Reading Achievement of Incarcerated Youth in Three Regions

Pamela J. Harris, Ph.D.
Heather M. Baltodano, Ph.D.
Aydin Bal
Kristine Jolivette, Ph.D.
Candace Malcahy, Ph.D.

Abstract

The reading achievement of 398 incarcerated male juvenile offenders was measured at three long-term correctional facilities in three distinct regions of the U.S. Participants were assessed in the areas of word identification, word attack, and comprehension. Results were analyzed by age, ethnicity, and special education status. Overall, reading achievement was in the low-average range, but there were significant differences by ethnicity and special education status.

To provide effective and efficient instruction to youth in juvenile corrections, a comprehensive assessment of their current achievement and unique needs must occur. (Foley, 2001; Johnson, 1999). Addressing the academic needs of youth in corrections and teaching the skills needed for their return to the community may reduce the likelihood for recidivism (Katsiyannis & Archwamety, 1997; Kollhoff, 2002; Leone, Meisel, & Drakeford, 2002). Decreasing recidivism has both immediate and long-term benefits. One researcher estimated that juveniles who become adult offenders cost society between $1.5 and $1.8 million each (Cohen, 1998). Providing academic intervention while youth are incarcerated is one cost-effective way to improve long-term outcomes for both youth and society. However, prior to appropriate academic interventions, there must be a comprehensive needs assessment.

Incarcerated youth are disproportionately ethnically and linguistically diverse, more often identified for special education, and come to corrections with a history of negative educational experiences. Research literature consistently reports that incarcerated youth experience academic deficits when compared to their non-incarcerated peers (Foley, 2001; Jerse & Fakouri, 1978;

Johnson, 1999; Keith & McCray, 2002). However, the research literature varies with regard to the degree of these deficits. For example, Jerse and Fokouri (1978) reported that not only were the differences between incarcerated and non-incarcerated youth significant, but the difference crossed the line between what was considered adequate and inadequate academic achievement. Leone et al. (2002) reported that the majority of incarcerated youth were approximately two years behind their peers in public school, and Foley's (2001) literature review indicated that the academic achievement of youth in corrections ranged from the fifth to ninth grade levels.

Incarcerated youth from culturally and linguistically diverse backgrounds scored lower on achievement measures in reading and math (Baltodano, Harris & Rutherford, 2005). In this study of approximately 200 male youth from a single site, the mean Broad Reading standard score from the Woodcock-Johnson Achievement Test – Third Edition (WJIII, Woodcock, McGrew, & Mather, 2001) was 96.73 for European Americans, which is within the average range. The scores for all other groups were around one standard deviation or more below the mean. For example, Hispanic youth had a mean score of 87.37, African American students had a mean score of 82.20, and Mexican Nationals had a mean score of 80.03. The sample only contained 3 Native Americans, but their mean reading achievement scores was particularly low at 43.50. Math calculation scores from the WJIII followed a similar pattern with European American youth scoring, for the most part, in the average range and culturally and linguistically diverse students scoring around one standard deviation below the mean.

Not only are youth in juvenile corrections settings behind their peers in overall academic achievement, their reading achievement also is significantly lower (Brunner 1977). Keith and McCray (2002) reported that a majority of ninth grade youth in correctional settings were reading at the fourth grade level. Similarly, Snowling, Adams, Bowyer-Crane, and Tobin (2000) found that male youth in correctional settings in Northern England read at approximately one standard deviation below their peers who were not incarcerated. In addition, Beebe and Mueller (1993) found that youth incarcerated for severe, aggressive offenses had greater reading deficits when compared to youth incarcerated for less severe offenses (e.g., property offenses, misdemeanors). For those youth with low reading achievement, most also had low self-esteem and frustration tolerance (Keith & McCray, 2002). However, high self-esteem does not necessarily correlate with high academic achievement and adolescents' views of themselves can be mediated by both personal and contextual factors such as

age, gender, economic class and family supports (Steinberg, 2005). Overall, these youth continue to fall further and further behind their non-incarcerated peers both academically and socially, which has negative life-long effects. Leone et al., (2002) stated

> Helping youth acquire educational skills is one of the most effective approaches to the prevention of delinquency and the reduction of recidivism. Literacy skills are an essential component of education to meet the demands of a complex, high-tech world. Higher levels of literacy are associated with lower rates of juvenile delinquency, rearrests, and recidivism (p.46).

Despite research that documents the importance of literacy skills and quality education, many youth in corrections are not receiving adequate or appropriate educational programming to meet their specific needs (Keith & McCray). Reading is a basic skill that incarcerated youth will need in order to function in society (Chall, 1983; Kollhoff, 2002). Unfortunately, incarcerated youth who return to the community and cannot demonstrate a minimal level of reading proficiency are not likely to find success in school or employment (Winters, 1997).

There are factors that exacerbate the academic achievement discrepancy for incarcerated youth. For example, many youth drop out or are pushed out of school prior to incarceration, making access to education problematic (Nelson, Leone & Rutherford, 2004). Archwematy and Katsiyannis (2000) found a direct correlation between age at first offense and academic achievement, indicating that the younger the student is at the time of the first offense the lower his or her academic achievement is likely to be. Additionally, the academic achievement of recidivists has been found to be significantly lower than that of nonrecidivists (Coulter, 2004; Foley, 2001).

Also adding to the achievement gap for incarcerated teens is the large percentage of youth with disabilities. Over the last twenty years, researchers have provided estimates of the percentage of youth with disabilities in correctional settings. Rutherford, Nelson, and Wolford (1985) surveyed educational administrators in juvenile corrections and estimated that between 30% and 70% of youth in correctional settings were identified with disabilities. In a more recent study, Quinn, Rutherford, Leone, Osher, and Poirier (2005) conducted a national survey of juvenile correctional facilities that reported between 9% and 78% (M = 34%) of their youth had identified disabilities as reported in their Child Find data. In particular, these juvenile corrections

facilities reported that 48% of the identified youth qualified as emotionally disturbed (ED), 39% specific learning disabilities (SLD), and 10% mentally retarded (MR). These findings support a previous report of overrepresentation of youth in correctional settings with ED, SLD, and MR (Katsiyannis & Murry, 2000). In fact, when these prevalence estimates are compared with the percentage of public school-aged students with disabilities (12%) served under IDEA in 2003 (U.S. Department of Education, 2003), youth with disabilities in correctional settings are significantly overrepresented.

Providing appropriate educational services to youth with disabilities within correctional settings can be difficult without a comprehensive assessment of their current achievement, strengths, and specialized needs (Foley, 2001; Johnson, 1999). Such a comprehensive assessment of these youth's educational needs is imperative for the delivery of appropriate instruction (Katsiyannis & Archwamety, 1997; Kollhoff, 2002; Leone et al., 2002). For many of these youth, quality education in the juvenile corrections setting may be the last opportunity to benefit from formalized education (Nelson et al., 2004). Foley (2001) indicates that these youth need "efficient, well-designed curricula and instructional programs that are relevant, that result in academic success and that facilitate interest in educational opportunities" (p.250).

Gaining access to juvenile correctional facilities for the purpose of research is problematic at best. Mulcahy, Krezmien, Leone, Houchins, and Baltodano (2007) outlined several barriers to conducting research in juvenile corrections. The barriers included denial of access to students by facility staff (even when state and facility administration supported the research), inconsistent supervision by facility staff, and attrition due to early and scheduled release dates. Consequently, the body of literature on this population's reading achievement, to date, is limited to single-site analyses where access was granted.

Additionally, the studies tend to be clustered in specific regions, with the majority of the studies reporting data for incarcerated youth in the mid-west region of the U.S. Studies on reading achievement were conducted independently in several Midwestern states (Archwamenty & Katsiyannis, 1999; Katsiyannis & Archwamety, 1999, 1997; Beebe & Mueller, 1993; Jerse & Fakouri, 1978; Zabel & Nigro, 2001) and a few Western states (Baltodano et al., 2005; Podboy & Mallory, 1978), as well as a southern state (Ryan & McCabe, 1993). Furthermore, the sample sizes in these studies varied greatly, with the majority of the studies having fewer than 200 subjects (see Harris, Baltodano, Artiles, & Rutherford, 2006). The current study is the first to examine achievement of incarcerated youth in multiple regions, with a sample of nearly 400 students.

The purpose of this study was to gauge the current academic achievement of youth in juvenile corrections. Specifically, we assessed the reading achievement of incarcerated youth in long-term commitment juvenile corrections facilities in a Southwestern state, a Southeastern state, and a Mid-Atlantic state. The purpose of this study was twofold. First, we sought to determine the current reading achievement levels for youth in correctional settings from a multi-regional perspective as an update to data from Project Read (Brunner, 1977). Using currently available research data, it appears as though reading achievement for incarcerated youth has not improved much in the past 30 years and we wanted to test this hypothesis on a larger scale. Second, we wanted to examine reading achievement similarities and/or differences in terms of age, ethnicity, and disability.

Method

Participants and Settings

Youth in three long-term juvenile correctional facilities voluntarily participated in this study. These youth were housed in one of three facilities in the Southwest, Southeast, or Mid-Atlantic United States. A facility in each region was sought in conjunction with state correctional administrators and based on the following study criteria: (a) youth were detained long-term, (b) there was a sufficient number of youth in the facility that were male, and (c) the facility and state consented to participate.

A convenience sample of 455 youth across the three regions was obtained. At the Southwest facility, 182 youth out of 220 were assessed while 127 out of 148 were assessed at the Southeast facility. At the Mid-Atlantic facility, 138 out of 144 youth were assessed. Some students at each facility were not assessed due to (in order of occurrence): (a) court appearances that required short-term transfers (up to 2 weeks) to detention facilities or court holding facilities, (b) illnesses that necessitated housing in the on-site infirmary or hospitalization off-site, (c) disciplinary isolation during the testing period and (d) student refusals.

Assessment Instruments and Dependent Variables

Standardized reading measures were used to assess the youth's current reading achievement levels. Three subtests of the Woodcock-Johnson Tests of Achievement – Third Edition (WJIII) were used: (a) Letter-Word Identification, (b) Word Attack, and (c) Passage Comprehension. The Letter-Word Identification subtest employs a word list in which the words begin as common sight words

and become increasingly novel and complex. At the lower grade levels, it includes letter and sound recognition. The Word Attack subtest provides phonetically-based nonsense words to assess the youth's phonic skills. The Passage Comprehension subtest uses a cloze format requiring students to identify a missing word from a sentence or passage as a means of assessing reading comprehension.

Procedures

The same data were collected at each state facility; however, at each facility, researchers collected data using three distinct sets of procedures. At the Southwest facility, the WJIII Standard Battery was administered to each student by a facility diagnostician as part of an intake process upon entry to the facility. For purposes of this study, scores were obtained from a three-month window of archival records. The Word Attack subtest is part of the Supplemental Battery of the WJIII, and was not administered by the facility diagnostician. Instead, the Word Attack subtest was administered by trained examiners from the university. It was administered to all youth at the facility in early December 2004 who also had archival scores for the other two subtests. Thus the scores at the Southwest facility were obtained during a three-month period of time that spanned from October 2004 through December 2004.

At the Mid-Atlantic facility, trained graduate students and special education teachers from the state's adult prisons administered the WJIII subtests to all youth housed in the facility as part of the facility's intake process. Scores were obtained from testing that occurred during the last week in July 2004.

The Southeast data were obtained through on-site testing during January 2005. Assessments were conducted by trained examiners from the university which included professors and graduate students. Data from all three facilities were collapsed into a single database for analysis. Scores from all three facilities were obtained during the same six-month period (i.e., July 2004 to January 2005).

In addition to reading subtest scores, researchers also collected archival information on each participant to aide in analysis. Ethnicity, age, grade, and special education data were obtained from facility educational records. Special education eligibility data were taken from educational records as well. Qualified school personnel or diagnosticians within each facility determined special education eligibility.

Data were analyzed using a MANOVA to assess the impact of ethnicity and special education status on the reading achievement of youth in long-term correctional facilities in three regions of the U.S. A Dunette C procedure was

employed for post-hoc analysis due to unequal numbers of participants within given categories, as recommended by Green & Salkind (2003). Data on age were not analyzed because the vast majority of participants were between the ages of 16 and 17 (70%), making the number of participants in other age categories impractical for multivariate analytical purposes. Descriptive data are reported for age, however.

Results

Participant Characteristics

Age. The total sample across three sites consisted of 455 youth aged 12 to 21 (M =15.99, SD =0.98), with the majority of the youth between the ages of 15 and 17 (see Table 1). Youth in the Southwest sample ranged in age from 13 to 17 (M =16.16, SD =0.91), while youth in the Southeast sample ranged from 14 to 17 (M =15.83, SD =0.62). The Mid-Atlantic sample had the largest age range with youth from 12 to 21 (M =15.92, SD =1.26), but the average age was similar to the other two sites.

Table 1. Age of Participants by Site

Age	Southwest *n (%)*	Southeast *n (%)*	Mid-Atlantic *n (%)*	Total *N (%)*
Total	182	126	138	455
12	0 (0)	0 (0)	1 (<1)	1 (<1)
13	2 (1)	0 (0)	4 (3)	6 (1)
14	5 (3)	1 (1)	14 (10)	20 (4)
15	36 (20)	33 (26)	29 (21)	98 (22)
16	58 (32)	78 (62)	38 (28)	174 (39)
17	81 (45)	14 (11)	42 (30)	137 (31)
18	0 (0)	0 (0)	10 (7)	10 (2)
21	0 (0)	1 (<1)	0 (0)	1 (<1)
Not reported				8 (2)

Ethnicity. Ethnicity data were obtained through archival records at each facility and merged into the full database. The Southwest facility maintained a category for Hispanics as well as a category for Mexican Nationals. Considering that the Southeast and Mid-Atlantic sites did not disaggregate these two distinct groups, the Mexican National and Hispanic categories in the Southwest were merged into a single Hispanic category to maintain consistency across sites. The following categories represent the codes from the three sites: African American, Hispanic, European American, Native American, Mixed Ethnicity, Asian American, and Other. The category "European American" consists of students at each facility who were identified as "White" or "Caucasian." Ethnicity data were unavailable for 15 of the participants, bringing the total sample on this variable to 440. The majority of the aggregate sample was identified in one of three categories: African American (51.8%), Hispanic (23.9%), and European American (23.0%). The participants in the remaining categories (n = 6) accounted for only 1% of the sample population (see Table 2). Therefore, in the data analysis, we included only the three major categories. Merging the remaining ethnicity categories into an "other" category was considered, but the number of participants was still too small to draw any meaningful conclusions. Additionally, the term "other" does not provide practical meaning when examining the relationship between ethnicity and achievement.

There were distinct differences in the ethnic composition by geographic location. Both the Southeast and Mid-Atlantic populations were predominantly African American (86.8% and 73.3% respectively) followed by a much smaller cohort of European Americans (7.8% and 22.6% respectively). The Southwest site, on the other hand, had a larger percentage of Hispanics (54.0%), followed by European Americans (34.5%), and African-Americans (10.2%).

Table 2. Ethnicity of Participants by Site

Race	Southwest *n (%)*	Southeast *n (%)*	Mid-Atlantic *n (%)*	Total *N (%)*
Total	174 (100)	129 (100)	137 (100)	455 (100)
African American	17 (10.2)	112 (86.8)	99 (73.3)	228 (51.8)
Hispanic	94 (54.0)	7 (5.4)	4 (2.9)	105 (23.9)

Table 2. continued

Caucasian	60 (34.5)	10 (7.8)	31 (22.6)	101 (23.0)
Native American	2 (1.1)	0 (0)	0 (0)	2 (<0.1)
Mixed Race	0 (0)	0 (0)	2 (1.5)	2 (<0.1)
Asian	0 (0)	0 (0)	1 (<0.1)	1 (<0.1)
Other	1 (<0.1)	0 (0)	0 (0)	1 (<0.1)
Not reported				15 (3.0)

Special education status and disability categories. Special education status data were available for 455 youth tested. In terms of disability, 151 of the 455 youth were identified as receiving special education services. The mean percentage across sites for special education diagnosis was 33.2%. The majority of these 151 youth were identified with an ED (49.3%) or a SLD (24.3%). MR made up 11% of the disabilities, while Other Health Impairments (OHI) accounted for 8.8%. Speech Language Impairment (SLI) was the least common with only 6.6% of the sample having that as a primary disability label (see Table 3).

The percentage of subjects identified as receiving special education services was similar across sites. Approximately 30% of the sample in the Southwest and Southeast were identified as receiving special education services, while the sample in the Mid-Atlantic state approached 40% (see Table 3). The majority of the youth identified as receiving special education services were identified as having ED; however, the primary disability did differ slightly according to the geographic location (see Table 3). Although ED was the most common primary disability at the Southwest and Mid-Atlantic sites, the Southeast site had a larger pool (33.3%) of participants with the diagnosis of Mild Intellectual Disability (MID). Mild Intellectual Disability was coded as MR in the other two states. Each of the other two states only had one student with MR. In the Southwest and Mid-Atlantic sites, the second most populous category was SLD, while the Southeastern sample included no students identified with SLD.

Table 3. Special Education Status and Primary Diagnosis by Site

Variable	Southwest *n (%)*	Southeast *n (%)*	Mid-Atlantic *n (%)*	Total *N (%)*
Total	187 (100)	129 (100)	139 (100)	455(100)
Special Education Status				
Not Identified as Special Education	129 (69.0)	90 (69.8)	85 (61.2)	304(66.8)
Identified as Special Education	58 (31.0)	39 (30.2)	54 (38.8)	151(33.2)
Special Education Diagnosis*				
ED	33 (24.3)	11 (8.1)	23 (16.9)	67 (49.3)
SLD	22 (16.2)	0 (0)	11 (8.1)	33 (24.3)
MR	1 (0.7)	13 (9.6)	1 (0.7)	15 (11.0)
OHI	1 (0.7)	7 (5.1)	4 (2.9)	12 (8.8)
SLI	1 (0.7)	8 (5.9)	0 (0)	9 (6.6)
Not reported				15 (10.0)

*Primary diagnosis only

Overall Reading Achievement

Multivariate analysis was conducted on 398 subject scores. This number represents those youth for whom there was complete data on all subtests and ethnicity was identified in one of the three populous ethnic categories. Results of the three WJIII subtests reveal that youth at the three sites performed approximately one standard deviation below the mean. For word identification, the mean score was 85.76 (SD=18.56). For word attack, the mean score was 85.93 (SD=17.96); for passage comprehension, the mean score was 83.79 (SD=19.72) (see Table 4).

Table 4. Mean Scores on Academic Achievement by Ethnicity and Special Education Status

	Ethnicity	Special Education	M	SD	N
Letter-Word ID	European American	Non-Special Ed	96.34	11.83	53
		Special Ed	85.75	19.47	36
		Total	92.06	16.15	89
	Hispanic	Non-Special Ed	86.31	17.48	139
		Special Ed	73.33	20.07	79
		Total	81.61	19.45	218
	African American	Non-Special Ed	92.64	13.50	74
		Special Ed	76.18	19.47	17
		Total	89.56	16.02	91
	Total	Non-Special Ed	90.07	15.93	266
		Special Ed	77.08	20.41	132
		Total	85.76	18.56	398
Word Attack	European American	Non-Special Ed	95.85	13.88	53
		Special Ed	86.08	14.44	36
		Total	91.90	14.83	89
	Hispanic	Non-Special Ed	88.25	17.07	139
		Special Ed	74.14	20.92	79
		Total	83.14	19.72	218
	African American	Non-Special Ed	89.42	13.39	74
		Special Ed	75.35	15.05	17
		Total	86.79	14.70	91
	Total	Non-Special Ed	90.09	15.73	266
		Special Ed	77.55	19.28	132
		Total	85.93	17.96	398
Passage Comprehension	European American	Non-Special Ed	96.87	12.16	53
		Special Ed	84.69	21.46	36
		Total	91.94	17.51	89
	Hispanic	Non-Special Ed	83.74	14.97	139
		Special Ed	74.20	17.70	79
		Total	80.28	16.62	218
	African American	Non-Special Ed	86.28	17.64	74
		Special Ed	75.12	17.19	17
		Total	84.20	18.00	91
	Total	Non-Special Ed	87.06	16.02	266
		Special Ed	77.18	19.16	132
		Total	83.79	17.72	398

Achievement and age. An analysis of variance (ANOVA) was conducted to determine if there were significant differences in achievement by age. No significant differences were found for Letter-Word Identification, F (3, 422) =1.02, p= 0.39. There also were no significant differences by age on the Word Attack, F (3, 406) =1.14, p= 0.33. Similarly, there were no significant differences in Passage Comprehension, F (3, 419) =1.78, p= 0.32. Analyses on the other age groups were not conducted because of insufficient numbers of students in each of the age categories of 12, 13, and 18. Mean achievement scores on all subtests were slightly higher for younger students, but it was not statistically significant (see Table 5).

Table 5. Mean Scores on Academic Achievement Measures by Age

	14 *n* *M(SD)*	15 *n* *M(SD)*	16 *n* *M(SD)*	17 *n* *M(SD)*
WJIII Standard Scores				
	17	94	163	127
Letter-word Identification	93.26	84.48	86.26	86.83
	(12.18)	20.44)	(19.51)	(17.00)
	18	93	161	122
Word Attack	93.06	86.63	86.06	85.98
	(14.23)	(17.95)	(18.64)	(16.62)
	17	94	161	127
Passage Comprehension	90.41	84.14	82.55	85.00
	(13.02)	(17.21)	(19.92)	(20.32)

Achievement and ethnicity. Differences in achievement by ethnic group were examined using a multivariate analysis of variance (MANOVA). Using the Box's M test of equality of covariance, the homogeneity assumption was likely violated ($F = 3.15$, $p < .01$); however, the large sample makes the finding robust to this violation (Green & Salkind, 2003). Significant differences were found among the three ethnic categories on all dependent measures, Wilk's = .91, $F(6, 780) = 6.30$, $p < .01$. The multivariate $^2 = .05$.

Follow-up tests were conducted using a univariate ANOVA. Because the Levene's Test yielded unequal variance on two of the three achievement subtests, the Dunnett C procedure was used, as it does not assume equal

variance. On Letter-Word Identification, significant differences were observed between African Americans and the other two groups; however, differences between Hispanics and European Americans were not significant. On the Word Attack measure, significant differences were only observed between European Americans and African Americans. In the area of Passage Comprehension, significant differences were found between European Americans and the other two groups. Differences between African Americans and Hispanics were not significant (see Table 6).

Table 6. Mean Score Comparisons by Ethnicity

	Hispanic	African American
Letter-word Identification		
European American	2.50	10.45*
African American	7.95*	
Word Attack		
European American	5.11	8.76*
African American	3.65	
Passage Comprehension		
European American	7.75*	11.66*
African American	3.91	

*Significant at the .05 level.

Special education status. A MANOVA was conducted to determine the effects of special education status on the three dependent subtest variables. Significant differences were found between special education and non-special education students on the three achievement subtests, Wilkes = .90, F (3, 390) = 15.19, $p < .01$. the multivariate $^2 = .11$. For Letter-Word Identification and Word Attack, approximately 9% of the variance in scores could be accounted for by special education status, whereas only 7% of the variance in Passage Comprehension scores was witnessed. The mean scores for students not in special education were in the lower-average range, while scores for student receiving special education were between one and two standard deviations from the mean.

The MANOVA results indicated no significant interaction between ethnicity and special education status, Wilkes = .99, F (6, 780) = 0.86, $p < .53$.

When assessing achievement by disability category, those whose primary label was SLI performed better than their counterparts in other disability categories on Word Identification and Passage Comprehension, while youth with the label of ED scored higher on Word Attack. Students with the label of ED had standard scores in the low 80s across measures, while those who had the label of SLD had standard scores in the mid-high 70s. Youth whose primary label was MR scored the lowest with all WJIII achievement scores more than 2 standard deviations from the mean (see Table 7).

Table 7. Mean Scores on Academic Achievement by Primary Disability Category

	ED *n* *M(SD)*	SLD *n* *M(SD)*	MR *n* *M(SD)*	OHI *n* *M(SD)*	SLI *n* *M(SD)*
WJIII Standard Scores					
	58	32	15	12	8
Letter-word Identification*	83.79	74.50	57.27	77.83	87.88
	(19.83)	(19.43)	(26.63)	(19.40)	(14.66)
	57	31	15	12	7
Word Attack*	83.19	75.35	64.07	79.83	75.71
	(16.85)	(16.54)	(22.45)	(12.83)	(26.51)
	59	32	15	12	8
Passage Comprehension*	80.10	77.66	56.47	73.67	83.63
	(24.71)	(18.57)	(20.38)	(20.40)	(9.74)

*$p<.05$

Discussion

The purpose of this study was to assess the reading achievement of incarcerated youth from a three-state sample. An analysis of the differences and similarities by age, ethnicity and special education status were conducted. This section will begin with a discussion of the limitations of the study so that the results and implications can be viewed within the framework of the limitations.

Limitations

All analyses on current data should be interpreted in light of some key limitations of the current study. First, this study was completed on male youth

offenders in long-term correctional facilities. Therefore, results do not include other incarcerated populations such as females and youth whom are housed in detention facilities or adult prisons. The reason for this was twofold: first, males are disproportionately represented in corrections; and second, due to the larger sample pool of all-male facilities, access was granted for research purposes by state agencies that housed male, long-term incarcerated youth. Furthermore, detention facilities vary by state as to jurisdiction. In some states, committed and detained youth are housed in the same state facilities, while in other states detention facilities are separated by county or local municipalities. By including youth in long-term state-level facilities, we maintained better continuity across sites.

Another limitation was the reliance on educational records for ethnicity and special education data. Designations for both ethnicity and special education categories relied on the accuracy of file information, which can be problematic. Although ethnicity and special education data were gathered by researchers from student files, the initial categorical labels could have been provided by the student, his parent or guardian, or clerical staff so the accuracy of the labels is questionable. This problem is not unique to correctional facilities and also exists in public schools as Office of Civil Rights (OCR) and Office of Special Education Programs (OSEP) data were quite variable when it comes to ethnicity and disability (Donovan & Cross, 2002).

Gathering information related to cultural and linguistic diversity was a third limitation because of the variance in categorical terms across sites. Although the categories were merged to address this issue, future studies may want to examine how the categorical labels differ from state to state and the implications of that variance. It is also important to recognize that the results of this analysis cannot be generalized to the population of all incarcerated youth because there was limited representation of youth from racial and ethnic categories other than African American, European American, and Hispanic. Achievement data for incarcerated youth in broader culturally and linguistically diverse groups may be better represented by including additional regions of the U.S. like the northwest, Alaska/Hawaii, and the northeast in future studies. It is recommended that future researchers seek representation from these regions to better understand the relationship between cultural and linguistic diversity and academic achievement in juvenile correctional settings.

Differential procedures employed at each site should also be noted so interpretation of results must be in light of the fact that this is a population that is constantly in flux. The participants in this study represent incarcerated youth

at long-term facilities within a given year. Ideally, data would have been collected within the same time frame at each site; however, this was not possible because of facility access issues in each state. Researchers were granted access during various times based on facility educational schedules. Future researchers may want to better control this variable by assessing incarcerated youth at the same time and /or over several points in time since the youth populations may be ever changing due to a variety of reasons (e.g. length of stay, release dates, overcrowding, etc.).

A final limitation is the number of youth not assessed at each facility. While 512 youth were on record as being housed at the three sites, only 455 were available for assessment. Consequently, nearly 9% of the youth incarcerated during the evaluation period were unavailable. As stated earlier, the most common reasons for unavailability were court appearances and facility transfers, followed by infirmary visits and isolation for discipline purposes. Less than 1% was due to student refusals, although participation was completely voluntary. This limitation was unavoidable for this study given the time frame for student access granted by each facility, and the schedules and availability of qualified examiners. The study is further limited by the availability of complete data for 398 students. This is less than ideal as information on those not included would have been helpful in better understanding the reading achievement of this population.

In light of these limitations, however, it is important to note that the current study contributes new information to the field and advances our understanding of incarcerated youth by reporting on one of the largest samples of student achievement data for this population. It is also the first to include achievement data from various geographical regions of the U.S.

Differences by Site

The racial make-up of the Southwest sample was considerably different than the sample in the Southeast and Mid-Atlantic facilities. The Southwest facility had a higher percentage of European Americans (34%) than the other 2 sites (7.8% and 22.6% respectively) and European Americans, on average, scored higher than the other racial groups. Furthermore, the majority of the Southwest sample was Hispanic and Hispanics did not score as well as European Americans, but they did score higher, on average, than African-Americans. Consequently, 88.5% of the Southwest sample was either European American or Hispanic. A primary reason for collapsing the database and not analyzing data by site was these noted differences.

Differences by Age

The variability in age across sites was minimal; however, it should be noted that the Mid-Atlantic site had ten 18 year olds, while the other two sites did not have 18 year olds in their samples. The Mid-Atlantic site also had the largest number of younger students in their sample with 19 students between the ages of 12 and 14; while the Southwest sample had 7 younger students and the Southeast sample had 1. This suggests that juvenile correctional educators in the Mid-Atlantic state must plan instruction for a wider range of student ages and maturity levels. Although outside the scope of this investigation, it would be interesting to explore where younger offenders are housed in the other states and how their educational needs are addressed.

Achievement for those in the majority of the age sample, ages 15-17, was around one standard deviation below the mean and speaks to the need for reading instruction as part of the curriculum for incarcerated youth. Instructional planning within long-term juvenile correctional facilities should consider that, on average, their population is below the mean in reading achievement. Consequently, coursework toward diplomas and GEDs must adapt for this reading deficit by providing both instruction in reading and alternate forms of gaining information such as audio and video so that students have access to content information.

Although there were fewer younger students in the sample, the mean reading achievement of the 14-year olds in this study was within the average range on all three measures. This finding is curious and warrants further investigation into the educational backgrounds of young offenders.

The fact that achievement scores were the lowest for 18-year olds suggests the need for focused reading instruction for these young men. For this group, incarceration may be their last chance to acquire literacy skills. This finding is hard to interpret since only one of the three sites in this study included 18-year olds; however, their particularly low achievement speaks for the need to continue working on literacy skills for below-level young men for the remainder of their incarceration.

Cultural and Linguistic Diversity

As stated earlier, we recoded ethnicity and analyzed data based on the three most populous categories: African American, Hispanic and European American. When combined, the excluded categories accounted for only 1% of the sample population. The make-up of the sample is interesting as African-Americans and Hispanics are overrepresented, while European Americans are

underrepresented, when compared with the general U.S. population. According to the 2000 U.S. Census data, European Americans make up approximately 69% of the population; while only 23% of the youth in the three-state sample were European American. African Americans make up 12% of the U.S. population, but accounted for approximately 52% of the youth in our sample. Finally, Hispanics account for only 13% of the U.S. population, but accounted for approximately 24% of the sample.

To state that incarcerated youth, as a whole, are far behind their non-incarcerated peers is not exactly accurate. European Americans that were not placed in special education were within the average range on all three subtests. African Americans that were not placed in special education were in the average range on Word Identification, but scored one standard deviation from the mean on Passage Comprehension. Hispanics that were not placed in special education had lower achievement than the other two groups and this group's mean comprehension scores were more than one standard deviation below the mean. A possible reason for this difference is that the Hispanic youth were likely to be English Language Learners (ELLs). European Americans that were placed in special education scored around one standard deviation from the mean on all three subtests, while the other two groups scored lower, between one and two standard deviations from the mean on all three subtests.

When considering the differences in achievement levels for incarcerated youth by race or ethnicity, we must analyze the data in light of achievement differences for all youth in the U.S. European Americans have higher achievement scores than those of other groups. Possible explanations for these differences, commonly known as the "achievement gap," include the higher percentage of minority populations living in poverty, cultural differences between home and school communities, lower levels of parental education, and neighborhoods with higher crime rates, just to name a few. Additionally, many schools in areas of high poverty lack educational resources and have less experienced teachers (Children's Defense Fund, 2004). There is also evidence that school systems have consistently failed to meet the needs of students from ethnic/racial minority backgrounds and those living in poverty (Decuir & Dixson, 2004; Garcia, 1993). This may also explain the higher achievement scores for European Americans in special education compared to the achievement scores of other special education students.

Consequently, the higher achievement of European Americans in this study may be a reflection of inequities in general school populations and not necessarily reflective of practices in juvenile correctional facilities. Nevertheless,

recognizing these differences for planning and implementing instruction within juvenile correctional facilities could strengthen programming for minority groups.

Special Education Status

The percentage of youth in the three correctional facilities with disabilities was much higher than that of the general school population. In the Mid-Atlantic state, less than 10% of the public school population was identified with the high-incidence disabilities that accounted for nearly 39% of that facility's incarcerated youth. Similarly, in the Southwest facility 31% of the incarcerated youth were identified with disabilities while only about 7% of the state's public school-aged population was eligible for special education services (Mathur, Rutherford, Umbreit, & Cocchiarella, 2004). The percentage of youth identified as special education students was similar across each of the three sites and mirrored previous prevalence data (Quinn et al., 2005).

The majority of the sample was either diagnosed as ED or SLD (73.6%). All sites had a significant percentage of youth diagnosed with ED. In the Southwest and Mid-Atlantic sites, ED represented the most populous diagnosis, but in the Southeast facility MR was the most common diagnosis. The Southwest and Mid-Atlantic sites also had significant numbers of students with SLD diagnoses, while the Southeast site had no students identified as SLD. All of the students in the study, however, had diagnoses that would be considered "high-incidence" disabilities. High incidence disabilities rely more heavily on human judgment in the diagnostic process as IDEA stipulates that a team of education professionals determine whether students meet certain inclusionary and exclusionary criteria by category. Students with both academic and behavioral challenges are likely to be referred for special education. No students in this study had a low-incidence disability.

The Southeast site had 13 students identified with MR, while the Southwest and Mid-Atlantic sites only had one each identified as MR. More specifically, the 13 students in the Southeast site were diagnosed with mild intellectual disabilities with an IQ range between 55 and 75. Individual records reviews were not conducted and the basis for categorization was beyond the scope of this study. It is possible that there may be overlap in students that qualify as LD in one state and MID in another. It should be noted that there is no distinction between mild, moderate or severe mental retardation in the data presented in this study. This problem of differing diagnoses by state has been well documented by MacMillan and Reschly (1998) who found a high degree of variability in identification rates across states for the disability categories that

rely heavily on human judgment such as SLD, ED, and MR.

Although it is unknown why the number of youth in each disability category differs across sites, it is clear that students with the MR label had much lower average standard scores in all reading areas than those in other disability categories. The average standard scores for Letter-word identification and Passage comprehension were nearly 3 standard deviations from the mean (57.27 and 56.47 respectively), while the students in other categories were between 1 and 1.5 standard deviations from the mean.

Special education teachers in correctional facilities need to differentiate instruction for students with mental retardation differently than for students with other disability labels because, as a group, their achievement is much lower than their peers. In this study, the number of students with mental retardation was few; therefore, individualization based on a needs assessment upon entry to the facility would be prudent for practitioners. An assessment that included academic achievement levels, social and adaptive skill checklists, and interest inventories could help plan appropriate instruction for this group with limited cognitive ability. Special care to match these youth with on-site job training in their interest and skill area could be critical for transition from facilities to community-based programming.

Students with high incidence disabilities also should have programming geared toward graduation goals; however, they will need prescriptive reading instruction to gain access to and benefit sufficiently from such programs. Students in all categories except mental retardation tended to score between 1 and 1.5 standard deviations below the mean. This suggests that intensive reading instruction is needed for students enrolled in special education programs. Small-group instruction or tutoring has been shown to be effective in improving reading scores for incarcerated youth (Coulter, 2004; Drakeford, 2002; Malmgren & Leone, 2000).

Systematic reading instruction should be included in programming for incarcerated youth that are not within the average range, regardless of special education status. This means that juvenile correctional facilities will need to screen for reading difficulties upon entry to the facility, directly teach reading skills, and monitor for progress in a systematic way. Educational testing should be completed by qualified examiners that have sufficient experience in diagnosing and treating learning differences. It is not enough to screen and determine academic levels and leave the results in a file. Screening measures should lead to more detailed assessments for students that demonstrate need. These assessments should be used to impact programming within the facility.

Special education and Title 1 staff could be utilized to differentiate instruction for youth with reading difficulties. A balanced approach teaches phonemic awareness, phonics/word recognition, vocabulary, fluency and comprehension in a systematic way (National Reading Panel, 2004). Furthermore, modifications such as books on tape and expository texts with key idea highlighted would make access to content area materials more likely for incarcerated youth with low reading skills. For example, youth with identified reading difficulties could spend one period a day in a class that targets improving reading skills and the remainder of the classes (science, social studies, etc.) with reading modifications to allow access to content area curriculum needed for graduation or GED attainment. For optimal results, planning and resources need to be allocated or shifted to meet student needs.

Because of the transitory nature of youth in correctional facilities, on-going curriculum-based measurement (CBM) is necessary for below-level readers for several reasons. One, it provides data that can be used by correctional teachers for instructional planning and decision making. It also provides feedback to teachers and students on progress on a regular (weekly or bi-monthly) basis. Furthermore, it can provide data to receiving schools, facilities or agencies during transitions so that appropriate instruction can happen right away. Instructional time lost in lengthy assessments or inappropriate instruction (i.e. regular curriculum with no specialized reading instruction or modifications) between facilities or educational agencies exasperates the achievement lag for youth already struggling to attain literacy skills.

Not surprisingly, achievement in all areas was higher for students not identified for special education. Achievement for students not in special education was in the lower end of the average range. This suggests that many students not in special education should have programming geared toward attaining diplomas or GEDs, as they likely have achieved basic reading levels that allow access to such programming. Although reading achievement was in the lower end of the average range, participation in such programs would likely strengthen reading and comprehension skills.

Implications for Practice

In general, results of this study confirm those of earlier studies that found that students in juvenile correctional facilities have below-average reading achievement when compared with the general school population (Foley, 2001; Jerse & Fakouri, 1978; Johnson, 1999; Keith & McCray, 2002; Baltodano, et. al, 2005). However, this study demonstrates that the findings of previous single-site

research do not hold true across three distinct regions. In addition, significant differences in achievement by ethnicity were found. Most notably, European American incarcerated males in this study scored within the average range on all subtests, while their culturally and linguistically diverse counterparts did not fare as well.

This study provided further evidence that students with disabilities are over-represented in juvenile correctional facilities, which also has been documented in previous studies (Rutherford et. al,1985; Quinn et. al, 2005) and that students with special needs do not achieve at the same level as those without disabilities. However, European American students identified with special needs scored higher, on average, than those in the other ethnic groups who also were placed in special education.

Future research on academic achievement levels of incarcerated youth should also seek to include geographical locations that may include more Native American and Asian American incarcerated youth so that their achievement could be analyzed. Assessing across multiple sites within a region would highlight any anomalies that may have occurred because of educational conditions or practices at a particular site that may not represent the entire region.

Future research is warranted to identify current reading practices used within youth correctional facilities, as well as effective reading practices specific to incarcerated youth in order to maximize reading achievement gains. Unfortunately, there is a dearth of studies on effective reading practices within juvenile correctional facilities. Researchers and practitioners should continue to document and publish effective and promising methodologies with this population.

Since the majority of incarcerated youth in this study were from cultural and/or linguistically diverse backgrounds, correctional educators should teach within a culturally responsive literacy framework that includes (1) helping students access their prior knowledge, make connections, and build new knowledge, (2) promoting vocabulary as a curricular anchor, (3) using visuals and graphic organizers to support concepts and teach vocabulary (4) explicitly teaching phonics, (5) providing explicit feedback that is appropriate for the learner's level (see Hoover, Klingner, Baca and Patton, 2008 for a complete discussion of culturally responsive teaching methods for students with learning challenges).

In summary, juvenile correctional facilities should avoid universal methodologies that prescribes all youth to similar programming regardless of achievement levels or cultural and linguistic background. A differentiated

approach, based identified needs and effective methodologies for those needs, would be beneficial. To provide such programming, correctional facilities may need to allocate or reallocate resources to directly teach reading skills to below-level readers. Staff may also need on-going training on effective teaching methodologies for reading instruction with culturally and linguistically diverse students and on how to conduct on-going curriculum-based measurement.

Areas for future study

This study focused on reading levels, but more research is needed to examine the written language skills of incarcerated youth as reading and writing skills go hand in hand when examining literacy in our society. Since English is usually taught in a simultaneous class period in secondary education classrooms, information on writing skills could be critical in improving long-term outcomes for employment or post-secondary education. Furthermore, data on the impact of special education services on student achievement for incarcerated youth are unexplored. Studies that identify the academic expectations of the schools and communities the students will be returning to could help inform practice for educators that work with youth while they are incarcerated. Research that included or exclusively focused on female incarcerated youth and their academic achievement levels would greatly add to the growing knowledge bank. It would be interesting to assess whether similar patterns of achievement existed in terms of age, ethnicity, and special education status among females. Data on category of offenses, recidivism, and extent of special education services were unavailable to researchers at all three sites, and therefore are not included in the present analysis; however, information on these variables would also add to the growing knowledge base in the field.

References

Archwamety, T., & Katsiyannis, A. (2000). Academic remediation, parole violations, and recidivism rates among delinquent youths. *Remedial and Special Education, 21*, 161-170.

Baltodano, H. M., Harris, P. J., & Rutherford, R. B. (2005). Academic achievement in juvenile corrections: Examining the impact of age, ethnicity and disability. *Education and Treatment of Children, 28*, 361-379.

Banks, J. A., & Banks, C. A. (2007). *Multicultural Education: Issues and Perspectives* (6). New Jersey: Wiley & Sons.

Beebe, M. C., & Mueller, F. (1993). Categorical offenses of juvenile delinquents and the relationship to achievement. *Journal of Correctional Education, 44*, 193-198.

Brunner, M. S. (1977). *Project READ (Reading Efficiency and Delinquency).* Lanham, MD: American Correctional Association.

Chall, J. S. (1983). *Stages of Reading Development.* New York: McGraw-Hill.

Children's Defense Fund. (2004). *The state of America's children 2004.* Washington DC: Author.

Cohen, M. A. (1998). The monetary value of saving a high-risk youth. *Journal of Quantitative Criminology, 14*, 5-33.

Coulter, G. (2004). Using one-to-one tutoring and proven reading strategies to improve reading performance with adjudicated youth. *Journal of Correctional Education, 55*, 321-331.

DeCuir, J. T. & Dixson, A. D. (2004). "So when it comes out, they aren't that surprised that it is there": Using critical race theory as a tool of analysis of race and racism in education. *Educational Researcher, 33*(5), 21-26.

Donovan, S., & Cross, C. (2002). *Minority students in special and gifted education.* Washington, DC: National Academy Press.

Drakeford, W. (2002). The impact of an intensive program to increase the literacy skills of youth confined to juvenile corrections. *Journal of Correctional Education, 53*, 139-144.

Foley, R. M. (2001). Academic characteristics of incarcerated youth and correctional educational programs: A literature review. *Journal of Emotional and Behavioral Disorders, 9*, 248-259.

Garcia, E. E. (1993). Language, culture and education. *Review of Research in Education, 19*, 51-97.

Green, S. B. & Salkind, N. J. (2003). Using SPSS for Windows and Macintosh: Analyzing and Understanding Data, Third Edition. New Jersey: Prentice Hall.

Harris, P., Baltodano, H. M., Artiles, A., & Rutherford, R. B. (2006).Integration of culture in reading studies for youth in corrections: A literature review. *Education and Treatment of Children ,29.* 749-779.

Hoover, J. J. , Klingner, J. K., Baca, L. M., & Patton, J. M. (2008). *Methods for Teaching Culturally and Linguistically Diverse Exceptional Learners.* New Jersey: Pearson Merrill Prentice Hall.

Jerse, F. W., & Fokouri, E. M. (1978). Juvenile delinquency and academic deficiency. *Contemporary Education, 49*, 106-109.

Johnson, R. (1999). Destiny's child: Recognizing the correlation between urban education and juvenile delinquency. *Journal of Law and Education, 28*, 313-317.

Katsiyannis, A., & Archwamety, T. (1997). Factors related to recidivism among delinquent youth in a state correctional facility. *Journal of Child and Family Studies, 6*, 43-57.

Katsiyannis, A., & Murry, F. (2000). Young offenders with disabilities: Legal requirements and reform considerations. *Journal of Child and Family Studies, 9*, 75-86.

Keith, J. M., & McCray, A. D. (2002). Juvenile offenders with special needs: Critical issues and bleak outcomes. *Qualitative Studies in Education, 15*, 691-710.

Kollhoff, M. (2002). Juvenile correctional education in the 21st Century: Leave no child out. Reflections of a Kansas juvenile educator. *Journal of Correctional Education, 53*, 44-45.

Leone, P. E., Meisel, S. M., & Drakeford, W. (2002). Special education programs for youth with disabilities in juvenile corrections. *Journal of Correctional Education, 53*, 46-50.

MacMillan, D. J., & Reschly, D. J. (1998). Overrepresentation of minority students: The case for greater specificity or reconsideration of the variables examined. *Journal of Special Education, 32*, 15-24.

Malmgren, K. W., & Leone, P. E. (2000). Effects of a short term auxiliary reading program on the reading skills of incarcerated youth. *Education and Treatment of Children, 23*, 239-247.

Mathur, S. R., Rutherford, R. B., Umbreit, J., & Cocchiarella, M. (2004). The condition of special education services for students with disabilities in Arizona: 2004. Retrieved on July 19, 2006, from http://www.asu.edu/educ/epsl/AEPI/EPSL-0405-107-AEPI.doc

Mulcahy, C. A., Krezmien, M. P., Leone, P. E., Houchins, D. E., & Baltodano, H. M. (in press). Lessons learned: Barriers and solutions for conducting reading investigations in juvenile corrections settings. *Reading and Research Quarterly.*

Nelson, C. M., Leone, P. E., & Rutherford, R. B. (2004). Youth delinquency: Prevention as intervention. In *Handbook of Research in Emotional and Behavioral Disorders.* New York: Guilford Press.

Podboy, J. W., & Mallory, W.A. (1978). The diagnosis of specific learning disabilities in juvenile delinquent populations. *Federal Probation, 42*, 26-33.

Quinn, M. M., Rutherford, R. B., Leone, P. E., Osher, D. M., & Poirier, J. M. (2005). Youth with disabilities in juvenile corrections: A national survey. *Exceptional Children, 71*, 339-345.

Rincker, J. L., Reilly, T. F., & Braaten, S. (1990). Academic and intellectual characteristics of adolescent juvenile offenders. *Journal of Correctional Education, 41*, 124-131.

Rutherford, R. B., Nelson, C. M., & Wolford, B. I. (1985). Special education in the most restrictive environment: Correctional special education. *Journal of Special Education, 19*, 59-71.

Snowling, M. J., Adams, J. W., Bowyer-Crane, C., & Tobin, V. (2000). Levels of literacy among juvenile offenders: The incidence of specific reading difficulties. *Criminal Behaviour and Mental Health, 10*, 229-241.

Steinberg, L. (2005). *Adolescence* (7). Boston: McGraw-Hill.

U.S. Department of Education, Office of Special Education and Rehabilitative Services. (2003). 25th annual report to Congress on the implementation of the Individuals with Disabilities Education Act. Retrieved June 21, 2007 from http://www.ed.gov/about/reports/annual/osep/2003/25th-vol-1-sec-1.pdf.

Winters, C. A. (1997). Learning disabilities, crime, delinquency, and special education placement. *Adolescence, 32*, 451-463.

Woodcock, R. W., McGrew, K. S., & Mather, N. (2001). *Woodcock-Johnson III Tests of Achievement.* Itasca, IL: Riverside.

Biographical Sketches

PAMELA HARRIS is an assistant professor at Seattle Pacific University. She specializes in literacy-related issues for students with emotional and/or behavioral challenges.

HEATHER BALTODANO VAN NESS is the Project Coordinator of the University of Nevada, Las Vegas Center for Autism Spectrum Disorders. Her research has focused on transition and academic remediation for children and youth in alternative education settings.

AYDIN BAL is an assistant professor at the University of Wisconsin. He specializes in culturally and linguistically diverse students and English language learners with behavioral and academic difficulties; academic identity formation; traumatic stress studies; and sociocultural theories and international issues in special education.

KRISTINE JOLIVETTE is an associate professor at Georgia State University. Her research interests include functional behavior assessments (FBA), behavioral intervention plans (BIP), positive behavior supports (PBS), juvenile justice issues and the prevention of aggression and violence.

CANDACE MULCAHY is an assistant professor at Binghampton University in New York. She specializes in educating youth at risk for, and involved with the juvenile delinquency system and academic instruction for secondary students with emotional and behavioral disorders.