

Predicting the Academic Functioning of Youth Involved in Residential Care

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Abstract: Youth involved in residential care programs present with significant difficulties across behavioral and mental health domains. Although this is a group that is also at considerable risk for academic failure, very little research has been done to understand the academic functioning of this population. The current study sought to expand what is known about this population and examine factors that are predictive of their levels of academic functioning. Results from 208 youth indicated that at the time of entry into residential care youth were performing in low average ranges across academic areas. While several variables were identified as predictors for level of academic functioning (e.g., IQ, age at admission, race/ethnicity, special education identification, and gender), variables particularly relevant for youth in residential care programs (e.g., behavior, number of previous schools attended) did not serve as predictors. Implications for practice and future research are discussed.

Introduction

There are currently over 100,000 youth being served in residential group care settings across the United States (Child Welfare League of America [CWLA], 2005). Previous research examining the characteristics of this population has consistently indicated that these are youth who demonstrate numerous and significant risks in areas of behavior and mental health (Baker, Kurland, Curtis, Alexander, & Papa-Lentini, 2007; Connor, Doerfler, Toscano, Volungis, & Steingard, 2004; CWLA, 2005). Specifically, it has been found that the majority of youth experience clinical levels of both internalizing and externalizing problem behavior (Baker et al., 2007; CWLA, 2005) and as many as 80-93 % of youth are eligible for a DSM-IV diagnosis (CWLA, 2005; Lyons, Libman-Mintzer, Kisiel, & Shalcross, 1998). In addition, youth involved in residential care often have histories of negative behaviors that put them at risk for poor long-term outcomes (e.g., criminal activity, substance abuse, suicidal behavior; Baker et al., 2007; Connor et al., 2004; CWLA, 2005; Duppong Hurley et al., 2009).

While the available information about the mental health and behavioral status of youth involved in residential group care programs is continually increasing, there is remarkably little known about the academic functioning of this group (Trout, Hagaman, Casey, Reid, & Epstein, 2008). This is problematic as academic functioning has been found to be related to a host of other factors later in life. Specifically, youth who do not have at least basic levels of academic functioning are more likely than their same-aged peers to drop out of high

school, fail to attend postsecondary institutions, or have high levels of unemployment (Perie, Grigg, & Donahue, 2005). In addition, poor academic functioning has also been identified as a prominent risk factor for antisocial and criminal behavior in adolescence and adulthood (Ary et al., 1999; Burton & Marshall, 2005).

Studies examining academic functioning of youth across the United States have found that a large proportion of youth do not have even basic skills necessary for gainful employment. For example, the 2003 National Assessment of Adult Literacy (Kutner, Greenberg, Jim, & Paulsen, 2006) found that nearly one out of seven adults had mastered only basic literacy skills such as identifying key information in a short paragraph, and Perie et al. (2005) report that the level of math required to work at an entry-level job as a production assistant in a factory has already reached a point where roughly half of high school graduates are not qualified. Given the high numbers of youth in the general population who do not have at least minimal academic skills, it is particularly important to identify the levels of academic functioning for at-risk groups such as youth in residential care. Factors such as frequent moves or school changes prior to entering residential care may place these youth at a greater risk for falling behind in school or may impede the special education identification process for those who need it (Courtney, Roderick, Smithgall, Gladden, & Nagaok, 2004; Malmgren & Meisel, 2002).

In order to identify the academic functioning of youth involved in residential care, we examined the literature base and conducted a systematic review of previous research (Trout et al., 2008). The review specifically sought to identify the academic

status of youth who were involved in out-of-home care placements by examining research conducted on this topic over the past 60 years. Findings highlighted that very little research has been conducted in regards to the academic functioning of these youth. In addition, several problems were identified with the research that had been conducted. Specifically, findings were not generalizable due to lack of clear definitions of content areas (e.g., general label of “math” vs. specific areas such as calculation, fluency, applied problems) and use of measures of achievement that were not standardized (e.g., teacher ratings, school grades). Despite these limitations, the overall findings indicated that teachers reported youth involved in residential care programs to be academically at risk, and to perform below grade level and in low-to-low-average ranges across academic areas (Blair, 1992; Evans, 2004; Jones & Landsverk, 2006).

While some general conclusions could be drawn from the review of the literature, more questions were generated than were answered. Therefore, in order to expand what is known about the academic functioning of youth involved in out-of-home care and to address some of the limitations identified in previous research (e.g., unclear subject areas, lack of standardized measurement), we conducted a study examining the academic functioning of youth at entry to a residential group care program (Trout et al., 2008). At the time of entry, 127 youth completed the Woodcock Johnson Test of Academic Achievement, 3rd Edition (WJ III; Woodcock, McGrew, & Mather, 2001). The results of that study verified some of the findings of earlier studies, that youth involved in residential care had, on average, low levels of academic functioning using a widely-accepted, standardized measure of academic achievement. However, it also highlighted the fact that these youth were a very heterogeneous population. Specifically, we found that scores on the WJ III ranged from “low-average and below” (< 89) to “high average and above” (> 111). This would suggest that youth involved in residential care may require various types of academic programming, ranging from remedial education to access to gifted and talented programs, and that academic evaluation to select the appropriate type of programming is necessary.

Due to the heterogeneity of youth entering residential care programs, the ability to predict which youth are likely to have low levels of academic functioning using some key variables would be valuable to residential care providers who may work with a large number of youth who often enter care at multiple points within the school year. Identification of appropriate services and programs hinges on the ability to distinguish between youth who have high levels of academic functioning versus those who have low levels (Eckert, 2005). Previous research has indicated that academic functioning can be predicted by a variety of factors such as maternal education level, access to an enriched home environment, prior academic challenges, ethnicity, gender, discipline records, literacy rate, attendance, mobility rate, and involvement in extracurricular activities (Davis-Kean, 2005; Halle, Kurtz-Costes, & Mahoney, 1997; Magnuson, 2007; Steinberg, Lamborn, Dornbusch, & Darling, 1992). While some of these factors may be difficult to obtain for youth who may have had multiple placements (e.g., attendance, involvement with extracurricular activities) or who have limited involvement with family members (e.g., maternal education level), some of these variables are key ones that are routinely collected at the time of intake and may be useful for identifying youth at risk for low levels of academic functioning.

Therefore, the purpose of the present study was to expand what is known about the academic functioning of youth at their time of entry into residential care. Specifically, we sought to continue our previous study in order to gain a large enough sample to answer some more complex questions. The primary goal was to go beyond basic descriptive information and to identify variables commonly available to residential care staff at the time of entry that may be predictive of academic functioning. However, in order to provide a context and more detailed information on the sample, results are also presented that describe the demographics of these youth at their time of entry into residential care and provide descriptive information about their level of functioning on a standardized measure of academic achievement.

Method

Participants

Two hundred and eight youth admitted to Boys Town (BT) Home Campus residential group care program in Omaha, Nebraska, between September 2006 and May 2008, participated in this study. All youth entering BT during this time period were recruited to participate, 12 declined.

Data Sources

Data were collected from two sources: youth files created at admission to BT through interviews with the youth’s parent/guardian (admission procedures to follow), and admission data completed following the youth’s orientation to the BT program. For organizational purposes, information is divided and presented in three fields: demographic, academic, and behavior.

Demographics. Data on demographic characteristics were collected from admission files collected when youth entered BT. Variables included: (a) age at admission, (b) gender, (c) race/ethnicity, (d) IQ, (e) medication status, (f) age at first placement, (g) special education status, (h) number of previous schools attended before BT, and (i) placement status immediately before coming to BT using the Restrictiveness of Living Environment Scales (ROLES; Hawkins, Almeida, Fabry, & Reitz, 1992). The ROLES identifies 25 placement categories that include highly restrictive (e.g., jail, state mental hospital), medical (e.g., inpatient drug-alcohol rehabilitation centers, medical hospitals), shelter and foster care (e.g., group emergency shelter, specialized foster care), supervised living alone or with a family friend or relative, family home (e.g., home of natural parents), and independent living settings (e.g., living independently by self or with a roommate). Each category is assigned a numerical rating (i.e., 1 = jail to 25 = independent living by self) indicating level of restrictiveness. Lower ratings mean more restrictive placement categories. The ROLES is a widely used measure that has begun to show promise as being psychometrically sound with adequate levels of reliability (Hawkins, et al., 1992).

Academic. Academic achievement was measured at admission using the WJ III (Woodcock et al., 2001). The WJ III is a widely used, psychometrically sound, and norm-referenced assessment designed to individually assess academic achievement of persons between the ages of 2 and 99. For the purpose of this study, seven subtests were administered: (a) Reading Fluency, (b) Calculation, (c) Spelling, (d) Writing Fluency, (e) Reading Comprehension, (f) Applied Problems,

and (g) Academic Knowledge. These subtests were selected to go beyond assessing basic reading and math skills, and were combined to create a composite score indicating overall academic ability. The reliability coefficients for the seven administered subtests of the Woodcock Johnson range from .77 to .94.

Behavior. Data on youth behavior were collected from the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001) completed by youth, parents, or guardians when youth were admitted to BT. The CBCL is a 120-item checklist that assesses the competencies and problem behaviors of children and youth between the ages of 4 to 18. The CBCL provides a total problem behavior score, two total score scales for internalizing and externalizing behaviors, and eight specific syndrome scores (i.e., anxious/depressed, withdrawn/depressed, somatic complaints, social problems, thought problems, attention problems, rule-breaking behavior, and aggression). Assessments of the psychometrics of the CBCL have found it to have satisfactory levels of validity and reliability, with coefficients ranging from .39 to .96 (Achenbach & Rescorla, 2001).

Procedure

Prior to data collection, all procedures were approved by the internal review boards (IRBs) at both the University of Nebraska-Lincoln and BT. Data were collected at two points in time. First, at the time of admission, BT admission staff interviewed youth and their caregivers using a standard procedure. During the interview, questions were asked about the youth's previous out-of-home placements, physical and mental health status, and basic demographic information to create a youth and family history. At this time, parents or caregivers were asked to complete the Child Behavior Checklist (CBCL). These three measures were combined to create a youth file.

Second, following the admission interview, youth were referred to one of five graduate student data collectors for academic assessment. Each student was informed of the purpose of the study, allowed to ask questions, and asked to sign an assent form prior to assessment. Once assent was obtained, each student was individually administered the seven subtests of the WJ III. Administration time varied in length from 45 minutes to 2 hours depending on the ability and persistence of the student.

Training

Each of the persons responsible for data collection completed a standardized training procedure prior to collecting data. For organizational purposes, the training procedures for the collection of the admissions data and the WJ III are presented separately.

Admission data. Training for BT admission staff was a four-step process. First, admission staff were required to complete a weeklong training seminar that presented information about the BT program and issues regarding youth and family confidentiality. Second, staff completed a training seminar where specific admission procedures were presented. Third, intake staff began a 3-week shadowing program with experienced staff to observe admission data collection procedures. Finally, once the job-shadowing program was complete, both new and experienced staff collected data for the same sets of youth and families. Data collection was independent and continued until a 90 % level of agreement was consistently obtained. This phase lasted approximately 30 to 90 days.

Academics. A two-step training process was used to train the five graduate student data collectors. First, to collect academic data, the student data collectors completed a weeklong training seminar that discussed participant confidentiality, data collection procedures, and administration and scoring of the WJ III. At this time, all data collection procedures were modeled by experienced data collectors. Second, once training was complete, the experienced data collectors observed while student data collectors administered and scored the WJ III in practice situations. All data collectors were required to meet 90 % fidelity of administration and scoring prior to administering any assessment to youth at BT. In addition, every three months during data collection, an evaluator familiar with testing and scoring procedures conducted a follow-up fidelity check to ensure that all data collectors remained above 90 %. Mean fidelity scores for the three fidelity checks were 96 %, 92 %, and 94 %, respectively.

Data Analysis

Data were analyzed in three phases. First, descriptive analyses were conducted to provide a summary of the demographic characteristics of students who participated in this study. Second, data were cleaned to ensure that outliers and/or skewness were identified and appropriate transformations were conducted (e.g., Winsorizing). In the third phase, a standard multiple regression analysis was conducted. The analysis used the WJ III scores as the criterion variable and the following variables as predictors: age, gender, ethnicity, IQ, ward-of-state status, age at first placement, special education status, number of schools attended before BT, medication status, and internalizing and externalizing CBCL scores. These variables were selected because they are ones that are commonly collected for youth at their time of entry into residential care (Baker, Wulczun, & Dale, 2005; Handwerk et al., 2006). Once the multiple regression analysis was completed (e.g., Cook's Distance, Standardized DFFit, and Standardized DfBeta), additional analyses were also conducted to assess for influential cases.

Results Demographics

Of the 208 youth who agreed to participate in the study, 40.4 % were girls ($n = 84$). Youth were predominantly Caucasian (50.0 %, $n = 104$), followed by African American (47, $n = 22.6$ %), two or more races (22, $n = 10.6$ %), Hispanic (7.7 %, $n = 16$), or other (e.g., Native American, Asian; 9.2 %, $n = 19$). On average, youth were 15.5 ($SD = 1.5$) years old with a range from 10.9 to 18.8. They were at an average grade level of 9.3 ($SD = 1.6$) and had been to an average of 5 schools ($SD = 2.1$) prior to BT. The majority of youth came from a home setting (e.g., family home, home of a relative; 38.5 %, $n = 80$) or from some type of out of home care (e.g., group home, foster care; 29.3 %, $n = 61$). Only 22.6 % ($n = 47$) came from a detention or correctional setting. However, the average scores on the Child Behavior Checklist indicated borderline levels of Internalizing behavior ($M = 60.0$, $SD = 10.0$), and clinical levels of Externalizing ($M = 67.8$, $SD = 9.3$) and Total Problem behaviors ($M = 64.8$, $SD = 9.3$). Overall, the youth scored within the average range on measures of IQ ($M = 95.5$, $SD = 12.1$) and 29.3 % ($n = 61$) had a special education identification.

Academic Functioning

Table 1 presents the means, standard deviations, and score distributions for the WJ III. Mean scores for each of the seven administered subtests and the overall composite score were below the means for the normative group ($M = 100$, $SD = 15$). Youth scored lowest among areas of academic knowledge ($M = 86.5$, $SD = 12.6$), applied problems ($M = 90.2$, $SD = 9.8$), and passage comprehension ($M = 90.2$, $SD = 11.7$), with roughly half of youth scores (60.6% for academic knowledge, 47.1% for applied problems, 44.2% for passage comprehension) in the “low average and below” range (i.e., > 89). Students had the highest scores in the spelling subtest, with over half of students (73.1%) scoring in the average range (i.e., 90 to 110) or above.

Table 1

Academic Functioning as Measured by the Woodcock Johnson Test of Academic Achievement, 3rd Edition

WJ III Subscale	M (SD)	Range
Reading Fluency	91.43 (13.62)	60 - 145
Calculation	91.02 (12.74)	57 - 123
Spelling	97.74 (14.38)	50 - 133
Writing Fluency	94.16 (15.35)	51 - 141
Passage Comprehension	90.22 (11.73)	42 - 130
Applied Problems	90.19 (9.84)	66 - 139
Academic Knowledge	86.54 (12.63)	52 - 126
Overall Academic Composite Score	91.61 (10.03)	61.86 - 126.29

Predicting Academic Functioning

A standard multiple regression analysis was conducted to determine if youth variables readily available at the time of admission to residential care (i.e., age, gender, ethnicity, IQ, ROLES at admission, age at first placement, special education status, number of schools attended before BT, medication status, and internalizing and externalizing CBCL scores) could be used to build a model that would be predictive of academic functioning (i.e., WJ III scores) at the time of intake and if so, which variables would provide significant, unique contributions to that model.

Data cleaning led to transformations of the variables to reduce number of outliers. The majority of the variables used were already normally distributed, however, Winsorizing (using 25% and 75% Tukey hinges) of 1-4 data points per variable was used for age at admission, number of schools attended, IQ, and externalizing behavior.

In addition, following the multiple regression analysis, analyses for influential cases indicated the presence of one influential case. As a result, that case was removed and the analyses were rerun.

Findings from the rerun multiple regression analysis indicated that the model was significant for predicting WJ III scores at intake, $R^2 = .537$, $F(10, 98) = 11.35$, $p < .001$, accounting for almost 54% of the variance in the WJ III scores. In this model, IQ, age at admission, race, special education identification, and gender provided unique and significant contributions to the model (see Table 2). Examination of the correlations and beta weights indicated that age at admission served as a suppressor variable, with its relationship to WJ III scores at admission being mediated by the relationship between IQ and special education identification.

Table 2

Predicting Academic Achievement Using Variables Available at Entry to Residential Care

Variables	Correlation With WJ III Scores at Intake	Beta
Gender	0.24***	0.20**
Ethnicity	0.35***	0.26***
Age	-0.07	-0.19**
IQ	0.64***	0.54***
ROLES at Admission	-0.02	-0.07
Special Education Identification	-0.25***	-0.23**
Number of Schools Attended Before BT	0.13*	0.10
Medication Status	0.18**	0.01
CBCL Internalizing Behavior	0.14*	0.10
CBCL Externalizing Behavior	-0.02	-0.12

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

Discussion Demographics

Based on the demographic information available for the youth, it appears as though they are a group with a high level of risk. Specifically, they have experienced multiple school placements, have a

higher level of special education identifications than would typically be found in the general population (U.S. Department of Education, 2007), are coming from placements other than the family home (with almost one quarter coming from placements with high levels of restrictiveness, e.g., correctional centers), and have clinical levels of problem behavior. These findings are consistent with previous studies that have examined the characteristics of youth involved in residential care (Connor et al., 2004; Duppong Hurley et al., 2009).

Academic Functioning

Although very little work has been done examining the academic functioning of youth involved in residential care, the current findings are consistent with previous studies and extend the findings of our previous study. Specifically, it was found that these youth performed below average on the overall score of academic functioning and across academic areas. Of particular concern were low scores in areas of basic academics that are required for more complex skills (e.g., reading fluency, calculation, writing fluency). According to Mastropieri et al. (2006), as students progress through school there is a greater expectation on independent learning. If students do not have basic skills, they cannot be expected to do well as academic demands become greater. This is evidenced as the areas of lowest performance were in those areas where more complex skills are needed (e.g., passage comprehension, applied problems, and academic knowledge). When taken together with findings that these youth have high levels of behavioral and mental health problems, low levels of academic functioning place them at an even greater risk for poor long-term adult outcomes across a variety of domains (e.g., educational attainment, employment, interpersonal relationships).

Predicting Academic Functioning

The results of this study indicate that variables commonly obtained during intake can be used to predict the level of academic functioning for youth in residential care programs. It was found that at the time of entry, IQ, gender, ethnicity, special education status, and age all provided unique contributions to the multiple regression model. Specifically, it was found that males were more likely to have lower levels of academic functioning, as were youth with lower IQs, youth with special education identifications, minority youth, and youth who entered residential care at an older age.

With the exception of gender, these findings are consistent with those of previous studies. In regards to gender, several studies have found that there is not a relationship between gender and academic achievement. Although it is a commonly held assumption that males do better in academics than females, particularly in areas of science and math, this is not actually the case (Geist & King, 2008). Similar levels of performance have been found between males and females for both typically developing youth (Huffman & Spear, 2000) and those with behavioral disorders (Nelson, Benner, Lane, & Smith, 2004). These findings have been consistent across several decades (Geist & King, 2008). Therefore, future research is warranted in an attempt to replicate the current findings. Other research examining gender differences at the time of entry into residential care has found that females tend to have a higher number of risk factors than males (e.g., multiple family problems, out-of-home placements, eating disorders, experiences with physical and/or sexual abuse; Connor et al.,

2004; Handwerk et al., 2006). Therefore, findings that females are still likely to have higher levels of academic functioning than males is surprising. Future research that attempts to identify key school-related differences between males and females (e.g., involvement in extracurricular activities, discipline records, attendance) involved in residential care may be useful for determining why these differences in academic functioning are present.

All of the other variables that provided unique, significant contributions to the multiple regression model influenced academic achievement in ways that were consistent with previous research. Specifically, previous research has found medium to high positive correlations between IQ and scores of academic achievement as measured by the WJ III. This was found to be true for both typically developing youth (McGrew & Woodcock, 1991) and those with behavioral disorders (Lavin, 1996; Naglieri & Lauder, 2006). As such it is not surprising that for youth in the current study, IQ was a predictor of academic achievement. Although other variables were also predictive of WJ III scores, IQ had the largest beta weight in the multiple regression model, indicating that it contributed more to the explained variance than did any of the other variables. Therefore, IQ is a particularly important variable to consider when attempting to predict the academic functioning of youth involved in residential care.

Previous research examining the relationship between academic functioning and special education status reported similar findings. Research has indicated that youth with a variety of disabilities (e.g., learning disabilities, behavior disorders) tend to perform below average on measures of academic functioning (Lane, Barton-Arwood, Nelson, & Wheby, 2008; Walker & Nabuzoka, 2007). For example, Nelson et al. (2004) reported that students with behavioral disorders performed below average across multiple areas of academic functioning (e.g., reading, math, science). This finding was one that is consistent across studies examining academic functioning of youth with disabilities (DeShazo Barry, Lyman, & Grofer, 2002; Walker & Nabuzoka, 2007). Thus, while IQ may play an important role in the prediction of academic functioning, other variables such as special education status are also relevant to consider.

Youth ethnicity is also an important factor to consider, as previous research has indicated that minority youth tend to perform lower on tests of academic achievement than do Caucasian youth (Morgan & Mehta, 2004; Roach, 2004). Ethnicity, like special education status, has been reported to be related to academic functioning across subject areas. Although minority youth are more likely to be identified for special education services (Hosterman, DuPaul, & Jitendra, 2005), the contribution of ethnicity for the current model was independent of the influence of special education status. Although reasons for this are unclear, it may be related to the quality of schools youth attended prior to entering residential care. In one study by Fassold (2000), it was reported that schools attended by predominantly Caucasian students were rated as superior in quality than schools attended by predominantly minority students. It was also reported that schools attended by predominantly Caucasian students have improved in quality at a much greater rate than have schools attended by predominantly minority students. While additional research is needed to identify the specific reasons for academic discrepancies across ethnic groups, in the current study ethnicity did serve as a unique predictor to the model.

The final variable that contributed to the multiple regression model was age at admission. Within the model, this variable provided a suppressor effect in that it did not correlate significantly with WJ III scores, yet it provided a unique, significant contribution to the model. Further examination of the data revealed that age at admission has a role in the prediction of academic achievement, but that the prediction is mediated by both IQ and special education status. Although further research is needed to identify the exact relationship between IQ, special education status, age at admission, and how this relationship influences scores of academic achievement, this finding is consistent with previous research that has indicated that for youth who have a special education identification (e.g., behavior disorder, learning disability), younger students perform more like their typically-developing peers than do older students (Mastropieri et al., 2006; Nelson et al., 2004). The reasons for this may vary, but as youth get older and progress through school, the demands that are placed upon them increase (Mastropieri et al., 2006). Specifically, youth are required to do much more learning on their own by obtaining information from textbooks (Mastropieri et al., 2006) and they have to engage in more complex thinking (Mastropieri, Scruggs, Boon, & Carter, 2001).

Due to similar relationships that have been identified in previous research, it is not surprising that gender, IQ, special education identification, ethnicity, and age at admission were predictive of academic functioning in the current study. What was surprising, however, was that other variables that are particularly relevant for youth involved in residential care did not provide a unique predictive contribution. Specifically, it would be expected that youth who experienced early placements, who had multiple school placements, who had high levels of problem behavior, and/or who were taking medications for psychosocial problems would be at greater risk for lower levels of academic achievement than other youth who had not experienced these factors. Previous research has indicated that each of these variables have been associated with lower levels of academic achievement (Haveman, Wolfe, & Spaulding, 1991; Malmgren & Gagnon, 2005; Mantzicopoulos & Knuston, 2000; Undheim & Sund, 2008). Why these variables did not provide a unique contribution in the current study cannot be determined at this point; however, additional research to examine this issue is warranted. It is possible that differing patterns of behaviors, medication use, and academic history affect level of functioning in different ways and that more detailed examinations of these factors will be necessary to identify what these patterns may be.

Limitations

There are several limitations of the current study that should be noted. First, all data were obtained for youth at entry to one residential program in the Midwest. Youth who enter this program come from across the United States; however, it is possible that the characteristics of the youth entering this program are different from those who are involved with other residential care programs. Additional research with youth from other residential care programs would be beneficial for determining the generalizability of these results. Second, the demographic information reported in this study was obtained using archived data from admission files. While this ensured that variables used as predictors in the multiple regression analysis were those that are routinely collected during admissions procedures at BT, it remains

unclear as to whether or not these same variables are also routinely collected at other residential care programs. In addition, the limited number of variables available for collection did restrict the description that could be provided for these youth and the variables that could be used as predictors. For example, the CBCL is the behavior measure that is used by BT clinical staff and, therefore, was the only measure of behavior that could be used as a predictor in the current study. Additional research is needed to identify the specific key domains for which data are collected by residential care programs across the United States and how different variables within these domains may differentially influence prediction of academic achievement.

Future Research

In addition to studies that address the current limitations, future research should focus on three areas. First, the current study should be replicated with a larger sample size that is representative of multiple residential facilities. Doing so would allow for additional and more complicated analyses to be conducted that are more representative of the population as a whole. If a larger sample were obtained, academic functioning could not only be compared across groups (e.g., males versus females, younger versus older youth), but also predictors for these specific groups could be identified. It is possible that variables that predict academic functioning for one group (e.g., males) may be different than for another group (e.g., females). Second, research needs to identify other areas of risk for youth involved in residential care programs. Specifically, youth entering residential care programs may be at risk for language deficits, poor functional academic skills, and/or poor use of learning strategies. Assessment across these areas and identification of predictors for youth who perform in below average levels will help to identify those youth who have additional areas of need. Finally, information on the academic functioning of youth needs to be monitored across time (i.e., at entry, during care, and at departure) to identify any gains that are made. It is important to understand if youth make academic gains while in care, in order to evaluate the programming that is in place. Also, by identifying predictors of gain (e.g., study skills, attendance, homework completion), a better understanding may emerge of what factors influence academic growth for this population.

Implications and Conclusion

The findings of this study are largely consistent with those from previous research and indicate that youth entering residential care programs do so with a variety of risk factors and are likely to also present with low levels of academic functioning. As a result, it is important for staff of residential care programs to be aware of potential problems in academics in addition to the more commonly addressed areas of behavior and mental health. Moreover, due to the heterogeneity of functioning levels for youth entering residential care, knowledge of factors that may be predictive of lower levels of academic functioning will be important for programs where assessment is difficult or not possible. While there are many factors that will play a role in how well youth perform academically (e.g., maternal education level, enrichment of the home environment, attendance in classes, homework completion), knowledge of some key predictive variables, commonly collected at intake, may help staff in identifying youth who may be at a level of risk.

REFERENCES

- Achenbach, T. M., & Rescorla, L. A. (2001). *Manual for ASEBA school-age forms & profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth, & Families.
- Ary, D. V., Duncan, T. E., Biglan, A., Metzler, C. W., Noell, J. W., & Smolkowski, K. (1999). Development of adolescent problem behavior. *Journal of Abnormal Child Psychology*, 27, 141-150.
- Baker, A. J. L., Kurland, D., Curtis, P., Alexander, G., & Papa-Lentini, C. (2007). Mental health and behavioral problems of youth in the child welfare system: Residential treatment centers compared to therapeutic foster care in the Odyssey Project population. *Child Welfare*, 86, 97-123.
- Baker, A. J. L., Wulczyn, F., & Dale, N. (2005). Covariates of length of stay in residential care. *Child Welfare Journal*, 84, 363-386.
- Blair, R. (1992). Applications of the life-impact curriculum. *Journal of Emotional and Behavioral Problems*, 1, 16-21.
- Burton, J. M., & Marshall, L. A. (2005). Protective factors for youth considered at risk of criminal behavior. Does participation in extracurricular activities help? *Criminal Behavior and Mental Health*, 15, 46-64.
- Child Welfare League of America. (2005). *The Odyssey Project: A descriptive and prospective study of children and youth in residential group care and therapeutic foster care*. Washington, DC: Author.
- Connor, D. F., Doerfler, L. A., Toscano, P. F., Volungis, A. M., & Steingard, R. J. (2004). Characteristics of children and adolescents admitted to a residential treatment center. *Journal of Child and Family Studies*, 13, 497-510.
- Courtney, M. E., Roderick, M., Smithgall, C., Gladden, R. M., & Nagaok, J. (2004). *The educational status of foster children*. Chicago, IL: Chapin Hall Center for Children.
- Davis-Kean, P. E. (2005). The influence of parent education and family income on child achievement: The role of parental expectations and the home environment. *Journal of Family Psychology*, 19, 294-304.
- DeShazo Barry, T., Lyman, R. D., & Grofer, L. (2002). Academic underachievement and attention-deficit/hyperactivity disorder: The negative impact of symptom severity on school performance. *Journal of School Psychology*, 40, 259-283.
- Duppong Hurley, K., Trout, A., Chmelka, M. B., Burns, B., Epstein, M., Thompson, R., & Daly, D. (2009). Are the mental health needs of youth admitted to residential group care changing? Comparing mental health status at admission for youth in 1995 and 2004. *Journal of Emotional and Behavioral Disorders*, 17, 164-176.
- Eckert, T. L. (2005). Improving children's educational outcomes by advancing assessment and intervention practices: An overview of the special series. *School Psychology Review*, 34, 4-8.
- Evans, L. D. (2004). Academic achievement of students in foster care: Impeded or improved? *Psychology in the Schools*, 41, 527-535.
- Fassold, M. A. J. (2000). Disparate impact analyses of TAAAS scores and school quality. *Hispanic Journal of Behavioral Sciences*, 22, 460-480.
- Geist, E. A., & King, M. (2008). Different, not better: Gender differences in mathematical learning and achievement. *Journal of Instructional Psychology*, 35, 43-52.
- Halle, T. G., Kurtz-Costes, B., & Mahoney, J. L. (1997). Family influences on school achievement in low-income African American children. *Journal of Educational Research*, 89, 527-537.
- Handwerk, M. L., Clopton, K., Huefner, J. C., Smith, G. L., Hoff, K. E., & Lucas, C. P. (2006). Gender Differences in Adolescents in Residential Treatment. *American Journal of Orthopsychiatry*, 76, 312-324.
- Haveman, R., Wolfe, B., & Spaulding, J. (1991). Childhood events and circumstances influencing high school completion. *Demography*, 28, 131-157.
- Hawkins, R. P., Almeida, M. C., Fabry, B., & Reitz, A. L. (1992). A scale to measure restrictiveness of living environments for troubled children and youths. *Hospital & Community Psychiatry*, 43, 54-58.
- Hosterman, S. J., DuPaul, G. J., & Jitendra, A. K. (2005). Teacher ratings of ADHD symptoms in ethnic minority students: Bias or behavioral difference? *School Psychology Quarterly*, 23, 418-435.
- Huffman, L. R., & Spear, P. W. (2000). Academic performance among at-risk children: The role of developmentally appropriate practices. *Early Childhood Research Quarterly*, 15, 167-184.
- Jones, L., & Landsverk, J. (2006). Residential education: Examining a new approach for improving outcomes for foster youth. *Children and Youth Services Review*, 9, 81-100.
- Kutner, M., Greenberg, E., Jin, Y., & Paulsen, C. (2006). *The health literacy of America's adults: Results from the 2003 National Assessment of Adult Literacy* (NCES 2006-483). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Lane, K. L., Barton-Arwood, S. M., Nelson, J. R., & Wheby, J. (2008). Academic performance of students with emotional and behavioral disorders served in self-contained settings. *Journal of Behavioral Education*, 17, 43-62.
- Lavin, C. (1996). Scores on the Weschler Intelligence Scale for Children – Third edition and Woodcock-Johnson Test of Academic Achievement – Revised for a sample of children with emotional handicaps. *Psychological Reports*, 79, 1291-1295.
- Lyons, J. S., Libman-Mintzer, L. N., Kisiel, C. L., & Shalcross, H. (1998). Understanding the mental health needs of children and adolescents in residential treatment. *Research and Practice*, 29, 582-587.
- Magnuson, K. (2007). Maternal education and children's academic achievement during middle childhood. *Developmental Psychology*, 43, 1497-1512.
- Malmgren, K. W., & Gagnon, J. C. (2005). School mobility and students with Emotional Disturbance. *Journal of Child and Family Studies*, 14, 299-312.
- Malmgren, K. W., & Meisel, S. M. (2002). Characteristics and service trajectories of youth with serious emotional disturbance in multiple service systems. *Journal of Child and Family Studies*, 11, 217-229.
- Mantzicopoulos, P., & Knuston, D. J. (2000). Head Start children: School mobility and achievement in the early grades. *The Journal of Educational Research*, 93, 305-311.
- Mastropieri, M. A., Scruggs, T. E., Boon, R., & Carter, K. B. (2001). Correlates of inquiry learning in science: Constructing concepts of density and buoyancy. *Remedial and Special Education*, 22, 130-137.

- Mastropieri, M. A., Scruggs, T. E., Norlan, J. J., Berkeley, S., McDuffie, K., Holloran Tornquist, E., & Connors, N. (2006). Differentiated curriculum enhancement in inclusive middle school science: Effects on classroom and high-stakes tests. *The Journal of Special Education, 40*, 130-137.
- McGrew, K. S., & Woodcock, R. W. (1991). *Woodcock-Johnson III technical manual*. Itasca, IL: Riverside Publishing.
- Morgan, S. L., & Mehta, J. D. (2004). Beyond the laboratory: Evaluating the survey evidence for the disidentification explanation of the Black-White differences in achievement. *Sociology in Education, 77*, 82-101.
- Naglieri, J. A., & Lauder, B. Y. (2006). WISC-III and CAS: Which correlates higher with achievement for a clinical sample? *School Psychology Quarterly, 21*, 62-76.
- Nelson, J. R., Benner, G., Lane, K., & Smith, B. W. (2004). Academic achievement of K-12 students with emotional and behavioral disorders. *Exceptional Children, 71*, 59-73.
- Perie, M., Grigg, W., & Donahue, P. (2005). The nation's report card: Reading 2005 (NCES 2006-451). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.
- Roach, R. (2004). The great divide. *Black issues in Higher Education, 21*, 22-25.
- Steinberg, L., Lamborn, S. D., Dornbusch, S. M., & Darling, N. (1992). Impact of parenting practices on adolescent achievement: Authoritative parenting, school involvement, & encouragement to succeed. *Child Development, 63*, 1266-1281.
- Trout, A. L., Hagaman, J. L., Casey, K., Reid, R., & Epstein, M. H. (2008). The academic status of children in out-of-home care: A review of the literature. *Children and Youth Services Review, 30*, 359-374.
- Undheim, A. M., & Sund, A. M. (2008). Psychosocial factors and reading difficulties: Students with reading difficulties drawn from a representative population sample. *Journal of Psychology, 49*, 377-384.
- U.S. Department of Education. (2007). *2006 Annual report to Congress on the Individuals with Disabilities Education Act*. Washington, DC: Author.
- Walker, A., & Nabuzoka, D. (2007). Academic achievement and social functioning of children with and without learning difficulties. *Educational Psychology, 27*, 635-654.
- Woodcock, R. W., McGrew, K. S., & Mather, N. (2001). *Woodcock-Johnson III*. Itasca, IL: Riverside Publishing.

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