

The Journal

OF AT-RISK ISSUES

National Dropout Prevention Center/Network
College of Health, Education, and Human Development
Clemson University, 209 Martin Street, Clemson, SC 29631-1555

www.dropoutprevention.org

Volume 14
Number 1



A Publication of the National Dropout Prevention Center/Network

The Journal OF AT-RISK ISSUES

Editor

Rebecca A. Robles-Piña
Sam Houston State University

Associate Editor

Joseph B. Ryan
Clemson University

Editorial Associate

Marty Duckenfield
National Dropout Prevention
Center/Network

Editorial Assistants

Merry "Peg" Chrestman
National Dropout Prevention
Center/Network

Melissa Hawkins
National Dropout Prevention
Center/Network

The Journal of At-Risk Issues

(ISSN1098-1608) is published bi-annually by the National Dropout Prevention Center/Network, College of Health, Education, and Human Development at Clemson University, 209 Martin Street, Clemson, SC 29631-1555, Telephone 864.656.2599, Fax 864.656.0136, www.dropoutprevention.org

Editorial Responsibility

Opinions expressed in *The Journal of At-Risk Issues* do not necessarily reflect those of the National Dropout Prevention Center/Network or the Editors. Authors bear the responsibility for accuracy of content in their articles.

The Journal of At-Risk Issues

Editor

Rebecca A. Robles-Piña
Sam Houston State University

Associate Editor

Joseph B. Ryan
Clemson University

Founding Editor

Ann Reitzammer
Huntingdon College (Ret.)

Gregory Benner

University of Washington
Patricia Cloud Duttweiler
San Antonio, Texas

Sandy Harris

Lamar University

Gregory Hickman

Arizona State University

Cynthia Loeffler

Sam Houston State University

Paul Mooney

Louisiana State University

Philip Nordness

Western Illinois University

Corey Pierce

University of Northern Colorado

Karen Smith

Sam Houston State University

Sylvia Taubé

Sam Houston State University

Alexandra Trout

University of Nebraska-Lincoln

Brad Uhing

Wichita State University

Patricia Van Velsor

San Francisco State University

Dalun Zhang

Texas A&M University

SPECIFICATIONS FOR MANUSCRIPT SUBMISSION

Focus:

Manuscripts should be original works not previously published nor concurrently submitted for publication to other journals. Manuscripts should be written clearly and concisely for a diverse audience, especially educational professionals in K-12 and higher education. Topics appropriate for *The Journal of At-Risk Issues* include, but are not limited to, research and practice, dropout prevention strategies, school restructuring, social and cultural reform, family issues, tracking, youth in at-risk situations, literacy, school violence, alternative education, cooperative learning, learning styles, community involvement in education, and dropout recovery.

Research reports describe original studies that have applied applications. Group designs, single-subject designs, qualitative methods, mixed methods design, and other appropriate strategies are welcome. Review articles provide qualitative and/or quantitative syntheses of published and unpublished research and other information

that yields important perspectives about at-risk populations. Such articles should stress applied implications.

Format:

Manuscripts should follow the guidelines of the *Publication Manual of the American Psychological Association* (5th ed.). Manuscripts should not exceed 25 typed, double-spaced, consecutively numbered pages, including all cited references. Submitted manuscripts which do not follow APA referencing will be returned to the author without editorial review. Illustrative materials, including charts, tables, figures, etc., should be clearly labeled with a minimum of 1 and 1/2 inch margins.

Submission:

Submit electronically in Microsoft Word, including an abstract, and send to the editor at edu_rar@shsu.edu for editorial review. Manuscripts should also include a cover page with the following information: the full manuscript title; the author's full name, title, department, institution or

professional affiliation, return mailing address, email address, and telephone number; and the full names of coauthors with their titles, departments, institution or professional affiliations, mailing addresses, and email addresses. Do not include any identifying information in the text pages. All appropriate manuscripts will be submitted to a blind review by three reviewers. Manuscripts may be submitted at any time for review. If accepted, authors will be notified of publication. There is no publication fee.

Book Reviews:

Authors are encouraged to submit appropriate book reviews for publication consideration. Please include the following: an objective review of no more than five, double-spaced pages; full name of the book and author(s); and publisher including city, state, date of publication, ISBN number, and cost.

Submit Manuscripts to:

Dr. Rebecca A. Robles-Piña, Editor
edu_rar@shsu.edu

Table of Contents

Articles

- A Mixed Methods Investigation of Male Juvenile Delinquents' Attributions Toward Violence
Anthony J. Onwuegbuzie, Christine E. Daley, and Vicki L. Waytowich 1
- How a Neurologically Integrated Approach Which Teaches Sound-Symbol Correspondence and Legible Letter Formations Impacts At-Risk First Graders
Donita Massengill Shaw and Mary Lou Sundberg 13
- A Focus on Hope: Toward a More Comprehensive Theory of Academic Resiliency Among At-Risk Minority Students
Erik E. Morales..... 23
- Early Classification of Reading Performance in Children Identified or At Risk for Emotional and Behavioral Disorders: A Discriminant Analysis Using the Dynamic Indicators of Basic Early Literacy Skills (DIBELS)
Jorge E. Gonzalez, Kimberly J. Vannest, and Robert Reid..... 33

A Mixed Methods Investigation of Male Juvenile Delinquents' Attributions Toward Violence

Anthony J. Onwuegbuzie, Christine E. Daley, and Vicki L. Waytowich

Abstract: *In an attempt to understand why youth commit violent acts, Daley and Onwuegbuzie (2004) conducted a study wherein they found that juvenile offenders tend to commit violence attribution errors—defined as negative emotional responses to negative social interactions which then serve as antecedents to at-risk behaviors. The purpose of this mixed methods study was to replicate Daley and Onwuegbuzie's research by examining the causal attributions that male juvenile delinquents use for the violent behaviors of others, as well as the salient pieces of information they use in arriving at their attributions. Participants were 120 incarcerated male juvenile offenders from a correctional facility in a mid-southern state. A mixed methods analysis revealed that the juvenile offenders committed violence attribution errors approximately 53% of the time—identical to Daley and Onwuegbuzie's study. A phenomenological analysis revealed the following seven themes stemming from juveniles' reasons for causal attributions: self-control, violation of rights, provocation, irresponsibility, poor judgment, fate, and conflict resolution. An exploratory factor analysis revealed that these seven themes were represented by three meta-themes. Implications are discussed.*

Introduction

Although actual violent crime statistics for juveniles have decreased during recent years, youth violence rates continue to remain alarmingly high (Children's Bureau, 2004; Federal Bureau of Investigation, 2006; Federal Interagency Forum on Child and Family Statistics, 2005; National Center for Educational Statistics, 2004; Waytowich & Onwuegbuzie, 2007). In 2002, youth under the age of 18 represented an estimated 2.3 million arrests made by law enforcement agencies (Snyder, Puzanchera, & Kang, 2005). The predominance of juvenile offenses range from misdemeanors, such as throwing rocks (projecting deadly missiles), family fights (domestic battery), school fights (battery), petty theft, trespassing, and destruction of property; to felonies, such as auto theft and criminal acts of violence. The FBI's Uniform Crime Report, Violent Crime Index, identifies criminal acts of violence as homicides, forcible rapes, robberies, and assaults (Snyder et al., 2005). In 2002, 15% of all Violent Crime Index arrests involved juveniles, and for every 10 arrests for murder, one involved a youth under the age of 18 (Snyder et al., 2005). Furthermore, in 2003, more than 17% of youth nationwide carried a weapon to school, and more than 6% carried a gun (Center for Disease Control [CDC], 2004).

The importance of early intervention for preventing the onset of violent behavior is well recognized. Sensationalized incidents across the United States (e.g., Jonesboro, AR, and Littleton, CO) have given further cause for concern regarding profound changes in youth behaviors. There

is particular interest in identifying and addressing mediating factors through which risk may be transformed into behavior—for example, attitudes. The prevalence of violence, and the gap in research regarding youth's attitudes toward violence (Nichols & Good, 2004), represents a significant deficit that demands attention. This necessitates further exploration both of factors associated with at-risk behaviors (Herrenkohl, Hill, Chung, & Guo, 2003) and immutable antecedents of violent behavior, as well as permeable correlates of violence predictor variables (Daley & Onwuegbuzie, 2002/2003).

Despite considerable research on youthful aggression, few studies have examined the role of social cognitive factors—in particular, attributions—in placing children at risk for involvement in acts of violence. Additionally, from a methodological standpoint, these investigations typically have made no attempt to approximate experimental conditions by manipulation of an independent variable. This methodological flaw may have culminated in the difficulties experienced in predicting violent acts (Capaldi & Patterson, 1993; Nichols & Good, 2004; Schlesinger, 1983). However, recently, Daley and Onwuegbuzie (2004) investigated the role that attributions play among male juvenile delinquents. More specifically, these researchers examined male juvenile delinquents' causal attributions for others' behaviors, and the salient pieces of information utilized in arriving at their attributions.

According to Kelley (1973), attribution theory examines the information individuals utilize in making justifications for events that occur within their social and physical environments. Daley and Onwuegbuzie (2004) coined the term "violence at-

tribution errors” to define “errors that occur when an offender does not blame the perpetrator of a violent act (e.g., rape) but instead blames either the victim or the circumstance” (p. 551). Using a mixed method analysis, they found that the juvenile offenders committed violence attribution errors approximately 53 % of the time.

Daley and Onwuegbuzie (2004) recommended that their study be replicated in order to verify the reliability of their findings. Thus, the major purpose of the present research was to replicate their study. More specifically, in the current investigation, as in the study of Daley and Onwuegbuzie (2004), the researchers examined the inaccuracy of causal attributions (i.e., violence attribution errors) made by juveniles for others’ behaviors, and the salient pieces of information they utilize in arriving at their attributions (i.e., reasons for violence attributions). As in Daley and Onwuegbuzie’s (2004) research, another goal of the present inquiry was to develop a typology of reasons for violence attributions and to determine whether these reasons predict juvenile delinquents’ violence attribution errors.

Method

Participants

The sample of 120 male juvenile offenders was drawn from the population of juveniles incarcerated at a correctional facility located in a mid-southern state. Thus, the participants were very similar to the sample members in the study of Daley and Onwuegbuzie (2004), except that they were incarcerated at a correctional facility located in a southeastern state. These participants represented all of the available offenders incarcerated at that facility. The juvenile offenders were considered wards of the state; consequently, informed consent to participate in the study was inherent in institutional permission to conduct the research. Formal consent was granted by the Department of Juvenile Justice in the state where the study took place for both researchers to collect data. This sample, which comprised 20.0 % Caucasian-American and 80.0 % African-American boys, ranged in age from 12 to 18. In Daley and Onwuegbuzie’s (2004) investigation, the sample comprised 23.2 % Caucasian-American and 76.8 % African-American boys, who also ranged in age from 12 to 18 years. Thus, with the exception of geographic region, the present sample was very similar to Daley and Onwuegbuzie’s (2004) sample.

Instruments and Procedure

Participants were administered the Violence Attribution Survey (VAS) (Daley & Onwuegbuzie, 2004), a 12-item questionnaire designed to assess attributions made by the juveniles for the behavior of others involved in a variety of violent acts. Each item consists of a vignette, followed by three possible attributions (i.e., person, stimulus, and circumstance) presented in multiple-choice format, and an open-ended question asking the juveniles to provide their reasons for selecting the response that they did. These vignettes were written in such a way as to allow for the perceived plausibility of any one of the three possible attributions. Because the stimulus and circumstance responses represent attribution errors on the VAS, these two responses should be combined and contrasted to person attributions. That is, responses representing external attributions (i.e., stimulus and circumstance) should be compared to responses indicating dispositional attributions (i.e., person), such that external attributions are given a score of “1”

and dispositional attributions are given a score of 0. Responses to the 12 items of the VAS are summed to produce an index of violence attribution errors (range = 0 - 12), with high scores being indicative of persons who commit a high proportion of violence attribution errors. With regard to content-related validity, the VAS was reviewed by secondary school teachers who assessed the scale for face validity (i.e., the extent to which the VAS items appeared relevant, important, and interesting to the respondent); item validity (i.e., the extent to which the specific VAS items represent measurement in the intended content area of violence attributions); and sampling validity (i.e., the extent to which the full set of items sample the total content area of violence attributions). The VAS also was analyzed for readability using Grammatik 5 (Reference Software International, 1992). The scale was found to be appropriate for readers at a fifth-grade level. With regard to construct-related validity, a factor analysis conducted by the developers revealed a single factor, thereby justifying that total scale scores be used. Local norms for the VAS have been reported by the instrument developers. In particular, VAS scores from 0 to 3 represent low risk for violence attribution errors, scores from 4 to 6 represent moderate risk for violence attribution errors, and scores from 7 to 12 represent high risk for committing violence attribution errors. For the current inquiry, the score reliability, as measured by Cronbach’s alpha, for the VAS was .70 (95 % confidence interval [CI] = .61, .77). A sample item from the VAS appears in the appendix.

Analysis

Because the VAS generated both quantitative information (i.e., multiple-choice responses) and qualitative responses (i.e., reasons for choosing responses), a mixed methods analysis was undertaken to analyze the data. This analysis involved the use of qualitative and quantitative data-analytic techniques in a complementary manner (cf. Tashakkori & Teddlie, 2003).

Onwuegbuzie and Teddlie (2003) identified the following seven steps of the mixed methods data analysis process: (a) data reduction, (b) data display, (c) data transformation, (d) data correlation, (e) data consolidation, (f) data comparison, and (g) data integration. *Data reduction* involves reducing the dimensionality of the qualitative data (e.g., via exploratory thematic analysis, memoing) and quantitative data (e.g., via descriptive statistics, exploratory factor analysis, cluster analysis). *Data display* involves describing pictorially the qualitative data (e.g., matrices, graphs, charts, lists, networks, rubrics, and Venn diagrams) and quantitative data (e.g., tables, graphs). This is followed (optionally) by the *data transformation* step, wherein quantitative data are converted into narrative data that can be analyzed qualitatively (i.e., *qualitized*) (Tashakkori & Teddlie, 1998) and/or qualitative data are converted into numerical codes that can be represented statistically (i.e., *quantitized*) (Tashakkori & Teddlie, 1998). *Data correlation* involves quantitative data being correlated with quantitized data or qualitative data being correlated with qualitized data. This is followed by *data consolidation*, wherein both quantitative and qualitative data are combined to create new or consolidated variables or data sets. The next step, *data comparison*, involves comparing data from the qualitative and quantitative data sources. *Data integration* is the final step, whereby both quantitative and qualitative data are integrated into either a coherent whole or two separate sets (i.e., qualitative

and quantitative) of coherent wholes. In implementing the four-stage mixed methods data analysis framework, the researchers incorporated five of the seven steps of Onwuegbuzie and Teddlie's (2003) model, namely, data reduction, data display, data transformation, data correlation, and data integration.

Stage 1 analyses. The first stage (i.e., exploratory stage) of this analysis involved recoding the multiple-choice responses (i.e., person, stimulus, and circumstance), as noted earlier. That is, external attributions (i.e., stimulus and circumstance) were given a score of 1 and dispositional attributions (i.e., person) were given a score of 0, yielding VAS scores that potentially ranged from 0 to 12, with high scores being indicative of persons who committed a high proportion of attribution errors. These scores then were used to determine the juvenile delinquents' overall violence attribution error rate. This error rate served as what Onwuegbuzie (2003) termed a *manifest effect size* (i.e., an effect size pertaining to observable content). This stage thus involved the first step (i.e., data reduction) of the mixed methods data analysis process.

Stage 2 analyses. The second stage (i.e., exploratory stage) consisted of a phenomenological mode of inquiry to examine students' reasons for their attributions (i.e., person, stimulus, and circumstance) (Goetz & Lecompte, 1984). Specifically, a modification of Colaizzi's (1978) phenomenological analytic methodology was utilized to reveal a number of themes relating to the offenders' reasons for their attributions. Consequently, this stage involved the first two steps (i.e., data reduction and data display) of the mixed methods data analysis process.

Stage 3 analyses. The third stage (i.e., exploratory and confirmatory stage) of the mixed methods analysis involved utilizing descriptive statistics to analyze the hierarchical structure of the emergent themes. In particular, each theme was *quantitized* (Tashakkori & Teddlie, 1998). Specifically, for each participant, a score of "1" was given for a theme if it represented at least one of the reasons cited for the 12 attributions made on the VAS; otherwise, a score of "0" was given for that theme. That is, for each sample member, each theme was quantitized either to a score of "1" or a "0," depending on whether it was represented in that individual's responses. This dichomotization led to the formation of an *inter-respondent matrix* (i.e., *participant x theme matrix*) containing a combination of 0s and 1s (Onwuegbuzie, 2003). The quantitizing of themes allowed for the computation of an additional *manifest effect size*. Specifically, a *frequency effect size* measure (i.e., frequency of theme within a sample—which can be converted to a percentage—(Onwuegbuzie, 2003) was obtained by calculating the frequency of each theme from the inter-respondent matrix, then converting these frequencies to percentages. These percentages represented the prevalence rate of each theme. The inter-respondent matrix was used to determine the relationship between responses to each theme (i.e., 0 vs. 1) and the violence attribution error rate. Therefore, this stage involved the second, third, and fourth steps (i.e., data display, data transformation, data correlation) of the mixed methods data analysis process. Table 1 and Table 2 illustrate the inter-respondent matrix. Table 1 gives an idea of how an inter-respondent matrix might look for the 120 participants (i.e., juvenile offenders). In this table, it can be seen that each theme has been *quantitized* (Tashakkori & Teddlie, 1998)—either to a score of "1" or

a "0," depending on whether it was represented in that individual's responses. Specifically, if a study participant listed a characteristic that was eventually categorized under a particular theme, then a score of "1" would be given to the theme for the participant's response; otherwise, a score of "0" would be given. Table 2 provides an example, using four participants, of how the inter-respondent matrix is used to compute various effect sizes. Looking at the row totals and percentages, It can be seen from this table that the fourth juvenile offender (i.e., ID 004) provided reasons for violence attributions that contributed to the most themes (i.e., $6/7 = 85.7\%$), with third juvenile offender (i.e., ID 003) contributing to the least themes (i.e., $2/7 = 28.6\%$). Examining the column totals reveals that Theme 4 is the most endorsed theme, with all four juvenile offenders endorsing this theme. Thus, the manifest effect size for Theme 4 is 100%. Conversely, the manifest effect size for Theme 1, the least endorsed theme, is 25.0%. Had the sample size been much larger (i.e., containing at least 70 participants, which would yield at least 10 participants per theme), the inter-respondent matrix could have been subjected to an exploratory factor analysis. With a larger sample size, other analyses could have been conducted—particularly those techniques that belong to the general linear model family (e.g., t-test).

Stage 4 analyses. The fourth and final stage of the mixed methods analysis involved the utilization of the inter-respondent matrix to conduct an exploratory factor analysis to ascertain the underlying structure of these themes (i.e., exploratory stage). This factor analysis determined the number of factors underlying the themes. These factors, or latent constructs, represented *meta-themes* (Onwuegbuzie, 2003) such that each meta-theme contained one or more of the emergent themes. The trace, or proportion of variance explained by each factor after rotation (Hetzl, 1996), served as a latent effect size (i.e., effect size pertaining to nonobservable, underlying aspects of the phenomenon being studied) (Onwuegbuzie & Teddlie, 2003) for each meta-theme (Onwuegbuzie, 2003). Also, a *manifest effect size* was computed for each meta-theme by determining the combined *frequency effect size* for themes within each meta-theme (Onwuegbuzie, 2003). As such, this stage involved the third, fourth, and seventh steps (i.e., data transformation, data consolidation, and data integration) of the mixed methods data analysis process.

Results

Stage 1

Scores on the VAS ranged from 0 to 11, with a mean number of attribution errors of 6.25 (SD = 2.66). The 95% confidence interval (CI) associated with this mean number of attribution errors was 5.75 to 6.74. That is, on average, the juvenile offenders were committing attribution errors 52.7% of the time (SD = 22.15%; 95% CI = 48.6%, 56.8%). With three response options on the VAS, one would expect that the respondents would be 33%. Thus, the attribution rate of 52.7% represents an attribution rate that is approximately 20% above what would be predicted by chance. This difference between the observed (i.e., 52.7%) and chance (i.e., 33.3%) translates to an effect size index of .41 (using Cohen's [1988, pp. 180-183] nonlinear arcsine transformation). Using Cohen's (1988) criteria, this effect size index suggests a moderate effect size.

Table 1

Example of Inter-Respondent Matrix Used to Conduct Mixed Methods Analysis

ID	Theme 1	Theme 2	Theme 3	Theme 4	Theme 5	Theme 6	Theme 7
001	1	0	1	1	0	0	1
002	0	1	1	1	0	1	0
003	0	1	0	1	0	0	1
.
.
.
.
.
120	0	0	0	1	1	1	1

Key: Theme 1 = self-control, Theme 2 = violation of rights, Theme 3 = provocation, Theme 4 = irresponsibility, Theme 5 = poor judgment, Theme 6 = fate, Theme 7 = conflict resolution.

Note. If a study participant listed a characteristic that was eventually categorized under a particular theme, then a score of “1” would be given to the theme for the participant’s response; a score of “0” would be given otherwise.

Table 2

Example of How to Use the Inter-Respondent Matrix to Compute Effect Sizes for Four Participants

ID	Theme 1	Theme 2	Theme 3	Theme 4	Theme 5	Theme 6	Theme 7	Total	Percent
001	1	0	1	1	1	0	1	5	71.4
002	0	1	0	1	0	1	0	3	42.9
003	0	0	0	1	0	0	1	2	28.6
004	0	1	1	1	1	1	1	6	85.7
Total	1	2	2	4	2	2	3	16	
%	25.0	50.0	50.0	100.0	50.0	50.0	75.0		

Key: Theme 1 = self-control, Theme 2 = violation of rights, Theme 3 = provocation, Theme 4 = irresponsibility, Theme 5 = poor judgment, Theme 6 = fate, Theme 7 = conflict resolution.

Stage 2

Table 3 presents the themes that emerged from the students' violence attribution reasons, alongside their attribution categories, and examples of statements representing each theme. It can be seen from the first column that the following seven themes were extracted from these responses: self-control, violation of rights, provocation, irresponsibility, poor judgment, fate, and conflict resolution. The second column of Table 3 (i.e., Attribution Category) identifies who the respondent blamed for the violent incident (i.e., person, stimulus, or circumstance). The first two themes were associated with the actor's disposition (i.e., person), the middle three themes pertained to the provocation of a target (i.e., stimulus), and the last two themes represented the exacerbating conditions (i.e., circumstance). The third column of Table 3 provides a representative quotation made by a respondent who selected the corresponding attribution category. The fourth and final column indicates the proportion of respondents who endorsed the attribution category.

Stage 3

The prevalence rates of each theme (i.e., [manifest] frequency effect sizes) (Onwuegbuzie & Teddlie, 2003) also are presented in Table 3. Interestingly, the three stimulus themes, namely, provocation, irresponsibility, and poor judgment, were the most frequently endorsed, with more than 70 % of the sample citing one or more reasons that fell into these categories. The two person themes, namely self-control and violation of rights, were the next most frequently endorsed, with 60.0 % and 59.2 % of the offenders providing violence attribution reasons that pertained to these classifications, respectively. Finally, the two circumstance themes, namely fate and conflict resolution, were the least frequently endorsed.

A series of independent samples *t*-tests was utilized to compare juveniles who endorsed each of the seven themes to those who did not endorse these themes with respect to the violence attribution error rate. These results are displayed in Table 4. After applying the Bonferroni adjustment, it can be seen that, compared to their counterparts, (a) juveniles who endorsed the self-control theme tended to make *fewer* violence attribution errors; (b) juveniles who endorsed the violation of rights theme tended to make *fewer* violence attribution errors; (c) juveniles who endorsed the provocation theme tended to make *more* violence attribution errors; and (d) juveniles who endorsed the conflict resolution theme tended to make *fewer* violence attribution errors. The Cohen's (1998) *d* effect sizes pertaining to these differences were large, ranging from .58 to .98.

Stage 4

An exploratory factor analysis was used to determine the number of factors underlying the seven themes. Specifically, a maximum likelihood factor analysis was used (Lawley & Maxwell, 1971). As recommended by Kieffer (1999), the correlation matrix was used to undertake the factor analysis. An orthogonal (i.e., varimax) rotation was used because of the low degree of correlations among the themes. This analysis was used to extract the latent constructs. As conceptualized by Onwuegbuzie (2003), these factors represented *meta-themes*.

The eigenvalue-greater-than-one rule (Kaiser, 1958), used to determine the number of factors to retain, yielded three factors (i.e., meta-themes). The "scree" test (Cattell, 1966) also suggested that three factors be retained. This three-factor solution is presented in Table 5. Using a cutoff correlation of 0.5, recommended by Hair, Anderson, Tatham, and Black (1995) as an acceptable minimum coefficient, it

Table 3

Open-Ended Response Categories With Selected Examples of Significant Statements of Attributions and Endorsement Rates

Violence Attribution Reason Theme	Attribution Category	Example	Endorsement Rate (%)
1. Self-Control	Person	"He should've been able to control himself."	.60.0
2. Violation of Rights	Person	"Nobody wants to be raped."	59.2
3. Provocation	Stimulus	"Tom was picking at him."	73.3
4. Irresponsibility	Stimulus	"Shaq could've covered up his test."	81.7
5. Poor Judgment	Stimulus	"Shouldn't have got drunk."	86.7
6. Fate	Circumstance	"Wrong place at the wrong time."	45.8
7. Conflict Resolution	Circumstance	"They need to work it out."	30.0

Table 4

Means, Standard Deviations, *t*-values, and Effect Sizes Pertaining to Attribution Error Rate Differences for Each Theme

Theme	Endorsers			Non-Endorsers			Effect Size	
	M	SD	n	M	SD	n	<i>t</i>	Cohen's <i>d</i>
Self-Control	5.56	2.67	72	7.42	2.22	42	-3.84*	0.74
Violation of Rights	5.42	2.75	71	7.61	1.85	43	-4.60*	0.89
Provocation	6.80	2.40	88	4.39	2.70	26	4.37*	0.98
Irresponsibility	6.15	2.68	98	6.81	2.54	16	-0.92	0.25
Poor Judgment	6.35	2.63	104	5.10	2.85	10	1.43	0.47
Fate	6.31	2.83	55	6.19	2.51	59	0.81	0.04
Conflict Resolution	5.22	2.68	36	6.72	2.53	78	-2.88*	0.58

*Statistically significant after the Bonferroni adjustment.

Table 5

Summary of Themes and Structure/Pattern Coefficients From Maximum Likelihood Varimax Factor Analysis: Three-Factor Solution

Theme	Coefficient ¹			Communality Coefficient
	1	2	3	
Irresponsibility	.79	-.05	.02	.35
Poor Judgment	.71	-.28	-.31	.63
Self-Control	.53	.13	.21	.71
Conflict Resolution	.31	.59	-.55	.63
Violation of Rights	.52	.57	.16	.68
Provocation	.45	-.69	-.19	.71
Fate	.34	-.02	.77	.74
Trace	2.09	1.24	1.09	4.42
% of Variance Explained	29.90	17.71	15.64	63.25

¹Coefficients in bold represent coefficients with the largest effect size within each theme, using a cut-off value of 0.5 recommended by Hair et al. (1995).

can be seen from this table that the following themes contributed significantly to the first factor: irresponsibility, poor judgment, and self-control; the following themes contributed significantly to the second factor: conflict resolution, violation of rights, and provocation; and the following theme contributed significantly to the third factor: fate. Consequently, the first meta-theme (i.e., Factor 1) was labeled *cognitively based stimulus*. The second meta-theme was termed *disposition of actor and interaction with emotionally based stimulus*. Finally, the third meta-theme was represented by *circumstance*. The thematic structure is presented in Figure 1. This figure illustrates the relationships among the themes and meta-themes arising from offenders' reasons for their violence attributions.

The trace revealed that the *cognitively based stimulus* meta-theme (i.e., Factor 1) explained 29.90 % of the total variance, the *disposition of actor and interaction with emotionally based stimulus* meta-theme (i.e., Factor 2) accounted for a further 17.71 % of the variance, and the *circumstance* meta-theme (i.e., Factor 3) explained an additional 15.64 % of the variance. These three meta-themes combined explained 63.25 % of the total variance. Interestingly, the proportion of total variance explained far exceeds that typically explained (i.e., 45 %) in factor solutions (Henson, Capraro, & Capraro, 2004). This total proportion of variance represents a large *latent effect size*. The manifest effect sizes associated with the three meta-themes (i.e., the prevalence rate of each meta-theme based on the juveniles' violence attribution reasons) were as follows: *cognitively based stimulus* (91.7 %), *disposition of actor and interaction with emotionally based stimulus* (90.0 %), and *circumstance* (45.8 %).

Discussion

The present investigation examined male juvenile delinquents' causal attributions for others' violent behaviors, and the salient pieces of information they utilize in arriving at their attributions, using a four-stage mixed methods analysis. The first stage revealed that the juvenile offenders committed violence attribution errors nearly 53 % of the time. Notably, this attribution error rate was identical to that reported by Daley and Onwuegbuzie (2004). Indeed, many of the findings that emerged in this study were very similar to Daley and Onwuegbuzie's (2004) results, including the number of themes extracted and the endorsement rates of each of these themes. Moreover, these findings are consistent with the results of several studies that have noted aggressive youth are more likely to externalize the causes of antisocial behaviors (Crick & Nelson, 2002). Further, Dodge, Price, Bachorowski, and Newman (1990) found that attributional biases were related to interpersonal aggression in youth with delinquent histories and that these youth were more likely to attribute hostile intent to external causes. Consequently, for some youth, it is their social interactions and their perceptions of these interactions that may lead to attribution errors.

Kelley (1967) postulates that individual and other's behaviors are interpreted based on three kinds of information: consensus, consistency, and distinction. According to Kelley, consensus refers to whether or not others would behave in the same manner relative to the same stimulus; consistency refers to whether the individual would behave in the same way to the same stimulus on other occasions; and distinctiveness refers to whether the individual would

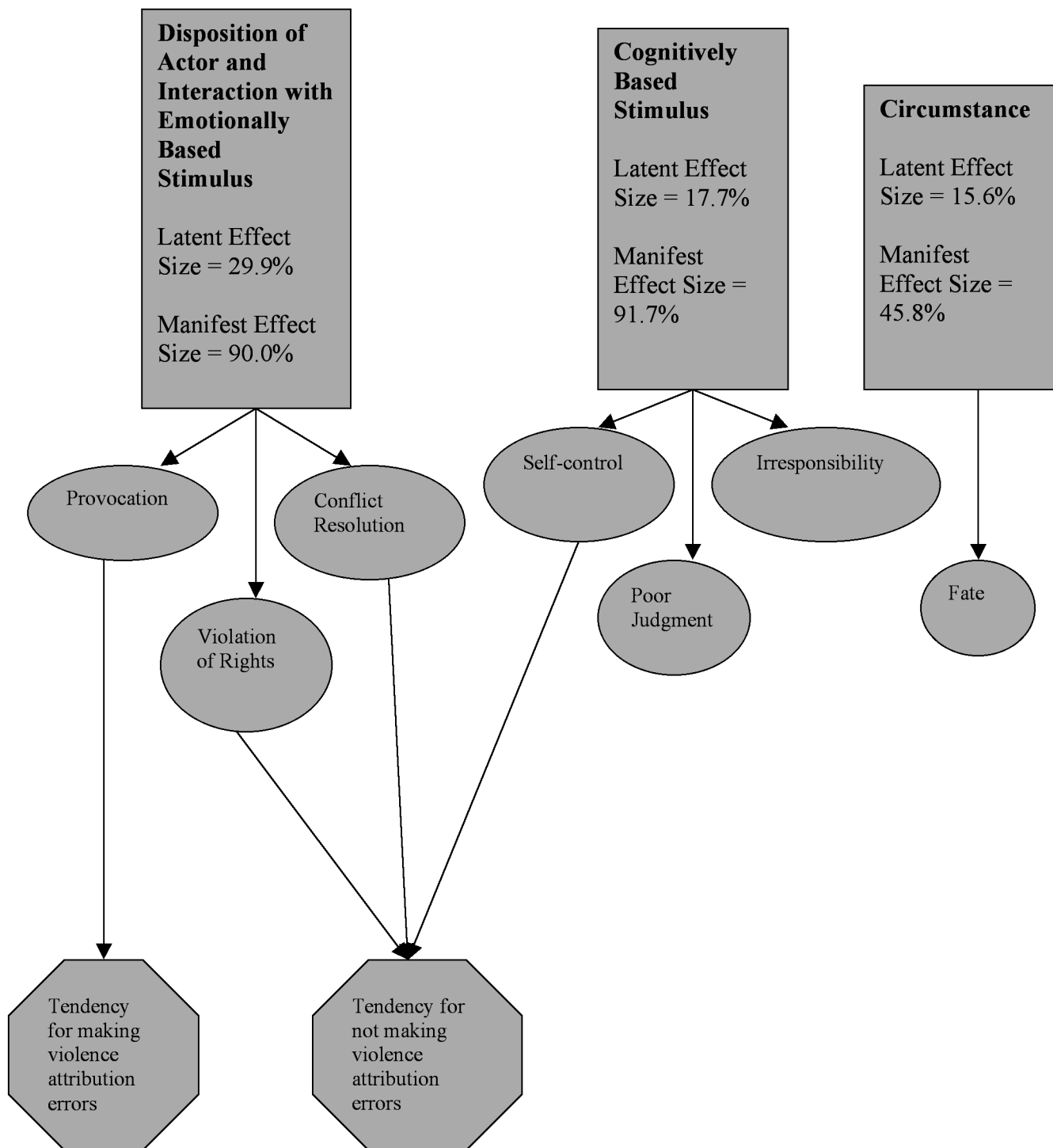
react the same way to other stimuli. Because negative behaviors may have negative implications, there is a motivation for self-protection that contributes to an individual assigning causation of a negative act to an external force (Kelley & Michela, 1980). Therefore, based on consensus, consistency, and distinction, a delinquent youth that has (a) knowledge of others being punished for admitting responsibility for criminal behavior (consensus), (b) knowledge that ownership of criminal behavior is always punished (consistency), and (c) knowledge that an individual's admission of guilt may result in assumptions of other criminal acts (distinction), may deny culpability, thereby externalizing causation of criminal behaviors in an attempt to protect themselves.

The finding regarding the rate of violence attribution errors is particularly informative, albeit disturbing. Moreover, the juvenile delinquents' tendency to commit violence attribution errors might explain, at least in part, their prison status. Indeed, Daley and Onwuegbuzie (2002/2003) documented that violence attribution errors are antecedents to other at-risk behaviors. Specifically, these researchers found that the number of violence attribution errors made was associated significantly with the following violent attitudes, experiences, or behaviors: believing that men have a right to expect sex from women, having friends who died violently, and bringing a gun to school. Notwithstanding, future research should investigate further this potential link between violence attribution errors and violent crime.

Building on Daley and Onwuegbuzie's (2002/2003) findings, Daley and Onwuegbuzie (2004) proposed what they termed a *cue-attribution-emotion-behavior-attribution* cycle, wherein juvenile delinquents tend to make violence attribution errors following negative social encounters, culminating in negative emotions and then at-risk behaviors, which, in turn, adversely affect future violence attributions. According to their conceptualization, the more negative encounters experienced by a juvenile, the more likely he is to believe that he is a victim of society, and any ensuing violent behaviors would reflect this belief system.

The second purpose of the present inquiry was to develop a typology of reasons for violence attributions, as well as to determine whether these reasons predict juvenile delinquents' violence attribution errors. The phenomenological analysis (Stage 2) and effect-size analysis (Stage 3) revealed the following seven themes that were extracted from juveniles' reasons for their causal attributions: self-control, violation of rights, provocation, irresponsibility, poor judgment, fate, and conflict resolution. The first two themes were associated with the actor's disposition (i.e., person), the middle three themes pertained to the provocation of a target (i.e., stimulus), and the last two themes represented the exacerbating conditions (i.e., circumstance). This finding suggests that juveniles' violence attribution reasons are multidimensional in nature. Daley and Onwuegbuzie (2004) extracted the same seven themes. Remarkably, the order of endorsement of these seven themes in both studies was identical, wherein the three stimulus themes, namely, poor judgment, irresponsibility, and provocation, respectively, were the most frequently endorsed, with approximately three-fourths or more of the offenders citing one or more reasons that fell into these categories. Consequently, stimulus (i.e., person) causal attributions appear to be most responsible for violence attribution errors. Alternatively stated, juvenile delinquents

Figure 1. Thematic structure pertaining to juvenile delinquents = reasons for their violence attributions.



appear to blame the victim much more often than they blame the perpetrator. Of the three stimulus reasons cited, the adolescents' perception that the victim should be blamed for being subjected to a violent act because the victim had provoked the actor (e.g., laughing at the actor) was the best predictor of violence attribution error. Specifically, juveniles who endorsed the provocation theme tended to make significantly *more* violence attribution errors than did their counterparts. In contrast, offenders who tended to cite attribution reasons that related to both person themes (i.e., self-control and provocation) tended to make fewer violence attribution errors.

The exploratory factor analysis (Stage 4) revealed that the seven themes fell into the following three meta-themes: *cognitively based stimulus* (comprising irresponsibility, poor judgment, and self-control), *disposition of actor and interaction with emotionally based stimulus* (comprising conflict resolution, violation of rights, and provocation), and *circumstance* (comprising fate). Interestingly, the *cognitively based stimulus* was the most prevalent meta-theme, providing a further explanation for the high incidence of violence attribution errors among youth. The results from the exploratory factor analysis are similar, but not identical, to those of Daley and Onwuegbuzie (2004). These researchers found that the seven themes fell into the following four meta-themes: *disposition of actor and interaction with stimulus* (comprising self-control, violation of rights, and conflict resolution); *cognitively based stimulus* (comprising irresponsibility and poor judgment); *emotionally based stimulus* (comprising provocation); and *circumstance* (comprising fate). Again, the *cognitively based stimulus* was the most prevalent meta-theme. On close examination, it can be seen that the only difference between the two sets of structural thematic relationships is that in the present inquiry, the themes associated with *disposition of actor and interaction with stimulus* and *emotionally based stimulus* fell into the same category.

The use of mixed methods techniques helped to increase the internal validity of the findings by combining an estimation of the prevalence of violence attribution errors with a typology of the salient pieces of information that juveniles utilize in arriving at their attributions. Nevertheless, the current study is limited by the fact that the sample represented juvenile delinquents from a geographically restricted region. Thus, it is not clear the extent to which the present findings can be generalized to juvenile offenders from other geographic regions. However, the fact that the results from this study are so closely aligned with (i.e., replicate) those from Daley and Onwuegbuzie's (2004) investigation adds incremental validity to their conclusion that violence attribution errors play an important role for juvenile delinquents.

Although there are many contributing factors that influence the type and extent of youth violence, the greater the understanding of the profile of youthful offenders, the greater the ability to gain insights into appropriate interventions. The identification of at-risk factors and offender characteristics assists programs in mitigating potential concurrent and consecutive deviant behaviors by enabling the development of effective treatment interventions. The benefits of identifying differential pathways that contribute to delinquent behavior are immeasurable for the formulation of future treatment modalities. Understanding how the detection of these attributes can be incorporated into correctional practice ultimately will yield more

effective correctional interventions and treatments. Thus, the identification of the contributing role that violence attribution errors play in the predilection toward violent behavior will assist in enhancing the individual treatment options for youthful offenders. Furthermore, the current research, alongside that of Daley and Onwuegbuzie (2004), provides evidentiary support to substantiate effective program interventions that promote attribution retraining targeting the antecedents of at-risk behaviors while developing more adaptive responses that may be effective in ameliorating future attribution errors. It is hoped that further investigations build on these two studies by creating such interventions.

References

- Capaldi, D. M., & Patterson, G. R. (1993, March). *The violent adolescent male: Specialist or generalist?* Paper presented at the biennial meeting of the Society for Research in Child Development, New Orleans, LA.
- Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research*, 1, 245-276.
- Center for Disease Control. (2004). Youth risk behavior surveillance – United States, 2003. *Morbidity and Mortality Weekly Report*, 53(SS-2).
- Children's Bureau. (2004). *Child maltreatment*. Washington, DC: U.S. Department of Health and Human Services. Retrieved December 19, 2007, from <http://www.acf.dhhs.gov/programs/cb/publications/cm02>
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Colaizzi, P. F. (1978). Psychological research as the phenomenologist views it. In R. Vaile & M. King (Eds.), *Existential phenomenological alternatives for psychology* (pp. 48-71). New York: Oxford University Press.
- Crick, N., & Nelson, D. (2002). Relational and physical victimization within friendships: Nobody told me there'd be friends like these. *Journal of Abnormal Psychology*, 111, 599-607.
- Daley, C. E., & Onwuegbuzie, A. J. (2002/2003). Relationship between violence attributional errors and at-risk behaviors among male juvenile delinquents. *Louisiana Education Research Journal*, 28(2), 3-14.
- Daley, C. E., & Onwuegbuzie, A. J. (2004). Attributions toward violence of male juvenile delinquents: A concurrent mixed methods analysis. *Journal of Social Psychology*, 144, 549-570.
- Dodge, K. A., Price, J. M., Bachorowski, J., & Newman, J. P. (1990). Hostile attributional biases in severely aggressive adolescents. *Journal of Abnormal Psychology*, 99, 385-392.
- Federal Bureau of Investigation. (2006). *Crime in the United States*. Washington, DC: U.S. Department of Justice.
- Federal Interagency Forum on Child and Family Statistics. (2005). *America's children: Key national indicators of well-being*. Retrieved December 19, 2007, from <http://www.childstats.gov/americaschildren/index.asp>
- Goetz, J. P., & Lecompte, M. D. (1984). *Ethnography and the qualitative design in educational research*. New York: Academic Press.

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1995). *Multivariate data analysis* (4th ed.). Englewood Cliffs, NJ: Prentice Hall.

Henson, R. K., Capraro, R. M., & Capraro, M. M. (2004). Reporting practice and use of exploratory factor analyses in educational research journals: Errors and explanation. *Research in the Schools*, 11(2), 61-72.

Herrenkohl, T., Hill, K., Chung, I., & Guo, J. (2003). Protective factors against serious violent behavior in adolescence: A prospective study of aggressive children. *Social Work Research*, 27, 179-191.

Hetzl, R. D. (1996). A primer on factor analysis with comments on patterns of practice and reporting. In B. Thompson (Ed.), *Advances in social science methodology* (Vol. 4., pp. 175-206). Greenwich, CT: JAI Press.

Kaiser, H. F. (1958). The varimax criterion for analytic rotation in factor analysis. *Psychometrika*, 23, 187-200.

Kelley, H. H. (1967). Attribution theory in social psychology. In D. Levine (Ed.), *Nebraska Symposium on Motivation*, 1967 (Vol. 15), Lincoln, NE: University of Nebraska Press.

Kelley, H. H. (1973). The processes of causal attribution. *American Psychologist*, 28, 107-128.

Kelley, H. H., & Michela, J. L. (1980). Attribution theory and research. *Annual Reviews Psychology*, 31, 457-501.

Kieffer, K. M. (1999). An introductory primer on the appropriate use of exploratory and confirmatory factor analysis. *Research in the Schools*, 6(2), 75-92.

Lawley, D. N., & Maxwell, A. E. (1971). *Factor analysis as a statistical method*. New York: Macmillan.

National Center for Education Statistics. (2004). Indicators of school crime and safety. Retrieved December 19, 2007, from http://nces.ed.gov/pubs2005/crime_safe04/

Nichols, S., & Good, T. (2004). *America's teenagers—myths and realities: Media images, schooling, and the sociology of indifference*. Mahwah, NJ: Laurence Erlbaum Association.

Onwuegbuzie, A. J. (2003). Effect sizes in qualitative research: A prolegomenon. *Quality & Quantity: International Journal of Methodology*, 37, 393-409.

Onwuegbuzie, A. J., & Teddlie, C. (2003). A framework for analyzing data in mixed methods research. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research* (pp. 351-383). Thousand Oaks, CA: Sage.

Reference Software International. (1992). *Grammatik 5.0 for DOS* (4th ed.) [Computer software].

Schlesinger, S. E. (1983, August). *The prediction of violence in the execution of social policies: What's the next step?* Paper presented at the annual convention of the American Psychological Association, Anaheim, CA.

Snyder, H., Puzzanchera, C., & Kang, W. (2005). Easy access to FBI arrest statistics 1994-2002. Retrieved September 21, 2005, from <http://ojjdp.ncjrs.org/ojstatbb/ezaucl/>

Tashakkori, A., & Teddlie, C. (1998). *Mixed methodology: Combining qualitative and quantitative approaches*. Applied Social Research Methods Series (Vol. 46). Thousand Oaks, CA: Sage.

Tashakkori, A., & Teddlie, C. (Eds.). (2003). *Handbook of mixed methods in social and behavioral research*. Thousand Oaks, CA: Sage.

Waytowich, V. L., & Onwuegbuzie, A. J. (2007). Full-service school. In K. M., Borman, S. E. Cahill, & B. A. Cotner (Eds.), *The Praeger handbook of American high schools* (pp. 183-185). Westport, CT: Praeger.

Authors

Anthony J. Onwuegbuzie, Ph.D., P.G.C.E., F.S.S, is a Professor in the Department of Educational Measurement and Research in the College of Education at the University of South Florida. His research topics primarily involve social and behavioral science topics (e.g., disadvantaged and underserved populations such as minorities, children living in war zones, students with special needs, and juvenile delinquents); as well as qualitative, quantitative, and mixed methodological topics. He has secured more than 200 refereed journal articles and 30 book/encyclopedia chapters, and has made approximately 400 presentations and keynote addresses at regional, national, and international conferences and venues.

Christine E. Daley, Ph.D., N.C.S.P., is in the Department of Psychological Services in Muscogee County School District, Columbus, Georgia. Her research interests include juvenile delinquency, anxiety, and intelligence. She has had 30 articles published and has made 74 presentations at regional, national, and international conferences and venues.

Vicki L. Waytowich, M.S.C.J., is the Director of Juvenile Justice Programs at Daniel Memorial Inc. Her primary fields of interest include juvenile delinquency, marginalized populations, and at-risk youth. She has had published several refereed articles and encyclopedia chapters.

Appendix

Sample Item From the Violence Attribution Survey

1. John, who enjoys reading and looking at pornographic books and films, was walking home late one night and decided to take a shortcut down a dark alley. Kim had just finished up her shift as a cocktail waitress and had not changed out of her revealing blouse and short, tight-fitting skirt. She, too, had decided to take a shortcut and had stopped in the deserted alleyway to smoke a cigarette. John saw Kim and raped her.

Who or what can be blamed for this event?

- (a) John
- (b) Kim
- (c) the situation (time, place, etc.)

Why did you choose this answer?

This vignette represents Item 1 of the Violence Attribution Survey. Reprinted with the kind permission of Drs. Christine E. Daley and Anthony J. Onwuegbuzie.

How a Neurologically Integrated Approach Which Teaches Sound-Symbol Correspondence and Legible Letter Formations Impacts At-Risk First Graders

Donita Massengill Shaw and Mary Lou Sundberg

Abstract: *The setting of this study took place in an inner city. The purpose was to determine the effectiveness of a neurologically integrated approach in teaching 43 at-risk pre-first graders their letter sounds and formations during 45-50 hours of summer school. There were four sequential phases to teaching this alphabetic approach: imagery, auditory, integration and sound blending, and motor plan. Students received three pre- and posttests: sound, letter formation, and phonic knowledge as assessed through alphabet exercises and the Early Reading Screening Instrument. Repeated measures and descriptive statistics of the three assessments were used to measure growth. Results indicate that despite an average attendance of 84%, significant changes occurred in the students' knowledge of letter sounds, letter formations, and their ability to write words (phonics). It is recommended to explicitly teach at-risk children their alphabet knowledge through a neurologically integrated approach that mirrors brain development.*

Introduction

The setting of this study took place in an inner-city school district during summer school. The school environments were not welcoming. One school was known to have the most drive-by shootings in the city. Another school had mice in the classrooms, a secretary who kept a baseball bat by her side in case parents wanted to fight, and there was a sign outside the school that read, "Don't shoot me. I want to grow up." The targeted students were pre-first graders. A five-year-old child came to school with a switchblade and five condoms in his pocket, another student had never been heard to speak a word, and a little girl was a crack-cocaine baby whose adopted mother came to school with her every day. These real-life facts present the background picture of this research.

The academic achievement of students in like inner-city schools has been a concern for many years. Research has shown that students' success in school is related to their early reading achievement (Juel, 1988). When academically-deficient primary-grade students do not get necessary assistance, their achievement gap widens from successful peers because the struggling students' academic self-beliefs diminish and they disengage from the learning process (Alexander & Entwisle, 1988; 1996). These students are then at an increased risk for academic failure and school dropout. Unfortunately, the three portrayed students and 40 additional students were not able to satisfactorily learn their alphabet skills during their kindergarten year. They needed to receive instruction during the

summer months to prepare them for the literacy tasks required of them in first grade. During summer school, these 43 students received instruction in a neurologically integrated approach to early literacy that simultaneously taught letter sounds and formations. Therefore, the major purpose of this study was to determine the effectiveness of using this approach in teaching at-risk pre-first grade students their letter sounds and formations during a short-term intervention.

Review of the Literature

To meet the goals of this study, it is of value to understand the research on alphabet knowledge, as well as the needs and challenges of at-risk learners. Information about the neurological approach will also be presented.

Alphabet Knowledge

Alphabet knowledge is fundamental to skilled reading and writing (McBride-Chang, 1999). Bramlett, Rowell, and Mandenberg (2000) found that letter recognition in kindergarten was the best predictor for reading achievement in first grade. Prerequisite to the development of formal literacy skills is the auditory understanding that words are made of sounds. Results of extensive research continue to provide evidence that phoneme awareness remains a strong predictor of reading ability and that children who lack in this phonemic awareness remain poor readers (Blachman, 1984; Høien, Lundberg, Stanovich, & Bjaalid, 1995; Wagner et al., 1997). "Getting started in alphabet reading depends

critically on mapping the letter and spellings of words into the speech units they represent” (Snow, Burns & Griffin, 1998, p. 6).

For beginning readers and writers, there is much to learn about letters. Letters have names, sounds, and shapes and the three are not logically connected. For example, the letter name for “c” is pronounced “see,” its pure phoneme should be correctly pronounced /k/ and its shape is an almost-closed “o.” To complicate matters, only eight letters of the alphabet have names from which the sounds can be derived (e.g., *b, d, j, p, t, k, v, z*) and numerous letter names are similar. For instance, *b, e, p, d, t, c, g, v*, and *z* all have the “ee” as the final sound in their name (Bear, Invernizzi, Templeton & Johnston, 2004). Additionally, several letter names begin with a short /e/ sound (e.g., *f, m, n*). Many letters make more than one sound (e.g., *c, g*) depending on surrounding letters. Each of these factors interferes with phonemic awareness and sound recall. When learning a letter’s shape, there are vertical, horizontal, and diagonal intersections and up-down and circular movements to coordinate (Bear et al., 2004). Alphabet knowledge is complex, yet integral to the development of advanced literacy skills.

“Most mainstream, middle-class children take five years to acquire this alphabet knowledge at home and in preschool” (Bear et al., 2004, p. 107). Distinctive alphabet knowledge is best learned through a naturalistic, fun, and game-like manner (Delpit, 1988). This claim is further supported by Hannaford (1995) who asserts that by age five, children’s logical hemisphere of their brain has not matured sufficiently for them to learn their letters through a linear, logical process with few mnemonic images. As children grow, their brain and body develop in a certain sequence. The gestalt hemisphere usually has a dendrite growth spurt between ages four and seven, whereas the logical hemisphere typically grows rapidly between seven and nine years of age. Therefore, young children who have been taught to learn their numbers and letters in a linear, logical fashion with few images may experience high levels of stress. Logical instruction defies natural development of brain functions, and children have to work very hard at learning alphabet knowledge. Children need to learn letters through association, image, emotion, and spontaneous movement (Hannaford, 1995). Bear et al. (2004) stated that children should learn through “active exploration of the relationships between letter names, the sounds of the letter names, their visual characteristics, and the motor movement involved in their formation” (p. 107). Adams (1990) recommended that children learn the visual shapes of individual letters through a keyword/picture display before learning the sounds of the letters. Moreover, she believed that children should learn to print the letters as soon as they were introduced. Writing allows access to the kinesthetic pathway, which is a strong, reliable learning channel for children (Sheffield, 2003; Zaporozhets & Elkonin, 1971).

At-Risk Learners

The term “at risk” may elicit several connotations. For example, at risk may refer to students who are of minority status, who have a learning disability, whose first language is not English, or who are economically disadvantaged. Even though these are the four most commonly identified aspects, there may be other factors, or there may be multiple factors that impact a student (Foster, 2004). For the purpose of this manuscript, we will focus specifically on minority status and economically disadvantaged youth.

African American and Hispanic American students tend to show poor academic achievement in comparison to students who are European American (Foster, 2004). Academically, African Americans have tended to perform approximately two years behind their white peers (Comer, 1997). Reasons for this disparity may be due to little home support for literacy (Baumann & Thomas, 1997), limited oral language skills, dialectal variations, and differing teacher expectations (Washington, 2001).

Another variable is family income, which is one of the important predictors of academic achievement (Roscigno, 2000). Although children cannot control their parents’ economic status, they are influenced by it. Statistics reveal disparities between ethnic groups. 32.7% of African American children under the age of 18 live in poverty while only 12.9% of white children live in poverty (Youth Indicators, 1999). Allington (1991) stated, “It is the children of poverty who are most likely to have literacy-learning difficulties” (p. 237). Roscigno and Ainsworth-Darnell (1999) found that socioeconomic status variables accounted for 53% of the students’ reading grade. Smith and Dixon (1995) investigated the impact of socioeconomic status on 64 Head Start students’ early print knowledge. They studied the function (e.g., environmental print, purpose of print) and form (e.g., letter identification, letter sound identification) of print. Socioeconomic status did not appear to affect print function; however, it did affect print form. The findings indicated that young children of limited socioeconomic status were twice as likely to start school with limited knowledge about print forms, which placed them at risk for reading and writing challenges. At-risk children require more instructional time learning to read (Hanson & Farrell, 1995) and often need to receive letter-sound instruction that is longer in duration and more explicit and more intense (Blachman, 2000).

Barone (2002) studied teacher’s instruction and children’s activities in two kindergarten classrooms in a school that was labeled at risk. She observed three teachers (two teachers worked part-time) and followed 16 focal children. Since alphabet and letter-sound knowledge are main concepts for kindergarten learners, the majority of reading instruction was devoted to learning these concepts by listening to alphabet songs, identifying letters in students’ names, and generating words that begin with a targeted letter. The teachers expected that “children in other schools will know the sounds of the letters, the children here may know a few, and those will be our best students” (p. 428). When the focal students were posttested on letter identification, “many could not display this knowledge without support from teachers . . . [and] students were not able to write letters that matched the initial consonants in words” (p. 431). As Barone analyzed her data and pondered why 11 of the 16 children left kindergarten without knowing their alphabet and letter knowledge, she attributed the lack of student success was due to the teachers’ limited view of literacy and their subsequent instruction, and the children’s lack of meaningful experiences with reading and writing.

It is imperative that educational systems identify young children with risk factors who possess an inadequate gap in their knowledge and skills before they enter formal education. Not only must this gap be identified early, but intervention needs to address the inadequacies through developmentally appropriate activities that are well designed and focused (Heibert & Taylor, 2000). Children who complete kindergarten without possessing the knowledge necessary for reading

success should be given support throughout the summer and during the first grade year (Allen, 2003). A summer program prior to first grade provides at-risk children an opportunity to strengthen their foundation, prevent loss of information during the summer months, and decrease the possibility of first grade reading failure (Alexander & Entwisle, 1996).

A New Integrated Alphabet Approach

This integrated alphabet approach is a practical, instructional methodology that simultaneously teaches phonemic awareness, letter sounds, and letter formations. It was created on the principles of developmental and neurological mechanisms of learning in young children (Dennison & Dennison, 1989; Hannaford, 1995). The alphabet system was developed by a teacher who was challenged by learners who possessed good visual processing abilities but struggled with auditory and motor learning. After studying brain research, she asked herself a question, "Would it be possible to appeal to the right visual gestalt hemisphere in a manner that would stimulate the temporal and frontal lobes, and thereby illicit auditory recall of the letter sound and a motor movement for writing?" To accomplish this, she realized it was necessary to transform each abstract symbol into a picture that started with the correct phoneme and had a similar shape so the letter sound and formation could be taught simultaneously.

The created method goes a step beyond multisensory learning (the actions of seeing, saying, and doing) to a term that can be coined "intersensory" because seeing, saying, and doing cannot be separated. The integrated alphabet approach serves as an intersensory feedback process that triggers visual/auditory/motor responses that aligns neurologically with children's brain development. It integrates the intersensory responses into a holistic approach that results in the integration of reading-writing-spelling because the skills are not separated. This methodology utilizes carefully selected visual images in conjunction with precisely crafted stories as a springboard to *transform* abstract symbols into meaningful letters which elicit specific consonant and short vowel sounds and integrated hand movements for writing.

This intersensory learning is taught in four phases. First, imagery is used to introduce students to a mnemonic symbol that represents both a sound and a letter. This means that the object's beginning sound and its shape are identical to the letter sound and letter shape, respectively. During the second phase, students learn the correct phoneme for each picture. Third, students join together the abstract letter with the sound to make a sound-symbol correspondence, followed by blending sounds into words. During the fourth phase, students are subsequently taught how to integrate the written elements. Throughout these phases, visual-auditory-motor learning works together. The new alphabet system does not isolate the phases, so phonics and handwriting cannot be separated. This integration of learning takes the new alphabet system beyond the multisensory to make it intersensory.

The principle of multifaceted learning exposure is applied to each letter of the alphabet. Each letter of the alphabet has its own device, which is comprised of stationary and movable parts; notched cardboard and acetate slide back and forth, left and right. How and when these parts are moved determines how the information is disseminated during the four phases. This alphabet concentrates on the pure

phoneme associated with consonants and the short vowels, which typically are the most difficult for children to master. Therefore, the 26 letter set is essential and complete for students to learn beginning reading/writing/spelling skills.

Purpose

The new integrated alphabet approach was designed to teach children alphabet knowledge based on their developmental and neurological needs. The teaching of phonemes (smallest unit of sound), graphemes (letters), and motor movement has been integrated into one approach that is neurologically sound. It was developed to assist all students, including those at risk, in gaining alphabet skills to avoid their falling behind in their academic achievement. Therefore, the purpose of this study was to determine the effectiveness of this neurologically integrated approach in teaching at-risk pre-first grade students their letter sounds and formations during a short-term intervention. Guiding questions included:

1. To what extent would at-risk pre-first grade students be able to correctly recall all 26 letter sounds after receiving neurological intervention?
2. To what extent would at-risk pre-first grade students be able to properly write all 26 letter forms after receiving neurological intervention?
3. To what extent would at-risk pre-first grade students be able to apply phonic knowledge?

Method

Elementary Participants

The learner population was comprised of African American students who came from economically disadvantaged homes. The students had completed kindergarten and were identified as at risk by school professionals because they were unable to recall the 26 alphabet sounds or form lowercase letters of the alphabet. They had previously been taught using traditional analytic phonics approach and ball-stick handwriting. One hundred twenty at-risk children were pretested in May; 59 enrolled in the summer school program with parental permission and 43 of the students remained for the duration of the program and were posttested at the conclusion of summer school. The students attended summer school at their local elementary, of which there were five schools. The five schools were all located within three to four square miles in a confined geographically similar area. Students were instructed in the alphabet approach three hours per day, four days a week for five weeks. The total possible duration of instructional time the students received was 51 hours. However, due to absenteeism, the average number of hours any student attended during summer school was 43 hours.

Teachers

The summer school teachers were all employed by the public school district. Teacher A (matches School A) had been a kindergarten teacher for 18 years. Teacher B taught for 29 years, the last 17 at School B. She had several years of kindergarten experience and had taught for 13 years in first grade. School C started with a sixth grade

social studies teacher and then a kindergarten teacher took over the third week of summer school. Teacher D had taught for 12 years, 11 of which were at School D. She had one year of kindergarten experience, five years of first grade, and six years of teaching second grade. Teacher E taught six years as a seventh-grade math teacher.

The teachers spent one full day in training prior to teaching with the instructional method. The day of training started with the founder introducing the theory of the approach. This foundation (the what and why) was followed by hands-on learning of correct pronunciation of sounds, how to correctly form the letters and how to work the devices, as well as other concepts. After the training, the teachers were monitored in several ways. The teachers were placed in classrooms with assistants who had extensive training and prior teaching experience with the alphabet system. These assistants were to support the teacher and monitor student learning. The teachers were also given instructional videos to guide their learning and help them deliver the approach. Additionally, the author of the alphabet system traveled to the schools daily to monitor their teaching for reliability and validity purposes.

Assessment Procedures

Students were individually pretested in May and then posttested during the last day of summer school using identical procedures. There were three assessments: sound knowledge, letter formation, and phonics.

To evaluate sound knowledge, the trained tester held a card with one letter on it and asked the child to tell her the sound, not the name of the letter. An example follows. The instructor held a card with *K* on it and said, "Tell me the letter sound, not its name." The child's response was documented. The sound knowledge assessment was scored correct or incorrect. Students received one possible point per letter—either the child knew the correct sound or did not know the correct sound. For example, if the child said "kay" or "s" or any sound other than its pure phoneme or did not know the sound, then the child received a 0 score for that item. There were 26 letters, thus 26 points possible for sound knowledge for each participant. The administration of this test took approximately 5-10 minutes per child.

Next, the students were asked to write each letter of the alphabet in a sequence based on motor plan rather than traditional alphabetical order of *a* to *z*. The teacher gave each child a piece of paper and said, "Write lower case [c]." If a child took longer than five seconds to respond to "Write lower case [c]," the tester asked the child to write the next grapheme in motor plan. *C* was followed by *o*, *a*, *d*. Then the tester would ask the child the next set of graphemes until all 26 letters had been written. The number of errors the students made was counted. Instead of receiving correct/incorrect as they did for letter sounds, students made an error if they did not know how to write the designated lower case letter, or if they capitalized the letter, wrote the wrong letter, or made the letter the wrong size. Even though there were 26 letters, some students made multiple errors per letter so they may have received four points per letter (one point per type of error) for a total of 104 points per child.

Kindergartners' ability to engage in invented spelling is a strong predictor of future literacy achievement (Torgeson & Davis, 1996). Therefore, the Early Reading Screening Instrument (hereafter ERSI) invented spelling subtest (Morris, 1992) was administered to the

students before and after intervention to measure their phonic knowledge. The students were given wide-lined paper with numbers 1-15 already written on the paper for them. The test began with the teacher modeling two practice words, *cat* and *flag*. Then the teacher orally read the word, read the word in a sentence, and the student and teacher said the word together before the child wrote the word. An example follows: "back. Please scratch my back." The child and teacher then said "back." Beside #1 on the paper, the child spelled "back" to the best of his/her ability. Scores were figured by counting the number of correct phonemes that were written. There was a possible total of five points per word. A description of the points is listed followed by the example for "back" in italics at the end of each description.

- 0 points for random string of letters (*ORAI*) or inappropriate letter (*K*)
- 1 point for initial phoneme represented correctly (*B* or *BAOR*)
- 2 points for initial and final phonemes (*BK* or *BTLK*) or initial phoneme and a vowel (*BA* or *BAT*)
- 3 points for the initial *and* final phonemes *and* a vowel (*BAC*)
- 4 points for the above plus additional phonemes (This would apply for a word with multiple sounds such as blends/digraphs = *dres* for *dress* or *stic* for *stick*.)
- 5 points for the correct spelling of the word (*BACK*)

Morris developed this instrument to screen beginning pre-first grade readers to see if they needed early intervention. Perney, Morris, and Carter (1997) found that ERSI's four subtests (alphabet knowledge, concept of word, invented spelling, and word recognition for decodable and basal words) have good predictive validity, correlating $r = 0.70$ with the end of first grade achievement. Further analysis through stepwise regression of the four subtests indicated that invented spelling and word recognition had the highest predictive ability (Lombardino et al., 1999). "The C_p value of 1.20, which measures the difference in fitting errors between the full and subset models, is the lowest for these two subtests indicating that it is a good subtest; the R^2 (0.53) and adjusted R^2 (0.52) values show the strength of the linear association between the criterion and predictor variables" (Lombardino et al., 1999, p. 8). ANOVA on spelling and word recognition was significant, $F(2, 88) = 50.40, p < .0001$. The ERSI has a coefficient alpha of .85 (Perney, Morris, & Carter, 1997), which indicates its internal consistency reliability for the total test.

Instructional Materials

Twenty-six individual devices, or cards with overlays, were used to disseminate the information of the 26 letters of the alphabet. Each teaching tool had a picture that began with the sound of that letter. Color illustrations were used to verify the visualized image created by the visual clues and mnemonically assist students in learning the name of the picture and the letter's sound. These visual images, combined with stories, worked in conjunction with directional arrows.

The image and arrows supported students in properly forming the letters by emphasizing the need for the student to start at a specific point and move to cross the midline. The devices included visual clues, color illustrations, and stories combined with directional arrows that stimulated sound recall and letter formation.

There were four sequential phases to teaching this alphabetic approach: imagery, auditory, integration and sound blending, and motor plan. In the first phase, students were introduced through imagery to a symbol that represented both a sound and a letter. This meant that the object’s beginning sound and its shape was identical to the letter sound and letter shape, respectively. During the second phase, students learned the correct phoneme for each picture. Third, students attached the abstract symbol to the sound and began to sound blend. During the fourth phase, students were subsequently taught how to integrate the written elements. The multifaceted learning was applied to each letter of the alphabet.

Instructional Procedures

The main focus of summer school was to teach students to recognize the letters, recall the sound for each letter, and correctly form each letter. The four phases (imagery, auditory, integration and sound blending, and motor plan) of the integrated approach were critical to learning. Due to the fact that summer school was intense (three hours a day, four days a week for five weeks), there was some alteration to the teaching of the final phase (motor plan). Handwriting was taught each day; however, students were not able to learn the correct letter formations as quickly as the imagery of the pictures or sounds of the letters. Therefore, the letters and sounds were introduced sequentially, but the focus of each day’s handwriting necessarily lagged behind the imagery and phoneme learning. At the conclusion of summer school, the four phases had been taught for all the letters, so the letter sound/letter formation learning came together as it would during a regular school year. Students were noticeably ready for sound blending, but time constraints prevented further development of beginning reading skills.

In addition to the traditional dissemination of information through direct instruction, the teachers incorporated learning in creative ways. For example, after learning four letters (*c, o, a, d*), the students played musical chairs. The students were given a card with a key picture on it (e.g., cat, octopus, apple, dog). When the music ended, the students who were holding the cards had to rise and say the proper sound for their picture. Another pleasurable activity was to decorate sugar cookies. On the day they learned “*c*” for cat, the teacher brought cat cookies with glaze and frosting. The students were asked to decorate their cookie to match the picture of the cat. Additional summer school activities included coloring pictures, matching pictures, and tracing around pictures.

Results

The purpose of this study was to analyze the effectiveness of an integrated alphabet approach in teaching at-risk students who had not learned all their letters and sounds by the completion of kindergarten. Due to the fact that poor attendance is one of the earliest and most visible signs of low achievement and school dropout (Rodriguez, 1999), attendance results will be documented across schools. Thereafter, sound recall, letter formation, and phonic assessment results across schools will be reported statistically.

Attendance

Poor attendance often identifies at-risk students and affects students’ achievement. Attendance was fairly consistent across students in four of the five schools. Students in School B attended, on average, 81 % of the time, School C had 82 %, School D had 84 %, and School E averaged 78 %. The exception was School A whose attendance averaged 97 % with only two students. Table 1 displays the number of students who enrolled in each school, the percentage of their attendance individually and collectively. Table 2 also shows the attendance average by school through a mean score. Summer school was conducted for 20 days.

Table 1

Analysis of Attendance

School	N	100 %	94 %	88 %	82 %	76 %	71 %	65 %	56 %	53 %	Max %	Min %	Average %
A	2	1	1	0	0	0	0	0	0	0	100 %	94 %	97 %
B	13	2	2	1	3	2	1	0	1	1	100 %	53 %	81 %
C	4	1	0	1	1	0	0	0	1	0	100 %	56 %	82 %
D	10	1	2	1	2	4	0	0	0	0	100 %	76 %	84 %
E	2	0	2	0	4	3	1	1	1	0	94 %	56 %	78 %

Table 2

Descriptive Statistics for Attendance and Assessments for Each School

Measure	School A			School B			School C			School D			School E			Total		
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
Attendance ^a	2	16.50	0.71	14	13.50	2.71	5	13.00	4.85	9	14.22	1.48	12	13.33	1.78	42	13.69	2.54
Letter sounds pre ^b	2	7.50	7.78	14	13.29	3.07	5	5.80	5.67	9	6.11	6.90	12	1.58	2.94	42	7.24	6.45
Letter sounds post ^b	2	26.00*	0.00	14	26.00*	0.00	5	26.00*	0.00	9	25.89*	0.33	12	25.83*	0.58	42	25.93*	0.34
Letter form pre ^c	2	44.00	5.66	13	24.77	9.11	4	26.25	21.65	8	37.25	8.22	11	39.09	12.79	38	32.71	13.15
Letter form post ^c	2	1.50*	2.12	13	0.46*	0.66	4	0.50*	0.58	8	2.00*	2.67	11	3.73*	6.02	38	1.79*	3.66
Phonic pre ^d	2	7.00	9.90	5	38.40	13.07	3	10.67	5.77	8	13.00	11.20	11	2.36	2.98	29	12.69	15.08
Phonic post ^d	2	19.50*	16.26	5	48.20*	6.38	3	24.67*	4.72	8	23.13*	17.13	11	17.82*	8.92	29	25.34*	15.43

^aThere were 20 total days of summer school.^bThe students knew this many letter sounds before and after the intervention.^cThe students made this many letter formation errors before and after the intervention.^dThe students were able to write the sounds in words before and after the intervention.

*p < .05

Letter Sounds

We used a repeated measures analysis of variance to test whether there was an improvement in students' knowledge of letter sounds from pre- to posttests. Overall, across schools, there was a significant change in students' ability to produce the correct sound for each letter of the alphabet, $F(1, 40) = 14.46, p = .00$. The interaction effect testing whether attendance affected the students' learning was not significant, $F(1, 40) = .19, p = .665$. Table 2 documents the means for the pre/post sounds by school.

Letter Formations

Likewise, we used a repeated measures analysis of variance to test whether there was an improvement in students' ability to form the correct letters from pre- to posttests. Overall, across schools, there was a significant change in students' ability to correctly form the lower case letters, $F(1, 37) = 9.49, p = .004$. The interaction effect testing whether attendance affected the students' learning was not significant, $F(1, 37) = .43, p = .515$. Table 2 documents the means for the pre-post letters by school. As can be seen, the errors dramatically decreased after intervention, which shows that students learned to correctly form lowercase letters.

Application of Phonic Knowledge

In addition to identifying correct phonemes and graphemes in isolation, students need to apply that knowledge to the writing of words. Thirty-one of the students were given the pre-post Early Readiness Screening Instrument (Morris, 1992). The reason there were only 31 of the 43 students tested on this measure is due to the miscommunication between administration and teachers and parents regarding the last day of summer school.

Reliability analyses of the ERSI using pre-intervention scores showed strong internal consistency with Cronbach's Alpha of .983. Also, post-intervention scores showed strong internal consistency with Cronbach's Alpha of .982.

A repeated measures analysis of variance was conducted to test whether there was an improvement in students' ability to write the correct spelling of words from pre- to posttests. Overall, across schools, there was a significant change in students' ability to correctly write words, $F(1, 28) = 64.17, p = .00$.

Discussion

This study was a short-term intervention posed to help at-risk learners prepare for pre-first grade by providing them with direct instruction in sound and letter formation knowledge. Children who come from disadvantaged homes have experienced less exposure to print and possess weaker alphabet knowledge (Bear et al., 2004). These students had been identified by the school as children who had not successfully learned their letter sounds and formations through traditional methods during the school year. Results of this study indicate positive changes in the students' knowledge of letter sounds, letter formations, and their ability to write words. There are reasons to support why these children, who did not learn their sounds and letters in kindergarten, were able to succeed in summer school despite an average attendance of 84%.

First, this alphabet approach attempts to logically connect the letter sound and shape. After learning the letters through imagery, sounds and motor movements were integrated into a holistic, seamless approach rather than teaching phonics and handwriting as separate subjects. The integration and connection of phonics and handwriting strengthens the reading-writing relationship (Spear-Swerling, 2006).

Second, the approach mirrors children's brain development and provides them with a mnemonic mental hook (Adams, 1990; Hannaford, 1995). A picture accesses stimulation in the right hemisphere and is easier for children to learn than an abstract symbol (Hannaford, 1995). Learning letters and sounds through pictures also supports a fun environment (Delpit, 1988) that engages students and allows them to learn through more playful conditions.

Third, alphabet knowledge was explicitly taught to the students every day. They were shown how to write the letters and say the sounds and given guided practice under supervision of the instructor. Direct instruction of alphabet knowledge has been found to be essential (Ball & Blachman, 1991; Graham, Harris, & Fink, 2000). Snow, Burns, and Griffin (1998) said that reading failure may be prevented by providing explicit instruction in letters and their sounds.

A fourth reason that positive results were made for letter formation is that the alphabet approach supports students' memory development for handwriting in several ways. The first is by providing specific arrow cues (Berninger & Abbott, 1994). Second, students should learn motor plans rather than focus on perfection of size and shape. Third, the most effective way is to teach similarly formed letters together (Spear-Swerling, 2006). In this manner, students succeed in learning how to make basic lines that create multiple letters, such as *c, o, a, d*, whereby each letter builds on previous motions, which develops automaticity.

When comparing this approach to other handwriting approaches, there are some vast differences. In the traditional ball and stick manuscript, students must form abstract symbols using counterclockwise circles and vertical lines, which are not continuous and are often reversed. Moreover, to learn cursive, they no longer use counterclockwise circles. Instead students are required to use diagonal lines that replace vertical lines, and must implement continuous strokes. So they must learn a whole new skill set to be proficient in cursive. When writing both manuscript and cursive D'Nealian, students form abstract symbols using diagonal and continuous lines, but are not taught counterclockwise circles resulting in letter formations which are disintegrated or left open. For the integrated approach used in this study, the author observed, hypothesized, tested, and carefully planned the use of pictures containing counterclockwise circles and diagonal lines with continuous strokes in both manuscript and cursive. Research has shown these three elements are critical for legibility (i.e., directionally correct, integrated letters) and students' success. Young children do not naturally cross the midline until approximately six years of age (Dennison & Dennison, 1989). This neurological approach has carefully and thoughtfully delivered instruction to aid children in bridging their two hemispheres by teaching them to draw pictures containing the counterclockwise circle and the diagonal line which cross the midline, and when combined with a continuous stroke avoids directionality problems and disintegration. This approach goes

beyond handwriting. As students draw pictures, they form legible letters and commit the sound to paper.

In essence, the deliberately planned approach teaches phonics and handwriting through imagery based on sound phonological and handwriting research. This new approach builds on multisensory learning by integrating the visual/auditory/motor (action) learning so the three cannot be separated into individual skills. It is this integration of literacy that provided the students a key to success.

Several limitations of the study need to be addressed. First, this study immersed students in alphabet instruction for three hours a day. Although this is atypical in terms of alphabet instruction in a traditional school day, the results suggest that immersion has potentially positive ramifications. Second, while the gains showed that students improved significantly in their knowledge of sounds and letters, little instruction was given to sound blending or holistic literacy activities, such as storybook reading and writing. This was primarily due to the need to accomplish the identified goals of teaching letter sounds and formations within considerable time constraints. Third, there was great variation among class size, with School A having two participants and Schools B and D having 13 and 10 participants, respectively. Classroom size during the school year often varies from the summer school enrollment and may affect the amount of individual attention given to students. Fourth, a confounding factor is that of maturation, in which children are expected to make progress as a result of instruction over a period of time.

There are several possibilities for future research. It would be worthwhile to conduct a similar study of a short intervention with a control group to determine differences in achievement. Another study should take place in kindergarten classrooms during the course of a school year with control and experimental classrooms. Nationally recognized phonemic awareness, letter identification, and writing assessments could be used to determine the amount of growth and whether it is significant. Ideally, conducting a long-term study, following the students through grade three or four, would provide information about the long-term effects on students' literacy development.

In sum, it was the goal of this new integrated approach to provide students with meaningful, as well as developmentally and neurologically appropriate methods to learn their alphabet. At-risk students who previously had not learned their alphabet were able to master alphabet knowledge in a relatively short amount of time. The new alphabet approach assisted students in their memory retrieval by providing a picture that connected the sound and the letter formation. Further, it was an intersensory approach that integrates visual/auditory/motor responses. In conclusion, this study supports previous research showing the link between letter sound and formation; this knowledge is the foundation for reading and writing.

References

- Adams, M. J. (1990). *Beginning to read, thinking and learning about print*. Cambridge, MA: MIT Press.
- Allen, L. C. (2003). *At-risk kindergarteners: Effects of an intervention program on early literacy acquisition*. (Doctoral dissertation, University of Alabama, 2003). Retrieved September 5, 2006 from www.proquest.umi.com/www2.lib.ku.edu
- Alexander, K. L., & Entwisle, D. R. (1988). Achievement in the first 2 years of school: Patterns and processes. *Monographs of the Society for Research in Child Development*, 53, (2, Serial No. 218).
- Alexander, K. L., & Entwisle, D. R. (1996). Schools and children at risk. In A. Booth & J. F. Dunn (Eds.), *Family school links: How do they affect educational outcomes?* (pp. 67-87). Mahwah, NJ: Erlbaum.
- Allington, R. L. (1991). The legacy of "slow it down and make it more concrete." In J. Zutell & S. McCormick (Eds.) *Learner factors/teacher factors: Issues in literacy research and instruction* (pp. 19-30). Chicago: National Reading Conference.
- Ball, E. W., & Blachman, B. A. (1991). Does phoneme awareness training in kindergarten make a difference in early word recognition and developmental spelling? *Reading Research Quarterly*, 26(1), 49-66.
- Barone, D. (2002). Literacy teaching and learning in two kindergarten classrooms in a school labeled at-risk. *Elementary School Journal*, 102(5), 415-441.
- Baumann, J., & Thomas, D. (1997). "If you can pass Momma's tests, then she knows you're getting your education": A case study of support for literacy learning within an African American family. *The Reading Teacher*, 51, 108-120.
- Bear, D. R., Invernizzi, M., Templeton, S., & Johnston, F. (2004). *Words their way*. Upper Saddle River, NJ: Merrill.
- Berninger, V., & Abbott, R. (1994). Redefining learning disabilities: Moving beyond aptitude-achievement discrepancies to failure to respond to validated treatment protocols. In G. R. Lyon (Ed.), *Frames of reference for the assessment of learning disabilities: New views on measurement issues* (pp. 163-202). Baltimore: Paul H. Brookes.
- Blachman, B. A. (1984). Relationship of rapid naming ability and language analysis skills in kindergarten and first grade reading achievement. *Journal of Educational Psychology*, 76, 610-622.
- Blachman, B. A. (2000). Phonological awareness. In M. L. Kamil, P. B. Mosenthal, P. D. Pearson, & R. Barr (Eds.), *Handbook of reading research* (pp. 483-502). Mahwah, NJ: Lawrence Erlbaum Associates.
- Bramlett, R. K., Rowell, R. K., & Mandenberg, K. (2000). Predicting first grade achievement from kindergarten screening measures: A comparison of child and family predictors. *Research in the Schools*, 7(1), 1-9.
- Comer, J. (1997). *Waiting for a miracle: Why schools can't solve our problems and how we can*. New York, NY: Dutton Publishers.
- Delpit, L. D. (1988). The silenced dialogue: Power and pedagogy in educating other people's children. *Harvard Educational Review*, 58, 280-298.
- Dennison, P. E., & Dennison, G. E. (1989). *Brain gym*. Ventura, CA: Edu-Kinesthetics, Inc.
- Foster, W. A. (2004). No child left behind: Group at-risk composition and reading achievement. *The Journal of At-Risk Issues*, 10(1), 1-6.
- Graham, S., Harris, K. R., & Fink, B. (2000). Is handwriting causally related to learning to write? Treatment of handwriting problems in beginning writers. *Journal of Educational Psychology*, 92(4), 620-633.

- Hannaford, C. (1995). *Smart moves*. Arlington, VA: Great Ocean Publishers.
- Hanson, R. A., & Farrell, D. (1995). The long-term effects on high school seniors of learning to read in kindergarten. *Reading Research Quarterly*, 30, 908-933.
- Heibert, E. H., & Taylor, B. M. (2000). Beginning reading instruction: Research on early interventions. In M. L. Kamil, P. B. Mosenthal, P. D. Pearson, & R. Barr (Eds.). *Handbook of reading research* (pp. 455-482). Mahwah, NJ: Lawrence Erlbaum Associates.
- Hoiem, T., Lundberg, I., Stanovich, K. E., & Bjaalid, I. (1995). Components of phonological awareness. *Reading and Writing: An Interdisciplinary Journal*, 7, 171-188.
- Juel, C. (1988). Learning to read and write: A longitudinal study of fifty-four children from first through fourth grade. *Journal of Educational Psychology*, 80(4), 437-47.
- Lombardino, L. J., Morris, D., Mercado, L., DeFillipo, F., Sarisky, C., & Montgomery, C. (1999). The Early Reading Screening Instrument: A method for identifying kindergarteners at risk for learning to read. *International Journal of Language and Communication Disorders*, 34(2), 135-150.
- McBride-Chang, C. (1999). The ABCs of the ABCs: The development of letter-name and letter-sound knowledge. *Merrill-Palmer Quarterly*, 45(2), 285-308.
- Morris, D. (1992). What constitutes at-risk: Screening children for first grade reading intervention. In W. A. Secord & J. S. Damico (Eds.), *Best practices in school speech language pathology* (pp. 43-51). Orlando, FL: Harcourt Brace Jovanovich.
- Perney, J., Morris, D., & Carter, S. (1997). Factorial and predictive validity of first graders' scores on the Early Reading Screening Instrument. *Psychological Reports*, 81, 207-210.
- Roscigno, V. J. (2000). Family/school inequality and African-American/Hispanic achievement. *Social Problems*, 47(2), 266-290.
- Roscigno, V. J., & Ainsworth-Darnell, J. W. (1999). Race, cultural capital, and educational resources: Persistent inequalities and achievement returns. *Sociology of Education*, 72, 158-178.
- Rodriguez, F. (1999). *Affirming equity*. Dubuque, IA: Kendall/Hunt Publishing Co.
- Sheffield, B. (2003). An excerpt from handwriting: A neglected cornerstone of literacy. In *Handwriting research and resources* (p.19-24). Columbus, OH: Zaner-Bloser.
- Smith, S. S., & Dixon, R. G. (1995). Literacy concepts of low-and middle-class four-year-olds entering preschool. *Journal of Educational Research*, 88, 243-254.
- Snow, C. E., Burns, M. S., & Griffin, P. (Eds.). (1998). *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.
- Spear-Swerling, L. (2006). The importance of teaching handwriting. LD Online. Retrieved September 12, 2006 from www.ldonline.org/spearswerling/10521
- Torgeson, J., & Davis, D. (1996). Individual difference variables that predict response to training in phonological awareness. *Journal of Experimental Child Psychology*, 63, 1-21.
- Wagner, R. K., Torgesen, J. K., Rashotte, C. A., Hecht, S. A., Barker, T. A., Burgess, S. R., Donahue, J., & Garon, T. (1997). Changing relations between phonological processing abilities and word-level reading as children develop from beginning to skilled readers: A 5-year longitudinal study. *Developmental Psychology*, 33, 468-479.
- Washington, J. (2001). Early literacy skills in African-American children: Research considerations. *Learning Disabilities: Research & Practice*, 16(4), 213-21.
- Youth Indicators. (1999). Retrieved September 12, 2006 from <http://nces.ed.gov>
- Zaphorozhets, A., & Elkonin, D. (1971). *Psychology of preschool children*. Cambridge, MA: MIT Press.

Authors

Donita Massengill Shaw, Ph.D. is an Assistant Professor in the Department of Curriculum & Teaching at the University of Kansas. She currently teaches graduate and undergraduate classes on the literacy topics of reading, writing, and spelling. Her research interests are in the area of elementary literacy and adult literacy.

Mary Lou Sundberg, M. A. is the author of Sunform Alphabet Systems, an integrated approach to teaching phonics and handwriting. Her research interests are to document methods that better assist children in learning their sounds and forming their letters for fluency and legibility.

A Focus on Hope: Toward a More Comprehensive Theory of Academic Resiliency Among At-Risk Minority Students

Erik E. Morales

Abstract: *The resilience construct, specifically an original framework entitled the "Resilience Cycle" (the Cycle) is presented and explored as an antidote to the current disproportionate focus on failure that characterizes most discussion of the academic performance of at-risk students. The Cycle, which evolved as data were gathered on the statistically unlikely academic achievement of 50 at-risk minority youth, is used as a theoretical framework to capture the processes and nuances of these students' journeys. The Cycle is woven through the research findings, and one is presented as mutually supportive of the other. It is concluded that key elements of academic resilience include high emotional intelligence, honest assessment of needs, multiple exogenous and endogenous protective factors working in a coordinated manner, and the development and use of internal loci of control.*

Introduction

Academic resilience, the phenomenon of statistically unlikely academic achievement among marginalized and disenfranchised students, has recently gained popularity and prominence in the educational, sociological, and psychological literature (Conchas, 2006; Hawkins & Mulkey, 2005; Kitano & Lewis, 2005; Reis, Colbert, & Hebert, 2005). Yet this research on positive outcomes is still dwarfed by the reams of paper laboriously documenting student failure and hypothesizing on reasons for said failure. Taking a different perspective, resilience research promotes an additive approach to student potential by focusing on proven success despite acute and ubiquitous risk.

The challenge of increasing academic achievement rates for students of color (particularly low socioeconomic status (SES) African Americans and Hispanics) has remained an illusive, yet pressing concern nationwide. The achievement gap between white and non-white students remains expansive. As Harris and Herrington (2006) conclude, while there was success in closing the gap during the 1980s, subsequently that success has eroded and the gap has actually expanded. By focusing on low SES students, those most at risk but who have exceeded expectations, it is hoped that progress toward closing the gap will be made.

In evaluating resilience research, it is important to understand degree of resilience. Degree of resilience is a relative term referring to the distance traveled by the resilient individuals. Looking at the extremes in seminal works, Gandara (1995) focused on poor Mexican Americans who ended up earning doctoral degrees in academic disciplines, law, or medicine. On the most modest end of the spectrum, Gale (1996) used a junior high school

GPA minimum of 3.0 for rural students. Regardless of the parameters of the degrees of resilience, due to what is known about the enduring correlation between ethnic minority/low SES status and low academic achievement (Harris & Herrington, 2006), any of the above measures can determine academic resilience.

Once degrees of resilience are established, the focus shifts to the process itself. Precious little is yet understood about the processes and practices that enable youth who are exposed to the array of social maladies, still rampant especially in the inner cities, to achieve academically (Barbarin, 1993; Gardynik & McDonald, 2005; Miller & Macintosh, 1999; Myers & Taylor, 1998; Ungar, 2004). As these authors point out, most current work focuses on *isolating* attributes or competencies present in resilient individuals and touches little on the complexity, idiosyncrasy, and interrelatedness characterizing the process. As Luthar, Cicchetti, and Becker (2000) point out, while progress toward uncovering quality resilience theories continues to be made, there is still a need for "coherent theoretical frameworks."

Additionally, a large portion of the literature is limited to the K-12 school experience (Brown, D'Emidio-Caston, & Benard, 2001; Milstein & Henry, 2000) and does not present models and data that stretch beyond high school, to the crucial high school-to-college transition. For this reason, a primary focus area here is what students have done in order to successfully move from high school to college.

There are three main theoretical challenges that available resilience constructs have yet to address satisfactorily:

1. A more comprehensive focus on the resilience process is needed, rather than simply identifying isolated variables.

2. The idiosyncratic nature of resilience should be acknowledged and integrated into resilience theory.
3. The crucial high school-to college transition must be emphasized.

In order to understand the context within which resilience operates, there must be an understanding of a prevalent discontinuity dynamic characterizing many minority students' social interactions. When engaging with educational institutions, especially colleges and universities which are traditionally even more "culturally distant" than K-12 institutions, the resilient student must often exhibit inordinate amounts of consciousness, compromise, and conciliation. Much more so than for those whose natural cultures fit relatively seamlessly into the academic environment. In a plethora of ways, the academic milieu and all that it involves is drastically different from the cultures with which many of these students are familiar (Bergerson, 2007; Deschenes, Cuban, & Tyack, 2001). This essentially requires the students to live two lives: to be bicultural in order to excel.

It is essential to point out that this is not a deficit model. It is not supportive of the term "culturally deprived," which gained prominence in the late 1970s, and essentially placed inherent superiority of certain cultures over others. Marginalized students are not culturally deprived—they possess an abundance of culture; the challenge is that their culture is different and thus often dismissed or devalued in the academic/collegiate arena (Delpit, 1995; Deschenes, Cuban, & Tyack, 2001; Lynn, 2006; Nelson, Tierney, Hau, & Englar-Carlson, 2006).

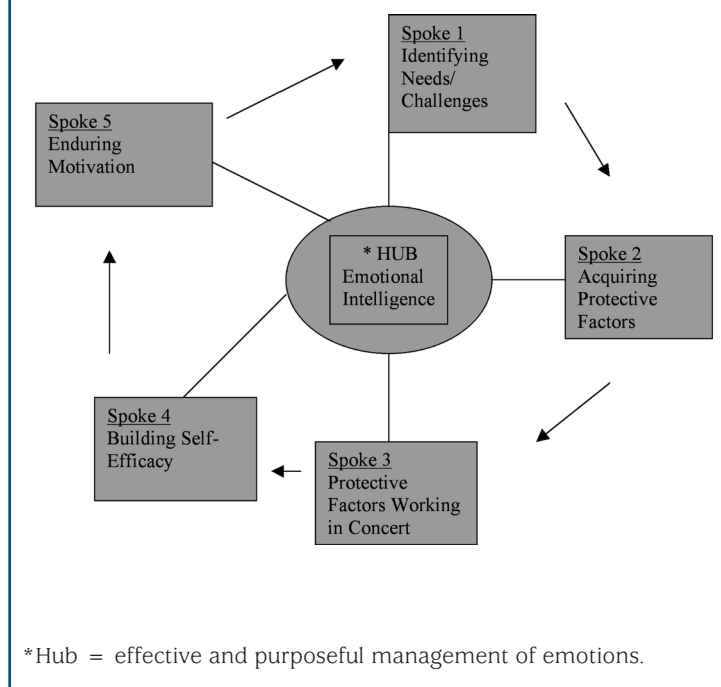
The Resilience Cycle

The Resilience Cycle is an original theoretical construct serving as a framework to capture common stages in the academic achievement of statistically at-risk students. Early iterations of the Cycle were gleaned from the authors' preliminary study of at-risk youth who demonstrated exceptional academic achievement (Morales, 2000; Morales & Trotman, 2004). With increased research, as presented here, the Cycle evolved from the data into its current rendition. With these data, the Cycle's nuances, fundamental nature, and relevance have become more pronounced.

The Resilience Cycle (Figure 1) describes "a hub" and the following five spokes representing the educational resilience process as demonstrated by the participants in this study:

- Spoke 1:** The student realistically recognizes her or his major risk factors.
- Spoke 2:** The student manifests and/or seeks out protective factors that have the potential to offset or mitigate negative effects of the risk factors.
- Spoke 3:** The student manages her or his protective factors in concert to propel her or himself toward high academic achievement.
- Spoke 4:** The student recognizes the effectiveness of the protective factors and continues to refine and implement them.
- Spoke 5:** The constant and continuous refinement and implementation of protective factors, along with the evolving vision of the student's desired destination, sustain the student's progress.

Figure 1. Resilience cycle.



The Cycle's hub and spokes are thoroughly explored and supported in the findings section below.

While the totality of the Resilience Cycle is original, aspects of the core elements that comprise the five spokes have been documented in the works of other researchers who were focused either directly or indirectly on the resilience phenomenon. Consequently, woven into the findings section are acknowledgments and credit for those contributions.

Based on the brief literature review provided above, clearly there remains a need for comprehensive and cogent models focused beyond attributes or protective factors, and on the actual scope and sequence of the resilience process in all its myriad forms. That is, a model broad enough to encompass individual variations, but firm enough to serve as a theoretical touchstone, as well as a controlling metaphor. While this is an ambitious goal, the research presented here represents movement in that direction.

Method

The observations and conclusions included in this text are based on original research done on resilient men and women. Beginning in the late 1990s, 50 academically resilient individuals from a variety of ethnic backgrounds were studied. While some students were older than others at the point of their interviews, at the time of the interview they each had met the academic achievement criteria identified below.

Student participants were recruited and interviewed over the course of eight years, from February 1997 through December 2004. The participants met the following criteria:

- Each student had parents with limited educational backgrounds (high school graduates or below) and self-identified as an ethnic minority.
- At the time of interview, each student had completed a minimum of 30 college credits and had a minimum grade point average of 3.0 (using a 4-point scale).

Based on overwhelming research indicating that being an ethnic minority from a household where neither parent went to college makes it unlikely that that student will excel in a collegiate environment (American Council on Education, 2006), these students have demonstrated academic resiliency. Furthermore, because at the time of the interview each student was actively pursuing their degree, they met Werner and Schoepfle’s (1987) important criterion for quality informants; they were *currently* involved in the phenomenon under study.

Because the academic resiliency phenomenon is complex, idiosyncratic, multidimensional, and understudied, qualitative methodologies are being employed in order to increase understanding. Engaging in deep exploration in order to achieve profound understanding of this complex process has been requested by numerous researchers. Garmenzy (1991) pointed out that research needs to address the person-environment dynamic that results in resilience. Winfield (1991), Gordan (1995), Dugan and Coles (1989), Wang and Gordan (1994) and Conchas (2006) all believe that a thick, rich, contextual understanding of resilience, and a specific focus on resilience processes are necessary. Additionally, it is this researcher’s belief that to understand the resilience process, the resilient individual’s own

experience of the resilience process must be paramount. Thus, the researcher is engaging in a phenomenological approach toward data gathering. The in-depth interview is particularly effective for this purpose (Geertz, 1973; McCracken, 1988; Rubin & Rubin, 1995; Spradley, 1979; Watson & Watson-Franke, 1985). As McCracken (1988) discusses, the long interview allows for the exploration of individual perceptions and world views. Specific to resiliency, Liddle (1994) articulates that resilience can and should be understood through the unearthing of individual narrative.

Other means of data collection played much more minor roles. Copies of transcripts were used to verify GPAs and academic standing, and some demographic background data pertaining to where the students grew up as well as the schools they’d attended were also gathered and interpreted. However, it was the student voices which were the overwhelming source of “truth.”

Participant Selection

Potential interviewees were “recruited” in a variety of ways. Of the 50, 22 were referred by college faculty and staff, 17 responded to flyers posted around college campuses, and 11 were referred by friends of participants. Potential interviewees were given a “Participant Identifying Data Form” which was reviewed to make certain that students met the above criteria. Documented proof of academic standing was requested; however, socioeconomic and ethnic status were determined based on student response alone. Students who were determined to have met the resilience criteria became research participants. Of the 50 students, 21 were females and 19 were male (see Table 1 for detailed student demographics). All of the participants were assigned pseudonyms for purposes of confidentiality and anonymity.

Table 1

Resilient Students’ Demographic Information (N = 50)

<p><u>Race/Ethnicity</u></p> <p>African American = 21, Hispanic = 20 Biracial = 5, Haitian American = 2 Jamaican American = 1 Guyanese American = 1</p> <p><u>Gender</u></p> <p>Female = 31, Male = 19</p> <p><u>Households</u></p> <p>Two Parent = 24 (48%) One Parent (Mom) = 26 (52%)</p>	<p><u>Parent Education Level</u></p> <p>African American = 72% HS, 22% 8th, 8% SC Hispanic = 60% HS, 29% 8th, 11% SC Biracial = 60% HS, 40% SC Haitian American = 100% HS Jamaican American = 100% SC Guyanese American = 100% HS SC = Some college HS = Completed 8th gr = Up to Grade 8</p> <p><u>Home Local</u></p> <p>Urban = 40 (80%) Suburban = 8 (16%) Rural = 2 (4%)</p>
--	--

Data Collection

All of the data were collected by this researcher, using traditional qualitative methodologies gleaned from graduate training during the attainment of a Ph.D. in higher education. While doing the research, completeness and data saturation were the goals. Completeness is the principle of adding interviews until one is satisfied with the level of understanding for the given phenomenon (Rubin & Rubin, 1995). The saturation point is defined as the place in time when additional interviews add little to what has already been learned (Glaser & Strauss, 1965). Through fulfillment of both completeness and data saturation, there was confidence that what was learned was accurate.

In accordance with the work of Rubin and Rubin (1995) topical, semi-structured, long interviews were conducted. The topic was the students' academic resilience, and structure and consistency was provided by an interview protocol used for all students (see Table 2 for examples of protocol questions).

Each participant was interviewed a minimum of three times. Data was gathered predominantly by following Kirk and Miller's (1986) inverted triangle; beginning with broad, general, open-ended questions, then following up with specific targeted inquiry. Consequently, the participants' initial interview sought to gain a general picture of their backgrounds and educational progressions. The second interview followed up by focusing on specific protective and risk factors identified and their position within the student's achievement context. The final interview served to establish specific relationships between risk and protective factors, and the processes by which those relationships resulted in academic success. Additionally, subsequent to the third interview, member checks were conducted to address any

apparent contradictions and to further establish the veracity of the researcher's findings.

Data Analysis

In conducting qualitative research, data collection and analysis are distinct processes that are closely intertwined. Consistent with the qualitative research norms (Lincoln & Guba, 1985; Rubin & Rubin, 1995) these two activities were performed continuously until data saturation was achieved.

All interviews were transcribed and the transcriptions became part of the field log. Ely (1991) describes the log as a cohesive history of the investigation. Additional components of the logs included field notes, personal reflections, and descriptions. Following common research protocols, these writings were then turned into lengthier writings called "analytic memos" (Bogdan & Biklen, 1982). The analytic memos provided opportunities to begin synthesizing thoughts and observations.

Throughout the actual data analysis process, and in accordance with the work of Bogdan and Biklen (1982) categories and themes emerged and concepts were coded. Major categories emerging were various forms of protective and risk factors, and from these developed subcategories (e.g., family members, schools, etc.). Once these were established, the goals were to identify relationships between the protective factors, the specific processes by which the resilience occurred, and how the students experienced these phenomena. These relationships evolved from cross-referencing the identified protective factors with resulting achievements, then questioning participants as to how the two may have been connected.

Table 2.

Interview Protocol: Areas of Discussion and Sample Questions

1. Educational History/Background
- Can you describe your educational journey thus far?....How it began and how you ended up here?
2. Risk Factors
- Is there anything from your background that has proven to be a challenge to your academic achievement? If so, what? How?
3. Protective Factors
- Were there any people in your community who were especially influential? Who? How?
4. Protective/Risk Factor Relationships
- You mentioned that your football coach gave you the father figure you lacked at home. How did he play that role and why was he effective?
5. Resilience Process
- Can you describe, in detail, a time when your family's support resulted in academic achievement?

Trustworthiness

For the qualitative researcher, trustworthiness refers to assurance that the research activities are instituted fairly, and that the conclusions yielded from the research represent as closely as possible the experiences of the people being studied (Ely, 1991). A variety of methods were used to promote trustworthiness, including: triangulation, coherence of themes, peer debriefing, and member checking. The belief and hope is that the research presented here is as accurate and precise as is reasonably possible. Additionally, given research indicating that community building and authentic communication are essential elements in order to promote honesty from minority communities (Moore & Boyd-Franklin, 1996), as the researcher I worked to build intimate and safe communication between myself and the student participants.

Findings

The Hub: Emotional Intelligence

If we speak of the steps of the Cycle as spokes, then there is a “hub” around which the spokes rotate and gain momentum. The hub consists of several related concepts: skillful and effective management of emotions amid stressful times, adeptness in social environments, impulse control, and effective decision making under duress. The cumulative expression of these basic characteristics can be found in the term *emotional intelligence* or Emotional Quotient (E.Q.) in the psychology literature (Goleman, 1995). Of the 50 resilient students interviewed, all but four exhibited high degrees of emotional intelligence in relation to their academic success (these four managed to excel, despite often erratic behavior and awkward social skills). The remaining 46 students were affable, calculating, and appeared to maintain emotional equilibrium throughout their educational journeys. These characteristics facilitated effective utilization of available protective factors.

Another aspect of emotional intelligence is the ability to be friendly and likeable. This ability has been found to be a key attribute contributing to academic resilience by a variety of researchers (Benard, 1993; Doll & Lyon, 1998; Gordan & Song, 1994; Jew, Green, & Kroger, 1999; Werner & Smith, 1992) and comes in especially handy during Spoke #2, when the potentially resilient students are seeking out individuals and environmental resources to serve as protective factors. Obviously, one is more likely to attract helpful individuals into one’s life the more affable one is. All of these attributes are indicators of an individual’s emotional intelligence. Of the students in this study, 38 out of 50 (76%) identified their own extroversion and amiability as important attributes contributing to their success.

Another key aspect of Goleman’s definition of emotional intelligence is that the strategic channeling of emotion through impulse control, delaying gratification, and persistence in the face of setbacks, is essential to success. These emotional intelligence skills are of particular value to the potentially resilient students given the inordinate amount of stress, challenges, and obstacles under which most of them will find themselves throughout their academic careers. And while Goleman’s work is about emotional intelligence and its influence on general success, and not specifically about its relation to academic achievement, his words and ideas lie at the very core, or

hub, of what academically resilient individuals focus on as they wade through the American educational system utilizing various aspects of the Resilience Cycle.

Though she was not familiar with the term “emotional intelligence,” Andrea’s emphasis on the value of her abilities in this area captures the essence of what many of the participants reported:

I guess one thing I am really proud of is that I don’t get caught up in the moment, like with a problem or a situation. I mean, I look back at my family living situation, I was homeless for Christ’s sake. But I didn’t freak out. I did what I had to do, I stayed focused on school. (Andrea, 19, GPA 3.6)

Sean’s work on anger management exemplifies some of the more formal work done by these students to help with the channeling of emotions:

When I first got here (to his college campus) I kept on getting into fights and arguments and stuff. Not really fistfights, just a lot of yelling and screaming. . . . I felt so uncomfortable here, and in some ways, like I didn’t belong. . . . and I would just blow up at people. . . . then they did this anger management workshop thing in my dorm, and I thought it would be corny, but it was cool. The guy who ran it was a counselor here, and him and me became close. . . . Now I go to him on a regular basis and I rarely lose my temper, now I can focus on school better. (Sean, 19, GPA 3.1)

Whether it was something that came naturally to them or something they had to acquire, these students relied on their emotional management a great deal.

While the emotional intelligence hub is the constant center, there are five spokes (or continuous steps) that have been exhibited by these students. These are explored and supported in the “Spokes of the Cycle” section.

Spokes of The Cycle

Spoke 1. Identifying needs/challenges: The student realistically recognizes her or his major risk factors.

At some point early in their lives, resilient students comprehend the obstacles they face, including their own deficiencies, as well as their strengths. This recognition is not done in a judgmental way (though sometimes anger is part of the equation), it is more matter of fact. Antonio’s awareness of his sub-par pre-college education is reflective of what many of the participants reported:

When I got here (to college) I got frustrated. I knew that I was not going to be able to skate by like in high school. There (in his high school) all I had to do was study 20 minutes before the test, not give the teacher a hard time, and say “please” and “thank you” and compared to everyone else, I was a “good student.” At my first English comp class here, the teacher asked “Who read Plato in high school?” Almost the whole class raised their hands. I knew then I was in trouble, but once I accepted that, I was like OK, I need to get busy catching up to these guys. (Antonio, 20, GPA 3.1)

It is this type of realistic assessment of the actual situation that several resilience researchers have identified as essential (Jew, Green, & Kroger, 1999; Reivich & Shatte, 2002). Most of the resilient students interviewed in this study have had an amazing acuity in honestly assessing the pros and cons of their current situation.

While virtually every student in the study (48 out of 50, 96 %) acknowledged that at various points they realized that others had more educational opportunities and stronger educational backgrounds, like Antonio, for a large percentage of them this inequity became glaring soon after getting to college. Thirty-eight of the 50 students (76 %) pointed to specific moments during their freshman year of college when they knew they would have to play “academic catch-up” in order to compete.

While Spoke 1 focuses on recognition of risk factors associated with the students’ marginalized status, there are strengths that can be gleaned from their backgrounds, that when channeled, can be invaluable. For example, high levels of “street smarts,” and an inculcated work ethic derived from constant struggle, were identified by 70 % (35 out of 50) of the participants as crucial attributes that they believed they would not have had if their upbringings had been more comfortable. However, as valuable as these attributes may be, in the milieu of formal education, they can only be useful if the student can transform them into a means of mastering assigned curricula. This ability to capitalize on whatever resources one has leads directly into Spoke 2.

Spoke 2. Acquiring protective factors: The student manifests and/or seeks out protective factors that have the potential to offset or mitigate negative effects of the risk factors.

These resilient students consistently have been able to manifest and/or seek out appropriate protective factors. *Appropriate*, meaning that these protective factors were often especially suitable for the specific risk factors that they had addressed. Here it is important to recognize the perspicacity necessary to accurately assess one’s strengths and the value of that assessment (Yang, MacPhee, Fetsch, & Wahler, 2000). This ability is a necessary prerequisite for the resilient student. Without this, the acknowledgement of limitations or academic deficiencies (Spoke 1) would be the end of the journey, as it often is for many nonresilient students. Once one knows one’s limitations and disadvantages, one must also be willing and able to address them in effective ways.

The ability to attract helpful resources into one’s life is often predicated on the student’s affect. As mentioned earlier in the emotional intelligence discussion, students who were likeable, positive, and energetic tended to attract assistance. Additionally, while these students often attracted help, they were also adept and proactive in seeking help. As Masten (1994) as well as Jew, Green, and Kroger (1999) stress, these resilient youth actively sought out environments that were supportive of their growth.

It is difficult to overestimate the challenges many of these resilient students have faced. In getting to know them, their risk factors were often more numerous, varied, complicated, and grave than at first glance. Resilient students in this study have managed to do well in school while dealing with homelessness; physical, verbal and sexual abuse; absence of one or both parents (or drug addicted parents who may as well be absent); severe poverty; undiagnosed learning dis-

abilities; barely functioning schools (which often had to be taken over by state authorities); language barriers; blatant racism; depressed and violent communities; and all the suffocating toxicity that emanates from these situations. These are all on top of the “normal” stresses of surviving adolescence under the best of circumstances.

Given the myriad hurdles, it stands to reason that students would need to manifest a *multitude* of protective factors—individual, environmental, or familial resources—that can help mitigate or soften the impact of the risk factors in order to succeed. For while not every student has had to endure all the social and communal ailments described above (though amazingly enough some do), most have had to endure and thrive with several of them.

Among the most common “major” dispositional protective factors identified by these students were *persistence* 47 (94 %); *sense of obligation to one’s family*, 47 (94 %); *high self-esteem*, 46 (92 %); and *internal locus of control*, 46 (92 %). Frequently cited environmental factors were *caring k-12 school personnel*, 45 (90 %); *state/federally funded college bridge programs*, 44 (88 %); and *attendance at a “non-neighborhood” school*, 36 (72 %). Often cited familial protective factors include *authoritative parenting styles*, 41 (82 %); *parental expectations demonstrated by words and actions*, 40 (80 %); and *mother modeling a strong work ethic*, 37 (74 %). This wide array of varied protective factors speaks to the variety of risk factors that these students must overcome. Gordan and Song (1994) refer to the process of managing these protective factors effectively as “orchestration” (p. 41).

Use of the word *orchestrations* is particularly appropriate. It speaks not only to the need for many protective factors of various types, but that the factors are working in a delicate, systematic, and concerted fashion that is as much art as it is science. This symphony is at the core of Spoke 3.

Spoke 3. Protective factors working in concert: The student manages her or his protective factors in concert to propel her or himself toward high academic achievement.

The third spoke of the Resilience Cycle counteracts the abundance of risk factors acknowledged in Spoke 1. Because there exists such a myriad of risk factors, resilient students must rely on multiple protective factors that they have manifested and cultivated (Luthar, Doernberger, & Zigler, 1993). One or two are not enough; the students must dig deeply and look widely for a variety of resources in order to succeed in an academic world that is often foreign to theirs. In fact, referring specifically to African American college students (perhaps the most historically marginalized group), Plummer and Slane (1996) found that as compared to whites, they used more and a wider variety of coping skills during their college careers.

In the process of identifying “major protective factors” (these were operationalized as factors so crucial to their academic success, that from the perspectives of the students, their academic success would probably not have occurred without them) 44 of 50 (88 %) identified multiple (more than three) such factors.

The resilient students also demonstrated an orchestration of their particular protective factors so that several protective factors often operate simultaneously in response to whatever stressors may be pressing down on the individual.

By managing one’s emotions, delaying gratification, exhibiting impulse control, and effectively reading the situations and people

around them, the students are able to play conductor; orchestrating their protective factors in a fluid manner and utilizing their repertoire of tools effectively.

Not only must these students cultivate and implement these resources strategically, they must sustain the motivation to continue to employ them throughout the arduous journey. Here is where Spoke 4 comes into play.

Spoke 4. Building self-efficacy: The student recognizes the effectiveness of the protective factors and continues to refine and implement them.

The fourth spoke involves looking at the protective factors with an eye toward recognition and refinement. Especially as the resilient students got older, they became cognizant and mindful not only of how effective a particular protective factor has been, but in which situations specific protective factors had proven particularly efficacious. Here again, their sense of acuity and perspicacity (as demonstrated in Spoke 1) become invaluable. Their self-awareness assists them in becoming adept at understanding which aspects of which protective factors have proven useful, and then proceeding to build upon them. Here they are becoming fully convinced that what they do matters, and that they can greatly influence their own destiny.

Perhaps the most ubiquitous reference in all of educational motivation literature is Rotter's (1966) value placed on having an internal locus of control; that is the degree to which an individual believes that a given outcome is a result of internal as opposed to external factors. Consistent with this finding, as pointed out above, many of the students in this study, 46 (92%), have identified this belief system as essential.

However, while Rotter's original work is often cited, few resilience researchers look at his later work (Rotter & Hochreich, 1975) where he focuses not only on the expectation of a given result, but on the importance and value of the *strength of desire* for the achievement on the particular desired outcome (the value and importance of desire is further elucidated in Spoke 5). Rotter goes on to explain that a true expectation of achievement can only result from repeated success in similar situations in the past. This is where Spoke 4 really gains its value. The student expects to achieve academically because he or she has built up a track record of success through hard work, skill building, and previous achievement.

When the study participants were asked about what motivated them to keep going, 37 (74%) of them described reflections on past successes as key motivators for continued action. Often these recollections revolved around, times when they doubted themselves, then thought about previous difficult situations that they were able to overcome. Naomi's graduate school letdown exemplifies many of the students' abilities to gain confidence and motivation from previous success:

When I was applying to grad schools for psych, I was so excited, because I did good in undergrad, I figured I'd be set. . . . I applied to five schools and didn't get into any of them. I didn't realize how competitive the psych programs were. . . . I think it was because I bombed the GRE. . . . was devastated and felt like a loser. Whenever my friends would bring up grad schools I would either change the subject or leave the room, I was so embarrassed. I was about

to give up. . . . I talked to one of my profs and she talked about how much I had grown, and how when I first got to college I was afraid I would fail, but that I did what I had to and succeeded. . . . I realized that she was right. It sounds corny, but that gave me confidence. Thinking about all that I was able to achieve, I knew I just needed to apply those things to getting into grad school, and that it would all work out. I mean I was the first in my family to finish high school, and here I was with a 3.4 GPA. I knew then that I would find a way. (Naomi, 22, GPA 3.4)

The other seminal work evident here is Bandura's (1982) work on the power of self-efficacy. He posits that self-competence is promoted through mastery of experience (in this case, the students' achievement) and that individuals will put forth more effort when they have experienced prior success. This true *expectation* of success cannot be faked or rushed; it must be built, layer by layer, challenge by challenge, and success by success.

Here is a logical place to insert a protective factor within the students' sphere of influence that is so obvious that if it were not so essential it might not even be worth acknowledging. A large portion of the resilient students in the study, 45 (90%), has repeatedly emphasized the *sine qua non* of "hard work." No matter how innately bright they believed that they were, at certain points, or for most of them at every point, they had to buckle down and put in the sweat. This is not to say that hard work alone is enough; the psychosocial stressors that most of these students endure are often so severe that hard work without significant environmental resources would have proved fruitless. However, the hard work had to be done, and often yielded the success that produced a realistic expectation of future achievement.

Spoke 5. Enduring motivation: The constant and continuous refinement and implementation of protective factors becomes habitual, and along with the evolving vision of the student's desired destination, sustain the student's academic achievement as new academic challenges present themselves.

The final spoke of the Cycle—not the "last" because the Cycle is just that, a continuous evolving and revolving process—centers around the stalwart visions of where the resilient student sees her or himself at the conclusion of a particular academic task or journey. It is this vision along with the refined protective resources they have acquired and refined along the way, which fuels them and carries them through the inevitably thorny times inherent to the journey.

Seventy two percent of the participants, 36 out of 50, explicitly referred to their approaches to educational achievement as having become habitual, using phrases such as "automatic," "second nature," and "routine." Regardless of the exact phrasing, these students expressed the notion that their comfort and confidence with school had increased along with their adeptness at utilizing their particular protective factors. This habitual honing of skills was expressed in a variety of ways. Kerline's description of her evolved approach to writing challenges captures the essence of what many of these students described:

With each semester here (her college campus) I have definitely grown more comfortable, not just with physically being here, but with the school work and studying and stuff. . . . It's like, now I know where to turn when I have a specific problem. . . . Like when I first got to college I was a terrible writer, they didn't teach me shit in high school English, I got As then, but then I got here and my freshmen comp teacher tore my writing apart. . . . I got real familiar with the writing center and with one specific tutor Jean. . . . So now, as soon as I see that there will be a paper due in a class, I don't panic, I know I'm going to see Jean and it will be fine. And I won't wait until it is almost due, I've learned that I should see Jean earlier, because she helps me with getting my ideas together and with actually writing it. (Kerline, 20, GPA 3.3)

As with many of the students, in Kerline's case we see that not only has implementation of her protective factors become habitual, but she also demonstrates honing of a key protective factor. Based on experience, she has learned that her tutor is more helpful if she sees her early, rather than waiting. This refinement induced by reflection allowed these participants to get better at being students and prepared them for the greater challenges that followed.

Feeding the students' desire to use and refine their academic strategies is their ongoing recognition of purpose. A significant majority of participants, 39 (78%), specifically referenced their awareness of concrete goals as major motivators sustaining them as they pursued their academic objectives. These students were very clear about where they wanted to go, and based on their high degrees of internal locus of control discussed earlier, they believed in their abilities to get themselves there.

While students described their experiences supporting Spoke 5 in a variety of ways, they usually allude to the process of acknowledging strengths and resources (protective factors) and strategically implementing them as they achieved each of their accomplishments. This along with their growing confidence and expectation for success characterized their success process. Charles' comments capture the essence of many of the students' attitudes:

I had to work hard to get that SAT score (1120) coming from where I came from, that was a miracle. But more than pride I started to *expect* success. I truly believed that with the people in my life, and the strategies I'd learned, there was no reason why I couldn't do the college thing. And once I got here (college) I knew I wasn't going to waste this opportunity. . . . I could see my future. (Charles, 20, 3.1 GPA)

Researcher Stance/Limitations

Clearly, the greatest potential for excess subjectivity comes from my general respect for the resilient individuals presented here. While I do hold them in high esteem, I consciously focused on them as three-dimensional human beings, and during the data gathering and analyses processes, I remained open to any and all possible findings. Remaining true to Munhall's (1994) fundamental rule of qualitative inquiry, I "let the data guide the way" (p.4).

Another limitation of this study is that it only includes ethnic minorities who have demonstrated academic resiliency. A thorough

focus on nonresilient individuals or resilient low SES whites is beyond the scope of this study. Consequently, the findings presented here are limited to the population under study and should not be applied to others. Future research can and should compare and contrast the findings here with the experiences of other resilient and nonresilient subpopulations. It would also be helpful to replicate this study using a larger sample size.

Implications for Practice

Educational research should have clear, practical value. Especially when talking about those students who are "at risk," there is no room or time for purely theoretical discussion. The consequences are too grave, the politics too vacillating, and the windows of opportunity too fleeting.

The applications of the Resilience Cycle are numerous. They include use as an individual academic counseling tool for students at virtually any stage of their academic careers. Unlike other resilience models (Joseph, 1994; Kobasa, 1979) the Cycle does not stress early academic competence as a prerequisite. It is supportive of the notion that at any point, one may begin their academic journey, regardless of their ages or of any academic deficiencies that may characterize their pasts. To this end, as a purely practical tool, an earlier iteration of the Cycle was periodically used at an urban community college to assist students of all ages in their quest to return to school and earn a college degree.

The Cycle can also be used as a model around which to structure both small and large academic support/enhancement initiatives. In fact, the Cycle was used effectively as a model for a program for "at-risk" freshmen at a small, private university near Philadelphia (Morales & Friedman, 2000). Additionally, elements of the Cycle were used to counsel urban youth at an alternative middle school in New Jersey.

In addition to intervention, as Gardynik and McDonald (2005) stress, resilience research and theory can be a valuable tool for educators in that it can help them think in terms of prevention. Aspects of the Cycle such as the value of emotional intelligence, the need for multiple protective factors, and the importance of recognizing small steps can become topics for extracurricular programming and workshops. Possibilities for how this model (or aspects of the model) can help students of any age, gender, or ethnicity are limited only by creativity and available funding.

Based upon the findings here, and the supporting literature for individual spokes of the Cycle, it appears that the basic elements of the Cycle may be core ingredients for promoting resilience and achievement for statistically at-risk students nationwide. Furthermore, while most of the study's participants achieved without constant and deliberate direction from others, providing such direction may assist those who have greater needs and/or are less focused.

From a philosophical perspective, resilience in general and the Resilience Cycle in particular provide educators with a new and distinctly different paradigm. It forces us to think and plan in terms of achievement while acknowledging the reality of risk. It also emphasizes the personal and very specific obstacles that each individual must face during his or her academic journey. Finally, the Resilience Cycle forces educators and policymakers to acknowledge that one

initiative, program, or focus area is not enough. In order to facilitate success within environments that often breed failure, there must be a myriad of protective factors made available.

Implications for Research

Due to the highly idiosyncratic nature of resilience, the vast majority of resilience research has been qualitative in nature. However, as demonstrated by this exploration and presentation of the Resilience Cycle, we are beginning to grasp enduring resilience constructs that appear to be common across some ethnic groups as well individuals. Consequently, using larger samples, a quantitative look at the broader statistical validity of the theoretical constructs presented here is appropriate. Specifically, quantitative studies comparing the relative significance of the protective factors, processes, and stages identified here to various ethnic groups, a range of socioeconomic populations, and both resilient and nonresilient individuals, would go a long way in furthering this research area and, as a result, could help to procure funding for resilience-based initiatives.

Conclusion

The degree to which educators in general, and the public in particular, have focused almost exclusively on the pathology of school failure, as well as the powerlessness of low socioeconomic students relegated to such schools, can not be overstated. This is not to say that such emphasis is unwarranted. However, there is a great deal of hope and empowerment to be found in the analysis of success. Furthermore, researching the processes of academic resilience is intended to spread resilience through understanding, and ultimately to facilitate the potentially resilient on their path toward resiliency.

References

- American Council on Education. (2006, October). *Students of color make dramatic gains in college enrollment but still trail whites in the rate at which they attend college*. Retrieved March 12, 2007, from <http://www.acenet.edu/AM/Template.cfm>
- Bandura, A. (1982). Self-efficacy mechanisms and human agency. *American Psychologist*, 37, 122-148.
- Barbarin, O. A. (1993). Coping and resilience: Exploring the inner lives of African-American children. *Journal of Black Psychology*, 19, 78-92.
- Benard, B. (1993). Fostering resiliency in kids. *Educational Leadership*, 51, 44-48.
- Bergerson, A. A. (2007). Exploring the impact of social class on adjustment to college: Anna's story. *International Journal of Qualitative Studies in Education*, 20(1), 99-119.
- Bogdan, R., & Biklen, S. (1982). *Qualitative research for education: An introduction to theory and methods*. Boston: Allyn and Bacon.
- Brown, J., D'Emidio-Caston, M., & Benard, B. (2001). *Resilience education*. Thousand Oaks, CA: Corwin Press.
- Conchas, G. (2006). *The color of success: Race and high achieving urban youth*. New York: Teachers College Press.
- Delpit, L. (1995). *Other people's children*. New York: The New Press.
- Deschenes, S., Cuban, L., & Tyack, D. (2001). Mismatch: Historical

- perspectives on schools and students who don't fit them. *Teachers College Record*, 103(4) 525-547.
- Doll, B., & Lyon, M. (1998). Risk and resilience: Implications for the delivery of educational and mental health services in schools. *School Psychology Review*, 27, 348-363.
- Dugan, T., & Coles, R. (Eds.). (1989). *The child in our times: Studies in the development of resiliency*. New York: Brunner/Mazel Publishers
- Ely, M. (1991). *Doing qualitative research: Circles within circles*. New York: The Falmer Press.
- Gale, G. (1996). *Academically resilient rural junior high school students: A qualitative study*. Unpublished doctoral dissertation, Walden University.
- Gandara, P. (1995). *Over the ivy walls: The educational mobility of low-income Chicanos*. Albany, NY: State University of New York Press.
- Gardynik, U. M., & McDonald, L. (2005). Implications of risk and resilience in the life of the individual who is gifted/learning disabled. *Roeper Review*, 27(4) 206-226.
- Garmenzy, N. (1991). Resiliency and vulnerability to adverse developmental outcomes associated with poverty. *American Behavioral Scientist* 34(4), 416-430.
- Geertz, C. (1973). Thick description: Toward an interpretive theory of culture. In C. Geertz (Ed.) *The interpretation of cultures* (pp. 3-30). New York: Basic Books.
- Glaser, B., & Strauss, A. (1965). The discovery of substantive theory: A basic strategy underlying qualitative research. *American Behavioral Scientist*, 8(6), 5-12.
- Goleman, D. (1995). *Emotional intelligence*. New York: Bantam Books.
- Gordan, K. (1995). Self-concept and the motivational patterns of resilient African-American high school students. *Journal of Black Psychology*, 21, August, 239-255.
- Gordan, E., & Song, L. (1994). Variations in the experience of educational resilience. In M. Wang & E. Gordan (Eds.), *Educational resilience in inner-city America: Challenges and prospects*. (pp. 27-43). Hillsdale, NJ: Lawrence Erlbaum.
- Harris, D. N., & Herrington, C. D. (2006). Accountability, standards, and the growing achievement gap: Lessons from the past half-century. *American Journal of Education*, 112(2), 209-238.
- Hawkins, R., & Mulkey, L. (2005). Athletic investment and academic resilience in a national sample of African American females and males in the middle grades. *Education and Urban Society*, 38(1), 62-88.
- Jew, C. L., Green, K. E., & Kroger, J. (1999). Development and validation of a measure of resiliency. *Measurement & Evaluation in Counseling & Development*, 32, 75-89.
- Joseph, J. (1994). *The resilient child: Preparing today's youth for tomorrow's world*. New York: The Free Press.
- Kitano, M. K., & Lewis, R. B. (2005). Resilience and coping: Implications for gifted children and youth at risk. *Roeper Review*, 27(4), 200-210.
- Kirk, J., & Miller, M. (1986). *Reliability and validity in qualitative research*. Beverly Hills, CA: Sage.

- Kobasa, S. (1979). Stress, life events, personality and health: An inquiry into hardiness. *Journal of Personality and Social Psychology*, 37, 1-11.
- Liddle, H. (1994). Contextualizing resiliency. In M. Wang and E. Gordan (Eds.), *Educational resilience in inner-city America: Challenges and prospects*. (167-177). Hillsdale, NJ: Lawrence Erlbaum.
- Lincoln, Y., & Guba, E. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage.
- Luthar, S. S., Cicchetti, D., & Becker, B. (2000). The construct of resilience: A critical evaluation and guidelines for future work. *Child Development*, 71, 543-562.
- Luthar, S., Doernberger, C., & Zigler, E. (1993). Resilience is not a unidimensional construct: Insights from a prospective study of inner-city adolescents. *Development and Psychopathology*, 5, 703-717.
- Lynn, M. (2006). Dancing between two worlds: A portrait of the life of a black male teacher in South Central LA. *International Journal of Qualitative Studies in Education*, 19(2), 221-242.
- Masten, A. S. (1994). Resilience in individual development: Successful adaptation despite risk and adversity. In M.C. Wang & E.W. Gordan (Eds.), *Educational resilience in inner-city America: Challenges and prospects* (pp.3-25). Mahwah, NJ: Erlbaum.
- McCracken, G. (1988). *The long interview*. Newbury Park, CA: Sage.
- Miller, D., & Macintosh, R. (1999). Promoting resilience in urban African American adolescents: Racial socialization and identity as protective factors. *Social Work Research*, 3, 23-43.
- Milstein, M., & Henry, D. (2000). *Spreading resiliency: Making it happen in schools and communities*. Thousand Oaks, CA: Corwin Press.
- Moore, P., & Boyd-Franklin, N. (1996). Black African American families. In M. Goldrick, J. Giordano, & J. Pearce (Eds.), *Ethnicity & family therapy*. (pp.66-84). New York: Guilford Press.
- Morales, E. (2000). A contextual understanding of the process of educational resilience. *Innovative Higher Education*, 25(1) 7-22.
- Morales, E., & Friedman, K. (2000). Resilience theory to practice: Setting the PACE. *The Learning Assistance Review*, 5(2). 13-21.
- Morales, E., & Trotman, F. (2004). *Promoting academic resilience in multicultural America: Factors affecting student success*. New York: Peter Lang.
- Munhall, P. L. (1994). *Qualitative research proposals and reports: A guide*. National League for Nursing: New York.
- Myers, H. F., & Taylor, S. (1998). Family contributions to risk and resilience in African American children. *Journal of Comparative Family Studies*, 29, 215-229.
- Nelson, M. L., Tierney, S. S., Hau, J. M., & Englar-Carlson, M. E. (2006). Class jumping into academia: Multiple identities for counseling academics. *Journal of Counseling Psychology*, 53, 1-14.
- Plummer, D. L., & Slane, S. (1996). Patterns of coping in racially stressful situations. *Journal of Black Psychology*, 22(3), 302-315.
- Reis, S. M., Colbert, R. D., & Hebert, T. P. (2005). Understanding resilience in diverse, talented students in an urban high school. *Roeper Review*, 27(2), 110-125.
- Reivich, K., & Shatte, A. (2002). *The resilience factor: 7 Keys to finding your inner strength and overcoming life's hurdles*. New York: Broadway Books.
- Rotter, J. B. (1966). Generalized experiences for internal versus external control of reinforcement. *Psychological Monograph*, 80(1).
- Rotter, J. B., & Hochreich, D. J. (1975). *Personality*. Glenview, IL: Scott Foresman.
- Rubin, H., & Rubin, I. (1995). *Qualitative interviewing: The art of hearing data*. Thousand Oaks, CA: Sage Publications.
- Spradley, J. (1979). *The ethnographic interview*. New York: Holt, Reinhart & Winston.
- Ungar, M. (2004). A constructionist discourse on resilience: Multiple contexts, multiple realities among at-risk children and youth. *Youth & Society*, 35(3), 341-365.
- Wang, M. C., & Gordan, E. W. (1994) *Educational resilience in inner city America: Challenges and prospects*. Mahwah, NJ: Lawrence Erlbaum.
- Watson, L., & Watson-Franke, M. (1985). *Interpreting life histories: An Anthropological inquiry*. New Brunswick, NJ: Rutgers University Press.
- Werner, E., & Smith, R. (1992). *Overcoming the odds: High risk children from birth to adulthood*. New York: Cornell University Press.
- Werner, O., & Schoepfle, G. M. (1987). *Systematic field work: Foundation of ethnography and interviewing*. Beverly Hills, CA: Sage.
- Winfield, L. (1991). Resilience, schooling, and development in African-American youth: A conceptual framework. *Education and Urban Society*, 24, 5-14.
- Yang, R.K., MacPhee, D., Fetsch, R., & Wahler, J.J. (2000). The structure of self-assessed competencies in an urban at-risk sample. *Journal of At-Risk Issues*, 6(2), 33-40.

Author

Erik E. Morales, Ph.D., is an Assistant Professor in the Department of Elementary and Secondary Education at New Jersey City University, in Jersey City, N.J. Morales taught several years in urban middle and high schools and earned his Ph.D. in Higher Education Administration from New York University. He has written extensively on at-risk urban students and academic resilience.

Early Classification of Reading Performance in Children Identified or At Risk for Emotional and Behavioral Disorders: A Discriminant Analysis Using the Dynamic Indicators of Basic Early Literacy Skills (DIBELS)

Jorge E. Gonzalez, Kimberly J. Vannest, and Robert Reid

Abstract: This study evaluated the ability of the kindergarten and first grade Dynamic Indicators of Basic Early Literacy Skills (DIBELS), measures of early literacy development, to discriminate among low average, average, and above average students considered at risk emotional and behavioral disorders (EBD) on the Total Reading cluster of the Woodcock Reading Mastery Tests-Revised (WRMT-R). The DIBELS consisted of two measures of phonological awareness, one measure of alphabet knowledge, one measure of the alphabetic principle, and one measure of oral reading fluency with connected text. Results indicated that first grade DIBELS differentiated among reading groups and classification accuracy was statistically better than chance. With the exception of alphabet knowledge, DIBELS did not significantly differentiate among the fall kindergarten groups. Oral reading fluency and alphabet knowledge had the greatest discriminating power for first graders. These findings extended the usefulness of the first grade DIBELS to populations other than general education students. Implications for the use and application of DIBELS to non-general education populations are discussed along with caveats for kindergarten discriminant power of the DIBELS.

Introduction

No one would argue that early intervention is essential for preventing or mitigating the impact of emotional and behavioral disabilities (EBD) on academic performance. This may be especially crucial in reading. The fundamental nature of reading ostensibly serves as the fulcrum for a majority of other learning demands. There currently exists a need to pay more focused attention to early identification and prediction of correlated behavior and reading difficulties (Trout, Nordness, Pierce, & Epstein, 2003).

Academic failure is pervasive for students with EBD. For these students, EBD will persist over time often disrupting social, academic, and community functioning (Kutach, Duchnowski & Friedman, 2005). Approximately 38% of students identified as EBD have been retained by the time they reach secondary school (Wagner, Kutash, Duchnowski, Epstein & Sumi, 2005) with most 1.5 to 3 grade levels below same age peers (Coutinho, 1986; Trout et al., 2003). While exact numbers vary, approximately 60% of elementary/middle school children with EBD perform in the bottom quartile on reading measures with 85% making up the bottom two quartiles (Wagner et al., 2005). Moreover, students identified with EBD are consistently found to have the highest school dropout incidence rates in children and youth identified with disabilities (Reschly & Christenson, 2006).

Although there is still much to be done on identifying and predicting which children are at risk for reading failure, a source of urgency is the relationship between reading failure and concomitant development of emotional and behavioral problems. Academic performance has consistently been shown to be inversely related to problem behavior beginning early in a child's schooling (Brier, 1995; McEvoy & Welker, 2000). Students with poor reading skills are more likely to experience negative behavioral and or antisocial outcomes in the future (Good, Gruba, & Kaminski, 2001; Good, Simmons, & Smith, 1998; McEvoy & Welker, 2000). The early identification and prevention of academic deficits, particularly in reading, may assuage and ultimately diminish the development of behavioral problems.

Results of four systematic research reviews synthesizing dozens of studies show that early reading failure is correlated with the onset, persistence, and seriousness of emotional and behavioral problems independent of major sociological variables such as socioeconomic status (Gottfredson, 1981; Hawkins & Lishner, 1987; McEvoy & Welker, 2000; Silberberg & Silberberg, 1971). These reviews show that poor academic achievement and/or academic survival skills often coincide with behavioral difficulties (Cullinan & Epstein, 2001; Cullinan, Evans, Epstein, & Ryser, 2003). Depending on the criteria for identification of EBD, studies demonstrate a 6% to 42% comorbidity of emotional disturbance involving academic difficulties.

Given the relationship among emotional, behavioral, and reading problems, one could reasonably assume that there would be a preponderance of research on the early detection of reading difficulties in students with EBD or vice versa and on interventions to address these problems. To the contrary, there is no preponderance of research in this important area (Coleman & Vaughn, 2000; Lane, 2004; Mooney, Epstein, Reid & Nelson, 2003; Ruhl & Burlinghoff, 1992; Trout et al., 2003; Wagner et al., 2005).

If researchers and educators are to improve academic and behavioral outcomes for low-achieving, beginning readers, measures of proficiency in critical early reading skill areas are essential. Conventional standardized student reading achievement data, unfortunately, do not yield sufficient information on these skills to differentiate successful from less successful readers. Traditional reading measures only provide summative information, infrequent measurement points, omit student progress monitoring, and have little instructional utility (Good et al., 2001; Good et al., 1998). Given accumulating evidence that reading success is causally influenced by ease with critical early reading skills, valid, formative, and reliable assessment tools are needed to determine performance on these skills before students begin to learn to read (Elliot, Lee, & Tollefson, 2001; Kaminski & Good, 1996).

One set of measures useful in monitoring progress on early reading skills are the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) (Good et al., 2001). The DIBELS are a continuum of fluency-based measures that assess facility in pre-reading and early reading skills, are highly correlated to later reading competence, and are aligned with scientifically-based reading research (Good et al., 1998; Hintze, Ryan, & Stoner, 2002). These skills include initial sound fluency, letter naming fluency, phonemic segmentation, nonsense word reading, and oral reading fluency. The DIBELS permit: (a) early identification of students with reading difficulties, (b) formative evaluation of instructional effectiveness in pivotal skills, and (c) determination of reading development (Kaminski & Good, 1996).

The reliability and validity of the DIBELS for heterogeneous samples of general education elementary students has been investigated in several reports and studies (Buck & Torgesen, 2003; Elliot et al., 2001; Hintze et al., 2002; Kaminski & Good, 1996; Shaw & Shaw, 2002). Alternate form reliability estimates for the DIBELS measures are generally adequate, ranging from .72 for *Initial Sound Fluency* (ISF) to .93 for *Letter Naming Fluency* (LNF). Elliott (2001) found test-retest reliability estimates of .90, .83, and .85 for LNF, Sound Naming Fluency (adaptation of INF), and Phonemic Segmentation Ability (adaptation of PSF), respectively. Concurrent validity estimates for the DIBELS measures range from a low of .09 for PSF (e.g., Comprehensive Test of Phonological Processing) (Wagner, Torgesen, & Rashotte, 1999) to a high of .85 for LNF (with teacher rating scale). Predictive validity estimates with well known measures, like the Woodcock-Johnson Psycho-educational Battery (Woodcock, Johnson, Mather, McGrew, & Werder, 1991), are adequate, ranging from .45 for *Oral Reading Fluency* (ORF) to .71 for *Letter Naming Fluency* (LNF).

The reliability and validity of the DIBELS has been well established among general education students; the ability to identify students who are at risk of failure is a separate issue. Only one study has evaluated the predictive validity of the DIBELS with this population. Hintze et al., (2002) studied a sample of 86 general education kindergartners. Results indicated that the combination of ISF, PSF, and LNF were ac-

curate in predicting membership in a poor reading group. Prediction accuracy for the high reading group was somewhat mixed. In other words, the DIBELS measures lead to a very high percentage of true positives (i.e., children correctly identified as performing poorly on the *Comprehensive Test of Phonological Awareness*). While the results of this study are encouraging, their generalizability is limited. We do not know if the DIBELS will be an accurate predictor of reading performance for children at risk of behavior problems or disorders.

If educators and researchers are to use the DIBELS to identify at-risk readers, then it is important to substantiate their validity across student populations other than general education elementary students. This study contributes to the research base by examining the usefulness of the DIBELS in differentiating among low average, average, and above average students identified at risk of emotional and behavioral disturbance based on performance on the Woodcock-Johnson Reading Mastery test.

Methods

Participants and Setting

Participants were 145 students (67 kindergartners, 78 first graders) identified as at risk of emotional and behavioral disorders (EBD) (see Table 1 for demographic characteristics of sample participants). The students were drawn from seven elementary schools in a medium-sized urban school district in the Midwest. The schools selected were part of a school district with a total minority enrollment of 15%. Districtwide, 27% of students receive free or reduced lunch and 15% receive special education services with over 5% of children in English Language Learner (ELL) programs. The students were drawn from an initial pool of 322 students invited to participate in research on the effects of primary (e.g., universal programs like mentoring programs); secondary (targeted programs like counseling and social skills training); and tertiary (intensive programs like behavior programs, related services) levels of intervention for students identified at risk of EBD.

Table 1

Demographic Characteristics of Sample Participants

Characteristic	Kindergarten (n = 67)	First Grade (n = 78)
Age		
Mean	5.6	6.2
Standard Deviation	.38	.40
Gender		
Male	56 (82 %)	51 (66 %)
Female	12 (18 %)	26 (34 %)
Ethnicity		
White	44 (64 %)	54 (69 %)
African American	15 (22 %)	13 (17 %)
Hispanic	7 (11 %)	8 (10 %)
Other	2 (03 %)	3 (04 %)

Note: Numbers in parentheses are percentages.

Students were identified as “at risk” using the *Systematic Screening for Behavior Disorders* (SSBD) program (Walker & Severson, 1990). The SSBD consists of three “gates” that provide progressively more intensive levels of screening; however, only the first two steps were necessary for subject identification in this study. In the spring and fall of 2002, all kindergarten and first grade students in the seven participating elementary schools were screened. In Stage I, teachers identified the five students who demonstrated the most problematic externalizing characteristics (e.g., acting out, aggressiveness, bullying) and five students who exhibited the most internalizing characteristics (e.g., anxiousness, depressed mood, sadness). In Stage II, teachers completed three measures for each of the 10 students identified in Stage I, namely: (1) the Critical Events Index, (2) the Adaptive Behavior Scale, and (3) the Maladaptive Behavior Scale. For the Critical Events Index, the teacher indicated the occurrence or nonoccurrence of 33 externalizing and internalizing problem behaviors over the course of the previous six months. The Adaptive Behavior Scale (12 items) indicated the presence or lack of prosocial behavior (e.g., “follows established classroom rules”). The Maladaptive Behavior Scale (11 items) indicated the presence or lack of antisocial behavior (e.g., “refuses to participate in games and activities with other children at recess”). Those students who exceeded the normative criteria on one or more of the measures in Stage II were considered as at risk of EBD and included in the study.

Instruments

Dynamic Indicators of Basic Early Literacy Skills (DIBELS). All DIBELS are reported as a frequency per minute rate total score. DIBELS data collected in this study included *Initial Sound Fluency* (ISF: kindergarten); *Letter Naming Fluency* (LNF: kindergarten, first grade); *Phoneme Segmentation Fluency* (PSF: kindergarten, first grade); *Nonsense Word Fluency* (NWF: kindergarten, first grade); and *Oral Reading Fluency* (ORF: first grade).

Initial Sound Fluency (ISF) is a measure designed to assess a student’s facility in recognizing and producing the initial sound from an orally presented word. For example, using four pictures, the examiner asks “This is a sink, cat, gloves, and a hat. Which picture begins with /s/?” Each probe consists of 12 items. The ISF task takes about three minutes to administer and possesses an alternate form reliability of .72 (Hintze et al., 2002).

Letter Naming Fluency (LNF) assesses rapid letter naming ability. Students are presented with a page of random upper- and lowercase letters and are asked to name as many letters as they can. The student is allowed one minute to produce as many letter names as he/she can with the score being the number of letters named correctly in one minute. Alternate form reliability for the LNF is .93 (Hintze et al., 2002).

Phoneme Segmentation Fluency (PSF) assesses a student’s ability to segment three- and four-phoneme words into their individual phonemes fluently. A phoneme is the smallest unit of sound which is significant in a language. It requires the student to verbally produce the individual phonemes for each word. The PSF measure takes about two minutes to administer and has over 20 alternate forms for progress monitoring.

Nonsense Word Fluency (NWF) assesses the alphabetic principle. This includes letter-sound correspondence along with the blending

of letters into words (Kaminski & Good, 1996). The student is presented with random VC (Vowel Consonant) and CVC (Consonant, Vowel, Consonant) nonsense words (e.g., sig, rav, ov) and is asked to either produce letter sounds in isolation or to orally produce the whole nonsense word. The score is the total number of letter-sounds produced correctly at the end of one minute.

Oral Reading Fluency (ORF) assesses reading with accuracy and fluency. Students read aloud a grade-appropriate passage for one minute. Omissions, substitutions, and hesitations greater than three seconds on words in the passage are considered errors. The oral reading fluency rate is determined by the number of words read correctly within one minute.

Woodcock Reading Mastery Test-Revised. The Woodcock Reading Mastery Test-Revised (WRMT-R) (Woodcock, 1998) is an individually administered, norm-referenced, standardized measure used to assess students’ beginning reading skills. The test mean is 100; the standard deviation is 15. The WRMT-R provides a total score for overall reading (i.e., Total Reading cluster which serves as a broad measure of global reading ability) and six subtest scores. Subtests (and coefficient alphas) are: Word Identification (alpha = .97) measures ability to pronounce words in isolation; Word Attack (alpha = .91) measures ability to use phonic and structural analysis to pronounce nonsense words; Word Comprehension (alpha = .91) measures vocabulary skills using Antonyms, Synonyms, and Analogy Completion tasks; Passage Comprehension (alpha = .92) measures ability to supply a missing word from a brief passage; Reading Comprehension (alpha = .95) combines Word Comprehension and Passage Comprehension; and Basic Skills Cluster (alpha = .97) combines Word Identification and Word Attack.

Data Collection Procedures

Measures were collected during the fall of 2002. All measures were administered by data collectors who had received 20 hours of formal training in the administration and scoring of each measure. All data collectors were required to demonstrate mastery (i.e., 90 – 100% inter-rater agreement) prior to testing. In one session, all students were tested individually with the DIBELS and the WRMT-R. Testing sessions took approximately 20 and 45 minutes, respectively. According to DIBELS instructions, kindergartners were tested on ISF, LNF, NSW, and PSF; and first graders were tested on LNF, NSW, PSF, and ORF. Each student was allowed a break between measures. In the event an administration was not completed due to unforeseen circumstances (e.g., fire drill), a second administration was scheduled no more than one week later.

Data Analysis

Two separate hierarchical discriminant analyses were conducted, one each for first grade and kindergarten, respectively. There are two kinds of conventional discriminant analysis studies—descriptive discriminant analysis (DDA) and predictive discriminant analysis (PDA). The primary objective of DDA is to identify attributes or variables that best discriminate members of two or more groups. PDA is used primarily to predict group membership in mutually exclusive groups of two or more (Duarte-Silva & Stam, 2004). Unlike conventional discriminant analysis in which a set of variables is used to predict group membership, hierarchical discriminant analysis permits the effect of

each single variable to be studied uniquely. In this article, separate analyses were conducted for first grade and kindergarten because kindergarten students are not measured on ORF, and first graders are not given ISF. Students were divided into three groups based upon the total cluster WRMT-R Reading scores: low average, average, and high average. For kindergarten, less than and equal to 89 was low average, 90 to 103 was average, and 104 or higher was above average. For first graders, less than and equal to 86 was low average, 87 to 98 was average, and 99 or higher was above average. In each case, group membership (i.e., low, average, and above average) was the dependent variable. For kindergarten and first grade, the independent variables were ISF, LNF and PSF and LNF, PSF, NWF and ORF. A preliminary analysis was conducted to examine the distribution of variables and their correlation matrix. Results showed that kindergarten NWF and first grade ORF and NWF were highly skewed. To normalize the skewness, square root transformations were employed. To control for the possible violation of homogeneity of variance-covariance, separate (as opposed to pooled) variance-covariance matrices in the classification were used for first grade since the Box's test indicated that the assumption had been violated.

Because there were no *a priori* assumptions about group membership, prior probabilities were set at equal group membership. The discriminatory power of the classification matrix in comparison to a chance model was tested using Press's Q statistic (Hair, Anderson, Tatham, & Black, 1998). If Press's Q statistic exceeds the chi-square critical value, then the classification matrix is considered statistically better than chance. Classification accuracy for low average, average, and above average groups was tested using the proportional chance criterion (Hair et al., 1998). These criteria provide a test of how accurately each group could be classified in relation to the total sample. In this study, hierarchical discriminant analysis was employed following the step down theory (Duarte-Silva & Stam, 2004; Roy & Bargman, 1958) with separate analyses for kindergarten and first grade students, respectively. Descriptive discriminant analysis (DDA) was applied to the set of DIBELS which most contributed to predicting WRMT-R scores. ANCOVA was subsequently employed on each additional predictor one at a time to test whether it had a significant effect on WRMT-R score group membership controlling for previous predictors already included in the model as covariates. The predictor was included in the model if it significantly influenced the WRMT-R group membership.

Results

Table 2 contains descriptive statistics for kindergarten and first grade children on both the DIBELS and the WRMT-R Total Score. Kindergarten WRMT-R Total standard scores assumed a bimodal distribution with first grade WRMT-R assuming a normal distribution. Table 3 shows the correlation matrices for both kindergarten and first grade. For kindergarten, only LNF was significantly correlated with the WRMT-R. In contrast, all the first grade DIBELS were significantly correlated with WRMT-R standard scores.

Table 2

Descriptive Statistics for Kindergarten and First Grade Samples

	Variable	Mean	Median	SD	Min.	Max
Kindergarten	ISF	12	10	7	0	32
	LNF	18	17	13	0	51
	NWF	4	0	8	0	37
	PSF	6	0	9	0	36
	WRMT-R	98	101	11	81	116
First Grade	LNF	35	34	18	3	84
	NWF	20	18	18	0	95
	PSF	20	19	16	0	61
	ORF	10	5	17	0	93
	WRMT-R	91	91	14	57	124

Note. ISF = Initial Sound Fluency; LNF = Letter Naming Fluency; NWF = Nonsense Word Fluency; PSF = Phoneme Segmentation Fluency; ORF = Oral Reading Fluency; WRMT-R = Reading Mastery Total Reading Cluster Standard Score.

Table 3

Intercorrelations Between DIBELS and WRMT-R (TR)

Variable	TRC	ISF	LNF	NWF	PSF	ORF
Kindergarten (n = 67)						
WRMT-R	-	.05	.33**	.22	.15	-
ISF		-	.21	.20	.46**	-
LNF			-	.51**	.29*	-
NWF				-	.60**	-
PSF					-	-
ORF						-
First Grade (n = 77)						
WRMT-R		-	.66**	.71**	.54**	.68**
LNF			-	.73**	.66**	.53**
NWF				-	.56**	.79**
PSF					-	.43**
ORF						-

Note. DIBELS = Dynamic Indicators of Basic Early Literacy Skills; Literacy Skills; WRMT-R = Woodcock-Johnson Reading Mastery-Revised Total Cluster Score; ISF = Initial Sound Fluency; LNF = Letter Naming Fluency; NWF = Nonsense Word Fluency; PSF = Phoneme Segmentation Fluency; ORF = Oral Reading Fluency.

*Significant at 0.05.

**Significant at .01.

In the hierarchical discriminant analysis of kindergarten students, DDA was employed on the model with LNF and ISF as predictors because they had the largest correlation with the discriminant function of WRMT-R. The results for the kindergarten group were marginally significant for Function 1 ($\Lambda = .86$), $\chi^2(4, N = 67) = 9.96, p = .041$. Function 1 accounted for 82 % of the explained variance. Standardized discriminant function coefficients for deriving discriminant function scores from standardized predictors were 1.01 for LNF and -.44 for ISF. Correlations (loadings) between LNF and ISF and the discriminant functions given in the structure matrix were .91 and -.20 for LNF and ISF respectively. The structure matrix of correlations between the predictors and the discriminant functions suggested that LNF was the best predictor for distinguishing between low, average, and above average students.

The effect of ISF, while not noteworthy, had a suppression effect and increased the effect size of the study. Therefore, both LNF and ISF remained in model. In the second step, ANCOVA was applied to PSF controlling for LNF and ISF as covariates. In the third step, ANCOVA was applied to NWF controlling for the other three predictors as covariates. Results showed that neither NWF or PSF had a significant effect on WRMT-R group membership. The final model had two DIBELS measures employed for the PDA of kindergarten students. Group means and standard deviation of LNF and ISF of three WRMT-R group levels are shown in Table 4. The use of the two DIBELS measures resulted in an overall classification accuracy of approximately 50 % with 68.2 % of low level, 50 % of average level, and 32 % of high level groups respectively as represented in Table 5. It illustrates that LNF and ISF are much more efficient in predicting low level reading performance ability students than high level kindergarten students. It reveals that DIBELS might not be good at predicting high WRMT-R level of students who were identified at risk of emotional and behavioral disorders.

Table 4

Group Means and Standard Deviation for Kindergarten Grade Readers

Group	Variable	Mean	Standard Deviation
1	Letter Naming Fluency (LNF)	11.8	10
	Initial Sound Fluency (ISF)	12	7.6
2	Letter Naming Fluency (LNF)	21	14
	Initial Sound Fluency (ISF)	9.8	5.7
3	Letter Naming Fluency (LNF)	20.5	13.4
	Initial Sound Fluency (ISF)	13	8
Total	Letter Naming Fluency (LNF)	17.8	13.1
	Initial Sound Fluency (ISF)	11.7	7.3

Table 5

Classification Results for Kindergarten Students

Reader Group	Predicted Reader Group Membership		
	(LA)	(A)	(HA)
Low Average (LA)	15 (68.2 %)	5 (22.7 %)	2 (9.1 %)
Average(A)	6 (30 %)	10 (50 %)	4 (20 %)
High Average (HA)	10 (40 %)	7 (28 %)	8 (32 %)

Note. 49.3 % of grouped cases correctly classified.

For first grade students, the DDA was applied on the ORF and LNF predictors because they had the strongest correlation with the discriminant function. The results for the first grade group were significant for Function 1 ($\Lambda = .45$), $\chi^2(4, N = 78) = 60.1, p \leq .001$. Function 1 accounted for 96.3 % of the explained variance. For first grade, standardized discriminant function coefficients for the discriminant function scores from standardized predictors were .53 for LNF and .67 for ORF. Correlations (loadings) between LNF and ORF and the discriminant functions given in the structure matrix were .88 and .27 for LNF and ORF, respectively. The structure matrix of correlations between the predictors and the discriminant functions suggested that both LNF and ORF were good predictors for distinguishing between low, average, and above average students.

Following the DDA, ANCOVA was applied to NWF, which was the third most important predictor of WRMT-R, using ORF and LNF as covariates. It was shown that NWF had no significant effect on the WRMT-R groups. Finally, ANCOVA was applied to PSF with ORF, LNF and NWF as covariates. Results showed that PSF still did not have a statistically significant affect on WRMT-R groups. The final model included only ORF and LNF as predictors in first grade and a PDA was applied to them. Table 6 shows the first grade ORF and LNF group means and standard deviation. The three WRMT-R levels increased with higher measured reading ability. Results show that 68 % of original cases were correctly classified with 65.5 % of low level, 68 % of average level, and 71 % of high level groups respectively and is shown in Table 7. Therefore, ORF and LNF were the most efficient in predicting high level reading ability and moderately predicted average and low level of reading for first grade students.

Table 6

Group Means and Standard Deviation for Grade Readers

Group	Variable	Mean	Standard Deviation
1	Letter Naming Fluency (LNF)	22	11.6
	Oral Reading Fluency (ORF)	1.2	.96
2	Letter Naming Fluency (LNF)	36.6	11.5
	Oral Reading Fluency (ORF)	2.1	1.1
3	Letter Naming Fluency (LNF)	50.3	17.9
	Oral Reading Fluency (ORF)	4.5	2.2
Total	Letter Naming Fluency (LNF)	35.4	18
	Oral Reading Fluency (ORF)	2.5	2

Table 7

Classification Results for First Grade Students

	Predicted Reader Group Membership		
	(LA)	(A)	(HA)
Reader Group			
Low Average (LA)	19 (65.5 %)	9 (31 %)	21 (3.4 %)
Average (A)	5 (20 %)	17 (68 %)	3 (12 %)
High Average (HA)	1 (4.2 %)	6 (25 %)	17 (70.8 %)

Note. 67.9 % of grouped cases correctly classified.

Discussion

Results of the present study showed that the first grade DIBELS (i.e., LNF, PSF, NWF, ORF) significantly discriminated among students identified a priori at risk of EBD categorized as low average, average, and above average on the basis of WRMT-R Total scores. Ranking of the first grade DIBELS discriminant function coefficients revealed that the best discriminators across the groups were ORF and LNF. As to kindergarten DIBELS (i.e., ISF, LNF, PSF, and NWF), LNF is the best discriminator among students identified as at risk of EBD.

In first graders, the DIBELS were statistically significant discriminators of group membership for students identified as at risk of EBD on WRMT-R Total scores. ORF and LNF had the largest standardized

discriminant function coefficients. They made the greatest unique contribution to predicting group membership. For the first grade students, all DIBELS measures had moderate to high associations with the WRMT-R Total Reading cluster. This finding was consistent with Kaminski and Good (1996) although these authors found fewer positive associations between the DIBELS and first grade criterion measures than in kindergarten. Findings were also consistent with Tobin (2000), who found that the subtests of the *Woodcock Diagnostic Reading Battery* and *Test of Oral Reading Fluency* correlated positively with DIBELS PSF (.44 to .70) and NWF (.55 to .88) for regular education first grade students.

Our kindergarten results were partially consistent with previous research (Elliot et al., 2001; Hintze et al., 2002; Kaminski & Good, 1996; Speece, Mills, Ritchey, & Hillman, 2003) which showed statistically significant, positive validity correlations between the kindergarten DIBELS and various other criterion measures (e.g., *Comprehensive Test of Phonological Awareness*, *Metropolitan Readiness Test*, *Level*, *Woodcock-Johnson Psycho-Educational Battery-Revised*). There are four likely explanations for the kindergarten results. First, most previous studies have used a “level” rather than a “point” estimate for the DIBELS. Level estimates refer to the average of DIBELS scores over repeated administrations whereas “point” refers to one administration at a given time. Perhaps the kindergarten student’s scores at one point in time under a unique set of conditions resulted in an attenuated relationship between the DIBELS and WRMT-R Total score. Second, the homogeneous nature of the students in the present study may have restricted the range of scores. Previous studies have relied on heterogeneous general education students for their samples. In this study, students were selected who met stringent criteria for identification of at-risk EBD status. The homogeneity of the groups may have functioned to restrict the variance in such a way that it attenuated the correlations between DIBELS measures and the WRMT-R Total scores. Third, the timing of the test, DIBELS, was administered early in the fall. In the early months of kindergarten, students may not have yet fully developed the prerequisite reading skills to a degree to be discriminated by ISF, PSF, LNF and NWF. For example, Hintze et al., (2001) indicated that early in kindergarten students are just beginning to develop and fine tune the phonological awareness skills assessed by PSF. Speece et al., (2003) found that the NWF may not be a valid measure in kindergarten until the spring. A fourth consideration is the lack of predictive power associated with the low to moderate reliability estimates for the kindergarten DIBELS. Specifically, ISF possesses an alternate form reliability estimate of .72, PSF ranges from .60 to .88, LNF ranges from .80 to .93, and PSF ranges from .84 to .88, all considered low for educational decision making.

Implications for Practice

The concurrence of reading problems with emotional and behavior problems has long been evidenced by teachers and is documented in the research literature. Interestingly a concurrent development of a three-tier model for assessment and intervention is found as the prevailing framework separately in both the reading and behavior disorders literature: the three-tier model as schoolwide best practice for level one; screening and subsequent identification of students at risk in level two; and individualized assessment and intervention in

level three. However, assessments and interventions rarely address reading and behavior together, instead discussing these as mutually exclusive categories of classroom problems. This study indicates that there is utility in examining the intersection of identification of students at risk for emotional and behavioral problems and students at risk for reading problems. The DIBELS are efficient and effective for early screening and identification of at-risk students before they become well entrenched in reading failure and on a path to negative emotional and behavioral outcomes. Early screening and identification is often proposed as a means of prevention of both reading and behavior problems; but among subgroups of at-risk students, those at risk for EBD, the identification and screening of reading problems is seldom discussed. DIBELS can reliably discriminate reading characteristics specific to this vulnerable subgroup of students as early as fall of the first grade year.

As with any assessment, DIBELS should not be used as the sole criterion to make diagnostic or intervention decisions (Kaminski & Good, 1996). To do so may render false positives, leading educational personnel to inaccurately identify early elementary students as being “at risk” for reading difficulties (Hintze et al., 2002) when in fact they are not. However, providing additional reading instruction, especially for those also identified as “at risk” for emotional and behavioral problems, is unlikely to do harm. The usefulness of the DIBELS for discriminating ability characteristics of students at risk of EBD is good news for schools. Service providers (e.g., teachers) in local settings can administer this type of assessment quickly and easily receiving reliable prediction of risk for reading failure thereby potentially reducing the risk of subsequent or co-occurring behavioral and emotional difficulties. Early identification can then lead instructional personnel to develop a stronger orientation for early intervention.

Limitations and Future Research

The results of this study must be considered in the context of limitations in sampling and measurement. First, our sample size was small. As is often the case, replication would strengthen confidence in the findings. A second limitation relates to group formation. Rather than form two groups consisting of poor and good readers, three groups were a better fit to the data. Most studies rely on differentiating between poor and good performance groups. Replicating these findings will rely on validating the three group membership. Future research should consider larger samples of students at risk for or identified as EBD. In addition, longitudinal studies might better follow the same sample from kindergarten through first grade and beyond. This would permit a more useful barometer of the predictive utility of the DIBELS in later reading ability, rather than using two mutually exclusive groups. Finally, because the DIBELS data relied only on one administration, it was not possible to calculate any reliability estimates (e.g., test-retest) for our sample as is customarily done. Future studies will attempt to use alternate forms to calculate alternate-form reliability.

Conclusion

An increasing number of children arrive at school with a plethora of risk factors and needs that are likely to affect their academic survival (Morrison, Walker, Wakefield, & Soldberg, 1994). This trend will likely

continue given that today's children are more at risk of social, emotional, behavioral, and academic problems than ever before (Knoff, Curtis, & Batsche, 1997). The increase in the at-risk status of children has occurred in the context of an educational climate that demands efficient and data-driven decision making that is aligned to prevention and intervention while being linked to assessment (Hintze et al., 2002). The ability to identify reading groups as early as the fall of first grade provides tremendous possibility for early intervention.

Research tells us that when young children lag behind their peers in reading, they are unlikely to catch up without strategic, targeted, and systematic instruction in key skills required for reading success. Further, there is comorbidity between reading problems and emotional and behavioral problems. Accurate, early identification of reading problems in students who are at risk of EBD may be the mitigating link between reading failure and the development of emotional and behavioral difficulties. Our results indicate that early identification is certainly possible and that this reading-behavior predictive data can assist in the targeting of individuals in need for additional services to prevent possible future school failure and drop out. A tool, such as the DIBELS, for discriminating reading characteristics of students at risk of EBD has a high utility for schools as they strive to better understand and intervene in the intersection between reading failure and problem behavior through evidence-based assessment practices.

References

- Brier, N. (1995). Predicting antisocial behavior in youngsters displaying poor academic achievement: A review of risk factors. *Developmental and Behavioral Pediatrics, 16*, 271-276.
- Buck, J., & Torgesen, J. K. (2003). *The relationship between performance on a measure of oral reading fluency and performance on the Florida Comprehensive Assessment Test*. Tallahassee, FL: Florida Center for Reading Research.
- Coutinho, M. J. (1986). Reading achievement of students identified as behaviorally disordered at the secondary level. *Behavioral Disorders, 11*, 200-207.
- Coleman, M., & Vaughn, S. (2000). Reading interventions for student with emotional and behavioral disorders. *Behavioral Disorders, 25*, 93-104.
- Cullinan, D., & Epstein, M. H. (2001). Comorbidity among students with emotional disturbance. *Behavioral Disorders, 26*, 200-213.
- Cullinan, D., Evans, C., Epstein, M. H., & Ryser, G. (2003). Characteristics of emotional disturbance of elementary school students. *Behavioral Disorders, 28*, 94-110.
- Duarte-Silva, A. P., & Stam, A. (2004). Discriminant analysis. In L. G. Grimm & P. R. Yarnold (Eds.), *Reading and understanding multivariate statistic* (pp.277-317). Washington, DC: American Psychological Association.
- Elliot, J., Lee, S., & Tollefson, N. (2001). A reliability and validity study of the Dynamic Indicators of Basic Early Literacy Skills—modified. *School Psychology Review, 30*, 33-49.
- Good, R. H., Gruba, G. G., & Kaminski, R. A. (2001). Best practices in using Dynamic Indicators of Basic Early Literacy Skills (DIBELS). In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology IV* (pp. 679-700). Washington, DC: National Association of School Psychologists.

- Good, R. H., Simmons, D. C., & Smith, S. B. (1998). Effective academic interventions in the United States: Evaluating and enhancing the acquisition of early reading skills. *School Psychology Review*, 27, 45-56.
- Gottfredson, D. C. (1981). School and delinquency. In S. E. Martin, L. B. Sechrest & R. Redner (Eds.), *New directions in the rehabilitation of criminal offenders*. WA: National Academy.
- Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate data analysis* (5th ed.). Upper Saddle River, NJ: Prentice Hall.
- Hawkins, J. E., & Lishner, D. M. (1987). Schooling and delinquency. In E. H. Johnson (Ed.), *Handbook of crime and delinquency prevention* (pp. 245-278). New York: Greenwood.
- Hintze, J. M., Ryan, A. L., & Stoner, G. (2002). *Concurrent validity and diagnostic accuracy of the Dynamic Indicators of Basic Early Literacy Skills and the Comprehensive Test of Phonological Awareness*. Amherst, MA: University of Massachusetts.
- Kaminski, R., & Good, R. I. (1996). Toward a technology for assessing basic early literacy skills. *School Psychology Review*, 25, 215-227.
- Knoff, H. M., Curtis, M. J., & Batsche, G. M. (1997). The future of school psychology: Perspectives on effective training. *School Psychology Review*, 26, 93-103.
- Kutach, K., Duchnowski, A. J., & Friedman, R. M. (2005). The system of care 20 years later. In M. H. Epstein, K. Kutasch, & A. J. Duchnowski (Eds.), *Outcomes for children and youth with emotional and behavioral disorders and their families: Programs and evaluation of best practices* (2nd ed.) (pp. 3-22). Austin, TX: PRO-ED.
- Lane, K. L. (2004). Academic instruction and tutoring interventions for students with emotional and behavioral disorders: 1990 to the present. In R. Rutherford, M. M. Quinn, & S. R. Mathur (Eds.), *Handbook of Research in Emotional and Behavioral Disorders*. (pp. 462-486). New York: Guilford Press.
- Mooney, P., Epstein, Reid, R., & Nelson, R. (2003). Status of and trends in academic intervention research for students with emotional disturbance. *Remedial and Special Education*, 24, 473-287.
- McEvoy, A., & Welker, R. (2000). Antisocial behavior, academic failure, and school climate: A critical review. *Journal of Emotional and Behavioral Disorders*, 8, 130-141.
- Morrison, G. M., Walker, D., Wakefield, P., & Soldber, S. (1994). Teacher preferences for collaborative relationships: Relationship to efficacy for teaching in prevention-related domains. *Psychology in the Schools*, 31, 221-231.
- Reschly, A. L., & Christenson, S. L. (2006). Prediction of dropout among students with mild disabilities. *Remedial and Special Education*, 27, 276-292.
- Roy, J., & Bargman, R. E., (1958). Tests of multiple independence and the associated confidence bounds. *Annals of Mathematical Statistics*, 29, 491-503.
- Ruhl, K. L., & Berlinghoff, D. H. (1992). Research on improving behaviorally disordered students' academic performance: A review of the literature. *Behavioral Disorders*, 17, 178-190.
- Shaw, R., & Shaw, D. (2002). *DIBELS oral reading fluency-based indicators of third grade reading skills for Colorado State Assessment Program (CSAP)*. Eugene, OR: University of Oregon.
- Silberberg, N. E., & Silberberg, M. C. (1971). School achievement and delinquency. *Review of Educational Research*, 41, 17-33.
- Speece, D., Mills, C., Ritchey, K. D., & Hillman, E. (2003). Initial evidence that letter fluency tasks are valid indicators of early reading skill. *Journal of Special Education*, 36, 223-233.
- Tobin, K. J. (2000, July 7). *The effect of direct instruction and prior phonological awareness training on the development of reading skills in first grade*. Retrieved October 29, 2007 from the World Wide Web: <http://www.sraonline.com/download/DI/Research/Reading/HorizonsResearch.pdf>
- Trout, A. L., Nordness, P. D., Pierce, C. D., & Epstein, M. H. (2003). Research on the academic status of children and youth with emotional and behavioral disorders: A review of the literature from 1961-2000. *Journal of Emotional and Behavioral Disorders*, 11, 198-210.
- Wagner, R. K., Torgesen, J. K., & Rashotte, C. A. (1999). *Comprehensive test of phonological processing*. Austin, TX: PRO-ED.
- Wagner, M., Kutash, M., Duchnowski, A. J., Epstein, M. H., & Sumi, W. (2005). The children and youth we serve: A national picture of the characteristics of students with emotional disturbances receiving special education. *Journal of Emotional and Behavioral Disorders*, 13(2), 79-96.
- Walker, H., & Severson, H. (1990). *Systematic screening for behavior disorders*. Longmont, CA: Sopris West.
- Woodcock, R. W. (1998). *Woodcock Reading Mastery Tests-Revised*. Circle Pines, MN: American Guidance Service.
- Woodcock, R. W., Johnson, M. B., Mather, N., McGrew, K. S., & Werder, J. K. (1991). *Woodcock-Johnson Psycho-educational Battery—Revised*. Itasca, IL: Riverside.

Authors

Jorge E. Gonzalez, Ph.D., is an Assistant Professor in the School of Psychology at Texas A&M University. His research interests are literacy and language development in young children.

Kimberly J. Vannest, Ph.D., is an Assistant Professor in the School of Psychology at Texas A&M University. Her research interest is interventions for students with emotional and behavioral disorders.

Robert Reid, Ph.D., is a Professor in the College of Education and Human Services at the University of Nebraska-Lincoln. His research interests are self-regulation and strategy instruction for students with learning disabilities and attention deficit hyperactivity disorder.
