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## A Preliminary Study of Disproportionate Representation and Response to Intervention

### Abstract

Disproportionate representation occurs when the percentage of an identified group enrolled in special education varies significantly from that group's overall percentage of the school population (Harry, 1994). Response to Intervention (RTI), a paradigm for educational intervention, is designed to minimize many factors contributing to disproportionality. The study examined disproportionality risk ratios for African American students, ages 6 through 21, who received special education services in a southeastern state supporting the RTI initiative during the 2006-2009 school years. Data suggest that African American students identified with a specific learning disability experienced increased referral and placement in special education in the three years corresponding to the initial RTI implementation efforts. Definitive conclusions about the fidelity of RTI implementation or effectiveness of intervention are beyond the scope of the current study, but disproportionality findings may be used as a comparative baseline for future research.

### Keywords

Disproportionality, Response to intervention, African American, Special education, Disability

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## **A PRELIMINARY STUDY OF DISPROPORTIONATE REPRESENTATION AND RESPONSE TO INTERVENTION**

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**Abstract:** Disproportionate representation occurs when the percentage of an identified group enrolled in special education varies significantly from that group's overall percentage of the school population (Harry, 1994). Response to Intervention (RTI), a paradigm for educational intervention, is designed to minimize many factors contributing to disproportionality. The study examined disproportionality risk ratios for African American students, ages 6 through 21, who received special education services in a southeastern state supporting the RTI initiative during the 2006-2009 school years. Data suggest that African American students identified with a specific learning disability experienced increased referral and placement in special education in the three years corresponding to the initial RTI implementation efforts. Definitive conclusions about the fidelity of RTI implementation or effectiveness of intervention are beyond the scope of the current study, but disproportionality findings may be used as a comparative baseline for future research.

*Keywords:* disproportionality, response to intervention, African American, special education, disability

## **Intervention**

### **Disproportionate Representation**

Disproportionate representation, or disproportionality, occurs when the percentage of an identified group enrolled in special education varies significantly from that group's overall percentage of the school population (Harry, 1994). Disproportionality is a complex problem and a host of contributing factors has been cited in the literature to include societal factors, racism in education, classroom management failures, cultural unresponsiveness, varied definitions and implementation of special education, as well as biases in the educational and referral process itself (Armor, 2006; Artiles & Bal, 2008; Artiles & Trent, 1994; Coutinho & Oswald, 2000; Evans, 2005; Farkas, 2003; Harry & Klingner, 2007; Miller & Ward, 2008; Monroe, 2005; Patton, 1998; Singham, 2003; Skiba, Poloni-Staudinger, Simmons, Feggins-Azziz, & Chung, 2005; Warner, Dede, Garvan, & Conway, 2002). The negative implications of disproportionality include curriculum limitations, lower academic achievement, decreased participation in post-secondary education, and decreased employment opportunities for those identified and placed in special education (Patton, 1998).

The Individuals with Disabilities Education Improvement Act (IDEA) of 2004 incorporated into oversight of special education mandate that states and districts analyze disproportionality data and take action to reduce imbalances (Bollmer, Bethel, Garrison-Mogren, & Brauen, 2007). The primary measure of the incidence of disproportionality currently used in analyzing data is the risk ratio. A risk ratio "compares a racial/ethnic group's risk of receiving special education and related services to the risk for a comparison group," providing a measure of risk for an ethnic group of receiving special education services (Bollmer et al., 2007, p. 187). A weighted risk ratio is a more complex calculation in which a particular district's level of risk is divided by that of risk for all other students in that state (Bollmer et al., 2007). Weighted risk ratios allow for the standardization and comparison of demographic distributions across districts and states. Once an ethnic group with a high risk ratio has been identified, action may be taken to reduce the ratio differential.

An abundance of literature suggests that disproportionality in referrals of minority students to special education continues to persist despite several educational reforms (Hosp & Reschly, 2003). In one study, risk ratios for being assigned to special education were two percent higher for minority students than Caucasian students (Hosp & Reschly, 2003). Furthermore, available literature clearly demonstrates that African American students are more likely to be referred to and placed in special education than their majority peers (Armor, 2006; Artiles & Bal, 2008; Cartledge, 2005; Davis, 2005; Farkas, 2003; Harry & Klingner, 2007; Hosp & Reschly, 2003; Miller & Ward, 2008; Monroe, 2005; Patton, 1998). Finally, disproportionate referral of minority students to special education varies by disability type. Risks appear to be greatest for high incidence low-level disabilities such as emotional behavior disorder, intellectual disability, and specific learning disability (Arnold & Lassman, 2002).

## **Response to Intervention**

Response to Intervention (RTI) currently guides the provision of school services in the United States (Johnson, 2006; Skiba et al., 2008). RTI is a systems-wide school improvement model designed to provide high quality instruction and behavioral support to students within a general education setting. Students receive multi-tiered instruction based on individual academic and behavioral needs with additional services available through special education. Other important features of RTI include evidence-based interventions, data-based decision-making, and multidisciplinary collaboration (Barnes & Harlacher, 2008; Gresham, VanDerHeyden, & Witt, 2005; Shinn, 2007).

The RTI model is federally supported by the No Child Left Behind Act of 2004 (NCLB, 2002) and the Individuals with Disabilities Education Improvement Act of 2004 (Fuchs & Fuchs, 2006; Fuchs, Mock, Morgan, & Young, 2003; Hosp, 2009; IDEA, 2004; Johnson, 2006). RTI was established as an alternative to the discrepancy model (i.e., significant differences between intelligence scores and individual achievement scores) for the identification of Specific Learning Disabilities with the reauthorization of IDEA in 2004, but states and school districts maintained the option of still using the discrepancy model and many states that do support the RTI initiative have school districts still transitioning to the new paradigm.

In the state of Georgia, where sample data were collected, the Pyramid of Interventions is a four-tier system of increased intervention (from inclusive to special programming) designed to ensure that each student receives an appropriate education and is not summarily assigned to special education (Cox, 2006; Georgia Department of Education [GADOE], 2008). Within Tier I of the Georgia Pyramid of Interventions, students with special needs participate in the general education classroom and receive some differentiation of instruction to ensure adherence to the Georgia Performance Standards. A student experiencing difficulties in Tier I will move to Tier II, which provides more formalized intervention and more frequent progress monitoring (Cox, 2006, p. 1). If Tier III is necessary, the student undergoes individual assessment with interventions designed to meet that student's specific needs (Cox, 2006). The student in Tier IV participates in detailed special education programs.

Students move sequentially from tier to tier as interventions are implemented and progress monitored. Movement takes place in either direction and relates to student progress. On average, the process of moving from Tier I to Tier III spans 6 to 12 weeks. Some students may never require Tier IV services, while others return to the lower tiers after being in Tier IV for a period of time (GADOE, 2008). The purpose of the tiered model of service delivery is to identify those students who require a high level of intervention and to minimize the tendency to classify students who experience difficulties in general education classrooms as in need of special education (Cox, 2006).

## **Disproportionality and RTI**

Is RTI a viable approach to address disproportionate representation of minority students in special education? In exploring this critical question, it is helpful to consider salient characteristics of both the RTI paradigm and the complexities of the disproportionality problem. Unlike the discrepancy model that assume intrinsic problems lessen a student's ability to learn, RTI practices encourage review of external factors contributing to failure to learn, including instructional practices, methods of learning, home-school relations, individual progress, appropriate assessment measures, new classroom procedures, and the environment (Artiles & Trent, 1994; Cartledge, 2005; Harry & Klingner, 2007). Given the complexity of contributing external factors associated with disproportionality cited in the literature, RTI may be a viable approach for helping to reduce achievement deficits and encourage learning opportunities in African American students (Doughty, 2001; Singham, 2003; Townsend, 2002; Young, Wright, & Laster, 2005). Similarly, RTI principles in theory may be used with most student difficulties because the focus is on providing a tailored intervention to meet specific needs. However, the available RTI research focuses almost exclusively on the identification of Specific Learning Disabilities among early readers (K-3), so the potential impact of RTI on disproportionality involving older learners and other disability categories remains unclear (Gresham, 2005; Samuels, 2008).

Currently, there is a lack of large scale empirical studies investigating the effects of RTI on the disproportionality of minority students within special education, but emerging case study research highlights the promise of RTI as an effective intervention paradigm to improve outcomes and reduce special education referrals among minority students (Cartledge & Kourea, 2008; Demski, 2009; Fuchs et al., 2003; Garcia & Ortiz, 2004; Gravois & Rosenfield, 2006; Marston, Muyskens, Lau, & Canter, 2003; Marston, 2005; Townsend, 2002; Young et al., 2005).

For example, Marston et al. (2003) provided a case study of the problem-solving RTI model used in the Minneapolis Public Schools. This approach was developed to counteract what was believed to be the negative impact of IQ-based referrals and other biases in assessment and referral. The model as implemented in Minneapolis consisted of three stages involving referral, intervention, and monitoring of progress. The study found that there was an increased number of referrals to stage 2 interventions, based on improved reporting methods, but that this increase also meant that more students were helped to improve outcomes, as the program did not witness an increase in referrals to stage three. Overall, the results showed that the RTI-based interventions were better able to identify students needing help; helped them more effectively; reduced the number of students of color referred to special education; and generally were successful in reducing the bias in the referral and eligibility process of special education (Marston et al., 2003).

Marston (2005) also provided a case study of the effectiveness of RTI interventions, modeled on previous studies of the efficacy of the problem-solving model or the standards protocol model underlying RTI. Three-tier RTI models for reading have been

found to be helpful for young readers, while studies on the evolution of the Heartland Area Education Agency's tailoring of a four-tier to three-tier intervention also supports the three-tier model. In reviewing these models, Marston (2005) found that all qualify as RTI best practice based on identification, eligibility, intervention and results, and that all models worked well. The studies also found that Tier II and III interventions are much more successful in reducing referrals, indicating that intensity level has an impact on diverting students away from referral to special education. In general, then, Marston (2005) supported the three-tier model for RTI interventions as the most optimal model available, as measured by favorable student outcomes. Nevertheless, broad conclusions based on available descriptive data should be avoided until further operationalization, development, standardization, and field testing take place (Barnett et al., 2006; Fuchs et al., 2003; Marston et al., 2003; VanDerHeyden, Witt, & Barnett, 2005).

### **Study Significance**

As with any new paradigm, systems-level change takes time, effort, and collaboration among skilled professionals. Thus, at this time, measuring the direct impact of a well-implemented state-wide RTI initiative on disproportionality is beyond the scope of the current study. However, this study represents a preliminary step in an investigation of the likely complex relationship between risk of disproportionality for African American students in special education and RTI by establishing a three-year baseline pattern of disproportionate representation at the state level corresponding to the first few years of RTI implementation.

To establish a relatively broad range of baseline data, researchers sought to answer the following research question: Are there significant differences in disproportionality weighted risk ratios among African American students with disabilities (all disabilities, emotional behavior disorders, intellectual disabilities, and specific learning disabilities) by school year (2006-2007, 2007-2008, and 2008-2009)? Present findings may then serve as a reference point for any changes observed in disproportionality risk ratios and give comparative meaning to subsequent research.

### **Methodology**

This study used an ex post facto group comparison research design. The independent variable was the individual school district. The dependent variable was the weighted disproportionality risk ratio for students with disabilities (all disabilities, emotional behavior disorders, intellectual disabilities, and specific learning disabilities) by school year (2006-2007, 2007-2008, and 2008-2009). All disabilities includes deaf/blind, deaf/hard of hearing, emotional behavior disorder, intellectual disabilities, orthopedic impairment, other health impaired, significant developmental delay, speech-language impairment, traumatic brain injury, and visual impairment and blindness. Georgia at-risk levels of disproportionality range from 1.20 to 3.99, disproportionate levels are ratios that are 4.00 and higher; and a significant disproportionality level is considered by having ratios of 5.10 and higher (Georgia Department of Education [GADOE], 2010).

## Population

The target population included all African American students, ages 6 through 21, who received special education services in Georgia school districts for an identifiable disability during the 2006-2009 school years. The population did not include school districts with a total enrollment of fewer than 20 African American students and fewer than 10 African American students with an identified disability as occurred in the 2006-2007 and 2007-2008 school years (Bollmer et al., 2007; Coutinho & Oswald, 2006; GADOE, 2010). Likewise, the population did not include school districts with greater than 75% African American enrollment in order to limit the effects of specific demographics in the form of district homogeneity.

## Data Collection

Data retrieval from the Georgia Department of Education (GADOE) began following approval of the study by the Valdosta State University Institutional Review Board. The GADOE had compiled data to meet federal accountability standards and had included it in the GADOE Special Education Reports of 2006-2007, 2007-2008, and 2008-2009. These reports were available from the Data Collections Department of the GADOE and the Division of Special Education Services.

## Data Analysis

Due to potential violation of statistical assumptions for parametric repeated measures, this study employed Friedman's analysis of variance to determine whether a significant difference in the weighted disproportionality risk ratio existed for African American students with disabilities (all disabilities, emotional behavior disorders, intellectual disabilities, and specific learning disabilities) by school year (2006-2007, 2007-2008, and 2008-2009). Following a significant Friedman's analysis of variance (ANOVA), a post hoc test (Wilcoxon signed-rank test) assessed significant differences (Field, 2009; Huck, 2008). The Bonferroni correction maintained an overall alpha level of .05.

## Results

Table 1 presents the median, mean, and standard deviation of weighted disproportionality risk ratios of students with disabilities (all disabilities, emotional behavior disorders, intellectual disabilities, and specific learning disabilities) for school districts by school year (2006-2007, 2007-2008, and 2008-2009). For the *all disabilities* category, the minimum weighted disproportionality risk ratio across the three school years was 0.40 (2008-2009), and the maximum weighted disproportionality ratio was 3.64 (2008-2009). For students identified with an emotional behavior disorder, the minimum weighted disproportionality risk ratio across the three school years was 0.61 (2008-2009), and the maximum weighted disproportionality ratio was 6.96 (2007-2008). For students identified with an intellectual disability, the minimum weighted disproportionality risk ratio across the three school years was 0.78 (2007-2008 and 2008-2009), and the maximum weighted disproportionality risk ratio was 9.21 (2007-2008). For students



identified with a specific learning disability, the minimum weighted disproportionality risk ratio across the three school years was 0.48 (2007-2008), and the maximum weighted disproportionality risk ratio was 2.72 (2008-2009).

Table 1  
*Mean and Standard Deviation of Weighted Disproportionality Risk Ratio by Disability Category and School Year*

Disability Category	Year	$N^a$	<i>Min</i>	<i>Max</i>	<i>Mdn</i>	<i>M</i>	<i>SD</i>
All Disabilities	2006-2007	154	0.52	3.29	1.27	1.35	0.38
	2007-2008	152	0.57	3.04	1.32	1.36	0.37
	2008-2009	153	0.61	3.50	1.34	1.38	0.38
Emotional Behavior	2006-2007	88	0.64	5.79	1.66	1.95	1.07
	2007-2008	82	0.63	6.96	1.67	1.98	1.19
	2008-2009	80	0.67	4.13	1.65	1.80	0.75
Intellectual Disabilities	2006-2007	113	0.80	5.98	2.94	3.06	1.15
	2007-2008	106	0.78	9.21	2.73	2.92	1.34
	2008-2009	104	0.78	7.65	2.63	2.91	1.33
Specific Learning	2006-2007	108	0.52	2.41	1.12	1.21	0.41
	2007-2008	104	0.48	2.54	1.16	1.22	0.37
	2008-2009	106	0.54	2.72	1.23	1.32	0.43

$N^a$  = the number of school districts that met data requirements for inclusion in the current study.

Results from Friedman's ANOVA for the *all disabilities* category indicated a statistically significant difference among weighted disproportionality risk ratios,  $\chi^2(2) = 11.88$ ,  $p = .003$ , across the three school years. A post hoc test, the Wilcoxon signed-rank test, was employed to determine which school years were significantly different. The median weighted disproportionality risk ratio ( $Mdn = 1.32$ ) for the 2007-2008 school year was significantly less than ( $z = -3.00$ ,  $p = .00$ ,  $r = .24$ ) the median weighted disproportionality risk ratio ( $Mdn = 1.34$ ) for the 2008-2009 school year. The effect size of 0.24 indicated a small practical difference. In addition, the median weighted disproportionality risk ratio

(*Mdn* = 1.27) for the 2006-2007 school year was significantly less than ( $z = -2.71, p = .007, r = .22$ ) the median weighted disproportionality risk ratio (*Mdn* = 1.34) for the 2008-2009 school year. The effect size of 0.22 indicated a small practical difference. The likelihood of African American students identified as having a disability increased slightly across school years examined.

Results from Friedman's ANOVA for students identified with emotional behavior disorders yielded no statistical difference between weighted disproportionality risk ratios,  $\chi^2(2) = 0.11, p = .949$ , across the three school years. Likewise, results from Friedman's ANOVA for students with an intellectual disability yielded no statistical difference between the weighted disproportionality risk ratios,  $\chi^2(2) = 4.47, p = .107$ , for the three school years.

Friedman's ANOVA for students with a specific learning disability yielded a significant difference between the weighted disproportionality risk ratios,  $\chi^2(2) = 22.70, p < .001$ , for the three school years. Post hoc analysis revealed that the median for weighted disproportionality risk ratio (*Mdn* = 1.16) for the 2007-2008 school year was significantly less than ( $z = -3.91, p < .001, r = .39$ ) the median for weighted disproportionality risk ratio (*Mdn* = 1.23) for the 2008-2009 school year. An effect size of 0.39 indicated a medium practical difference. The median weighted disproportionality risk ratio (*Mdn* = 1.12) for the 2006-2007 school year was significantly less than ( $z = -3.90, p < .001, r = .39$ ) the median weighted disproportionality risk ratio (*Mdn* = 1.23) for the 2008-2009 school year. An effect size of .39 indicated a medium practical difference. The likelihood of African American students referred and identified as having a specific learning disability increased across the three school years examined.

## Discussion

### Summary of Findings

This study examined state-level representation of African American students in special education classes over a three-year period following initial implementation of RTI policies and practices. The study analyzed data from The Georgia Special Education Annual Report (school years 2006-2007, 2007-2008, and 2008-2009) to determine disproportionality levels for school districts enrolling African American students with disabilities (all disabilities, specific learning disabilities, emotional behavior disorders, and intellectual disabilities). Four Friedman's ANOVAs were calculated to determine if significant differences existed between weighted disproportionality risk ratios across three school years.

Results indicate that when considering disabilities collectively, a small increase occurred in the weighted disproportionality risk ratio for African American students across the years included in the study (2006-2009). Weighted disproportionality risk ratios for African American students with a specific learning disability increased over the years included in the current study. No differences in risk ratios were found for African

American students with emotional behavioral disorders or intellectual disabilities. Unedited data from the Department of Special Education Services were not available to the researchers for the years prior to 2006, thus pre- and post- IDEA comparisons were not possible. However, it remains interesting to note that African American students identified with a specific learning disability experienced an increased risk for referral and placement in special education in the years after RTI was federally introduced as an alternative model for the identification of specific learning disabilities.

The purpose of the current study was to establish a disproportionality baseline during the early years of RTI implementation, not assess the degree of RTI implementation across districts or draw broad conclusions regarding RTI effectiveness in reducing disproportionality, and to that end, the research questions were addressed. The current study simply suggests that for the three-year period examined there was an elevated risk of overrepresentation of African American students in special education for high-incidence low-level disabilities and, the risk actually increased for students with specific learning disabilities despite being the focus of the RTI initiative.

### **Implications for Practice**

The educational system in the United States, due to federal legislation, is experiencing heightened accountability to students, parents, and communities. As such, research on scientifically based service delivery models, such as RTI, is of great importance (Sugai & Horner, 2009). At a time when research is just beginning to emerge on the relationship between disproportionate representation of African American students and RTI, this study is valuable because it offers state-level information about African American student disproportionality as initial efforts are being made to implement RTI. While no firm conclusions may currently be drawn regarding the direct effects of RTI implementation on disproportionality, it is interesting to note trends in the disproportionality data within the incipient years of RTI implementation. Results may serve as a baseline for future efforts to quantify the effectiveness of RTI in reducing disproportionate representation of African American students at the state level.

### **Limitations**

Ex post facto research presents inherent limitations (e.g., lack of statistical control, lack of randomization, failure to identify causative or confounding variables, etc.). The present study of RTI and disproportionality evidenced specific limitations such as: (a) the population was restricted to students in a single state, (b) data accuracy was dependent on the correct reporting by each school district, (c) only 3 years of unedited data were available from the Department of Special Education Services, and (d) no attempts were made to quantify degree of RTI implementation across districts. Some school districts still struggle with full RTI implementation and the current study offers no explanations regarding the success or failure of RTI to reduce disproportionality across districts.

## **Future Research**

This study represents a preliminary step in investigating the likely complex relationship between risk of disproportionality for African American students in special education and RTI by offering a baseline for disproportionate representation at the state-level in the first few years of RTI implementation. Present findings may serve as a reference point for any changes observed in future disproportionality risk ratios. Without a baseline for comparison, future research may not be meaningful.

The sheer number of contributors cited in the literature, demonstrates the complexity of the disproportionality problem and given the complexity of the problem, is it logical to assume that the RTI model would decrease the risk of disproportionality at the state-level? While RTI is designed to minimize many contributing factors to disproportionality and early research has supported RTI's potential to reduce disproportionate special education referrals among minority students (Cartledge & Kourea, 2008; Demski, 2009; Fuchs et al., 2003; Garcia & Ortiz, 2004; Gravois & Rosenfield, 2006; Marston, 2005; Townsend, 2002; Young et al., 2005), implementation remains highly variable due to differences in local interpretation and broad conclusions regarding effectiveness are limited.

Proponents of RTI programs cite improved educational and behavioral outcomes, higher graduation rates, and greater levels of achievement (Creel, Krisel, O'Connor, & Williams, 2006; GADOE, 2008), but future research is needed to determine specific RTI factors contributing to the effectiveness of implementation and reduction in disproportionality. As RTI becomes more established, future researchers should assess differences in local interpretation and fidelity of RTI implementation across school districts and states in hopes of identifying key RTI variables that may mitigate the risk of disproportionality for those students identified with specific learning disability, emotional behavior disorders, and intellectual disability.

## **Conclusion**

With system-wide modifications to educational practices throughout Georgia and the country and the changing roles of school psychologists and other professionals (Klotz, n.d.; National Association of School Psychologists, 2006; Reschly, 2008; Tilly, 2008), analysis of the changes in disproportionality is important at this time. This study offers comparative information for future researchers investigating relationships between the risk of disproportionality for African American students and RTI implementation.

Overall, this study suggests improvement is still needed in the area of disproportionality. The disproportionate risk of referral and eligibility to special education for African American students increased in the state of Georgia over the three-year period corresponding to recent RTI implementation efforts. As with any new paradigm, systems-level change takes time, effort, and collaboration among skilled professionals. Future studies should document the progression and implications of RTI practices across

districts and states and it will be interesting to observe the influence of RTI procedures on the disproportionate risk of referral to special education for African American students.

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