores for the experimental group were not statistically significant. The difference between mentoring group participants' pre- and post-test mean scores for "Self-in-Future" subscale score did display a statistically significant value (.008).

Discussion

School counselors in this action research study implemented a cross-age mentoring program with middle school student mentees in a rural, impoverished area of the state of Georgia, United States. Results from the intervention demonstrated an increase in school connectedness mean scores as measured by the Hemingway MAC (Karcher, 2011) for both groups. Surprisingly, while participants receiving the intervention (i.e., cross-age peer mentoring) displayed statistically significant increases in the "Self-in-Future" subscale, increases in overall global MAC scores were not statistically significant. These results are consistent with previous studies where participants in cross-age peer mentoring programs experienced increases in various aspects of school connectedness (Karcher et al., 2002) even when such

increases were not statistically significant.

This study uniquely contributes to mentoring literature in that while previous studies have called for specific attention to student populations facing developmental challenges and/or negative developmental consequences (e.g., "at-risk" youth), few have reported samples with comparable socio-economic levels. Specifically, while some studies with comparable sample sizes have reported free or reduced lunch (FRL) levels ranging from 22-43% (Converse & Lignurgaris/Kraft, 2013; Gordon et al., 2013), many studies report only broad family income level (i.e., census data) common for the geographical region in which the study takes place (Karcher, 2008b; Karcher & Sass, 2010). Other studies report selecting participating students solely on the basis of "at-risk" status as defined by classroom teachers/staff perception (Karcher, 2005; Karcher, Davidson, Rhodes, & Herrera, 2010; Karcher et al., 2002). In the current study, all participants (regardless of group assignment) qualified as below the poverty line as indicated by the school's 100% FRL status.

Interestingly, participants in the experimental (mentoring) group demonstrated statistically significant increased scores on the "Self-in-future" subscale. Even though this was the only statistically significant increase for experimental participants, the finding is encouraging. In their study of 638 impoverished African-American youth (mean age = 15.85, SD = 1.42), So, Voisin, Burnside, and Gaylord-Harden (2016) found student future orientation associated with more positive school connectedness. Specifically, after controlling for gender, SES, and age, higher

levels of participants' future orientation was positively correlated with increased student-teacher connection.

It should be noted that although results for the experimental group were found to be non-significant, the increase in school connectedness (i.e., global MAC scores) was valued by school site administration. Starting in the 2014 academic year, annual state evaluation measures for public schools required the inclusion of data pertaining to school climate. The resulting expectation is that schools not only report such data, but are actively engaged in interventions addressing school climate. Towards that end, the current study was considered successful in two regards. First, it aided site school counselors in providing a research-based intervention targeting school climate via school connectedness. This action postured school counselors within pertinent school improvement activities and clearly aligns with the call for increased evidence-based school counseling practices (American School Counselor Association, 2012; Erford, 2015). Secondly, and arguably more importantly to site administration, participants in both groups demonstrated increased school connectedness (i.e., global MAC scores). Again, the researchers fully acknowledge that such increases in the experimental (mentoring) group were non-significant and such information was presented to administration as well. However, in terms of state required school improvement reporting, these findings were considered beneficial on a practical level.

Limitations & Recommendations

Limitations of this study include small sample size, duration of intervention, and logistical challenges of the PK-12 school environment. While the number

of participants is similar to other investigations of mentoring programs in the school setting, (Karcher, Davis, & Powell, 2002; Converse & Lignurgaris/Kraft, 2013) a larger sample size might prove more beneficial for future investigations. Further study is necessary replicating both site and population demographics.

While this study utilized a nine week mentoring intervention, school connectedness interventions in the literature range in duration from 18 weeks to spanning the entire academic year (Converse & Lignurgaris/Kraft, 2013; Karcher, 2005; Karcher, 2008b; Karcher, et al., 2010). Future research might benefit from employing longer duration interventions, gathering multiple data points throughout the academic year. Such data might provide a more comprehensive picture of students' levels of school connectedness as influenced by the continued intervention as well as environmental changes experienced across systemic levels (e.g., individual, classroom, whole school) throughout the school year.

Logistical challenges of the middle school environment also proved challenging. The original design of the study aimed to also review participants' attendance, discipline and English and Language Arts (ELA) grades. However, complications midway through the research project resulted in a sole focus on school connectedness. Similarly, competing school initiatives exerted influence over the execution of the research project. During the third week of the intervention, school administration required all students who had previously failed a state mathematics exam to attend mathematics remediation tutoring during the exploratory period (time during which the intervention occurred). Similarly, despite

securing both participant and parent consent, participants involved in one of the school's athletic teams were not allowed to participate as the exploratory period was reserved for weight training.

These logistical challenges and their consequences (e.g., the previous limitation of small sample size) are representative of the complex nature of conducting research in the PK-12 school setting. However school counselors are well positioned to aid in conducting such investigations within the PK-12 environment through collaboration with state school counseling associations and/or university counselor-preparation program faculty. Such collaborative endeavors can yield systemic benefits impacting school counselors' comprehensive school counseling program (CSCP), school site broader needs (i.e., school improvement plan), and the surrounding community as well (Dimmitt, Carey, & Hatch, 2007; Kaffenberger & Young, 2013; Muro, Stickley, Muro, Blanco & Tsai, 2015).

Conclusion

Achieving optimal levels of student attendance and academic achievement, along with decreasing disciplinary referrals have consistently been areas targeted for school improvement. Similarly, these components have been identified as indicators for students at-risk of dropping out of high school. A review of the literature suggests increasing students' personal feelings of connectedness to school as one approach to ameliorate these concerns. One way to increase students' degree of school connectedness is through cross-age peer mentoring programs where relationships are built between more successful, connected students with struggling and/or disconnected

students. The purpose of this study was to investigate the effects of school counselors applying a cross-age peer mentoring program to impoverished (i.e., 100% FRL) students in the rural southeastern United States. Specifically, this study investigated individual students' levels of school connectedness. While all participants demonstrated increased global school connectedness, participants in the mentoring (experimental) group demonstrated statistically significant increases in the "Self-in-Future" subscale only. This study adds to the literature on cross-age mentoring and uniquely contributes findings relative to participants in impoverished, rural populations.

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Table 1

Hemingway subscale reliability: Pre-test

Subscale	Cronbach's Alpha
School	.379
Teachers	.666
Reading	.506
Peers	.556
Self-in-Future	.145

Table 2

Hemingway subscale reliability: Pre-test

Subscale	Cronbach's Alpha
School	.375
Teachers	.536
Reading	.605
Peers	.410
Self-in-Future	.391

Table 3

Hemingway Pre/Post Global Score Descriptive Statistics

	n	M	Median	Mode	SD	Skewness	Kurtosis	Min	Max
Whole Sample									
Pre-Test	47	211.809	210	196	24.102	-.534	.794	134	254
Post-Test	47	219.766	221	216	29.035	-.694	.963	134	276
		1.07							
Mentoring									
Pre-Test	28	210.679	205	198	18.415	.382	-1.445	186	243
Post-Test	28	218.357	216	216	30.365	-.565	.909	134	276
Non-Mentoring									
Pre-Test	19	213.473	223	226	31.160	-.910	.756	134	254
Post-Test	19	221.842	223	146	27.635	-.977	1.881	146	266
Individual/ Group Counseling		0.49							

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