

**THE RELATIONSHIP BETWEEN THE ROLE OF THE SCHOOL
PSYCHOLOGIST AND POST-SECONDARY SCHOOL OUTCOMES
FOR SPECIAL EDUCATION STUDENTS**

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ABSTRACT

Since the federal law IDEIA of 2004 allowed for the determination of LD eligibility for Special Education services, it was expected that School Psychologists would have begun spending less time devoted to standardized tests, and more time providing other services such as counseling, consultation, and interventions. Moreover, any benefit that these services might have for students would ideally extend beyond the K-12 period when they receive these services. This study compares the time school psychologists spend engaged in service delivery unrelated to testing with post-school outcomes for special education students. Data are compared from all 50 states, as well as other variables such as the ratio of students to psychologists, socio-economic status, and per pupil spending. While time not testing did not correlate with post-school outcomes, other variables proved to correlate significantly, and are discussed in accordingly.

Data were collected from a variety of sources, including state and national governments, education departments, professional school psychology organizations, and research institutions. Students' post-school outcomes were tracked for eight years after high school, and measured and compared based on level of education.

The ratio of students to school psychologists proved to correlate significantly with the graduation rate of special education students both from high school and from four-year secondary institutions, suggesting that the fewer students a psychologist serves, the better the outcomes for those students. However, socio-economic status (as represented by students receiving free lunch or lunch assistance) was by far the most significant correlate with school and post-school outcomes, necessitating comparisons between statistics with that variable removed.

Ultimately, variables for which school psychologists have little control, such as socioeconomic status, the ratio, per pupil spending, the percentage of students receiving ELL instruction, and other factors, proved to be more significant in their correlation with graduation rates and post-school outcomes than how much time psychologists spent providing services other than testing.

Further study is recommended, as various elements of this study proved to limit the value of the results, such as the use of states as units of study, as opposed to smaller units, the inability to further divide the ways in which psychologists allocate their time, and the inability to obtain post-school data for more specific subsets of the special education population, such as LD. A study employing smaller units of comparison, such as school districts, and which could accurately measure time school psychologists spend in a variety of service delivery capacities, as well as more uniform groups of special education students, is recommended.

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CHAPTER 1: INTRODUCTION

When school psychology first emerged in the United States, it was deeply rooted in the child study clinics of such pioneers as Arnold Gesell. Early school psychologists were essentially diagnosticians, who analyzed attributes of children to predict their school success and need for remedial or specialized instruction. School psychology was initially practiced only in large urban and suburban areas, at first in centralized diagnostic clinics (comparable to today's hospitals or community clinics) and later on a highly itinerant basis, as school psychologists were hired to visit schools periodically to assess referred children (though this was a small fraction of their work). Even prior to special education regulations which required public school districts to educate all students living within their respective geographic boundaries, students referred to school psychologists generally were either failing academically or exhibited severe emotional disturbance, and school psychologists determined which students needed special placement or treatment (Fagan & Wise, 2000).

Although the tools they employed continued to change and (generally) improve, school psychologists' primary functions remained essentially unchanged for decades. This medical model of diagnosis and classification—as “sorters and repairers” (Fagan, 2002)—was well entrenched when federal

special education regulations were first adopted. In 1975, Congress passed the Education for All Handicapped Children Act, better known at the time as Public Law 94-142. This proved to be landmark legislation, requiring public schools to provide students with a broad range of disabilities - including physical handicaps, mental retardation, speech, vision and language problems, emotional and behavioral problems, and other learning disorders - with a "free appropriate public education," and is the core of federal special education law in place today. The new mandates further institutionalized the test-and-place model, and the profession rapidly grew to the point that nearly every school district employed at least one school psychologist, whose sole reason for being hired was to implement this test-and-place model. Although researchers had already discredited the popular concept of aptitude by treatment interactions (matching treatment to individual attributes), this philosophy nevertheless served as the foundation for early special education practice, and thus for the practice of school psychology, at a critical point in the profession's development (Gresham, 2002; Reschly & Ysseldyke, 2002).

A pair of significant conferences over 30 years ago -- at Spring Hill in Minnesota in 1980 (Ysseldyke & Weinberg, 1981) and Olympia in Wisconsin in 1981 (Brown, Cardon, Coulter, & Meyers, 1982) -- are often cited as the organized start of a slow revolution in school psychology, as they included the first large-scale discussions of role expansion beyond diagnostic assessment (Reschly & Ysseldyke, 2002). At that time, school psychologists were still in

somewhat short supply. Attention was becoming focused on strategies of behavioral psychology and ecologically oriented indirect services, directed at modifying the instructional environment as a means to impact outcomes for *all* students efficiently. Consultation to address individual academic and behavioral difficulties, as well as group and systems intervention (e.g., at the school or district level), were promoted as ways to expand roles and to help *prevent* more serious student difficulties, rather than simply evaluating and managing these problems as they arose. As school psychologists were beginning to be trained in a wide variety of strategies and techniques to serve their school-age populations, far beyond the core skills needed to administer and interpret standardized tests, they expected their employers (school districts) would be eager to utilize a more varied role for the school psychologist.

Although many school psychologists felt limited by their roles as special education “gatekeepers,” and desired opportunities to affect student performance more effectively, relatively few individuals and school districts initiated recommended paradigm shifts (Goldwasser, Meyers, Christenson, & Graden, 1983; Smith, 1984). School budget problems in the 1980s further contributed to this maintaining of the status quo. Overall ratios of students to school psychologists steadily improved (Fagan, 2002). Referral to special education also increased rapidly (Ysseldyke & Marston, 1999). Role

expansion, where it occurred, had an interesting result—the more services school psychologists provided, the more services were requested, so the number of school psychologists continued to grow rapidly.

For many, the ratio of students to staff improved. With better ratios, many school psychologists began to carve out more time for expanded service delivery; more school psychologists included consultation, counseling, staff training, and group interventions in their repertoire of professional services (e.g., Canter, 1991; Franklin & Duley, 2002). Often, however, these services were additions to the traditional diagnostic role -- the role most often funded by special education dollars and justified by special education mandates.

While others employed by school districts – school counselors, most significantly – had comparable (or at least similar enough) training in consulting with teachers or assisting with school-wide behavioral programs, only the school psychologist was capable of administering the legally mandated standardized tests required to determine eligibility for most special education students; thus, this role could neither be abandoned nor reduced.

The first *School Psychology: A Blueprint for Training and Practice* (Ysseldyke, Weinberg, & Reynolds, 1984), going beyond the recommendations of the Olympia and Spring Hill conferences, called for a re-thinking of the concept of “best practice” where the system and individual students were the

target clients for school psychology. However, the training of school psychologists lagged well behind the new standards. The majority of school psychologists continued to spend much of their time engaged in eligibility assessments and related special education activities (e.g., Reschly, Genshaft, & Binder, 1987; Reschly & Wilson, 1995). In a few settings, new strategies and methodologies (e.g., curriculum-based measurement [CBM] and problem-solving models) did generate opportunities for school psychologists to serve as interventionists rather than special education gatekeepers (Deno, 1985; Ysseldyke & Marston, 1999). However, these models were the rare exception, rather than anything close to the norm; innovators often faced significant institutional and political barriers (Marston, Canter, Lau, & Muyskens, 2002), most of which are still in place today.

At the end of the 1980s, another event in the development of the profession was the introduction of the first national credential for school psychologists -- the National School Psychology Certification system, affiliated with the National Association of School Psychologists [NASP]. The Nationally Certified School Psychologist credential [NCSP] solidified several trends in the profession: broad recognition of the specialist level of training; uniform training standards incorporating the principles of the *Blueprint*; and a commitment to ongoing professional development, necessary for new approaches to become common practice. Following introduction of the NCSP credential in 1989 (Batsche & Curtis, 2003), states began adopting its

standards; currently, a majority of states include the NCSP as a criterion for state certification or licensure, even if they are not uniformly embracing “best practice,” in terms of actual work being done by school psychologists.

Several shifts in research and practice came together toward the end of the last century, creating both conceptual and technical opportunities for significant change in school psychology practice. The growing call for accountability in education led to increased support for evidence-based practice (e.g., Kratochwill & Shernoff, 2003) and a focus on measurable outcomes. At the same time, new tools that allowed for more precise and frequent measurement of student skills and behavior were developed and validated. These included curriculum-based assessment [CBA] (Howell & Nolet, 1999), curriculum-based measurement [CBM] (Shinn, 1989), functional behavior assessment [FBA] (Gresham & Noell, 1999), and response to intervention [RTI] (Gresham, 2002). These new technologies, integrated in the context of collaborative team decision-making, form the foundation for Problem-Solving Models of service delivery, which emphasize early identification and support of at-risk students within general education prior to referral for evaluation of special education eligibility; ideally, all of these tools can and should be utilized with any struggling student prior to any referral for special education evaluation, in addition to serving those students already identified as eligible for special education services. For

school psychologists, this model has promoted broader roles in consultation and intervention design (e.g., Marston et al., 2002).

As federal laws were modified as they came up for renewal, the needs of students evolved, and technological innovation changed certain aspects of school psychology, the *Blueprint* – and notions of best practice in general – continued to evolve. Ultimately, the notion that school psychologists would best serve their student populations by occasionally putting the clipboards and stopwatches away, and working outside the testing room gained popularity (Sheridan, et al., 2000). A clearer picture of school psychologists' role in schools and districts emerged, with a pronounced gap between research and practice.

One way of describing the current view of best practice is as follows: School Psychologists can be engaged in two types of services, either systems-level services (which can be further divided into categories such as School-wide academic initiatives, District-level behavioral interventions which include prevention and crisis, and Family-school integration), and Student-level services (either academic interventions or mental health services). Moreover, in order to best determine what type of services to provide to students, the School Psychologist should engage in two different (though not always separate) activities: Data-based Decision-making, and Consultation-Collaboration (NASP, 2010). Research suggests that employing something similar to this model should yield improved outcomes for our students.

At the same time, however, Special Education students continue to be identified as getting worse grades, being more likely to drop out, and having consistently more difficult transitions out of high school than their peers in the general education population (Marston et al., 2003). Post-school outcome data are, for various reasons both obvious and subtle, extremely complicated to assess. For one, students leave high school for a variety of reasons, graduation being only the most desirable cause, and they immediately scatter to countless different locations and situations that make them far less likely to be either willing or able to be tracked by researchers. Additionally, those attempting to gather such data rely more on the accuracy and honesty of those who participate than when measuring grades or test scores of school-age participants. Nevertheless, Special Education students - without question – represent a significantly larger portion of populations with labels such as Unemployed, Under employed, and Incarcerated. They wait for longer periods of time to live independently than their non-disabled peers, and many never do so (US Dept. of Ed., 2010). In that the entire federal program of Special Education was created as an attempt to minimize, if not erase, these discrepancies, it can be described as, if not a total failure, something less than a complete success.

While many aspects of our educational system are far from perfect (education consistently appears in polls as an issue that both politicians and voters place as a top priority, yet are unwilling to pay to improve), the

question must be posed as to what extent School Psychological service delivery plays a role.

The purpose of this research is to address this issue. How do we define best practice? What happens to Special Education students after they leave the educational system, and how, if at all, can school psychological services alter that outcome? Does changing the role of the school psychologist actually improve the lives of the students being served?

Question 1: How is the amount of time spent by school psychologists in non-testing activities related to the post-school outcomes of the students they serve?

Hypothesis 1: The more time school psychologists spend providing services not related to standardized testing and eligibility determination, the better the students they serve will do after leaving their given public educational system.

Question 2: How is the ratio of students to school psychologists related to the post-school outcomes of the students they serve?

Hypothesis 2: The lower the student–school psychologist ratio, the better the students they serve will do after leaving the public educational system.

CHAPTER 2: REVIEW OF THE LITERATURE

The precise definition of best practice in school psychology is a source of continual debate. However, research has, over the past century, produced an increasingly refined and fairly universal model of what school psychologists *ought* to be doing with their time. Much of what is currently considered to be best practice began to emerge in the past three decades, both as a response to what was clearly *not* working during the first decade of federally-mandated special education services, and in the wake of the publication of the first *School Psychology: A Blueprint for Training and Practice*, as mentioned previously. While research was being undertaken for quite some time prior to its publication, the *Blueprint* provided, among other things and as its name suggests, a template: a starting point for further discussion and research.

When the *Blueprint* was revised (Ysseldyke, Dawson, Lehr, Reschly, & Reynolds, 1997), there was a substantial body of research supporting ecological approaches over medical models, problem-solving strategies over refer-test-place paradigms, and curriculum-based assessment strategies over traditional norm-referenced approaches. This fundamental shift in philosophy can be described as moving away from probing for deficits *within* the child, and toward searching for areas that required modification,

accommodation, or general improvement *outside* the child, whether that be in curriculum, teaching methods, physical environment, social factors, or other aspects of the child's school day. Research also questioned the efficacy of the current model of special education—the system that was responsible for the rapid growth of school psychology (Reschly & Ysseldyke, 2002). New standards for training (e.g., NASP, 2000c) reflected the domains and philosophy of *Blueprint II*.

With the initial wave of school psychologists hired in the 1970s about to retire, projected shortages of personnel (including shortages of trainers and training programs), further economic downturns, calls for educational reform, and largely political initiatives to hold schools accountable (notably the federal legislation known as No Child Left Behind) motivated school psychology leaders to call for wide-scale change to address the needs of an increasingly diverse and at-risk student population (e.g., Reschly & Ysseldyke, 2002). Revamping models of service delivery one psychologist or even one district at a time was clearly as inadequate as trying to solve individual student problems one at a time, yet this was largely how change was being attempted; individual school psychologists would attempt to convince their districts of the importance and value of RTI or CBA, only to be informed that their services were required largely in the old role of eligibility determination, and using essentially the same technology as those practicing

decades prior. At the end of the 20th century as at the beginning, school psychologists devoted most of their time to “sorting and repairing” individual students. However, many school psychologists now had the training to engage in very different roles, training that was being, at best, underutilized.

Further argument for fundamental reform in school psychology emerged from the proceedings of the 2002 Conference on the Future of School Psychology (Sheridan & D’Amato, 2004), held two decades after Spring Hill, nearly two decades after the first *Blueprint*. A highly diverse gathering of practitioners, trainers, researchers, and association leaders at the Futures Conference quickly reached consensus in calling for change across the domains of school psychology practice and service delivery (Harrison et al., 2004). Overall, the proposed changes reflected the need to address the learning of all students by promoting evidence-based instructional strategies and to identify student needs and measure progress using ecological and functional procedures. The third *Blueprint* continued much along this same vein.

Simultaneously, NASP created and refined its *Model for Comprehensive and Integrated School Psychological Services*. First written in 1978 as the *Guidelines for the Provision of School Psychological Services*, revised in 1984, 1992, 1997, 2000, and 2010, the model serves as a guide to the organization and delivery of school psychological services at the federal,

state, and local levels. The model provides direction to school psychologists, students, and faculty in school psychology, administrators of school psychological services, and consumers of school psychological services regarding excellence in professional school psychology. It also delineates what services might reasonably be expected to be available from most school psychologists. *The Model for Comprehensive and Integrated School Psychological Services* synthesizes much of the current research into a useful guideline for practitioners, as it addresses the delivery of school psychological services within the context of educational programs and educational settings.

One of the reasons for the continued emphasis on school psychologists providing services not directly related to standardized testing is that the typical workload has continued to increase under the economic and political pressures described above, while the ratio of students to psychologists – which saw a significant *decrease* during the last decade of the 20th century - has begun to climb even more quickly. The “supply” of school psychologists is determined by the number of current practicing professionals, new school psychologists entering the field, and professionals who leave the field at a given point in time. Over the years, school psychologists have completed several large-scale surveys to examine issues related to supply and demand and particularly to enable the profession to project the extent of likely shortages. Unfortunately available data have limitations (e.g., variable

response rates; the use of samples from state and national associations; time delay in collecting, processing, and analyzing complex demographic information; and the varied situations in different areas of the country).

Determining the precise number of school psychologists practicing today is difficult. Official statistics published by the USDOE are already out of date. As Reschly (2000) has explained, these figures may not tell the whole story because they are gathered as part of the states' reporting requirements for psychologists who work with students with disabilities. The total may not be limited to school psychologists and may not include school psychologists who work with nondisabled populations. Thus, each year's data are complicated by a variety of factors, not limited to each state's own inexact numbers. Based on recent attempts to collect data, however, one can estimate that there are approximately 35,000 to 40,000 currently credentialed school psychologists who are also employed by public school districts in the United States. This is based on a number of sources. It was estimated that 25,000 to 30,000 school psychologists were employed in the U.S. in 2000 (Fagan, 2002). Furthermore, an analysis of the recent 25th Annual Report to Congress on the Implementation of Individuals with Disabilities Education Act [IDEA] (U.S. Department of Education, 2005) indicated that the total number of credentialed full-time equivalent [FTE] school psychology positions in public schools as of the August 2002 school year was 27,265, up about 2,500 from the data reported a year earlier and based on August 1999 records. An

additional 1,058 positions were held by individuals not fully credentialed (this may include supervised interns). This report included only full-time equivalent positions, not the actual number of individuals employed. As school district budgets continue to shrink at every level, the number of part-time school psychologists continues to climb (Charvat, 2005).

Ultimately of more significance to this document are the data concerning the ratio of students to psychologists, and the ways in which these psychologists were utilized by their employers in terms of time spent:

- Administering, scoring, interpreting and reporting on standardized tests
- Consulting with individual teachers concerning either individual student issues or matters of curriculum and classroom management
- Implementing and monitoring school- or district-wide programs designed to improve academic performance or behavior
- Providing mental health counseling services to individual and/or groups of students
- Serving in a district leadership capacity regarding transitioning existing methods of service-providing into those determined to be best practice
- prevention, wellness promotion, and crisis intervention
- home-school-community collaboration

- research and program evaluation
- legal, ethical practice, and professional development.

Many of these activities can be placed into the larger categories described earlier. Again, the most significant distinction to be made for the purposes of this study concerns the services related to the administration and interpreting of standardized tests vs. any other services provided by school psychologists. This latter category would include, as examples, Response to Intervention, Curriculum-Based Assessment, Consultation, in which the psychologist and classroom teacher work together in planning, implementing, and evaluating academic and mental health services, and Collaboration, in which the psychologist works with parents, teachers and other school personnel, policy makers, community leaders, and outside agencies in a variety of contexts, in order to provide the best possible educational services for the child. All too often, all of these activities in the latter category, even when viewed together, still make up a small minority of the school psychologist's work time (Reschly et al., 2010), despite their established value.

Most significantly in the past decade has been the emphasis on models incorporating Response to Intervention, and its potential role in affecting student outcomes. This was largely a result of the most recent (2004) reauthorization of the Individuals with Disabilities Education Act (IDEA

2004). This federal mandate states that local education agencies (LEA) “shall not be required to take into consideration whether a child has a severe discrepancy between achievement and intellectual ability” when diagnosing a learning disability (LD; Pub. L. No. 108-446 § 614 [b][6][A]). Instead, LEAs are allowed to use a “process that determines if the child responds to scientific, research-based intervention as a part of the evaluation procedures” (Pub. L. No. 108-446 § 614 [b][6][A]; § 614 [b][2 & 3]). This provision, commonly referred to as RTI (Gresham, 2002), still operates under diagnostic classifications (i.e., LD), but its use of assessment data to directly address individual student needs (Burns & VanDerHeyden, 2007) is consistent with the problem-solving aspects all too frequently discussed in school psychology role reform literature.

RTI is most effectively accomplished through a three-tiered model of increasing intensity of service and frequency of assessment (Tilly, 2003). Recent meta-analytic and previous empirical research supports the effectiveness of this model in improving both student and systemic (e.g., reducing referrals to and placements in special education, reducing the number of children retained in a grade, and increasing the percentage of children who demonstrated proficiency on state accountability tests) outcomes (Burns, Appleton, & Stehouwer, 2005; Marston, Muyskens, Lau, & Canter, 2003; Torgesen et al., 2001; Vellutino et al., 1996). However, what exactly constitutes RTI is not spelled out in the federal regulations or the

research literature, nor has its impact on post-school outcomes been measured.

Moreover, the ratio of psychologists to the students in their school districts varies widely, to say the least. According to one source, in 2004, Connecticut had one school psychologist for every 535 students, while Mississippi had each psychologist serving 7,946 students, with the other 48 states and Washington, DC falling somewhere in between (Curtis, Chesno, Grier, & Hunley, 2004). Clearly, these ratios cannot all be taken into account when researchers are determining best practices. Thus, given the potentially diverse role of school psychologists in the early 21st century, it would seem logical and practical to determine: what school psychologists are actually doing with their time; how disparate is the ratio of school psychologists to students across the 50 states and the District of Columbia, and is there a relationship between these differing ratios and the role of the school psychologist; and, most significantly, how any of these variables impact actual outcomes for students.

By some estimates, 28 percent of youth with disabilities fail to graduate from secondary school, as opposed to 10 percent for the general school population (U.S. Dept. of Education). The most common reasons reported for dropping out of school are dislike of school (36 percent) and poor

relationships with teachers and students (17 percent). The vast majority of youth with visual or hearing impairments (95 percent and 90 percent) complete high school, as do more than 85 percent of youth with autism or orthopedic impairments. The majority of school leavers with disabilities—those in the categories of learning disability, mental retardation, speech or other health impairment, or traumatic brain injury—have school completion rates of 72 percent to 79 percent. The school completion rate for youth with emotional disturbances (56 percent) is lower than the rate for all other categories, with the exception of youth with multiple disabilities or mental retardation.

While socioeconomic status has a significant impact on the odds of these students graduating, no significant differences in school completion rates appear to exist correlating with gender or ethnicity.

Up to two years after leaving high school, almost 8 in 10 out-of-school youth with disabilities have been engaged in postsecondary education, paid employment, or training to prepare them for employment (OSEP, 2010). Employment is the sole mode of engagement in the community for about half of out-of-school youth with disabilities, 4 percent have attended postsecondary school without being employed or participating in job training, and about one-fifth have both gone to school and worked since leaving high school.

About 30% of out-of-school youth with disabilities enroll in some kind of postsecondary school after leaving high school. This rate of current enrollment is significantly lower than that of their peers in the general population (41 percent), and the disparity grows for each number of years attending a post-secondary school. After leaving high school, 9 percent of youth with disabilities attend a 4-year college. Youth in the general population are over four times as likely as youth with disabilities to attend full-time, or at least take courses in, a 4-year college. Additionally, approximately 5 percent of youth with disabilities attend postsecondary vocational, business, or technical schools within 2 years of leaving high school (Wagner, 2009).

About 7 in 10 out-of-school youth with disabilities have worked for pay at some time since leaving high school (OSEP, 2010). This rate is substantially below the employment rate among same-age out-of-school youth in the general population. Wages earned by youth with disabilities after leaving school tend to also be significantly lower than the general population. Moreover, receiving benefits as part of a total compensation package is not common; about one-third of out-of-school youth with disabilities receive any benefits (i.e., paid vacation or sick leave, health insurance, or retirement benefits).

Whether youth with disabilities complete high school is associated with a variety of differences in experiences in their early post-school years. Dropouts are significantly less likely to be engaged in school, work, or preparation for work shortly after high school than are those who graduated; 69 percent of dropouts engage in these activities, compared with 86 percent of school completers. The form of post-school engagement undertaken by dropouts is unlikely to include postsecondary education; dropouts with disabilities are 18 percent less likely to have enrolled in a 2- or 4-year college shortly after high school than are school completers (U.S Dept. of Ed.).

Eight percent of dropouts attend vocational, business, or technical schools, and 1 percent attend a 2-year college at some time after leaving high school, compared with 5 percent and 27 percent, respectively, among high school completers with disabilities (U.S. dept. of Ed.). Moreover, dropouts with disabilities tend to work more hours per week (an average of 34 vs. 27 for school completers). Dropouts are more likely to support independent households and children than are school completers. More than one-fourth of dropouts with disabilities (27 percent) are living independently with a spouse or partner, compared with 7 percent of school completers; 19 percent are parenting, rates of independent living and parenting that are more than four times those of youth with disabilities who completed high school (3 percent). Dropouts are less likely than school completers to have a driver's license (51

percent vs. 73 percent), a checking account (16 percent vs. 39 percent), or to be registered to vote (48 percent vs. 69 percent). More than one-third of dropouts with disabilities have spent a night in jail, three times the rate of youth with disabilities who finished high school. Controlling for other differences between them, dropouts are 10 percent more likely to have been arrested than youth with disabilities who finished high school (Wagner, 2009).

While all of these statistics serve to portray students with disabilities as facing additional challenges after leaving school, they do not address the fundamental question of this research: to what extent does the role of the school psychologist affect these outcomes? Does a district or state that utilizes school psychologists primarily to test and place exhibit significantly different student outcomes from a district more embracing of RTI, teacher consultation, and primary interventions? Or, is the ratio of students to school psychologists not only a factor, but a factor so large as to make any other correlations seem irrelevant? These are the questions that this paper attempts to answer.

CHAPTER 3: METHODOLOGY

The first component of this research was to gather data regarding school psychologists. These data can be broken into two larger categories: first, what are the differing ratios of school psychologists to students based on geography, socioeconomic status of a district, and so forth and, second, how are school psychologists utilized by districts in which they serve, broadly defined by hours spent on a given task (such as testing vs. designing, implementing, and monitoring interventions vs. consulting with teachers), and again compared across various demographic variables (and again, when available). Broadly, this database was used to distinguish time school psychologists spend on testing-related activities from time spent engaged in other roles. The source of these data includes data obtained from national sources including the U.S. Department of Education, the Departments of Education for the 50 states and the District of Columbia, and from state School Psychology Associations. The available data regarding both student-to-psychologist ratios and percentages of time school psychologists allot to testing and non-testing activities from the school year ending in 2009 have been used.

The second, larger data set involved tracking the post-school outcomes of students, with demographic variables such as ethnicity, gender, type of disability, socioeconomic status, etc. These data by necessity are largely

dependent on surveys of limited numbers of students and extrapolating for far larger geographic areas. Overall graduation rates for high school and college students by state were obtained from the U.S. Department of Education. The most recent data available at the time of this writing were for the school year ending in 2009, so data from that year were used throughout the study.

Data for the overall percentage of students receiving free lunch or lunch assistance services, the percentage of the population in K-12 schools, and the number of students enrolled in some form of ELL instruction, were all provided by the U.S. Bureau of the Census. Again, the data for the school year ending in 2009 were used.

Percentage of students receiving Special Education Services by state were provided by the Departments of Special Education for all 50 states and Washington, DC. The data concerning Special Education students' education after exiting the K-12 system, including the percentage of students who do not continue with their education, those who attend some college, and those who receive a 4-year degree were obtained from various studies and surveys conducted by the National Post-School Outcomes Center, which works in partnership with the Office of Special Education Programs (OSEP). Data for the school year ending in 2009 were used.

Additional data were collected which described gender differences in high school graduation rates by state, which were provided by the Institute

for Education Sciences, but were not used in the final analysis, as the data were inconsistent in their collection methods and in the most recent year data were available. Moreover, gender discrepancies for graduation of Special Education students were not available.

For the purposes of this study, data employed measured for students 8 years out of secondary school. This allowed for a minimizing of the variability of students' activities immediately following high school, and the year or two post-graduation. It is assumed for the purposes of this research that students planning on continuing with their educations (such as attending a Vocational, Community or 4-year college) will have at least begun to do so within eight years of finishing high school.

While a small portion of these data was available and obtained directly from the websites of the aforementioned organizations, much of it was not published or organized in way so as to be useful in their current form. For most of the data used, it was necessary to compare data from state organizations with federal data, directly contact various members of the organizations involved to address any discrepancies, through both telephone and email contact, and to clarify and expand on any omissions or contradictions. Where post-school data for special education students were not monitored by official state organizations, national data were compared with independent research to ensure accuracy. If dates, numbers, or other figures were confusing or questionable, researchers were contacted directly to

clarify.

Four distinct categories of student outcomes have been created: failure to graduate, receiving a High School diploma or equivalent but pursuing no further education, continuing with education after graduating high school, but not receiving a BA or equivalent, and receiving a BA or equivalent. While this is not a foolproof way to determine post-school success, it is based on current research that suggests that the more education one receives, the more economic security and stability one will have later in life. Those students with more education have been shown to be more likely to be living independently, financially supporting themselves, and able to retire, than those ending their educational experience sooner, and this is true for students receiving Special Education services, as well as the general population (Wagner et al., 1991).

The data collected yielded one large data set, incorporating the activities of school psychologists, by state, various other demographic variables related to K-12 schooling, such as socio-economic status, percentage of the student population enrolled in Special Education, and so forth, and the variables measuring the success of the students within their state, post-school. Since the data yielded variables with irregular distributions and high levels of skewness, the data were compared using Spearman correlations.

While data were collected for the District of Columbia for all the variables measured and compared, Washington, DC appeared as an outlier in nearly all of the correlations performed. As Washington, DC represents a low-income urban school district, it is not comparable to any of the 50 states in terms of population density, the physical make-up of the area, socio-economic factors, and many other variables. Consequently, it was decided that Washington, DC, as a unique entity, was inappropriate as a basis of comparison for this study.

Moreover, while it is clear that many states do not have any large urban school districts, have less economic and ethnic diversity, and significantly lower populations than other states, the possibility of clustering states together to form larger entities more comparable in size to more populous states was considered. Similarly, dividing larger states such as California, New York, or Texas, was also considered as an option.

However, states that are similar in size, ethnic make-up, and even geographical location, may not be similar in terms of their Special Education populations, their use of school psychologists' time, per pupil spending, and other factors; in other words, determining "similar" states to combine would be ultimately impossible. Furthermore, for the same reasons mentioned above, and also as there are significant and notable limitations inherent in a data set describing an entire state, determining how and where to divide a large state into smaller units for comparison would make the data less

reliable. Therefore, the states were retained as the unit of analysis. Due to the volume of research supporting the efficacy of the RTI and other non-testing methods of delivering services, it was anticipated that the effect size would be large, so a power analysis indicated that at least 27 entities should be included (Cohen, 1992). The raw data collected for all 50 states and Washington, DC appear in Table 3.1.

**Table 3.1
Demographic Data by State**

<u>State</u>	<u>School age pop.</u>	<u>Student/Psych. Ratio</u>	<u>% Not Testing</u>	<u>Per Pupil \$</u>	<u>% Free Lunch</u>	<u>% ELL</u>	<u>% Grad.</u>	<u>% BA</u>	<u>Sped % Grad</u>	<u>Sped% BA</u>
Alaska	18	1051	21	15,353	34	14	69	24	82	18
Alabama	17	4997	17	9,042	52	3	69	23	79	21
Arkansas	18	2552	26	8854	57	5	76	17	87	13
Arizona	18	1729	33	7929	48	25	71	26	83	17
California	18	1892	30	9503	53	39	71	30	79	21
Colorado	17	1078	22	8782	35	15	75	36	77	23
Connecticut	17	535	35	15353	31	18	82	34	79	21
DC	14	1228	21	19698	69	16	56	46	66	34
Delaware	16	1340	32	12109	40	9	72	28	79	21
Florida	15	1984	24	8867	50	23	67	26	80	20
Georgia	19	2655	23	9649	53	9	66	25	80	20
Hawaii	16	3953	21	12399	42	26	76	27	81	19
Iowa	17	1310	36	10055	34	5	86	25	83	17
Idaho	19	1153	28	7118	40	9	80	23	84	16
Illinois	18	1341	29	11592	42	19	80	28	82	18
Indiana	18	2601	19	9254	42	6	74	22	84	16
Kansas	18	760	35	10201	43	8	79	31	84	16
Kentucky	17	2415	28	9038	52	3	74	21	85	15
Louisiana	18	2417	26	10625	65	9	64	22	85	15
Massachusetts	16	1272	18	14540	31	18	82	38	79	21
Maryland	17	1491	21	13737	35	7	80	37	78	22
Maine	15	962	20	12183	38	12	79	24	80	20
Michigan	17	2559	29	10373	42	8	76	23	82	18
Minnesota	17	1218	21	11088	33	8	86	33	75	25
Missouri	17	5735	27	9891	39	5	82	27	82	18
Mississippi	19	7946	29	8064	68	3	64	19	86	14
Montana	16	900	30	10189	37	5	82	25	80	20

**Table 3.1
Demographic Data by State (continued)**

<u>State</u>	<u>School age pop.</u>	<u>Student/Psych. Ratio</u>	<u>% Not Testing</u>	<u>Per Pupil \$</u>	<u>% Free Lunch</u>	<u>% ELL</u>	<u>% Grad.</u>	<u>% BA</u>	<u>Sped % Grad</u>	<u>Sped% BA</u>
N. Carolina	17	2463	26	8518	46	8	73	24	84	16
N. Dakota	16	2101	23	9802	32	6	84	25	83	17
Nebraska	18	982	29	10846	39	7	84	27	84	16
New Hampshire	16	964	30	12583	21	8	83	34	81	19
New Jersey	17	1350	18	17076	30	25	85	33	79	21
New Mexico	17	1922	17	9648	63	36	67	24	83	17
Nevada	17	2408	21	8321	40	23	51	21	85	15
New York	16	642	22	17746	45	28	71	30	77	23
Ohio	17	1567	28	10902	36	6	79	25	79	21
Oklahoma	18	3249	25	7878	56	7	78	24	80	20
Oregon	16	2648	32	9611	46	12	77	26	82	18
Pennsylvania	16	1354	27	12299	36	8	83	25	81	19
Rhode Island	16	1167	32	14719	41	20	86	28	82	18
South Carolina	17	1303	22	9228	53	5	54	22	80	20
South Dakota	18	1796	21	8543	35	6	78	24	85	15
Tennessee	17	2679	29	7992	51	4	75	24	88	12
Texas	19	2579	26	8562	49	31	73	25	84	16
Utah	22	2744	36	6612	32	12	84	28	83	17
Virginia	17	2237	24	10928	33	11	77	34	80	20
Vermont	15	1040	21	15096	32	5	89	31	79	21
Washington	16	1585	34	9688	40	14	77	29	79	21
Wisconsin	17	1033	33	11183	34	7	90	24	84	16
W. Virginia	15	2549	32	10821	50	2	77	15	88	12
Wyoming	16	1043	28	14628	31	6	76	21	89	11
Average	18.2	2191	28	9963	41.2	15	70.1	25.3	81.3	17
Range	14-22	535-7946	17-36	6612-19698	21-69	3-39	51-90	15-46	66-89	11-34

CHAPTER 4: RESULTS

The primary question addressed in this paper was to determine if the amount of time school psychologists spend in non-test-related activities directly correlated with the post-school outcomes of students who receive Special Education services. An additional question that this study concerned itself with was whether the ratio of psychologists to students had an effect on post-school outcomes for students receiving Special Education services.

Initially, it was planned that an ordinal scale would be used based on the four levels of education students achieved in the data set: not completing high school, completing high school but pursuing no further education, attending some college but not receiving a 4-year degree, and those students who completed their four-year degree. Again, this was based on the plentiful research linking education with employment (US Census Bureau). However, the data concerning students who attended college but did not complete a 4-year degree were not a subset of the general population, but rather only a subset of those students who received a high school diploma and continued with their education; thus, it cannot be accurately compared with the other figures. As a result, separate analyses of each outcome using Spearman correlations were done, and can be found in Table 4.1 of this chapter.

Table 4.1 Spearman Correlations

	% School Age	Student to Psych. Ratio	Time Not Testing	General No HS Diploma	General Ed. HS Only	General Some College	General BA	% in Special Ed.
% School Age								
Student to Psych. Ratio	.305*							
Time Not Testing	.045	-.113						
General No HS Diploma	.217	.378**	-.214					
General Ed. HS Only	-.062	.027	.299*	-.093				
General Some College	-.132	-.374**	.236	-.408**	.642**			
General 4-year degree	-.213	-.399**	.065	-.438**	-.174	.460**		
% in Special Ed.	-.319*	-.113	-.055	-.186	-.133	-.291*	-.110	
Per Pupil Spending	-.499**	-.579**	-.103	-.364**	-.178	.134	.446**	.347*
% ELL	.009	-.171	-.094	.198	.014	.244	.463**	-.162
% Free Lunch	.308*	.534**	.007	.721**	-.003	-.439**	-.520**	-.074
SpEd No HS Diploma	-.032	.419**	-.136	.620**	-.053	-.355*	-.406**	-.107
SpEd HS Only	-.087	.030	.243	-.125	.943**	.612**	-.110	-.063
SpEd Some College	-.347*	-.456**	.292*	-.344*	.561**	.711**	.238	-.219
SpEd 4-year degree	-.307*	-.306*	-.252	-.168	-.186	.293*	.699**	-.041
SpEd % Grad	.032	-.419**	.136	-.620**	.053	.355*	.406**	.107
All % Grad	-.217	-.378**	.214	-1.000**	.093	.408**	.438**	.186

Table 4.1 Spearman Correlations (Continued)

	Per Pupil Spending	% ELL	% Free Lunch	SpEd No HS Diploma	SpEd HS Only	SpEd Some College	SpEd % Sped BA	General Grad	General % Grad
% School Age									
Student to Psych. Ratio									
Time Not Testing									
General No HS Diploma									
General Ed. HS Only									
General Some College									
General 4-year degree									
% in Special Ed.									
Per Pupil Spending									
% ELL	.169								
% Free Lunch	-.532**	-.047							
SpEd No HS Diploma	-.145	-.119	.415**						
SpEd HS Only	-.162	.060	-.056	-.102					
SpEd Some College	.296*	.036	-.401**	-.175	.472**				
SpEd 4-year degree	.418**	.325*	-.295*	-.211	-.141	.136			
SpEd % Grad	.145	.119	-.415**	-1.000**	.102	.175	.211		
All % Grad	.364**	-.198	-.721**	-.620**	.125	.344*	.168	.620**	

*. Correlation is significant at the 0.05 level (2-tailed)

** . Correlation is significant at the 0.01 level (2-tailed)

The total number of correlations performed was 136, and the total number that was calculated as being significant at the .05 or .01 level was 58. Removing the two correlations related to graduation rates (percentage graduating with percentage not graduating, for both general and special education), the result is 56 of 134, or 41.8%.

The amount of time School Psychologists spend in activities other than testing did not significantly correlate with Special Education students' likelihood of graduating high school, or any other variables related to post-school outcomes for Special Education students, with the only exception being the statistically problematic variable of students who attend college without receiving a degree (Table 4.1).

The ratio of students to psychologists was directly correlated with Special Education students not completing high school ($r=.419$, $p=.002$, Table 4.1). This suggests that the more students attending school under the purview of a school psychologist, the greater chances that those students receiving Special Education services will not complete high school.

The ratio of students to psychologists was also inversely correlated with Special Education students receiving a 4-year degree ($r=-.306$, $p=.031$, Table 4.1). A large student to psychologist ratio continues to be related to outcomes for special education students after graduation, including their likelihood of receiving a 4-year college degree.

Secondary questions addressed the relationship of various independent

variables such as socioeconomic status, language ability of the general student population, and per pupil spending to graduation rates and post-school outcomes.

The percentage of students considered to have a low socio-economic status was based on those students receiving free or discounted lunch at school. The percentage of students receiving free or discounted lunch was directly correlated with Special Education students not completing high school ($r=.415, p=.003$, Table 4.1).

The percentage of students receiving free or discounted lunch was also inversely correlated with Special Education students completing a 4-year college degree ($r=-.295, p=.038$). This suggests that the effects of poverty are still significant after high school graduation for students receiving Special Education services.

It was important to compare these statistics with those addressing the entire student population. Percentage of students receiving free or discounted lunch was directly correlated with students not completing high school ($r=.721, p<.001$). This suggests a strong impact of poverty on overall graduation rates, consistent with the findings for Special Education students (Table 4.1).

Additionally, the percentage of students receiving free or discounted lunch was inversely correlated with students receiving a 4-year college degree ($r=-.520, p=.000$). This seems to indicate that attending school in

conditions of poverty or low socioeconomic status can still directly impact a student’s chances of graduating from a 4-year college, and is consistent with the statistics for Special Education students (Table 4.1).

Additionally, multiple regressions were performed to determine which variables were responsible for the most variance in graduation rates and post-school outcomes.

Because low socioeconomic status (again, as represented by the percentage of students receiving free lunch or lunch assistance) proved to be such a powerful predictor in the regressions, they were repeated without that variable to determine which other variables accounted for the remainder of the variance. Each regression with the lunch variable removed follows its counterpart.

Table 4.2: High School Graduation for All Students

Independent Variables		<i>Standardized</i>		
		<i>Coefficients</i>		
		Beta	<i>t</i>	<i>p</i>
1	(Constant)		4.237	.000
	Ratio of Students to Psychologists	.025	.191	.849
	% of population that is school age	.099	.732	.468
	Time spent not testing	.175	1.544	.130
	Per Pupil Spending	-.035	-.238	.813
	% Students in ELL	-.165	-1.384	.174
	% Students receiving free lunch or lunch assistance	-.592	-4.439	.000

A multiple regression was performed to determine the significant predictors of the percentage of all students who received a high school diploma (Table 4.2). The predictors entered were the ratio of students to psychologists, percentage of population that is school age, percentage of time psychologists spent not testing students, per pupil spending, percentage of students in ELL instruction, and percentage of students receiving free lunch or lunch assistance at school. The only significant predictor was the percentage of students receiving free lunch or lunch assistance ($p < .001$).

Table 4.3: High School Graduation for All Students (SES Variable Removed)

Independent Variables		<i>Standardized</i>		
		<i>Coefficients</i>		
		Beta	<i>t</i>	<i>p</i>
1	(Constant)		2.351	.023
	Ratio of Students to Psychologists	-.253	-1.649	.106
	% of population that is school age	.115	.692	.492
	Time spent not testing	.238	1.668	.102
	Per Pupil Spending	.153	.836	.408
	% Students in ELL	-.288	-2.028	.049

A multiple regression was performed to determine the significant predictors of the percentage of all students who received a high school

diploma (Table 4.3), but with the variable for SES (free lunch or lunch assistance) removed from the regression. The predictors entered were the ratio of students to psychologists, percentage of population that is school age, percentage of time psychologists spent not testing students, per pupil spending, and percentage of students in ELL instruction. The only significant predictor was the percentage of students receiving ELL instruction ($p < .001$).

Table 4.4: High School Graduation for Special Education Students

		Standardized Coefficients		
Independent Variables	Beta	<i>t</i>	<i>p</i>	
1	(Constant)		3.891	.000
	Ratio of Students to Psychologists	-.268	-1.697	.097
	Time spent not testing	.145	1.106	.275
	Per Pupil Spending	-.124	-.810	.422
	% Students ELL	.120	.896	.375
	% Students receiving free lunch or lunch assistance	-.388	-2.406	.020

A multiple regression was performed to determine the significant predictors of the percentage of Special Education students who received a 4-year college degree (Table 4.4). The predictors entered were the ratio of students to psychologists, percentage of time psychologists spent not testing students, per pupil spending, percentage of students in ELL instruction, and percentage of students receiving free lunch or lunch assistance at school. The

only significant predictor was the percentage of students receiving free lunch or lunch assistance ($p=.020$).

Table 4.5: High School Graduation for Special Education Students (SES Variable Removed)

Independent Variables		<i>Standardized Coefficients</i>		
		Beta	<i>t</i>	<i>p</i>
1	(Constant)		.123	.903
	Ratio of Students to Psychologists	-.482	-3.226	.002
	Time spent not testing	.143	1.029	.309
	Per Pupil Spending	-.111	-.623	.537
	% Students ELL	.039	.279	.982

A multiple regression was performed to determine the significant predictors of the percentage of special education students who received a high school diploma (Table 4.5), but with the variable for SES (free lunch or lunch assistance) removed from the regression. The predictors entered were the ratio of students to psychologists, percentage of time psychologists spent not testing students, per pupil spending, and percentage of students in ELL instruction. The only significant predictor was the ratio of students to psychologists ($p=.002$).

Table 4.6: College Graduation for All Students

		Standardized Coefficients		
Independent Variables	Beta	<i>t</i>	<i>p</i>	
1	(Constant)		5.639	.000
	Ratio of Students to Psychologists	.012	.088	.930
	Time spent not testing	-.037	-.320	.751
	Per Pupil Spending	.132	.972	.336
	% Students ELL	.329	2.753	.009
	% Students receiving free lunch or lunch assistance	-.547	-3.820	.000

A multiple regression was performed to determine the significant predictors of the percentage of all students who received a 4-year college degree (Table 4.6). The predictors entered were the ratio of students to psychologists, percentage of time psychologists spent not testing students, per pupil spending, percentage of students in ELL instruction, and percentage of students receiving free lunch or lunch assistance at school. The only two significant predictors were the percentage of students receiving free lunch or lunch assistance ($p < .001$), and the percentage of students receiving ELL instruction ($p = .009$).

Table 4.7: College Graduation for All Students (SES Variable Removed)

		Standardized		
		Coefficients		
Independent Variables		Beta	<i>t</i>	<i>p</i>
1	(Constant)		3.691	.001
	Ratio of Students to Psychologists	-.220	-1.526	.134
	Time Spent not Testing	-.015	-.113	.910
	Per Pupil Spending	.310	2.132	.038
	% Students ELL	.198	1.518	.136

A multiple regression was performed to determine the significant predictors of the percentage of all students who received a 4-year college degree, with the SES variable removed (Table 4.7). The predictors entered were the ratio of students to psychologists, percentage of time psychologists spent not testing students, per pupil spending, and percentage of students in ELL instruction. The only significant predictor was per pupil spending ($p=.038$).

Table 4.8: College Graduation for Special Education Students

		Standardized Coefficients		
Independent Variables		Beta	<i>t</i>	<i>p</i>
1	(Constant)		5.288	.000
	Ratio of Students to Psychologists	-.055	-.334	.740
	Time spent not testing	-.244	-1.792	.080
	Per Pupil Spending	.129	.811	.422
	% Students ELL	.214	1.534	.132
	% Students receiving free lunch or lunch assistance	-.256	-1.529	.133

A multiple regression was performed to determine the significant predictors of the percentage of Special Education students who received a 4-year college degree (Table 4.8). The predictors entered were the ratio of students to psychologists, percentage of time psychologists spent not testing students, per pupil spending, percentage of students in ELL instruction, and percentage of students receiving free lunch or lunch assistance at school. No predictors were significant. However, it is worth noting that the dependent variable closest to significance is time psychologists spent not testing ($p=.080$).

Table 4.9: College Graduation for Special Education Students (SES Variable Removed)

Independent Variables		<i>Standardized Coefficients</i>		
		Beta	<i>t</i>	<i>p</i>
1	(Constant)		5.301	.000
	Ratio of Students to Psychologists	-.164	-1.090	.282
	Time Spent not Testing	-.233	-1.693	.097
	Per Pupil Spending	.212	1.402	.168
	% Students ELL	.153	1.128	.265

A multiple regression was performed to determine the significant predictors of the percentage of Special Education students who received a 4-year college degree, with the SES variable removed (Table 4.9). The predictors entered were the ratio of students to psychologists, percentage of time psychologists spent not testing students, per pupil spending, and percentage of students in ELL instruction. There were no significant predictors. However, it is worth noting that the dependent variable closest to significance is time psychologists spent not testing ($p=.097$).

CHAPTER 5: DISCUSSION

Interpretation

The primary question this paper attempted to answer was whether the amount of time school psychologists spend providing services to their students that are not related to standardized tests would have a significant impact on Special Education students *after* those students exit the public K-12 system of education. The results of this study indicate that there is not a significant effect on post-school outcomes based on this variable. Moreover, the secondary question of whether the ratio of students to psychologists had a significant impact on those same students' post-school outcomes yielded results that were mixed. However, the results of the correlations and regressions performed did produce statistically significant data that require elaboration.

The ratio of psychologists to students (as compared at the state level) varied more than expected, with Connecticut having the smallest ratio (535 students for every psychologist), and Mississippi having the largest (7946 students per psychologist). As this represents a massive spread across the data set, the results are worth examining more closely. This ratio was correlated significantly with both high school graduation rates for Special Education Students, *and* the percentage of those students receiving a Bachelor's degree from a 4-year college. Thus, while the way in which

psychologists provide services may not be able to significantly impact outcomes for these students in relation to other variables, the number of students a psychologist is expected to serve – the sheer amount of the workload itself – correlated with outcomes for these students, even eight years after high school (Table 4.1).

Next and most obvious, of course, is the overwhelmingly significant impact that low socio-economic status – poverty – has on the outcomes for all students, both those in Special Education, and those in the general population. On every regression in which the free lunch variable was used, it proved to not only be a statistically significant predictor of student outcomes, but the *most* significant of all independent variables. The notable exception is the regression that addressed college graduation rates for Special Education students. This might suggest that those students in special education who also have to contend with the various hardships of poverty, yet are able to attend a 4-year college or university, may have somehow mastered ways of addressing these various obstacles in such a way that socio-economic status is no longer a significant negative force in their lives, at least in terms of hindering their education.

Another possible interpretation might consider the phenomenon of students living in poverty being over-identified as eligible for Special Education services. Those students who were deemed eligible for services by psychologists who did not properly account for their economic situation may

be able to function in a college setting better than expected, as they are not actually disabled in any way that affects their ability to learn and succeed in school.

Yet it is still worth addressing that students' socioeconomic status is the strongest predictor of academic success among the variables studied. While educators and politicians endlessly debate how schools should be structured, what curriculum is best, or where money is best allocated, those students struggling with more basic material and survival concerns continue to be the least likely to graduate from high school or college, despite any interventions being utilized in or out of the Special Education setting.

The regressions performed with the SES variable removed yielded interesting results, as well. The variable that proved to be a significant predictor of high school graduation for the general population once the lunch variable was taken out of the regression was the percentage of students receiving English Language Learner (ELL) services (Table 4.3). Again, while this has been the subject of heated debate across the country, both within the offices of school administration buildings and among the population in general, the idea that – after poverty – the most limiting factor in a child's education might be their non-native English-speaking status bears examining. One possible explanation is simply that those states with a higher percentage of ELL students must assign a significant portion of their total educational budget toward ELL instruction, leaving less to spend in other

ways, which would affect the entire student population, not just those receiving ELL services. But other possibilities should also be considered. While there are a great many languages spoken in the United States, by far the largest linguistic (or ethnic, for that matter) minority is the Latino population (US Census Bureau, 2008). At the time of this writing, there are 50,000 new Latino students entering the American school system *every day* (US Census Bureau), and that number is actually based only on those Latinos who are U.S. Citizens. Therefore, until this achievement gap of non-English speakers is properly addressed, the problem seems highly likely to not only continue, but to increase in severity.

Regarding Special Education students, the story changes. While SES is again the only significant predictor of high school graduation, when it is removed from the regression, the Student:Psychologist ratio is what emerges as a significant predictor. This can be explained in several ways. First, it stands to reason that the number of school psychologists working in a given school or district is going to have a far larger impact on students receiving Special Education services than those who are not. Most students outside of Special Education probably do not know who their school psychologists are, or what they do. Therefore, the psychologists have a real opportunity to impact the educational experience and success of those students within the Special Education program.

Second, because of the complexity and diagnostic sophistication

required to adequately identify a non-native English speaker as being Learning Disabled (by far the largest category of students in Special Education), and because schools and districts continually struggle with funding questions about what kinds of services to offer and what teachers to hire, a large number of students who might be eligible to receive services from both ELL and Special Education programs end up only receiving services from one of these programs. This results in a small overlap of the two populations, which would explain its reduced impact on Special Education students' graduation rate. It is also worth considering that those states assigning a higher percentage of their educational budget toward ELL services would not be using money specifically meant for Special Education services, so Special Education students would not be experiencing the same degree of resource scarcity as the rest of the school population.

Post-school data also produced significant and interesting results. Among the general population, SES and ELL were the significant predictors of college graduation, as might be expected (Table 4.6). However, once SES was removed from the regression, per pupil spending emerged as a significant predictor, and ELL was not (Table 4.7). One possible explanation for this phenomenon is that, for the most part, only those students with a firm grasp of English are attending 4-year colleges. One might imagine three categories of students receiving ELL services: those whose failure to learn English eventually led to a failure to graduate high school; those whose

English skills are basically indistinguishable from their native English-speaking peers, making the likelihood of graduating college unrelated to their prior status as English learners, and those who graduated high school, but whose limited English made college unrealistic or impossible. It is this last group that would account for the drop in significance of the ELL variable.

Another likely explanation is that the ELL and low-SES groups overlap a great deal. While it is already known that Latinos are more likely to be below or near the poverty line than the average American (US Census Bureau), it may be that those Latinos (and other linguistic minority students) who attend 4-year colleges are among those students who do not overlap with the low-SES population. Thus, the students who received ELL and attend 4-year college do not overlap much with the group that received free lunch or lunch assistance. This would minimize the impact of ELL on college graduation with the SES variable removed.

Finally, the regressions measuring post-school outcomes for Special Education students provided no statistically significant results, but did yield some useful information. Regardless of the presence of the SES variable, the variable that is closest to achieving statistical significance as a predictor of college graduation for students who received Special Education services is, in fact, the time psychologists spent providing services to those students unrelated to standardized tests (Tables 4.8 & 4.9). While the results are not statistically significant, the effect size is small and this study might not have

had sufficient power to identify it as a significant contributor. It does at least suggest that how a school psychologist divides his or her time at work might in some small way be related to students' educational outcomes after they have stopped receiving those services.

Limitations

Working with this large a data set led to various limitations in the study. One of the more significant limitations is the use of states as the sample set. First, the reasons for choosing to use data at the national level should be addressed. While comparing districts in, say, Southeastern Pennsylvania to each other would have provided a more uniform and easily compared sample set, the results would not have been easily generalized to other parts of the country, or even the rest of the state. The percentage of students receiving ELL, the socioeconomic status, the use of non-testing methods by psychologist, and other variables, would have been too similar to each other to yield results that applied to any other part of the country. As RTI and other non-testing methods are being promoted and utilized across the country in different ways, it seemed reasonable to apply to question to the nation as a whole.

However, in addition to obvious differences between states (population numbers and density, percentage of students in ELL, states having or lacking large urban districts, broad economic factors), other differences exist that limited this study, as well. How states determine what constitutes time spent

testing versus not is open to subjectivity and error, as is how these data were collected by the sources used in the study. Moreover, because of the scale, other variables affecting academic outcomes for students (such as class size, choice of curriculum, access to technology and other resources) would have either been impossible to determine, or meaningless to discuss at the state level, given the discrepancies that exist between districts within states.

Similarly, students' post-school experiences are going to vary considerably both within and across states. States have drastically different approaches to funding their public universities, which both affect students' ability to attend college and to graduate; if a student in one state has to work two jobs in order to afford college, while a similar student in another state receives far more financial aid, their academic outcomes are likely to be affected. Moreover, the economics of some states (and parts of states) make it far more likely for a student to join the military or get another job (such as farm or factory work) immediately after high school, regardless of that students' ability to attend (or succeed at) a 4-year college or university. This would be related to which states' economies are more connected to industries that do or do not require a college education for one to succeed.

Per pupil spending is another variable that is problematic to address at the state level. While the overall numbers of dollars per student should have an impact on student outcomes, it stands to reason that states are using those dollars for vastly different uses. In Texas, for instance, more of those

dollars might be going toward high school football programs and ELL services than in, say, Wyoming. Thus, while dollars spent on many aspects of education might have a direct impact on student success, other dollars spent in ways that are entirely unrelated to the outcomes being measured in this study.

Furthermore, while it would have been far more desirable to address the specific ways in which school psychologists were spending their time (consultation, testing, individual interventions, counseling, etc.), these data was not available at the state level, and would no doubt be very difficult to assure of consistency if it were. A more local study could address this issue as well.

Similarly, there is a significant portion of students receiving special education services for whom high school graduation and schooling beyond high school are not realistic goals; transition plans for these students may be required at age 14, but many families are well aware that their child is going to require significant services for their entire lifetimes, and planning to obtain these services begins at a very young age. Thus, states with a larger percentage of these students would have a lower special education graduation rate, and/or markedly different post-school outcomes, regardless of the efficacy of the state's special education program. Thus, addressing only the population with Learning Disabilities (or another group) would have been preferable, but, again, these data were not available.

Finally, while many districts around the country are embracing RTI and other non-testing practices for school psychologists, exactly what those psychologists are doing and how much time they are spending away from standardized tests becomes essentially negated by the thousands of districts that are still practicing the same methods of several decades past. Thus, the percentage of time spent not testing yielded a far lower spread (and thus less meaningful results) than if one compared a traditional model with a district that only used standardized tests 25% of the time. No state has enough of those districts to have yielded a significantly different overall result from the other states.

Implications for Future Research

As alluded to previously, there are many results from this study that lend themselves to further research at a different scale. As socioeconomic status emerged as the dominant predictor of school success, it would be a simple conclusion that a study attempting to explore aspects of this study use educational entities that are socioeconomically identical, or at least as similar as possible. It should go almost without saying that, for school psychologists, the variables that are most important to study are the ones that they themselves can directly affect; it is, for better or worse, in the hands of policy-makers how much money is allocated to education, and how it is spent. Thus, research needs to focus on the direct educational and post-school benefits of each activity a school psychologist practices.

Moreover, in order to minimize many of the differences among these variables, working on a smaller scale would be logical. Researchers could compare two school districts with similar factors such as size, SES, percentage and type of students receiving ELL, and per pupil spending, yet have significantly different approaches to the utilization of testing and non-testing methods. Even so, there would almost surely be discrepancies of other factors (availability and type of after-school programs, Special Education instructional approaches, etc.) that would be virtually impossible to fully account for.

Nevertheless, any of the independent variables that exhibited some statistical significance in either the correlations or the regressions lend themselves to further study. If there is a connection between the ratio of students to psychologists and the amount of money spent per Special Education student (a variable that was *not* considered in this study), then that connection needs to be explored. How is money allocated to Special Education, and how are these decisions being made? Does time spent away from testing allow a psychologist to serve more students effectively, or fewer? Do students in districts that differ greatly in SES experience different benefits from the different practices in which a psychologist is engaged; in other words, are best practices best for all students, or just some? As the research continues to support RTI and other pre-referral interventions in terms of short-term gains for students in Special Education, much more

research is needed to determine which of these strategies, if any, can be proven to have a long-term impact on the educational success of students.

Implications for Practice

Despite the limitations addressed previously, various implications for the practice of school psychology emerge, at least as ideas to consider. To begin with, the overwhelming impact of socioeconomic status – while not proven here for the first time by any means – does seem to suggest that school psychologists evaluate their interventions with great care. Simply because an intervention has failed to produce measurable results with a non-native English speaking, low income student with a Learning Disability, does not automatically mean that it will not work with another student; in fact, it could be argued that, given the limitations of both the implementation of an intervention under real-world conditions and in collecting accurate progress data under those same conditions, it may not have even failed to help *that* student. It may simply be that the benefits of the intervention are emerging in a time or way not being measured. More importantly, slight or subtle improvement may be more meaningful than it appears, given how much of academic success is dependent on factors outside of a school psychologist's control.

Additionally, advocating one's district or supervisor for more leeway to explore options of service delivery appears to be suggested by this study. If nothing else, there appears to be at least some weak evidence that school

psychologists spending their time engaged in activities other than administering and scoring standardized tests might have benefits for the student receiving services that do not make themselves apparent until after that student has left the K-12 system. Thus, more research might lead to the conclusion that RTI and other similar practices may not increase the likelihood of a student graduating high school, but instead have a lasting benefit in academic performance and success for those Special Education students who do actually graduate. It is not unreasonable to consider that some of the interventions employed at the K-12 level somehow do not make their benefits fully apparent until a student is enrolled in some form of higher education, as the skills required and demonstrated at the college level are often qualitatively different from those in high school and earlier.

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