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Personal Research Agenda

Overview

I am most interested in studying and quantifying the interaction between children and environmental variables that impact performance at a given moment in time, manipulating those variables, and measuring the impact using direct child outcome measures. My three major areas of research include identifying dynamic indicators of learning, identifying effective instructional strategies, and effecting system change.

Identifying Dynamic Indicators of Learning

Previous Efforts. Two years ago, I developed a set of curriculum-based measurement (CBM) probes to assess kindergarten readiness skills classwide (VanDerHeyden, Witt, Naquin, & Noell, 2001). This spring I conducted a study to develop and validate a set of curriculum-based measurement (CBM) probes of math for use with four-year old children in public preschool programs. Specifically, six CBM probes of math were developed to provide an alternative means of assessing math performance with four-year old children. Probes were designed to sample skills identified by teachers as being very important for children to master before entering kindergarten (e.g., number naming, counting). Each probe was designed to yield a fluency estimate. Alternate form reliability, concurrent correlation with two standardized measures, and sensitivity to instruction were assessed.

Future Directions. I am interested in continuing to develop measures of behaviors in preschool that are predictive of long-term performance and academic competence, can be reliably measured, and are sensitive to instructional manipulations. I envision a line of research that examines the technical properties of scores obtained using the measures, examines the utility and predictive power of the measures for screening, and studies their use in functional academic

assessment (performance/skill deficit identification, response to intervention, identifying effective instructional strategies).

Identifying Variables of Effective Instruction

Previous Efforts. I am very interested in quantifying quality of intervention with very young children. At LSUHSC, Pat Snyder and I served as co-investigators on a project designed to measure complete learning trials in an inclusive preschool classroom. One manuscript from this work will present data concerning one way to quantify instructional activity in early childhood classrooms. The other manuscript will present data concerning a possible dynamic indicator.

Future Directions. Methods for capturing the quality of early educational intervention that are sensitive to instructional growth are critically needed. I envision a series of studies examining the use of antecedent strategies to establish and maintain in a robust fashion adaptive responding important for optimal child development.

System Change

Currently I have three manuscripts under review at *School Psychology Review* (VanDerHeyden, Witt, & Naquin, in submission; VanDerHeyden & Witt, in submission; VanDerHeyden & Witt, in submission) that present data for an alternative model of identification for special education services. These models rely on the use of CBM to identify children who perform lower than their classroom peers, academic functional assessment to develop intervention, and response to intervention to determine outcome. This spring, I conducted a study to attempt to quantify response to intervention as an alternative identification criterion for use with young children. In this study, we examined relative response to classwide and individual intervention.

References

VanDerHeyden, A. M., Witt, J. C., Naquin, G., Noell, G. (2001). The reliability and validity of curriculum-based measurement readiness probes for kindergarten students. School Psychology Review, 30, 363-382.

VanDerHeyden, A. M., Witt, J. C., & Naquin, G. Development and validation of a process for screening referrals to special education. Manuscript submitted for publication.

VanDerHeyden, A. M., & Witt, J. C. Toward an operational definition of resistance to intervention: How much growth is enough? Manuscript submitted for publication.

VanDerHeyden, A. M., & Witt, J. C. Using universal curriculum-based measurement level and trend data to identify students needing academic intervention. Manuscript submitted for publication.

Abstract

The cumulative impact of an enormous and growing body of evidence on assessment and instructional effectiveness has prompted a call for early identification and intervention (President's Commission on Excellence in Special Education, 2002). Evidence has shown that poor readiness skills lead to and compound future deficits (Adams, 1990; Cunningham & Stanovich, 1997; Gettinger, 1986). Evidence has also shown that a disproportionate positive association between readiness skills and SES exists (Donovan & Cross, 2002; Hart & Risley, 1995). Finally, early intervention has been shown to remediate deficits and prevent future deficits (Lennon & Slesinski, 1999; Torgeson, 2002; Vellutino, Scanlon, & Tanzman, 1998). Torgeson (2002), for example, summarized his own research and that of others related to how poor readers differ from strong readers in the early grades and specified instructional strategies likely to effectively remediate reading problems. Torgeson describes a model of *prevention* of learning disability for children who are poor readers in kindergarten and first grade, given early identification and early, powerful intervention. This model of prevention is one that "makes sense" in terms of effectiveness and in terms of cost. Yet, research is needed to identify and refine dynamic assessment tools and effective instructional programming to enhance learning for preschool children and accomplish the goal of prevention. Specifically, I envision a series of studies examining further the utility of curriculum-based measurement with preschoolers and early elementary children, identifying robust instructional strategies, and identifying criteria for child response that relate to meaningful learning outcomes (i.e., functional competence).

Purpose and Objectives

Several investigators have conducted exciting research to identify dynamic indicators of learning for young children (*Early Childhood Research Institute on Measuring Growth and Development*). I have been in contact via email with Dr. Roland Good at the University of Oregon and Dr. Scott McConnell at the University of Minnesota who generously provided me with their measures to use in my own research in this area. The goal of this proposed line of investigation is to continue to identify objective, short-duration measures of child performance (i.e., dynamic indicators) that can be obtained in the regular classroom setting and reflect skills that are important for long-term functional competence. These measures could be used within a problem-solving model of assessment and contribute to the use of response to intervention for decision-making. Once dynamic indicators are identified for young children, these measures can be used to gauge the effectiveness of instructional strategies.

Proposed Method

Setting

All study activities will be conducted in early intervention inclusive toddler programs, public preschool, and Early Headstart/Headstart centers.

Participants

Children between the ages of two and four will be recruited for participation. All children in participating classrooms (approximately 100 children) will be recruited for participation.

Procedures

Identifying Dynamic Indicators. One line of research will focus on developing and extending dynamic indicators of learning with young children. Alternate form reliability will be examined using repeated administrations of two forms of a probe approximately one day apart

with a pool of approximately 50 children per probe. Probes that are found to yield consistent scores from one session to the next will be retained for the validation phase of the project. In the validation phase of the project, the probe scores will be compared to scores obtained on criterion measures (e.g., Brigance Screens) to determine whether or not the scores correlate. Children will then participate in a brief instructional session to determine whether or not the probe appears to be sensitive to instructional growth and therefore, useful for formative planning. Children between the ages of two and four will participate in this phase of the project.

Examining the Utility of a Problem-Solving Model of Assessment with Young Children. Probes that yield scores with acceptable technical properties will be included in this phase of the project. In this phase, decision rules will be applied to classwide score patterns to identify children who may be in need of further assessment and intervention (e.g., VanDerHeyden, Witt, & Naquin, in submission). All children will be exposed to a set of criterion measures to attempt to quantify predictive power of various decision criteria for identification of children in three and four year old public school and Headstart programs.

Examining Response to Intervention. One of the criterion measures included in the second phase of this project will involve an intervention component. In this phase of the project, several criteria for judging response to intervention will be proposed and examined. Relative response to classwide and individual intervention will be examined with children attending three and four year old public school and Headstart programs.

Examining the Quality of Early Intervention. Children attending early intervention inclusive toddler programs (two and three year olds) will participate in this phase of the project. The goal of this phase of the project will be to continue to refine the methods of capturing and maximizing complete learning trials experienced by children in early intervention classrooms.

The dynamic indicators identified in the first phase of the project will be used in this phase to evaluate the effectiveness of instructional manipulations and the value of complete learning trials as an indicator of intervention quality/effectiveness.

Advantages and Challenges of a Collaborative Multi-Site Research Program

Because this study involves three different types of early childhood programs, multi-site collaboration is a necessity. I have had the good fortune to build collaborative partnerships with senior scientists who have access to particular programs where research has been successfully conducted in the past. For example, Pat Snyder's background in early intervention and expertise in group measurement and analysis strategies has been a perfect match with my own work in single-subject methodology and applied behavior analysis. We have forged a strong working relationship based on our mutual interests and unique strengths that could continue to be very productive in terms of research. I envision the early intervention phase of the project being implemented in Louisiana. The preschool portion of the project will take place both in Arizona (where I am taking a research position with a school district in July, 2002) and in Louisiana. An estimated budget is provided below. Estimated total is $67,724.

Professional Time	Early Career Scientist	20% time + Benefits (24%)	$10,000 + $2400= $12,400
	Senior Scientist	10% time + Benefits (24%)	$10,000 + $2400= $12,400
	Research Associate	50% time + Benefits	$15,000 + $3600= $18,600
	Clerical Assistance	10% time + Benefits	$2600 + $624= $3224
Supplies	Reinforcers		$500
	Test Kits		$2000
	Office Consumables	e.g., video tapes, batteries	$3000
Travel	Site visits and conference presentations		$10,000
Equip-ment	LCD projector		$3000
	Digital Recorder		$600
	Laptop Computer		$2000