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Data-based decision making in identifying specific learning disabilities through response to intervention

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DATA-BASED DECISION MAKING

Running Head: DATA-BASED DECISION MAKING IN IDENTIFYING SLD

**Data-based Decision Making in Identifying Specific Learning Disabilities
through Response to Intervention**

Thesis Submitted to

**The School of Education and Allied Professions of the
University of Dayton**

in Partial Fulfillment of the Requirements for the Degree

**Education Specialist in the Department of Counselor Education and Human
Services**

by

Stacy Alexander

UNIVERSITY OF DAYTON

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SCHOOL PSYCHOLOGY PROGRAM
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WE HEREBY APPROVE THE THESIS SUBMITTED

BY

Stacy Alexander

ENTITLED:


Data-based Decision Making in Identifying Specific Learning Disabilities
through Response to Intervention

AS PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF


Educational Specialist in School Psychology


Chair

Date


Member

Date


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Date

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ABSTRACT

DATA-BASED DECISION MAKING IN IDENTIFYING SPECIFIC LEARNING DISABILITIES THROUGH RESPONSE TO INTERVENTION

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Traditional methods of identifying learning disabilities have limitations that can be detrimental to students. Response to intervention has been identified as an alternative to waiting for a discrepancy between a child's potential and their school achievement. The main benefit of using this data-based method is that many students' needs can be addressed without waiting for eligibility for special education services. A limitation of using response to intervention is that little is known about its reliability. The purpose of this study was to examine the interaction between the amount of resources used in an intervention, its effect on student achievement, and decision making. Early career psychologists completed a survey which asked them to use data to make decisions about how to proceed in the response to intervention process. It was hypothesized that participants would choose to increase the intensity of an intervention when the effect size was small. This hypothesis was not supported, as increasing the intervention intensity was the most common choice in only one of the six scenarios involving a small effect size. It was also hypothesized that the use of an intervention with a large amount of resources would lead participants to consider special education. Although special education was not the most common choice in scenarios with a high amount of resources, the percentage of participants that considered this option was higher than in scenarios that involved a lesser amount of resources. Therefore, this hypothesis appears to be supported. Factors that could have affected the participants' decision-making were addressed.

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INTRODUCTION

The reauthorization of the Individuals with Disabilities Education Improvement Act 2004 (PL 108-446) provides the option to use a response to intervention or problem-solving model instead of the traditional discrepancy model in the identification of learning disabilities, although its use is not mandatory (Ysseldyke, 2005). This legislative act tips the scale in favor of response to intervention in a highly contentious debate regarding the most valid approach to assessing and serving students with learning disabilities.

Why is this change in legislation important? Traditional methods of assessing disabilities include the use of intelligence tests and achievement tests. This approach focuses on deficits within the child instead of considering relevant factors within the child's educational ecology (Barnett, Daly, Jones, & Lentz, 2004). Response to intervention was identified as a more comprehensive alternative in the President's Commission on Excellence in Special Education report (Office of Special Education Programs, 2002). The reasons against using the discrepancy model and also the benefits of using response to intervention will be discussed later.

LITERATURE REVIEW

Defining Learning Disability

Approximately 50% of the 5.78 million children served under IDEA in 2000-2001 were identified as having a specific learning disability (SLD) (Office of Special Education Programs, 2002). IDEA 2004 defines a specific learning disability as

a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculation, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia and developmental aphasia. The term does not include learning problems that are primarily the result of visual, hearing, or motor disabilities or mental retardation, of emotional disturbance, or of environmental cultural or economic disadvantage (PL 108-446).

The traditional method used to diagnose a learning disability is the discrepancy model, which is determined by calculating the difference between intellectual ability and academic achievement (Fletcher, Coulter, Reschly, & Vaughn, 2004). Although this discrepancy was originally meant to be one of several criteria

required to diagnose a learning disability, it has since become the primary determining factor in special education eligibility (Lyon et al., 2001).

Arguments Against the Discrepancy Model

There are several reasons why the discrepancy model is no longer considered a best practice in education. First, measured intelligence does not directly translate into a student's potential; it only measures learning that has taken place (Fletcher et al., 2004; Kavale, 2002). Second, a student's true intelligence quotient score can be depressed because of the learning disability itself (Kavale, 2002). Third, males and minority students are over-represented as a result of the discrepancy formula (Speece, 2002). Fourth, each state uses its own framework for determining special education eligibility, which results in inconsistent diagnosis from state to state (Dombrowski, Kamphaus, & Reynolds, 2004; Lyon et al., 2001; Shaw, Cullen, McGuire, & Brinckerhoff, 1995; Vaughn & Fuchs, 2003). Not only is there variation from state to state, but there is also variation within states and even within school districts (Vaughn & Fuchs, 2003). This inconsistency can be very problematic for a student when the family moves to a school district where he or she is no longer eligible for special education services (Lyon et al., 2001). In essence, the utilization of the discrepancy model to determine SLD has questionable validity and limited reliability.

Perhaps the biggest problem is that students cannot receive special education services until the discrepancy is met. This policy is commonly referred to as the wait to fail model (Meyer, 2000). Services for these children are often

delayed until third grade when the required discrepancy between intelligence and school achievement finally appears (Meyer, 2000). Given that these children have fallen so far behind their classmates, it is very difficult for the child to catch up, even with special education. In sum, the discrepancy method for identifying students with SLD is "an inconsistent, imperfect, expensive, and time-consuming one that does not serve the parent, teacher, or child well" (Vaughn, 2002, p. 550).

Education professionals are aware of the negative impact of delaying the identification of learning problems that often results from the use of the discrepancy model. In a recent survey, 54% of parents and 72% of educators stated that the time span between recognizing students who have learning problems and offering services to those students is too long (National Center for Learning Disabilities, 2003). In addition, education professionals invest considerable time and energy in identifying learning disabilities utilizing a method that does not link assessment with instruction (Vaughn & Fuchs, 2003). Delays in addressing educational needs and failure to link assessment with instruction may lead to inadequate support for students with learning problems.

Response to Intervention: A Possible Solution

The alternative approach to meeting the needs of the struggling learner is response to intervention, defined as a method to measure "the change in behavior or performance as a function of an intervention" (Gresham, 2001, p.3). Kovaeski and Prasse (2004) describe three levels of the response to intervention

model. In Phase 1, entire classes are screened using a measure of academic performance, such as The Dynamic Indicators of Basic Early Literacy Skills (DIBELS) or other curriculum-based measures of academic knowledge and skills. The students who are found to be at risk are then targeted for more intensive instruction as a group. Students who continue to experience difficulty after Phase 1 are provided with small group interventions in Phase 2. The interventions in Phase 2 are monitored to document student progress. Computer programs such as Accelerated Math TM, Yearly Progress Pro, and Aimsweb can be utilized to track progress (Ysseldyke, 2005). If students demonstrate inadequate progress during Phase 2 that student is considered to have a "poor" response to intervention and is moved on to Phase 3 of the response to intervention model (Kovaleski & Prasse, 2004, p. 160). More intense investigation into each student's problem and/or needs for educational services are likely considerations for students who reach Phase 3.

Decision-making Constructs for Response to Intervention

Barnett et al. (2004) offer several key constructs that should be considered within a response to intervention framework. To begin with, a discrepancy between the target child's performance and local norms must be established. Also, the amount of resources needed for the intervention (i.e., staff, planning time, student time spent out of the classroom, and materials) should be taken into account. This is referred to as intervention intensity (Barnett et al., 2004). Interventions that are high in intensity will require more resources.

Additionally, the team must decide if an intervention is effective and if it should be continued. At what point is a highly intense yet effective intervention continued or not continued?

Response to Intervention: Advantages

Research points to several advantages in using a response to intervention framework. First, providing effective classroom instruction becomes a priority over special education eligibility (Fletcher et al., 2004). In addition, students are serviced immediately as they no longer have to wait to fail. Third, response to intervention does not rely on teacher referral, which reduces the possibility of bias in referring students (Speece, Case, & Molloy, 2003; Vaughn & Fuchs, 2003). Also, response to intervention preserves the notion of discrepancy that is an important component of the SLD definition to many professionals in the field. However, rather than showing a difference between ability and achievement, the discrepancy occurs between the levels of performance before and after the intervention or between different areas of academic achievement (Gresham, 2001). Discrepancy can also take place between the target student and the established local norms. For example, a student may perform at a higher level in mathematics than in reading, indicating that the student's reading performance is below the student's overall ability. Lastly, all children stand to benefit from high-quality instruction, not just those at risk for academic failure (Speece et al., 2003).

Response to Intervention: Limitations

Several limitations of response to intervention have been presented in the literature. Some argue that more research-based evidence is needed (Kavale, Kaufman, Naglieri, & Hale, 2005; Naglieri & Crockett, 2005). Research also indicates that response to intervention is an effective tool for pre-referral assessment but not for special education eligibility (Kavale et al., 2005; Naglieri & Crockett, 2005). Also, multiple treatment interference can occur when using multiple interventions simultaneously (Barnett et al., 2004). In this case, determining which intervention had an effect could be problematic. Another limitation of using response to intervention is not using a single assessment method to make decisions. Critics of response to intervention feel that it can be used as part of the decision-making process, but not as the sole method (Kavale et al., 2005; Naglieri & Crockett, 2005). Given these limitations, more information is needed in order to determine if response to intervention is a viable tool for identifying learning disabilities.

Using Data to Make Educational Decisions

Visual analysis of data. Of all analytic methods, visually analyzing data has the longest history of use in the single-case research field (Kazdin, 1982). Kazdin (1982) defines visual analysis of data as the process for reaching a judgment about reliable or consistent intervention effects by visually examining graphed data. The predominance of visual analysis as the preferred method of data analysis in single-subject research literature was first empirically

demonstrated by Kratochwill and Brody (1978), and confirmed since then (Busk & Marascuilo, 1992). This preference exists for several reasons. First, no present statistical technique can concurrently consider data variability, trend magnitude and direction, mean levels and shifts, embedded cycles (e.g., weekly), and precipitous changes in performance at the point of intervention. Also, statistical analyses cannot distinguish between improvement and deterioration in an effect size, as an effect size is a blind index of change, always positive. Only visual analysis can detect the direction of change, and which pattern of behavior influenced the effect size. Some experts have contended that visual analysis should be the sole or at least primary method for single-case design data (Baer, 1977; Michael, 1974; Parsonson & Baer, 1978, 1986), arguing that visual analysis will reveal any intervention effects large enough to be important to clinicians.

However, there are drawbacks to using visual analysis of data. Visual analysis is a mainly informal process, lacking formal decision rules to guide inferences (Wampold & Furlong, 1981). Even strong proponents of visual analysis acknowledge that statistics are warranted in conditions with visually ambiguous results; when a flat, stable baseline does not exist; and when results must serve as objective documentation or unambiguous communication with other professionals (Huitema, 1986; Kazdin, 1982; White, Rusch, Kazdin, & Hartmann, 1989). Park, Marascuilo, and Gaylord-Ross (1990) found that even among expert raters, inter-rater agreements were 27% for graphs with statistical

significant results, and 67% for graphs without significant results. Harbst, Ottenbacher, and Harris (1991) report that journal reviewers performed little better than untrained raters at graph judgment tasks and that student training in single-subject research had little influence on visual analysis judgments.

Statistical analysis of data. Even strong advocates of visual analysis tend to recommend statistical analysis as a supplement in some cases. Kazdin (1982) stated that statistical procedures may be of value when there is no stable baseline, expected treatment effects cannot be well predicted, or statistical control is needed for extraneous factors in naturalistic environments. Huitema (1986), a strong supporter of visual analysis, recommends supplemental statistical analyses when ambiguous results must be shared with other professionals. Researchers are searching for an acceptable statistical methodology to calculate the effect size of treatment of single-subject experimental designs. Some have proposed parametric statistics for this purpose (e.g., Center, Skiba, & Casey, 1985-86; Ferron & Sentovich, 2002; Koehler & Levin, 1998; Kromrey & Foster-Johnson, 1996; Marascuilo & Busk, 1988; Swanson & Sachse-Lee, 2000; Wampold & Worsham, 1986; White, Rusch, Kazdin, & Hartmann, 1989). These methodologies would not necessarily be appropriate for single-subject studies.

One method of calculating effect size involves the standard mean difference. Standard Mean Difference (SMD) is calculated by determining the difference between the mean baseline and mean intervention and then dividing

by a standard (Busk & Serlin, 1992). Often, the standard deviation of the baseline is the metric used for this. Two variations of SMD have been described.

Specifically, SMD may be calculated using the mean for all baseline and intervention points (SMD_{all}) or it may be calculated using the mean from only the last three of each (SMD_3).

Olive and Smith (2005) compared various analyses for single-subject designs for interventions of six children with challenging behaviors using Percentage of Non-overlapping Data, Mean Baseline Reduction, Standard Mean Difference, and Regression Effect Size. The rank order of the magnitude of the intervention effects were consistent across all of the techniques used. Olive and Smith (2005) recommend the use of SMD_{all} as an alternative method to complement single subject visual analysis because of its simplicity of calculation, and given the limitations of the regression effect size (Scruggs & Mastropieri, 2001), percentage of non-overlapping data points, and mean baseline reduction.

Purpose of the Proposed Study

Although response to intervention is a proposed alternative to the discrepancy model, little is known about its reliability in regard to identifying students as learning disabled. The overall aim of this study is to provide information in regard to the current use of response to intervention to serve students with learning disabilities. The primary purpose of this study was to examine the interaction between decision-making, effect size, and resources. As such, two hypotheses were considered: a) that a small effect size would lead

participants to increase the intervention's intensity, and b) that a high amount of resources would lead to consideration for special education. A secondary purpose of this study was to determine inter-rater agreement of eligibility decisions when provided response to intervention data in a time-series format. It was hypothesized that there will be a moderate degree of inter-rater agreement in these decisions.

METHODS

Participants

Approximately 35 early-career school psychologists and 7 interns were recruited for participation in this study. Early-career school psychologists, by definition, have completed their graduate training and internship and have been practicing in the field for less than three years. This group was chosen because of their recent graduate training in response to intervention. All of the school psychologists recruited have obtained their degree in Ohio from a National Association of School Psychologists (NASP) approved training program with an emphasis on data-based decision making. The participants for this study were identified as recent school psychology graduates from an Ohio university and were recruited by mail. An informed consent letter describing the nature of the research was included with the materials for the study (See Appendix A). Seventeen of the participants recruited for the study returned completed surveys.

Materials

Eighteen time-series graphs displaying hypothetical data sets were created for the purpose of this study (See Appendix B). Each graph represented one hypothetical second grade student's progress in response to interventions within a three-tiered response to intervention approach. Two hypothetical students were created for the survey, Ralph and Mike. The graphs varied

systematically in the rate of response to intervention (i.e., low, medium, or high response) and the amount of resources needed for the intervention (i.e., low, medium, or high) (See Table 1). The levels of response to intervention were determined using effect size. A low response rate has an effect size of 0.20, a medium response rate has an effect size of 0.50, and a high response rate has an effect size of 0.80. To calculate effect size, the difference in means of the treatment and baseline conditions is divided by the standard deviation of the baseline. Effect size was not explicitly stated in the survey materials. Separate criteria were used to indicate the amount of resources involved in an intervention. A low level of resources indicates a class-wide intervention, while a medium level of resources is a small group intervention and a high level of resources would involve one-on-one tutoring. Only academic interventions were represented in the graphs. The graphs were presented in the same random order for all participants.

Design and Procedures

This study used a between-subjects design to determine the level of agreement across raters for time-series graphs. The participants were mailed the hypothetical scenarios along with a cover letter explaining the research and an assurance of confidentiality. As an incentive, each participant who returned the survey was entered into a drawing to receive a gift card to a local restaurant. Each participant examined 18 graphs and answered the accompanying multiple-choice and rating scale questions. Included with the data series was a self-

addressed stamped envelope for the return of the data. After completing the survey, the participants returned it to the researcher by mail. Participants were assigned a number for identification purposes. The participants' names did not appear on the survey or the return envelope.

Measures and Analysis

The hypothetical scenarios and corresponding questions were used to assess inter-rater agreement regarding the use of eligibility decisions when provided response to intervention data in a time-series format. The first question asked what the participant would do next based on the information given in the graph. Answer choices include continuing the current intervention, increasing the intervention's intensity, changing the intervention, doing further assessment, considering special education, and a space for other responses not listed. The second question asked the participant to rate their confidence in the decision from the first question, ranging from 1 (not at all confident) to 4 (confident).

The data gathered for the study were analyzed using the percentages of participants that chose each of the responses across the two students. For the purposes of this study, the similarity of their answers between students is considered inter-rater agreement. The rates of inter-rater agreement were analyzed for 17 independent raters across 18 time-series analysis graphs. See Table 1 for the distribution of graphs among the conditions used in the survey.

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TABLE 1. Distribution of resources and responses among the graphs used in the study.

	Ralph	Mike
<hr/>		
<i>Amount of Resources: High</i>		
Small Effect	Graph 5	Graph 14
Moderate Effect	Graph 9	Graph 18
Large Effect	Graph 1	Graph 10
<i>Amount of Resources:</i>		
Small Effect	Graph 8	Graph 17
Moderate Effect	Graph 3	Graph 12
Large Effect	Graph 6	Graph 15
<i>Amount of Resources: Low</i>		
Small Effect	Graph 2	Graph 11
Moderate Effect	Graph 7	Graph 16
Large Effect	Graph 4	Graph 13

RESULTS

Respondents' Decisions for the Nine Possible Scenarios

For the high effect size and high resources graphs, the majority of respondents chose to change the intervention. Approximately 40% of respondents chose to increase the intensity of the intervention and do further assessment. Approximately 25% of the respondents chose to consider special education. None of the respondents chose to continue the current intervention. When the participants' choices were rank ordered, the rankings were consistent across both students for all six choices. See Table 2 for the percentages of each decision option for each student.

TABLE 2. Percentage of School Psychology Respondents Select Each of the Team Decision Options: High Effect Size and High Resources

<i>Team Decision Options</i>	Ralph	Mike
Continue current intervention	0.0%	0.0%
Increase intervention intensity	41.2%	41.2%
Change interventions	82.4%	70.6%
Do further assessment	41.2%	29.4%
Consider special education	29.4%	23.5%
Other (please explain):	17.6%	5.9%

For the low effect size and low resources graphs, the overwhelming majority of the respondents chose to change the intervention (94%). A similar number of respondents chose to increase the intensity of the intervention and do further assessment. None of the respondents considered special education for Ralph, but 18% chose to consider special education for Mike. None of the respondents chose to continue the current intervention. When the participants' choices were rank ordered, the rankings were consistent across both students for four out of the six choices. See Table 3 for the percentages of each decision option for each student.

TABLE 3. Percentage of School Psychology Respondents Select Each of the Team Decision Options: Low Effect Size and Low Resources

<i>Team Decision Options</i>	Ralph	Mike
Continue current intervention	0.0%	0.0%
Increase intervention intensity	52.9%	64.7%
Change interventions	94.1%	94.1%
Do further assessment	52.9%	47.1%
Consider special education	0.0%	17.6%
Other (please explain):	17.6%	5.9%

For the medium effect size and medium resources graphs, the overwhelming majority of the respondents (94%) chose to change the intervention. A similar number of respondents chose to increase the intensity of the intervention for each student (35% for Ralph and 47% for Mike); also, a similar number of respondents chose to do further assessment for each student (59% for Ralph and 65% for Mike). A small percentage of the respondents

considered special education. None of the respondents chose to continue the current intervention. When the participants' choices were rank ordered, the rankings were consistent across both students for all six choices. See Table 4 for the percentages of each decision option for each student.

TABLE 4. Percentage of School Psychology Respondents Select Each of the Team Decision Options: Medium Effect Size and Medium Resources

<i>Team Decision Options</i>	Ralph	Mike
Continue current intervention	0.0%	0.0%
Increase intervention intensity	35.3%	47.1%
Change interventions	94.1%	94.1%
Do further assessment	58.8%	64.7%
Consider special education	11.8%	5.9%
Other (please explain):	17.6%	5.9%

For the high effect size and low resources graphs, the overwhelming majority (94%) of the respondents chose to change the intervention. A similar number of respondents chose to increase the intensity of the intervention (53% for Ralph and 59% for Mike) and do further assessment (53% for both students). A small percentage of the respondents considered special education. None of the respondents chose to continue the current intervention. When the participants' choices were rank ordered, the rankings were consistent across both students for four out of the six choices. See Table 5 for the percentages of each decision option for each student.

TABLE 5. Percentage of School Psychology Respondents Select Each of the Team Decision Options: High Effect Size and Low Resources

<i>Team Decision Options</i>	Ralph	Mike
Continue current intervention	0.0%	0.0%
Increase intervention intensity	52.9%	58.8%
Change interventions	94.1%	94.1%
Do further assessment	52.9%	52.9%
Consider special education	5.9%	11.8%
Other (please explain):	11.8%	5.9%

For the low effect size and high resources graphs, the responses among the respondents were varied between which decision option was chosen and which student the graph referenced. For Ralph, the most common choices were to change the intervention and do further assessment. Increasing the intensity of the intervention and changing the intervention were the most common choices for Mike. Responses were also varied in which student should be considered for special education (35% for Ralph and 24% for Mike) as well as if the current intervention should be continued (0% for Ralph and 24% for Mike). When the participants' choices were rank ordered, the rankings were consistent across both students for one out of the six choices. See Table 6 for the percentages of each decision option for each student.

TABLE 6. Percentage of School Psychology Respondents Select Each of the Team Decision Options: Low Effect Size and High Resources

<i>Team Decision Options</i>	Ralph	Mike
Continue current intervention	0.0%	23.5%
Increase intervention intensity	35.3%	58.8%
Change interventions	88.2%	52.9%
Do further assessment	70.6%	29.4%
Consider special education	35.3%	23.5%
Other (please explain):	11.8%	0.0%

For the high effect size and medium resources graphs, the responses among the respondents were varied between which decision option was chosen and which student the graph referenced. For Ralph, the most common choice was to increase the intensity of the intervention (77%), followed by change the intervention (59%) and do further assessment (41%). For Mike, the majority of the respondents chose to change the intervention (88%). An equal number chose to increase the intensity of the intervention and do further assessment for Mike (59%). Responses were also varied in regard to if the current intervention should be continued (18% for Ralph and 0% for Mike). Six percent of respondents considered special education. When the participants' choices were rank ordered, the rankings were consistent across both students for two out of the six choices. See Table 7 for the percentages of each decision option for each student.

TABLE 7. Percentage of School Psychology Respondents Select Each of the Team Decision Options: High Effect Size and Medium Resources

<i>Team Decision Options</i>	Ralph	Mike
Continue current intervention	17.6%	0.0%
Increase intervention intensity	76.5%	58.8%
Change interventions	58.8%	88.2%
Do further assessment	41.2%	58.8%
Consider special education	5.9%	5.9%
Other (please explain):	5.9%	11.8%

For the medium effect size and low resources graphs, the majority of the respondents chose to change the intervention (82% for Ralph and 88% for Mike). The same number of respondents chose to increase the intensity of the intervention (65% for both students). Also, a similar number of respondents chose to do further assessment for each student (53% for Ralph and 47% for Mike). The same number of respondents considered special education for both students (24%). None of the respondents chose to continue the current intervention. When the participants' choices were rank ordered, the rankings were consistent across both students for all six choices. See Table 8 for the percentages of each decision option for each student.

TABLE 8. Percentage of School Psychology Respondents Select Each of the Team Decision Options: Medium Effect Size and Low Resources

<i>Team Decision Options</i>	Ralph	Mike
Continue current intervention	0.0%	0.0%
Increase intervention intensity	64.7%	64.7%
Change interventions	82.4%	88.2%
Do further assessment	52.9%	47.1%
Consider special education	23.5%	23.5%
Other (please explain):	11.8%	5.9%

For the low effect size and medium resources graphs, the overwhelming majority of the respondents chose to change the intervention (94% for Ralph and 100% for Mike). The same number of respondents chose to increase the intensity of the intervention (59% for both students) and a similar percentage chose to do further assessment (53% for Ralph and 59% for Mike). Six percent of the respondents considered special education for Ralph, but 18% chose to consider special education for Mike. None of the respondents chose to continue the current intervention. When the participants' choices were rank ordered, the rankings were consistent across both students for all six choices. See Table 9 for the percentages of each decision option for each student.

TABLE 9. Percentage of School Psychology Respondents Select Each of the Team Decision Options: Low Effect Size and Medium Resources

<i>Team Decision Options</i>	Ralph	Mike
Continue current intervention	0.0%	0.0%
Increase intervention intensity	58.8%	58.8%
Change interventions	94.1%	100.0%
Do further assessment	52.9%	58.8%
Consider special education	5.9%	17.6%
Other (please explain):	5.9%	5.9%

For the medium effect size and high resources graphs, the majority of respondents chose to change the intervention (100% for Ralph and 82% for Mike). Many respondents also felt that further assessment was necessary (59% for Ralph and 75% for Mike). Respondents were divided in the decision to increase the intensity of the intervention (24% for Ralph and 47% for Mike), as

well as if special education should be considered (41% for Ralph and 29% for Mike). When the participants' choices were rank ordered, the rankings were consistent across both students for four out of the six choices. See Table 10 for the percentages of each decision option for each student.

TABLE 10. Percentage of School Psychology Respondents Select Each of the Team Decision Options: Medium Effect Size and High Resources

<i>Team Decision Options</i>	Ralph	Mike
Continue current intervention	0.0%	5.9%
Increase intervention intensity	23.5%	47.1%
Change interventions	100.0%	82.4%
Do further assessment	58.8%	64.7%
Consider special education	41.2%	29.4%
Other (please explain):	5.9%	5.9%

Summary

For seven of the nine possible scenarios, the most frequently occurring decision was to change the intervention. The decision to increase the intensity of the intervention and do further assessment were also common choices (40% to 77%, depending on the scenario). Special education was considered in higher percentages in four of the nine scenarios: the high effect size/high resources graphs (25%), low effect size/high resources graphs (35% for Ralph and 24% for Mike), medium effect size/low resources (24%), and low effect size/medium resources (41% for Ralph and 29% for Mike).

Respondents' Confidence Judgments in Making Decisions

Overall, participants' judgments of their decision confidence did not vary by degree of effect or resource intensity. The mean rating for the scenarios ranged from 2.86 to 3.24, which indicated respondents were fairly confident in their decisions. Participants could rate their confidence level on a scale ranging from 1 to 4. See Tables 11 and 12 for each scenario's mean confidence rating.

TABLE 11. Judgments of Confidence in Decision Making: Ralph
(Mean and Standard Deviation)

		Effect Size		
Amount of Resources		Low	Middle	High
	High	3.12 0.49	3.06 0.66	2.94 0.66
	Middle	3.00 0.61	2.86 0.75	3.19 0.54
	Low	2.86 0.64	3.19 0.54	3.14 0.75

TABLE 12. Judgments of Confidence in Decision Making: Mike
(Mean and Standard Deviation)

		Effect Size		
Amount of Resources		Low	Middle	High
	High	3.18 0.64	2.93 0.80	3.13 0.62
	Middle	3.12 0.70	3.06 0.66	3.06 0.56
	Low	3.24 0.75	3.24 0.66	3.18 0.73

DISCUSSION

Hypotheses

For the purposes of this study, three hypotheses were considered. The first two hypotheses examined the relationship between the effect size of the graph, the given amount of resources, and the decisions that the participants made. The first hypothesis speculated that participants would decide that the intervention intensity should increase if the graph had a small effect size. In five of the six graphs that had a small effect size, a higher percentage of participants chose to change interventions instead of increase the intensity of the current intervention. A higher percentage of participants felt that increasing intervention intensity was the best choice for the sixth graph. Since increasing the intensity of the intervention was the top choice in only one of the six scenarios involving a small effect size, this hypothesis was not supported.

It was also hypothesized that a student would be considered for special education when a high amount of resources was involved in the intervention. Consideration for special education was not the top choice of participants in any of the six scenarios that utilized a high amount of resources. However, an average of 30% of participants chose this option for the given scenarios. This may mean that participants took the demands of the intervention into account. A deeper problem likely exists if an intervention that requires more materials,

longer time periods, and additional staff does not improve the student's skills.

The participants of this study considered special education more often in high resources situations than in low or medium scenarios. An average of 11% of participants chose special education in the low and medium resources scenarios.

Although suspecting a disability was not the most common choice in the high amount of resources scenarios, this hypothesis appears to be supported based on the percentage of participants who chose this option in comparison to situations that involved a lesser amount of resources for the intervention.

Another hypothesis examined the degree to which participants would make consistent decisions for both students in the same situation (i.e., participants would make the same decision for Ralph and Mike in the High Effect Size/Low Amount of Resources scenario). For seven out of nine possible combinations of effect size and amount of resources, participants made the same decisions for Ralph as they did for Mike. Therefore, this hypothesis appears to be supported. Since participants made similar decisions across the two students, an adequate level of reliability was achieved. However, education professionals would likely benefit from training in using data to make decisions.

Limitations of Study

Many factors could have altered the decisions of the participants in this study. First of all, no treatment integrity data was included in the survey. If the participants knew that an intervention was implemented with integrity, they may have been more likely to continue it or perhaps increase its intensity, rather than

change interventions all together. In addition, the length of the intervention may have been a factor in participants' decisions. The graphs show the intervention taking place over ten weeks, with eight data points marking the student's progress. If the intervention were carried out over a longer period of time, this could have an effect on their decision-making. Personal factors could also have an influence on participants. These could include their previous experiences working with the intervention provider, how competent they perceive the intervention provider to be, and/or how much support they are able to provide the intervention provider. Another factor influencing participants' decisions is the intervention itself. Participants were not given any specific information about which intervention was used. Student factors could also affect intervention performance. Participants were not provided information about behavioral issues, absences, retention, siblings, or any issues that the student may have been experiencing during the intervention. Including this information may have led to different decisions. For example, if a student's grandparent passed away during the intervention and missed school as a result, this could negatively affect his/her performance. In this case, continuing the intervention might be a better option than changing it because the intervention provider does not know if the student's performance is due to lack of skill or the distraction of family matters. Finally, school factors could also affect intervention implementation and performance. Lack of adequate space, interruptions, holidays and breaks in the school schedule, state and district testing cycles, and special events have an

impact on the learning environment. Any one or combination of these factors could sway the progress of an intervention.

Conclusion

As Robinson (2002) stated, school psychologists are trained to work with diverse populations and are valuable resources for teachers, parents, and students. They can advocate for students, provide counseling, and consult with the teachers and parents regarding the education of students with learning disabilities. They also facilitate a collaborative relationship between regular education teachers, special educators, and other professionals. School psychologists are on the front line of identifying students with possible learning disabilities. However, traditionally most of their time is spent assessing students to determine eligibility. In districts that utilize response to intervention, the school psychologist's role would shift to intervention related activities, such as monitoring students' progress and implementation of behavior supports (Fletcher et al., 2004).

The Evidence-Based Interventions (EBI) movement challenges school psychologists to strengthen and expand their roles as scientist-practitioners. In addition to being users of effective interventions, they are expected to engage in data-based decision making, and even contribute to the international database on intervention effectiveness (Kratochwill & Stoiber, 2002; Kratochwill & Stoiber, 2000). The fulfillment of these expanded roles will require greater research expertise by most school psychologists, particularly in the area of single-case

research methodology (Parker, Cryer, & Byrns, 2006). Response to intervention is a data-based method of serving students can lead to access to services without the delay of the special education evaluation and identification process. Students can enter and exit intervention programs fluidly and make progress at their own pace while maintaining access to the general education curriculum. More research is needed in order to create a standard to which eligibility decisions can be made.

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APPENDIX A
Informed Consent

Informed Consent to Participate as a Research Subject

Project Title: Data-Based Decision Making in Identifying Learning Disabilities through Response to Intervention

Investigator: Stacy Alexander

Purpose of Research: This research is investigating how school psychologists believe children with learning disabilities should be served within a response to intervention framework.

Expected Duration of Study: This research should take 30-45 minutes for you to complete.

Procedure: You will be given 18 scenarios each with information about a student's progress during a six-week reading intervention. Then you will be asked to answer two questions regarding that student: "What would you do next based on the information given above?" and "How confident are you in making this decision?"

Alternative Procedures: No alternative procedures exist in this research project.

Anticipated Risks and / or Discomfort: There are no foreseeable risks from your participation because this is simply an assessment study and not a treatment study. Your participation is completely voluntary and you will be free to refuse or stop at any time without penalty.

Benefits to the Participant: By participating in this research, you will be entered in a drawing to win a \$20 gift certificate to Starbucks Coffee.

Confidentiality: No records of your participation in this research will be disclosed to others. Your data will be pooled with data from other research participants and only summary results will be made public. Your name will not be revealed in any document resulting from this research. Your data will be recorded anonymously. Only a randomly assigned identification number will be recorded with your data; your name or other identification will not be recorded with the data.

Contact Person for Questions or Problems: If a research-related injury occurs, or if you have questions about the research, contact Stacy Alexander, 501 Albert St., Englewood, OH 45322, (937) 478-5331, alexandersl@earthlink.net or Dr. Julie Morrison, 301 Chaminade Hall, University of Dayton, 300 College Park, Dayton, OH 45469, (937) 229-3621, Julie.Morrison@notes.udayton.edu. Questions about the rights of the subject should be addressed to Jon Nieberding., Chair of the Committee for the Protection of Human Subjects, Kettering Labs Room 542, +0104, 229-4053.

Consent to Participate: I have voluntarily decided to participate in this research project. The investigator named above has adequately answered all questions that I have about this research, the procedures involved, and my participation. I understand that the investigator named above, or one of his assistants, will be available to answer any questions about experimental procedures throughout this research. I also understand that I may refuse to participate or voluntarily terminate my participation in this research at any time without penalty or loss of benefits to which I am entitled. The investigator may also terminate my participation in this research if he feels this to be in my best interest. In addition, I certify that I am 18 (eighteen) years of age or older.

Signature of Subject

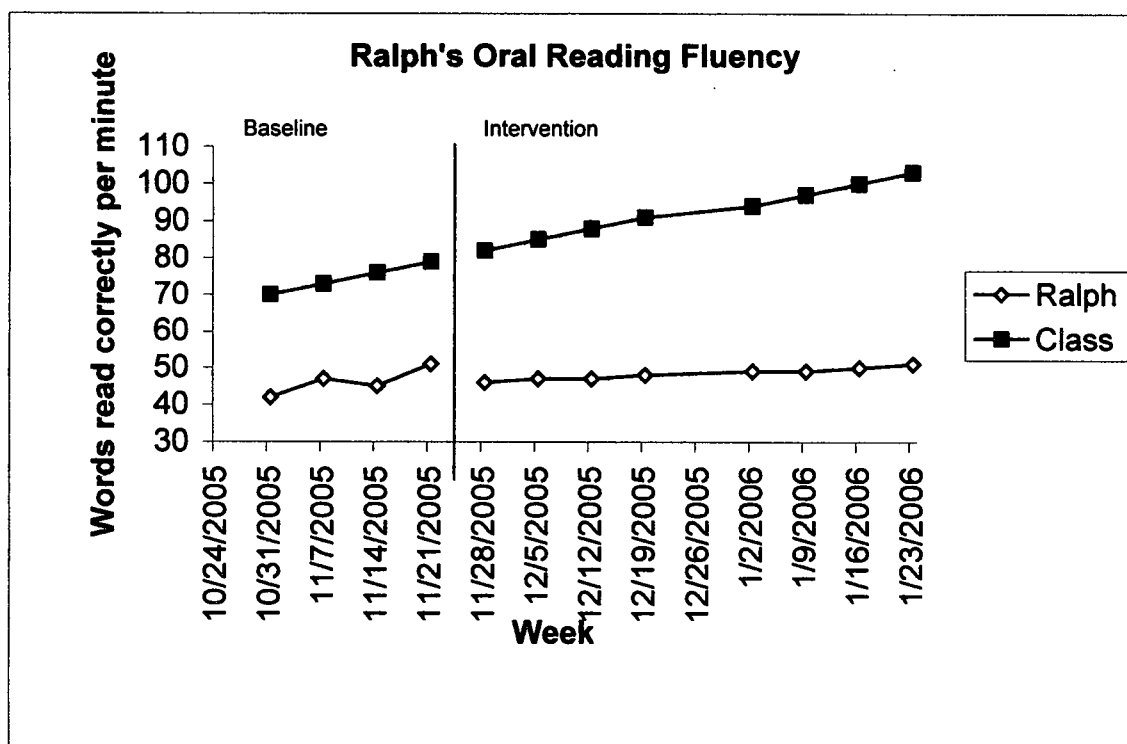
Date

Signature of Investigator

I would like a copy of the results of this study. Please send it to me by email at the following address:

APPENDIX B
Example Text of Questionnaire

DIRECTIONS: Observe each graph and answer the accompanying questions.



High Amount of Resources Involved in Intervention

1. What would you do next based on the information given above? (Please check all that apply.)

- | | |
|--|---|
| <input type="checkbox"/> Continue current intervention | <input type="checkbox"/> Do further assessment |
| <input type="checkbox"/> Increase intervention intensity | <input type="checkbox"/> Consider special education |
| <input type="checkbox"/> Change interventions | <input type="checkbox"/> Other (please explain): |

2. How confident are you in making this decision?

- | | | | |
|------------|-------------------|------------------|-----------|
| 1 | 2 | 3 | 4 |
| Not at all | Somewhat/not sure | Fairly confident | Confident |

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