

**The Use of Cultural Competency Educational Interventions to Improve  
Rehabilitation Service Access and Outcomes for  
Culturally Diverse Individuals with Disabilities:  
A Systematic Review and Meta Analysis**

---

**The Campbell Collaboration Colloquium 2009**

*Better Evidence for a Better World*

Oslo, Norway  
May 18 – 20, 2009

**Rooshey Hasnain, Ed.D.**

Department of Disability and Human Development  
Center for Capacity Building on Minorities with Disabilities Research  
University of Illinois at Chicago  
Chicago, Illinois USA  
roosheyh@uic.edu

**SR Project Team & Co-Authors**

---

**Rooshey Hasnain, EdD**

Visiting Research Assistant Professor, Institute on Disability and Human Development  
Center for Capacity Building on Minorities with Disabilities Research, UIC

**Diane M. Kondratowicz, PhD**

Instructor of Political Science in Family Medicine and  
Coordinator, Patient-centered Medicine Scholars Program, Department of Family Medicine, UIC

**Nelson Portillo, PhD**

Visiting Senior Research Specialist, Institute for Health Research and Policy, UIC

**Fabricio Balcazar, PhD**

Professor, Institute on Department of Disability and Human Development  
Center for Capacity Building on Minorities with Disabilities Research, UIC

**Robert Gould, B.A.**

Master's Student, Institute of Disability and Human Development, UIC

**Katherine Hanz, M.A., M.L.I.S**

Information Specialist, Concordia University, Canada

**Timothy P. Johnson, PhD**

Professor, Public Administration and Director, Survey Research Lab, UIC

## Acknowledgements

---

### **National Center for the Dissemination of Disability Research (NCDDR) and Southwest Educational Development Laboratory (SEDL)**

- Participated in on-line training course, "Developing Evidence-Based Products Using the Systemic Review Process" (Fall, 2007 to Spring 2008)
- Joann Starks, Ph.D. and John Westbrook, Ph.D.

### **Campbell Collaboration Group**

- Accepting our title registration
- Identifying information specialist
- Funding support

### **Chad Nye, PhD**

- Expert consultation and mentor
- Ongoing encouragement & support

## Background

---

- Many studies highlight **disparities and poorer outcomes for ethnic/racial/linguistic minorities with disabilities** across different rehabilitation settings(Thomas et al. 2002; Brach et al., 2000)

- Limited access to rehabilitation services or opportunities
- Limited access to quality care and/or treatment
- Economic and social exclusion
- Barriers to full inclusion and
- Denial of basic human rights

- **Rehabilitation professionals are aware of multicultural issues:**  
Need to improve the accessibility and quality of rehabilitation services for individuals from underserved ethnic, racial, and linguistic backgrounds.

## Our SR Project

---

**Assumption is clear vs. Evidence is unclear:** *Does* cultural competency *really* improve rehabilitation outcomes for individuals with disabilities who are from ethnically/racially/linguistically/economically diverse backgrounds?

**Purpose:** Assess current literature for evidence that CC service delivery improves the experiences and outcomes of clients seeking and using rehabilitation supports and services

## Terminology -- Definitions

---

- “Disability”
- “Cultural Competency”
- “Rehabilitation”

## **“Disability”**

---

“Difficulty in functioning at the body, person, or societal levels, in one or more life domains, as experienced by an individual with a health condition in interaction with contextual factors”

Source: International Classification of Functioning and Disability (ICF)

## **Types of Disability**

---

Amputation, arthritis, autism, blindness, cancer, **diabetes**, cerebral palsy, cystic fibrosis, deafness, head injury, heart disease, hemophilia, respiratory or pulmonary dysfunction, mental retardation, **mental illness**, multiple sclerosis, muscular dystrophy, muscular-skeletal disorders, neurological disorders, paraplegia, quadriplegia, sickle cell anemia, specific learning disabilities, end-stage renal disease, **HIV/AIDS**

Source: Dept. of Rehabilitation Services, Illinois Dept. of Human Services

## Key Issues and Challenge

---

- No universally accepted definition or national guidelines of cultural competency, except for the culturally and linguistically appropriate standards (**CLAS**)
- CC definitions are difficult to operationalize into identifiable, observable, or measurable behaviors (Price and al., 2005 Geron, 2002)
- Still missing CC guidelines and preferred practices in disability and rehabilitation

**Bottom Line:** We don't know if, or to what extent, CC interventions impact outcomes in diverse consumer populations.

## “Cultural Competency”

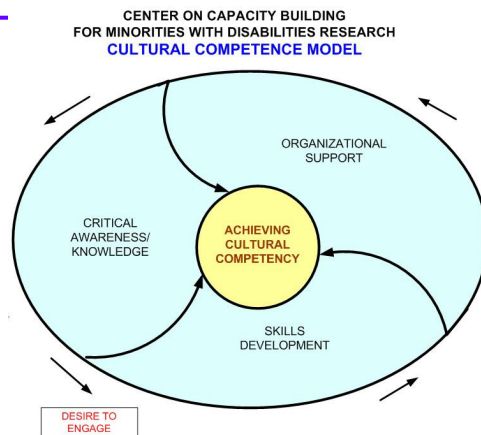
---

Developing cultural competence results in an ability to understand, communicate with, and effectively interact with people across culture

**CC comprises components:**

- Awareness of one's own cultural worldview,
- Attitude and knowledge towards cultural differences
- Cross-cultural skills and
- Organizational supports

## Guiding Cultural Competency Model



Source: Balcazar, F., Willis, C., Taylor-Ritzler, T.(2008). Cultural Competence Model  
Center on Capacity Building for Minorities with Disabilities Research, UIC

## Categorical-Related Rehabilitation Outcome Measures

- Psychosocial (e.g., quality of life)
- Physiological/Biological
- Attitudinal
- Behavioral
- Cognitive Understanding of Disability
- Psychological

## Over 20 Databases Searched

Subject Specific Databases	<ul style="list-style-type: none"> <li>● Medline</li> <li>● ERIC</li> <li>● PsycINFO</li> <li>● Health Sciences: SAGE Full text</li> <li>● Social Services Abstracts</li> <li>● Rehabdata (NARIC)</li> <li>● CIRRIE</li> <li>● Social Work Abstracts</li> <li>● CINAHL</li> <li>● EMBASE</li> <li>● HealthSource</li> </ul>
Inter-disciplinary Databases	<ul style="list-style-type: none"> <li>● ISI Web of Knowledge</li> <li>● Science Direct</li> <li>● ProQuest Dissertation and Theses</li> <li>● Academic Search Premier</li> </ul>
Primarily International Databases	<ul style="list-style-type: none"> <li>● Canadian Research Index</li> <li>● CBCA Education</li> <li>● British Education Index</li> <li>● Australian Education Index</li> <li>● Francis</li> <li>● PAIS International</li> <li>● Google Search</li> <li>● Dissertation Abstracts</li> </ul>

## Key terms and descriptors:

CONCEPTS	RELATED TERMS
Cultural Competency	cultur* ; cultural competenc* ; culturally competent; transcultural* ; cultural literacy ; cultural awareness ; cross-cultural training ; cultural education ; cultural characteristics ; cultural diversity ; cultural sensitivity ; ethnic groups
Educational Interventions	intervention* educat* train* professional education professional training educational initiatives
Disability	disab* disorder* disease* health*

## Criteria Used for Inclusion & Exclusion

### Inclusion Criteria

- Adults with disabilities, 18 and/or older
- A cultural competency (CC) intervention of some kind
- RCTs (where control received standard care or treatment as usual and the treatment group received a cultural competency intervention)

### Exclusion Criteria

- Health promotion/preventative studies
- Children, Youth under 18
- No drugs, alcohol or substance abuse of any kind
- No CC intervention

•**RESULTS= 9 Studies identified; 7 Used for Meta-Analysis**

## Participant Characteristics

	Treatment	Control
Main Recipient of Intervention	100% Client with Disability/ Health Condition	100% Client with Disability/ Health Condition
Predominant Disability	87.5% Chronic Illness 12.5% Mental Illness	87.5% Chronic Illness 12.5% Mental Illness
Who Else Involved	Family Involvement	
Modal Gender	Females	Females
Age Range	30-60	30-60
Race/Ethnicity	Hispanic: 50% studies Asian: 25% studies Black: 12.5% studies Minority: 12.5% studies	Hispanic: 50% studies Asian: 25% studies Black: 12.5% studies Minority: 12.5% studies

## Participant Characteristics, cont'd.

	<b>Treatment</b>	<b>Control</b>
Modal SES	90% studies: Low	90% studies: Low
Modal Education	87.5% High school or <	75% High school or < 12.5 Some college or >
Modal Employment Status	62.5% Unemployed	62.5% Unemployed
Modal Marital Status	25% studies: Single, Divorced, Separated, Widowed 37.5% studies: Married	25% studies: Single, Divorced, Separated, Widowed 37.5% studies: Married
Modal Living Arrangement	12.5% Living independently 75% Cannot tell 12.5% Facility-Based	•12.5% Living with family •75%: Cannot tell •12.5% Facility-Based

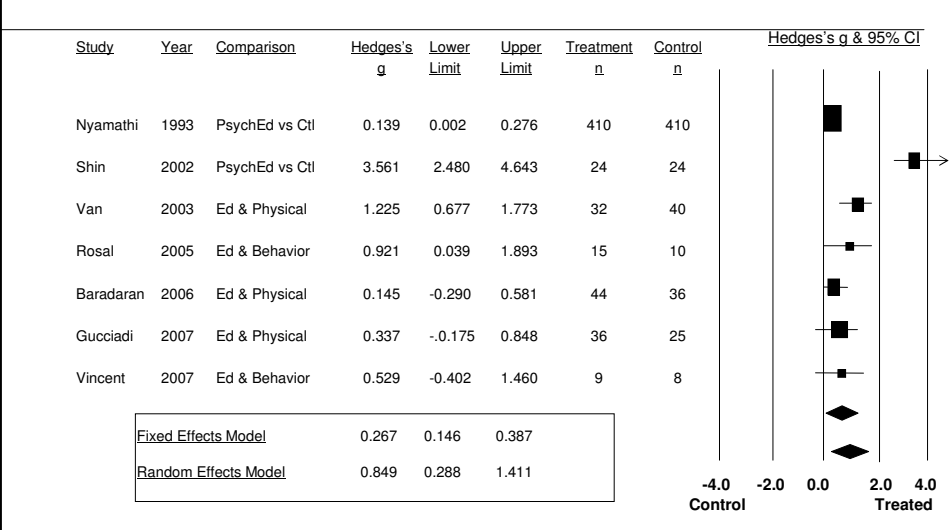
## Provider-Client Level Characteristics

	<b>Treatment</b>	<b>Control</b>
Intervention Provided to Treatment Group in Language Other Than English	Yes: 100%	Yes: 100%
Languages Used in Intervention	Korean: 12.5% studies Portuguese: 12.5% studies Spanish: 50% studies English, Punjabi, Urdu, Hindi: 12.5% studies Punjabi, Urdu, Hindi: 12.5% studies	Korean: 12.5% studies Portuguese: 12.5% studies Spanish: 50% studies English, Punjabi, Urdu, Hindi: 12.5% studies Not Specified: 12.5% studies

## Elements of Culturally Competent Interventions

<p>All studies use a different combination of culturally adapted elements.</p>	<p><b>100% studies:</b> Language/linguistic match via bilingual providers Language/linguistic match via translated written materials</p>
	<p><b>75% studies:</b> Rehabilitation supports are adapted to account for clients' cultural contexts Cultural concepts, values (e.g., active family involvement) Health literacy or disability literacy (use of culturally relevant pictures, etc)</p>
	<p><b>62.5% studies:</b> Consultation/collaboration or partnerships w/family, community, or spiritual leaders</p>
	<p><b>50% studies:</b> Outreach to ethnically, racially, linguistically &amp; economically diverse communities</p>
	<p><b>37.5% studies:</b> Racial/ethnic match of consumer &amp; provider Culturally and linguistically tailored media tools (videos)</p>
	<p><b>25% studies:</b> Immersion in multicultural environment:</p>
	<p><b>37.5% studies:</b> Other, Ethnic-specific diet pref., dance, social interactions</p>
	<p><b>0 studies:</b> Language/linguistic match via interpreters</p>

**Figure 1. Global Effects of Cultural Competency Intervention: Tx vs. Ctl**

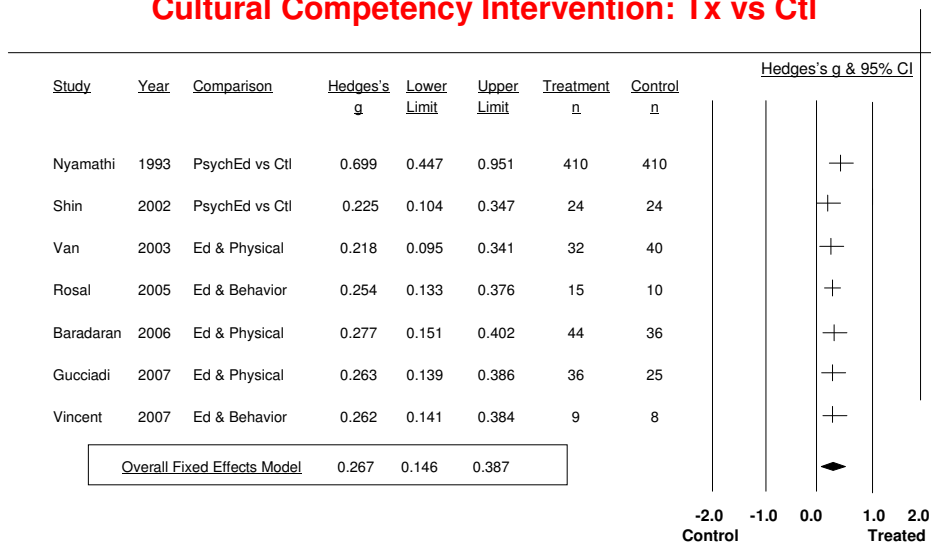


Heterogeneity statistics for a fixed model: Q=53.52, df=6, p=.000, I<sup>2</sup>=88.79

## Outlier Comparison Matrix

Studies	Hedges g	LL	UL	Q	I-squared
<b>All 7 Studies</b>					
Fixed	0.267	0.146	0.387	53.515	88.788
Random Effects	0.849	0.849	1.411		
<b>Shin Removed</b>					
Fixed	0.269	0.150	0.388	31.779	81.119
Random Effects	0.634	0.217	1.051		
<b>All Shin</b>					
Fixed	0.225	0.140	0.346	17.422	71.301
Random	0.476	0.114	0.838		

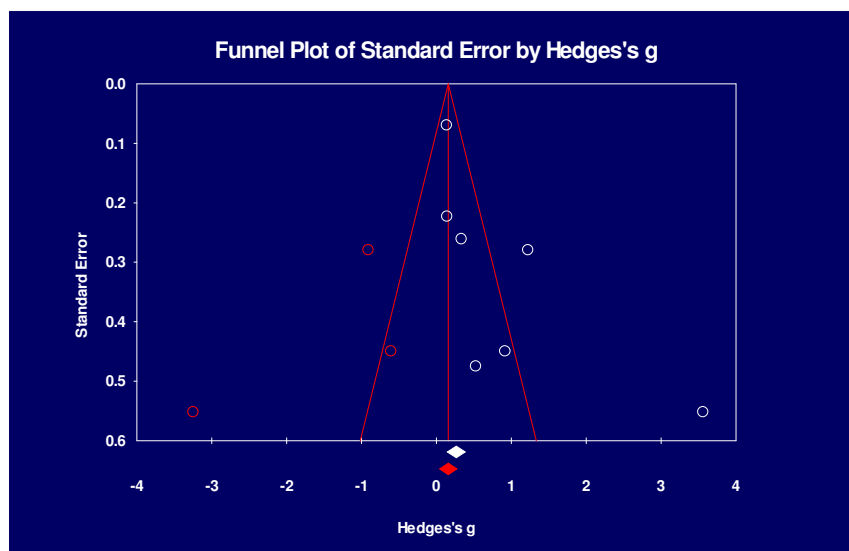
**Figure 2. Sensitivity Analysis of Global Effects of Cultural Competency Intervention: Tx vs Ctl**



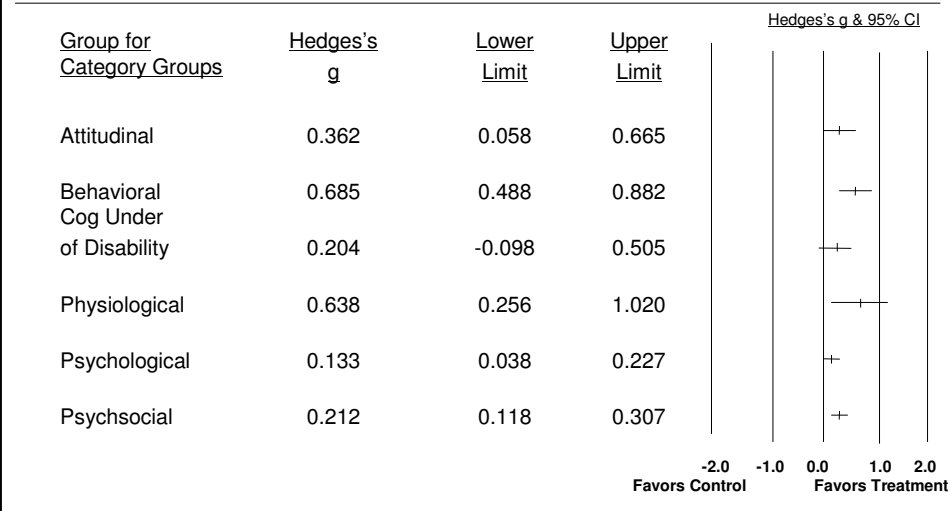
Heterogeneity statistics for a fixed model: Q=53.515, df=6, p=.000, I<sup>2</sup>=88.79

## Cumulative Analysis of Global Effects of Cultural Competency Intervention: Tx vs Ctl

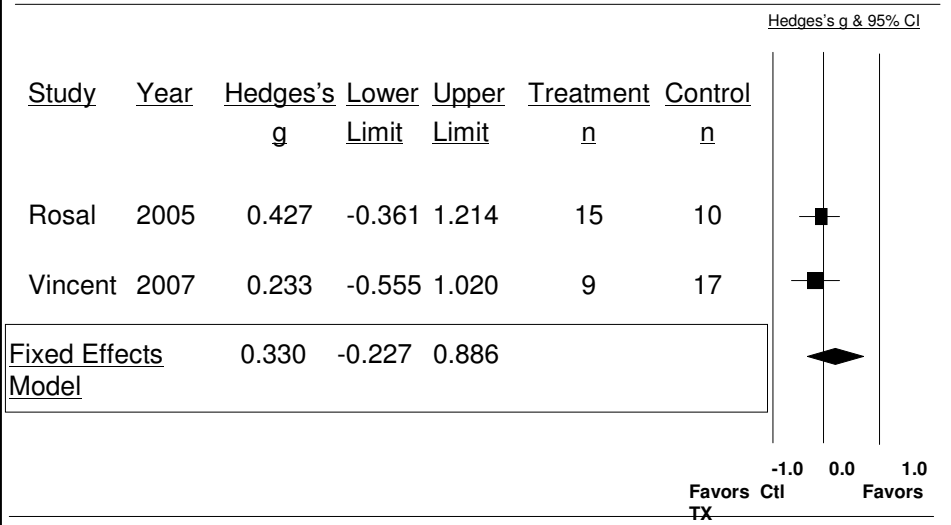
Study	Year	Comparison	Outcome	Hedges's g	Lower Limit	Upper Limit	Treatment n	Control n
Nyamathi	1993	PsychEd vs Ctl	Combined	0.139	0.002	0.276	410	410
Shin	2002	PsychEd vs Ctl	Combined	0.193	0.058	0.329	434	434
Van	2003	Ed & Physical	Combined	0.253	0.121	0.385	466	474
Rosal	2005	Ed & Behavior	Combined	0.268	0.137	0.398	481	484
Baradaran	2006	Ed & Physical	Combined	0.258	0.133	0.383	525	520
Gucciadi	2007	Ed & Physical	Combined	0.262	0.141	0.384	561	545
Vincent	2007	Ed & Behavior	Combined	0.267	0.146	0.387	570	553



**Figure 3. Summary of Treatment Effect by 6 Categorical Outcome Measures**



**Figure 4. Summary of Treatment Effect on Follow-up Measurement**



## Conclusion

- The preliminary results demonstrate an overall positive effect of culturally adapted rehabilitation interventions for ethnically, racially, and linguistically diverse individuals with disabilities.
- Among the included studies presented in this meta-analysis, culturally competent interventions resulted in significant client improvement across different rehabilitation outcome measures.

## Implications & Future Research

**Determine what and how moderators (e.g., client, provider intervention characteristics, etc) impact rehabilitation outcomes across different studies.**

### **Periodically update SR**

inclusion of new studies & studies previously missed

### **Follow up work:**

- Identify future SR work
  - Examine CC interventions @ other levels
    - e.g., provider &/or organizational
  - Examine CC interventions at prevention levels

Thank you!



# Effects of the Picture Exchange Communication System in Children with Autism Spectrum Disorders: A Systematic Review

Ralf W. Schlosser, PhD

Oliver Wendt, PhD

Natasha Beretvas, PhD

Colloquium Disability Subgroup, Campbell  
Collaboration 2009



## Background

- Approximately 25% of children on the autism spectrum disorder (ASD) present with little or no functional speech (Volkmar, Lord, Bailey, Schultz, & Klin, 2004; Lord & Bailey, 2002).
- This makes many of these children excellent candidates for the use of augmentative and alternative communication (AAC) approaches (Beukelman & Mirenda, 2005; Lloyd, Fuller, & Arvidson, 1997).

## Background

- Picture Exchange Communication System (PECS)
  - Structured behavioral intervention program to teach use of visual-graphic symbols for communication (Bondy & Frost, 1994)
  - Teaches to make requests by handing/exchanging symbols for desired items

## Background

- Picture Exchange Communication System





## Background

---

- Picture Exchange Communication System (PECS) (Frost & Bondy, 1994)
  - Phase I: Physical Exchange
  - Phase II: Expanding Spontaneity
  - Phase III: Picture Discrimination
  - Phase IV: Sentence Structure
  - Phase V: Responding to “What do you want?”
  - Phase VI: Responsive and Spontaneous Commenting



## Background

---

- Recent Reviews on the Effectiveness of PECS
  - Lancioni, G. E., O'Reilly, M. F., Cuvo, A. J., Singh, N. N., Sigafoos, J., & Didden, R. (2007). PECS and VOCAs to enable students with developmental disabilities to make requests: An overview of the literature. *Research in Developmental Disabilities*, 28, 468-488.
  - Bondy, A. (2009). Picture Exchange Communication System. In P. Mirenda & T. Iacono (Eds.), *AAC for Individuals with Autism Spectrum Disorders*. Baltimore, MD: Paul H. Brookes.
  - Schlosser, R. W., & Wendt, O. (2008). Augmentative and alternative communication interventions for children with autism. In J. K. Luiselli, Dennis C. Russo, & Walter P. Christian (Eds.), *Effective Practices for Children with Autism: Educational and Behavior Support Interventions that Work* (pp. 325-389). Oxford University Press.



## Purpose

---

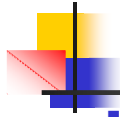
- To determine
  - the effectiveness of PECS instruction on prelinguistic behaviors, speech production, and expressive social regulation and communicative functions in children with ASD.
- Systematic review methodology is uniquely suited to minimize bias in locating, selecting, coding, and synthesizing this evidence (Petticrew & Roberts, 2006).
- Guided by criteria for appraising systematic reviews (Schlosser, Wendt, & Sigafoos, 2007)



## Methods

---

- Criteria for Inclusion
  - RCTs, non-randomized group designs, and single-subject experimental designs
  - Children between 12 months and 21 years
  - Documented diagnosis of ASD
    - Autism Prototype Disorder, Childhood Disintegrative Disorder, Rett Syndrome, PDD-NOS
  - PECS as the intervention
    - At least one and as many as six phases
    - Child needs to be the primary target of intervention
  - Outcomes include
    - pre-linguistic behaviors (e.g., joint attention), speech production, social regulation functions (e.g., initiating), and communicative functions (e.g., requesting).



## Methods

---

- Criteria for Inclusion Continued
  - If group-level data and/or analyses, all participants had to be classified as ASD
  - Group designs need to involve a treatment group and a 2nd/3rd/4th treatment group or control group
    - to apply standardized mean difference effect size metrics.
  - For single-subject experimental designs,
    - at least one outcome needs to lend itself for the calculation of the percentage of non-overlapping data (i.e., graphic display of session-by-session time series testing data; no ceiling effects in the baseline)
  - Study is dated between 1994 and 2009.



## Methods

---

- Data Sources
  - General-purpose electronic databases
    - CINAHL
    - ERIC
    - LLBA
    - MEDLINE
    - PSYCINFO
    - PROQUEST DIGITAL DISSERTATIONS
  - Web Search Tools
    - Google Scholar
    - Scirus
    - Scopus
    - C-2 PROT, C-2 RIPE, C-2 SPECTR



## Methods

---

### ■ Data Sources

#### ■ Web Search Tools Continued

- Cochrane Central Register of Controlled Trials
- Cochrane Register of Systematic Review
- Database of Abstracts of Reviews of Effects (DARE)
- National Research Register
- CRD Register of Reviews
- Publisher-specific maintained websites
  - <http://www.sciencedirect.com>
  - <http://www.springerlink.com>
  - <http://www.metapress.com>
- ASHA, ABA (Autism & International), and ISAAC Conference Proceedings



## Methods

---

### ■ Search Strategies

- Free-text searching
  - Picture Communication Exchange Communication System
  - PECS
- Pearl Growing
- Branching
- Forward citation search
- Manual searches of key journals
- Author searches
  - ISI Web of Science, Scopus
- Personal contacts

Schlosser, Wendt, Angermeier, & Shetty (2005)

Schlosser, Wendt, Bhavnani, & Nail-Chiwetalu (2006)



# Methods

---

- Data Extraction

- **Research design characteristics**

- Group designs
- Single-subject experimental designs

- **Participant characteristics**

- # of subjects (if group)
- Disability
- ASD diagnostic tests
- Age at ASD diagnosis
- Severity of autism
- Degree of intellectual disability (if applicable)
- Chronological age
- Gender, Race/Ethnicity
- Receptive language (standardized test)
- Expressive language (standardized test)



# Methods

---

- Data Extraction

- **Participant characteristics continued**

- **Overall developmental functioning (standardized tests)**
- **Speech before intervention**
- **Speech imitation before intervention**
- AAC imitation before intervention
- Pre-intervention modes of expressive communication
- Pre-intervention functions of expressive communication
- Pre-intervention receptive communication
- History with PECS instruction
- History with requesting instruction

- **Intervention characteristics**

- Adherence to PECS protocol
- Innovation of the PECS protocol
- PECS phases implemented
- Length of follow-up



## Methods

---

- Data Extraction

- Intervention characteristics continued
  - Length of the intervention
  - Density of the intervention schedule
  - Interventionist preparation
  - Treatment integrity
  - Type of treatment integrity
  - Treatment integrity % of sessions
  - Treatment integrity observer status
- Outcome characteristics
  - Acquisition or intervention effectiveness outcomes
  - Maintenance effectiveness outcomes
  - Generalization effectiveness outcomes



## Methods

---

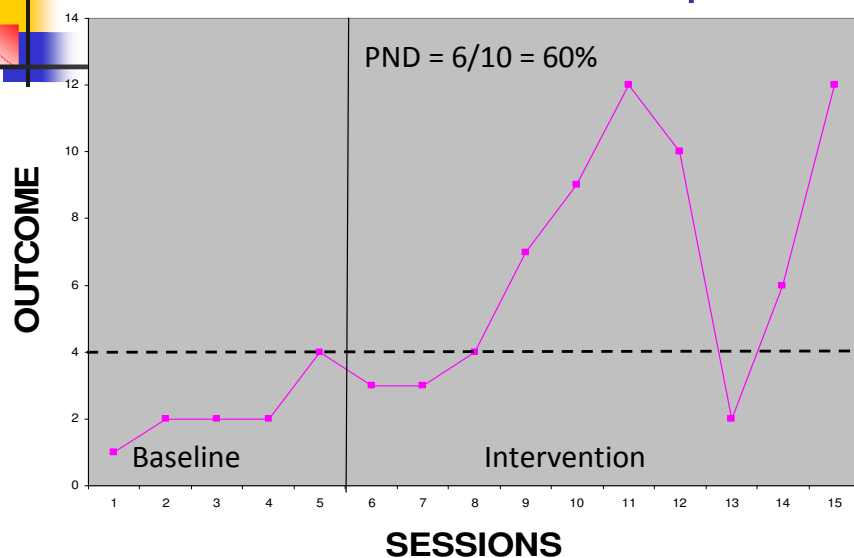
- Data Extraction Continued

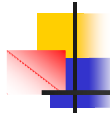
- Outcome measures
- Different quantitative measures for group designs and single-subject designs

## Percentage of non-overlapping data (PND) (Scruggs et al., 1987)

- Calculation of non-overlap between baseline and successive intervention phases
  - Identify highest data point in baseline and determine the percentage of data points during intervention exceeding this level
- easy to interpret
- non-parametric statistic

## PND calculation: An example

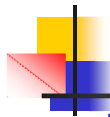




## Interpretation of PND scores

---

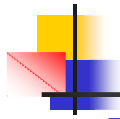
- PND range 0-100%
  - PND < 50% reflects unreliable treatment
  - PND 50% - 70% questionable effectiveness
  - PND 70% - 90% fairly effective
  - PND > 90% highly effective



## Methods

---

- Data Extraction
  - Assessment of methodological quality
    - Certainty of evidence
      - Conclusive, preponderant, suggestive, inconclusive ([Simeonsson, 1994](#))
    - Single-subject experimental designs evaluating the effectiveness of one intervention
      - 10-point scale based on [Horner et al. \(2005\)](#) and others
    - Single-subject experimental designs comparing two or more interventions
      - 17-point scale based on [Horner et al. \(2005\)](#) and [Schlosser, Sigafoos, & Belfiore \(2006\)](#).
    - Group designs
      - 10-point PEDRO scale (10 points maximum for RCTs; 8 points max for non-RCTs)
  - Data Extraction Process



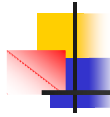
## Preliminary Results -SSED

- Single-Subject Experimental Design Studies
  - 26 participants across 9 studies
  
- Inconclusive single-subject design studies:
  - Son et al. (2006)
  - Travis (2006)
  - Yokoyama et al. (2006)

Study	N	Phases	DV	PND-Mean	PND Range	Appraisal
Anderson (2001)	6	I-III	Requesting-PECS	67 (Q)	29-100	Conclusive
			Requesting-Signing	0 (U)	0-0	
Tincani (2006-2)	1	IV	Word vocalizations	0 (U)	0	Conclusive
			Word approximations	100 (H)	100	
Angermeier (2008)	4	I-II(III)	Requesting-high iconic	67 (Q) 47 (U) 0 (U)	67 0-72 0	Conclusive
			Requesting-low iconic	100 (H) 72 (F) 31 (U)	100	
Tincani (2004)	2	I (II as best Tx.)	Requesting-PECS	92 (H)	83-100	Preponderant
			Requesting-Signing	75 (F)	72-78	
			Words/approximations elicitation-PECS	100 (H)	100	
			Words/appr.-Signing	100 (H)	100	

Study	N	Phases	DV	PND-Mean	PND-Range	Appraisal
Ganz (2007)	3	I-IV	Words imitation	4 (U)	0-8	Suggestive
			Word approximation imitation	4 (U)	0-8	
Marckel (2006)	2	IV	Requesting generalization (untrained items)	100 (H)	100	Suggestive
Tincani (2006-1)	2	I-II/IV	Requesting	100 (H)	100	Suggestive
			Word vocalizations	0 (U)	0	
			Word approximation	6 (U)	0-11	
Charlop-Christy (2002)	3	I-IV	Eye contact, joint attention or play	100 (H)	100	Suggestive
			Requests and initiations	87(F)	60-100	
			Elicited vocalizations	44 (U)	25-90	
			Speech imitation	34 (U)	25-50	
			MLU	31 (U)	17-50	

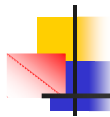
Study	N	Phases	DV	PND-Mean	PND-Range	Appraisal
Lund (2007)	3	I-III, I-II, I	Requesting (Independent)	60 (Q) 42 (U) 100 (H)	54-71 23-60 100	Suggestive



## Methods - Group Outcomes

---

- Effectiveness measures for group data
  - Cohen's  $d$  and Hedges  $g$  (range -3.00 to 3.00)
    - $< .20$  : small effect
    - $.20 - .50$ : medium effect
    - $.50 - .80$ : important effect
    - $> .80$ : large effect/ major difference (Cohen, 1977, 1988)
  - Pearson's  $r$  (range -1.00 to 1.00)
    - $\leq .1$  : small effect
    - $.3$  : medium effect
    - $\geq .5$  : large effect (Cohen, 1988, 1992)
  - $(\Delta)R^2$  (range 0-1): amount of variance accounted for by the treatment effect



## Preliminary Results - Group

---

- Group Studies
  - 79 participants across 3 studies

Study; N; CA	Phases	DV: # of	OUTCOMES		STATISTICAL RESULTS			AP-PRAISAL
			A Mean (SD)	B Mean (SD)	Coh. <i>d</i>	<i>d</i> L (H)	Hedge's <i>g</i> ( <i>p</i> )	
Yoder & Stone (2006a); 38 subjects 33 mo	1 PECS - (I-IV if within 6 months) 2 RPMT	non-imitative spoken acts	<u>1T2</u> : 3.6 (4.8) <u>1T3</u> : 5.5 (3.2)	<u>2T2</u> : 0.6 (4.8) <u>2T3</u> : 5.4 (3.2)	.63  .03	-1.53 (2.91) -1.41 (1.55)	.61(.03)  .03 (.96)	Conclusive
		different non-imitative words	<u>1T2</u> : 2.4 (3.6) <u>1T3</u> : 3.1 (2.4)	<u>2T2</u> : 0.6 (3.6) <u>2T3</u> : 2.9 (2.4)	.50  .08	-1.12 (2.21) -1.00 (1.22)	.49 (.04)  .08 (.93)	
Yoder & Stone (2006b); 35 subjects 33 mo	1 PECS - (I-IV if within 6 months) 2 RPMT	Generalized turn-taking	<u>1T2</u> : 4.1 (SE =.81)* *adjusted mean and standard error	<u>2T2</u> : 7.1 (SE=.86)*	.97	.22 (4.29)	.93 (.019)	Conclusive
		Generalized joint attention initiation	> 10 pre-training joint attention skills, RPMT superior to PECS <2 joint attention skills, more success with PECS		ES $\Delta R^2 = .24$ , CI=.03-.80, $p = .003$ Time 2: $g = .94$ , $p = .019$			

Study; N; CA	Phases	DV	OUTCOMES		STATISTICAL RESULTS			AP-PRAISAL
			A Mean	B Mean	<i>z</i>	<i>p</i>	<i>r</i>	
Carr & Felce (2006a); 41 subjects Elementary age	PECS I-III (A) vs. control (B)	Child-to-adult initiations	<u>T2</u> : 61.4	<u>T2</u> : 10	5.3	< .00003	0.83 <i>r</i> 0.69 <i>R</i> <sup>2</sup>	Suggestive
		Child-to-adult linguistic initiations	<u>T2</u> : 50.8	<u>T2</u> : 1.3	6.93	< .00003	1 <i>r</i> 1 <i>R</i> <sup>2</sup>	
		Child-to-adult initiations w adult response	<u>T2</u> : 96.7	<u>T2</u> : 76.9	2.8	< .0026	0.44 <i>r</i> 0.19 <i>R</i> <sup>2</sup>	
		Adult-to-child w/ no opportunity for child to respond	<u>T2</u> : 13.3	<u>T2</u> : 21.1	-1.65	< .0495	-.26 <i>r</i> 0.07 <i>R</i> <sup>2</sup>	



## Questions ???

---



## Contact Information

---

- Ralf Schlosser, PhD
  - [R.Schlosser@neu.edu](mailto:R.Schlosser@neu.edu)
  
- Oliver Wendt, PhD
  - [olli@purdue.edu](mailto:olli@purdue.edu)

# Effectiveness of Adult Employment Assistance Services for Persons with Autism Spectrum Disorders

## Reviewers

John D. Westbrook,  
PhD

Frank H. Martin, PhD

SEDL  
Austin, TX

Chad Nye, PhD

University of Central Florida  
Orlando, FL

- **Autism is a neurological disorder characterized by impaired social interaction and communication and by restricted and repetitive behavior**
- **Autism Spectrum Disorders (ASD) includes autism, Asperger's Syndrome, Pervasive Development Disorder**
- **ASD Prevalence: 1 in 150 children (CDC, 2008)**

- **Nondisabled are 8 times more likely to be employed than individuals with very severe disabilities (National Organization on Disability, 2000)**
- **Employees with ASD are more likely to lose their job for behavioral and social interaction reasons rather than their inability to perform work tasks (Dew & Alan, 2007)**

## **National VR Service in Fiscal Year 2007**

- **Provided services that successfully placed 1,774 individuals with ASD into employment situations that continued for 90 or more days (Rehabilitation Services Administration, 2009)**

## Grant Funding

- **National Institute on Disability and Rehabilitation Research, US Department of Education**
- **Priority (2008)**
  - **Improve outcomes for persons with ASD**
  - **Analyze the factors affecting the organization and delivery of employment-related services**

## REVIEW OBJECTIVE

**To determine the effectiveness of employment support interventions in securing and maintaining employment for adults (18 years and older) with autism spectrum disorders.**

## Inclusion Criteria & Procedures

- **Research Design:** RCT, QED, Single Group Pre-Post Designs, SSED
- **Participant:** ASD, 18 yrs, Not in High School
- **Intervention:** provision of vocationally oriented service of any length intended to produce employment outcome
- **Outcome:** employment placement; duration and/or retention of that placement; full or part-time (25% time or more) placements; social, behavioral, and/or cognitive dimensions related to employment

7

## Database Sources (24)

- Academic Search Complete
- Business Source Complete
- ERIC
- CINAHL
- MEDLINE
- PsycINFO
- PsycARTICLES
- PsycCRITIQUES
- PsycEXTRA
- Psychology & Behavioral Sciences Collection
- Science and Technology Collection
- Web of Science
- Academic One File
- WorldCAT

8

## SEARCH TERMS

### POPULATION

autism OR  
asperger OR  
asperger's syndrome OR  
autism spectrum disorder OR  
pervasive developmental disorder AND

### SEARCH TERMS (continued)

### INTERVENTION

intervention OR  
treatment OR  
therapy OR  
program OR  
instruction OR  
plan AND

**SEARCH TERMS (continued)****DOMAIN**

pre-employment OR  
employment OR  
transition OR  
vocational training OR  
supported employment OR  
occupational therapy OR  
occupational training OR  
return to work programs OR  
vocational guidance OR  
vocational education OR  
vocational rehabilitation AND

11

**SEARCH TERMS (continued)****AGE**

young adults OR  
teenagers OR  
adults OR  
adulthood

12

## Publication Criteria

- **Eligible studies may be either published or unpublished**
- **Studies may be conducted in any country and reported in any language**
- **No restriction on date of publication (1943-2008)**

13

## Search Results

**Total Citations  
Identified  
768**

**Full-Text Studies  
Retrieved  
107**

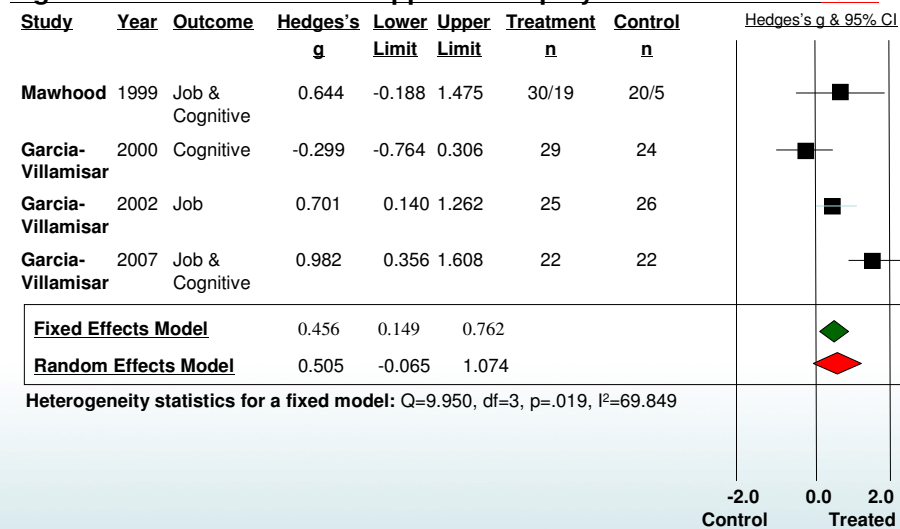
**Number of  
Included Studies  
5**

14

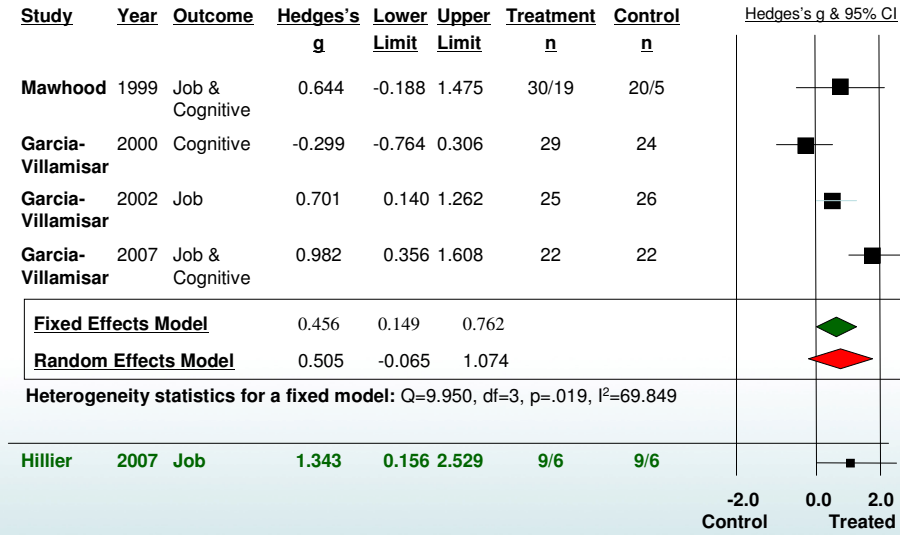
## Included Studies

- Mawhood & Howlin, 1999                      QED
- Garcia-Villamisar, et al., 2000              QED
- Garcia-Villamisar, et al., 2002              QED
- Garcia-Villamisar, et al., 2007              QED
- Hillier, et al., 2007                              Pre Exp

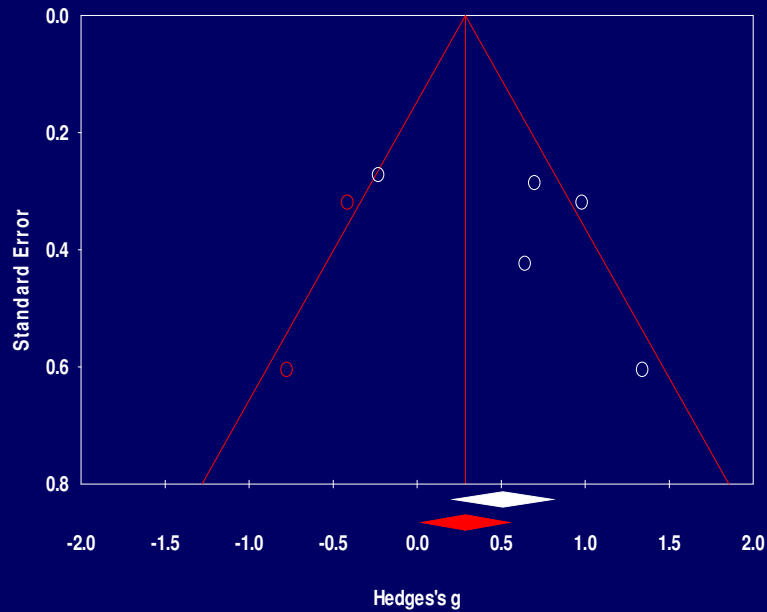
**Figure 1. Overall Effect for Supported Employment vs. Control: QED**



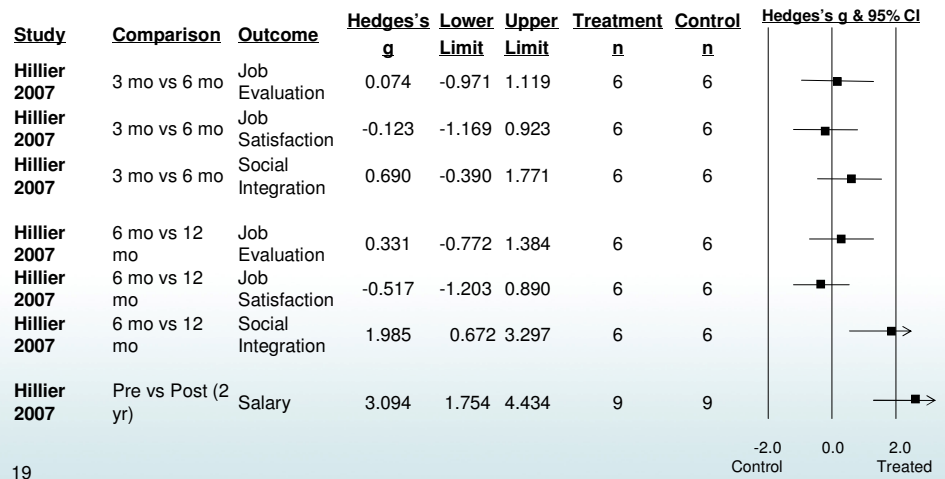
**Figure 2. Overall Effect for Supported Employment vs. Control: Pre Exp**



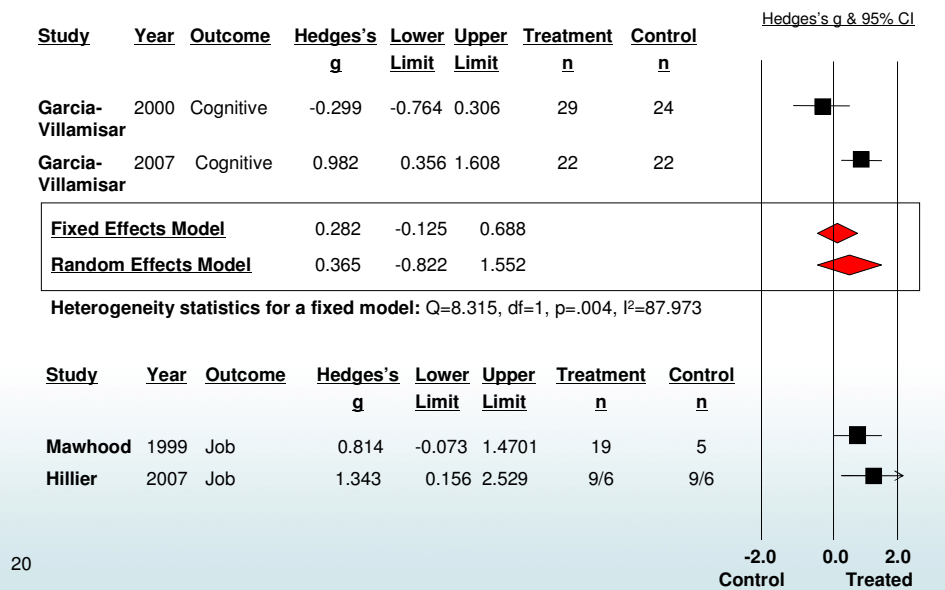
**Funnel Plot of Standard Error by Hedges's g**



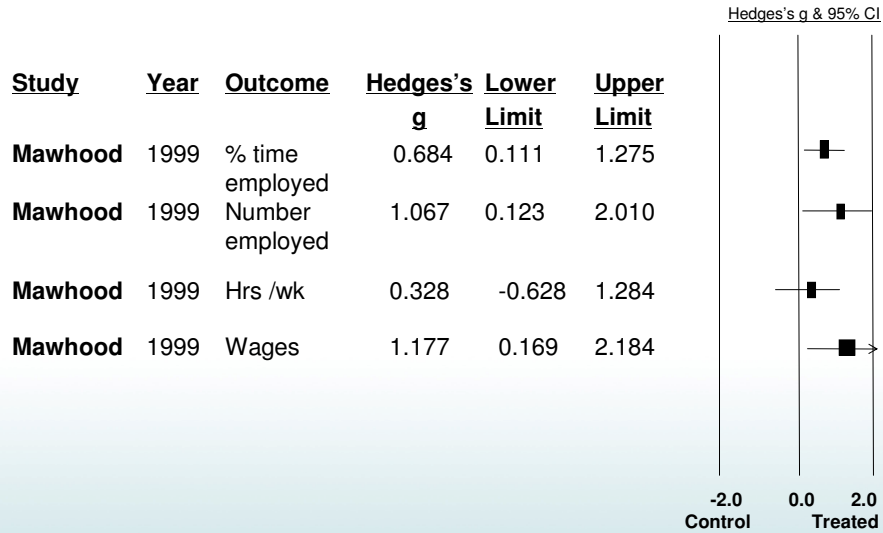
**Figure 4. Overall Effect for Supported Employment vs. Control: 6 and 12 month Follow-up**



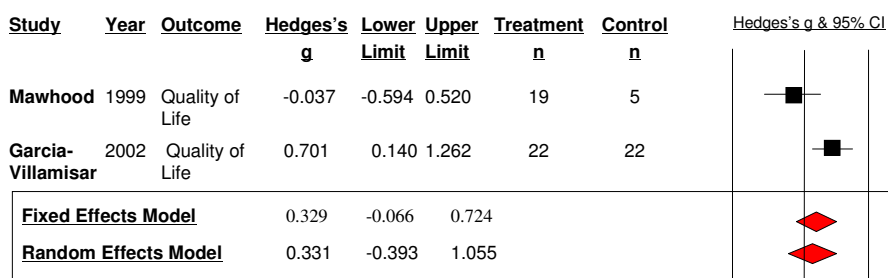
**Figure 6. Effect Size by Outcome Categories: Cognitive and Job**



**Figure 7. Overall Effect for Mawhood Outcomes**



**Figure 8. Effect Size by Quality of Life Outcome**



Heterogeneity statistics for a fixed model:  $Q=3.353$ ,  $df=1$ ,  $p=.067$ ,  $I^2=70.173$

-2.0 Control 0.0 2.0 Treated

## Conclusions

- Protocol has been submitted for review
- Preliminary searching suggests workable approach
- Limited and diverse literature base

23

## Contact Reviewer

**John D. Westbrook, PhD**  
Disability Research to Practice Program

SEDL  
4700 Mueller Boulevard  
Austin, Texas USA 78723-3081

Phone: 512-391-6565  
Text Telephone: 512-391-6578  
FAX: 512-476-6861

Email: [john.westbrook@sedl.org](mailto:john.westbrook@sedl.org)

24

# Does Shared Storybook Reading Increase Vocabulary Skills in At-Risk Preschool Students?

Stacey Pavelko  
Kera O'Brien  
Jamie Schwartz  
Chad Nye  
Joy McGahey

Department of Communication Sciences and Disorders  
College of Health and Public Affairs  
University of Central Florida



## Background

- the size of a person's vocabulary is one of the strongest predictors of how well that person comprehends what he or she reads
- by age three, children who were raised in high-poverty homes had significantly smaller vocabularies than children who had been raised in middle- and high-income homes

(Davis, 1944; Tannenbaum, Torgeson, & Wagner, 2006)

(Hart & Risley, 1995)



## Background

- One intervention that has been advocated in the literature to increase vocabulary and other language and pre-literacy skills for at risk preschoolers is shared storybook reading

(for reviews, see Walsh, 2008; Scarborough & Dobrich, 1994; Bus, Ijzendoorn, & Pellegrini, 1995)



## Method

- Following the guidelines in:  
*Steps in Proposing, Preparing, Submitting,  
and Editing Of Campbell Collaboration  
Systematic Reviews*



## Inclusion Criteria

- **Design:** RCT or QED
- **Participants:**
  - preschool-aged children 2;0-5;11 years;
  - at risk for later reading difficulties
- **Intervention:** storybook reading
- **Outcome:** receptive and/or expressive oral vocabulary



## Information Retrieval

### Electronic Searches

- ERIC (Educational Resources Information Center)
- PsychInfo
- Dissertations and Theses: Full Text
- Linguistics and Language Behavior Abstracts,
- Sociological Abstracts



## Results

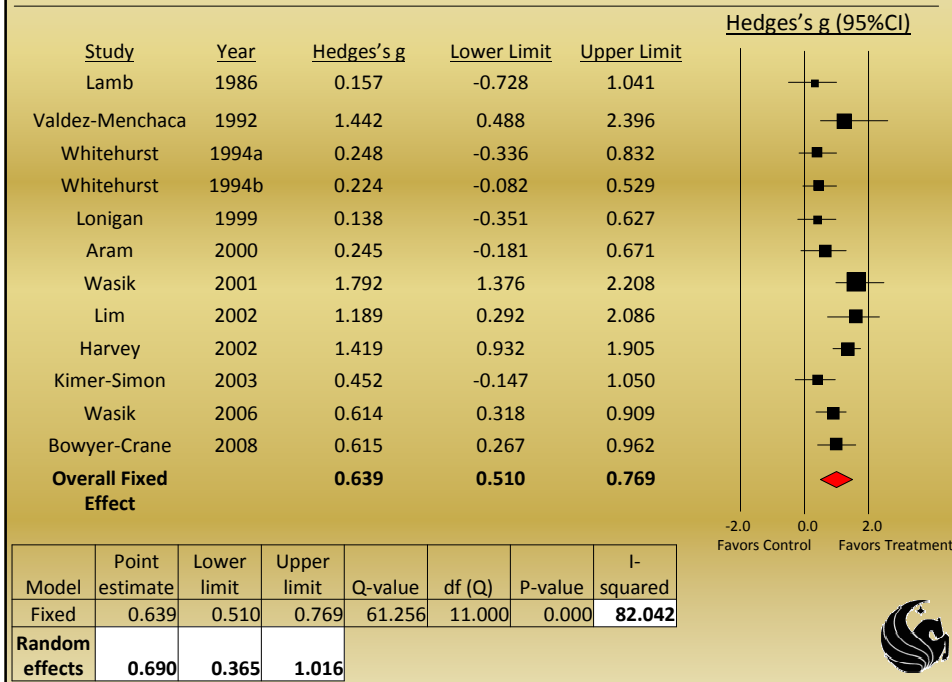
- All studies double-coded following code book procedures
  - 691 Total studies initially retrieved
  - 48 studies passed the title and abstract screening
  - 12 identified as Randomized Control Trials (RCTs)



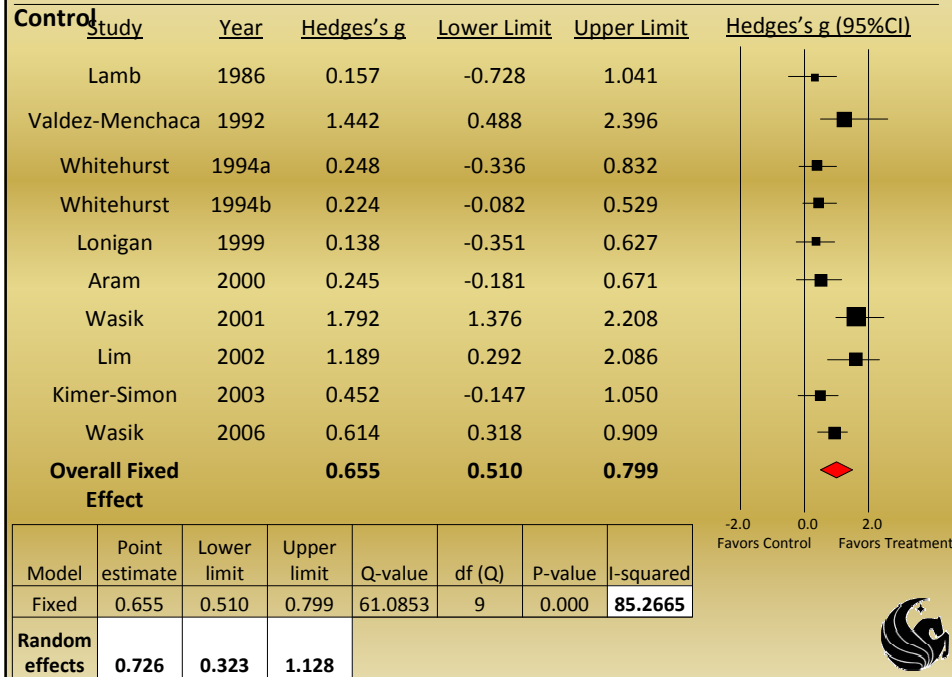
Study	Year	TX N	TX N	CTL N	CTL N	Total N
Lamb	1986	10	9	9	8	36
Valdez-Menchaca	1992	10		10		20
Whitehurst	1994a	19	26	22		67
Whitehurst	1994b	94		73		167
Lonigan	1999	34	29	32		95
Wasik	2001	61		60		121
Lim	2002	11		10		21
Harvey	2002	40		40		80
Kimer Simon	2003	19		24		43
Wasik	2006	139		68		207
Aram	2006	37	40	38	41	116
Bowyer-Crane	2008	63		74		137
<b>Total Treatment: 641</b>		<b>Total Control: 509</b>				



**Figure 1. Overall Effect Size for Vocabulary Acquisition**



**Figure 2. Overall Effect Size for Vocabulary Acquisition: Treatment vs. Control**



### Figure 3: Effect for Expressive Vocabulary

Name	Year	Hedge's g	Lower Limit	Upper Limit
Harvey	2002	1.311	0.832	1.791
Lim	2002	1.189	0.292	2.086
Lonigan	1999	0.030	-0.466	0.526
Valdez-Menchaca	1992	1.382	0.440	2.324
Wasik	2001	2.023	1.592	2.454
Wasik	2006	0.449	0.157	0.741
Whitehurst	1994	0.212	-0.349	0.772
Whitehurst	1994	0.068	-0.236	0.373
<b>Overall Fixed Effect</b>		<b>0.978</b>	<b>0.389</b>	<b>1.561</b>



### Figure 4: Effect for Receptive Vocabulary

Aram	2006	0.141	-0.296	0.578
Harvey	2002	1.526	1.032	2.020
Lamb	1986	0.139	-0.755	1.036
Lonigan	1999	0.201	-0.288	0.690
Valdez-Menchaca	1992	1.157	0.244	2.070
Wasik	2001	1.562	1.162	1.962
Wasik	2006	0.778	0.479	1.076
Whitehurst	1994a	0.496	-0.045	1.036
Whitehurst	1994b	0.195	-0.110	0.500
<b>Overall Fixed Effect</b>		<b>0.750</b>	<b>0.192</b>	<b>1.309</b>



## Effect for Expressive Vocabulary:

Overall Fixed Effect	0.978	0.389	1.561
----------------------	-------	-------	-------

## Effect for Receptive Vocabulary:

Overall Fixed Effect	0.750	0.192	1.309
----------------------	-------	-------	-------



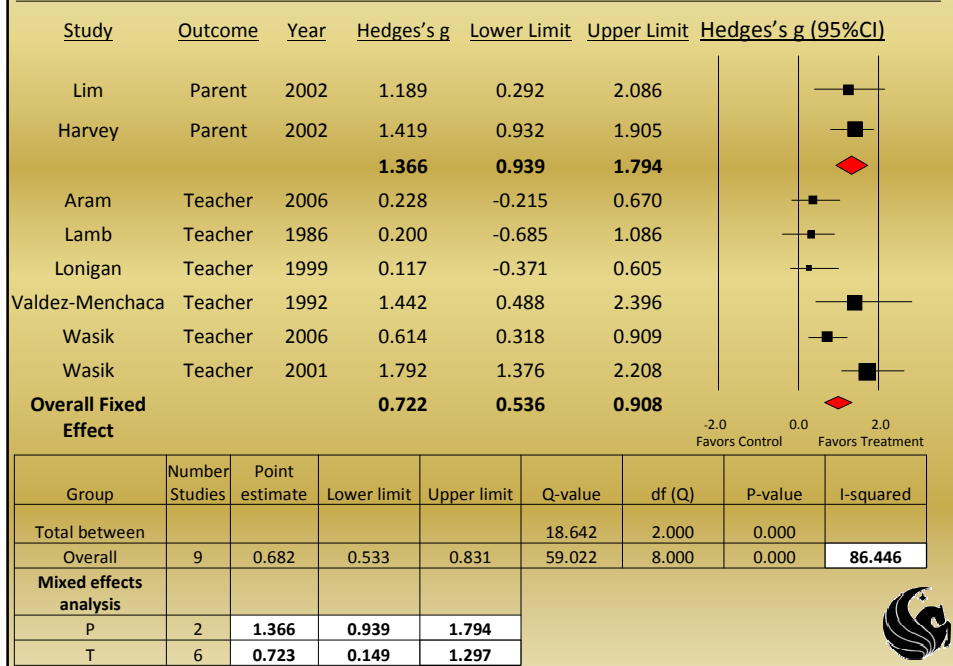
**Figure 5. Overall Effect for Type of Outcome Measure**



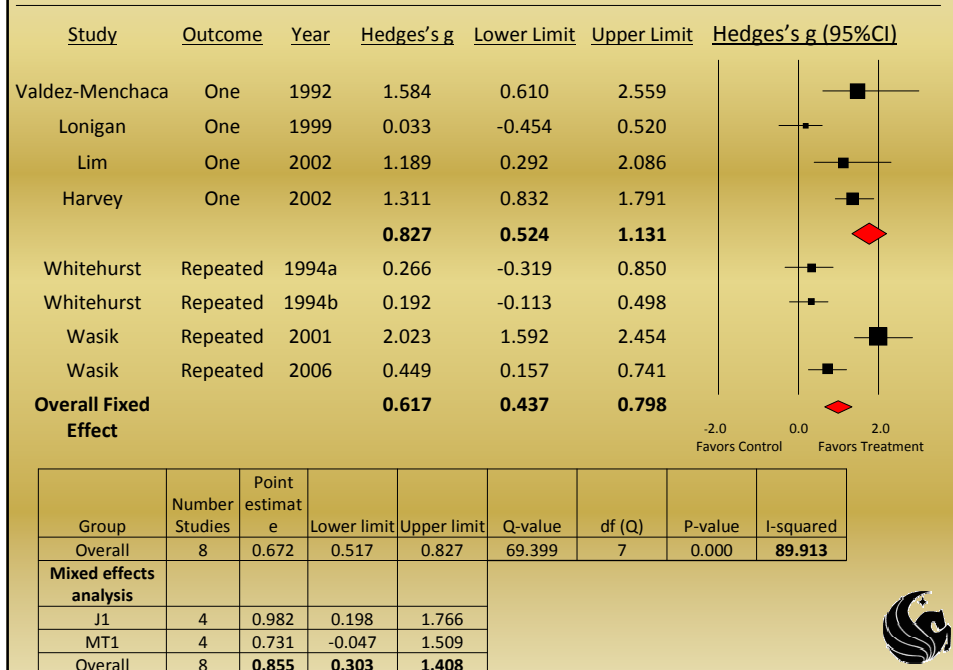
Group	Point estimate	Lower limit	Upper limit	Q-value	df (Q)	P-value	I-squared
Fixed effect analysis							
Total between				29.276	1.000	0.000	
Overall	0.740	0.582	0.898	54.459	7.000	0.000	<b>87.146</b>
Mixed effects analysis							
CR	<b>1.627</b>	<b>1.099</b>	<b>2.155</b>				
ST	<b>0.628</b>	<b>0.204</b>	<b>1.053</b>				



**Figure 6. Overall Effect for Intervener**



**Figure 7. Overall Effect for Expressive Vocab: Repeated Readings**



## Conclusions

- Storybook reading is an effective intervention to increase the vocabulary skills of at-risk preschoolers.
- Larger effect for expressive vocabulary ( $g=0.978$ ) vs. receptive vocabulary ( $g=0.750$ )
- Criterion Referenced Measures ( $g= 1.627$ ) vs. Standardized Measures ( $g=0.628$ )



## Conclusions

- Parent vs. Teacher as Intervener
- Preschool programs should implement storybook reading, particularly with at-risk students.



## Research Implications

- One vs. More Than One Reading
- Criterion Referenced Measures

Stacey Pavelko  
spavelko@mail.ucf.edu

