Education and Training in Developmental Disabilities
The Journal of the Division on Developmental Disabilities,
The Council for Exceptional Children

Editor: Stanley H. Zucker  
Arizona State University

Editorial Assistant: Hannah H. Hainline  
Arizona State University

Consulting Editors

Martin Agran  
Reuben Altman  
Phillip J. Belfiore  
Sharon Borthwick-Duffy  
Michael P. Brady  
Fredda Brown  
Mary Lynne Calhoun  
Sharon F. Cramer  
Caroline Dunn  
Lisa Fox

Martina G. Gast  
Herbert Goldstein  
Robert Henderson  
Carolyn Hughes  
Larry K. Irvin  
James V. Kahn  
H. Earle Knowlton  
Barry W. Lavay  
Rena Lewis  
Kathleen J. Marshall

John McDonnell  
Gabriel A. Nardi  
John Nciupski  
James R. Patton  
Edward A. Polloway  
Thomas G. Roberts  
Robert S. Rueda  
Diane L. Ryndak  
Edward J. Sabornie

Laurence R. Sargent  
Gary M. Sasso  
Tom E. C. Smith  
Scott Sparks  
Fred Spooner  
Robert Stodden  
Keith Storey  
David L. Westling  
John J. Wheeler  
Mark Wolery

Education and Training in Developmental Disabilities is sent to all members of the Division on Developmental Disabilities of The Council for Exceptional Children. All Division members must first be members of The Council for Exceptional Children. Division membership dues are $25.00 for regular members and $15.00 for full time students. Membership is on a yearly basis. All inquiries concerning membership, subscription, advertising, etc. should be sent to the Division on Developmental Disabilities, 1110 North Glebe Road, Arlington, VA 22201.

Advertising rates are available upon request.

Manuscripts should be typed, double spaced, and sent (five copies) to the Editor: Stanley H. Zucker, Special Education Program, Box 872011, Arizona State University, Tempe, AZ 85287-2011. Each manuscript should have a cover sheet that gives the names, affiliations, and complete addresses of all authors.

Editing policies are based on the Publication Manual, the American Psychological Association, 2001 revision. Additional information is provided on the inside back cover. Any signed article is the personal expression of the author; likewise, any advertisement is the responsibility of the advertiser. Neither necessarily carries Division endorsement unless specifically set forth by adopted resolution.


Division on Developmental Disabilities
The Council for Exceptional Children

Board of Directors

Officers

Past President Phil Parette  
President Polly Parrish  
President-Elect J. David Smith  
Vice President Emily Bouck  
Secretary Toni Merfeld  
Treasurer Amanda Boutot

Members

Leslie Broun  
Linda Laz  
Nikki Murdick  
Angie Stone-MacDonald (Student Governor)  
Dianne Zager  
Deborah Wichmanowski

Executive Director  
Tom E. C. Smith  
Publications Chair  
Jack Hourcade  
Communications Chair  
Darlene Perner

The purposes of this organization shall be to advance the education and welfare of persons with developmental disabilities, research in the education of persons with developmental disabilities, competency of educators in this field, public understanding of developmental disabilities, and legislation needed to help accomplish these goals. The Division shall encourage and promote professional growth, research, and the dissemination and utilization of research findings.

EDUCATION AND TRAINING IN DEVELOPMENTAL DISABILITIES (ISSN 1547-0350) (USPS 0168-5000) is published quarterly in March, June, September, and December, by The Council for Exceptional Children, Division on Developmental Disabilities, 1110 North Glebe Road, Arlington, Virginia 22201-5704. Members’ dues to The Council for Exceptional Children Division on Developmental Disabilities include $8.00 for subscription to EDUCATION AND TRAINING IN DEVELOPMENTAL DISABILITIES. Subscription to EDUCATION AND TRAINING IN DEVELOPMENTAL DISABILITIES is available without membership; Individual—U.S. $40.00 per year; Canada, PUAS, and all other countries $44.00; Institutions—U.S. $175.00 per year; Canada, PUAS, and all other countries $179.50; single copy price is $25.00. U.S. Periodicals postage is paid at Arlington, Virginia 22204 and additional mailing offices.

POSTMASTERS: Send address changes to EDUCATION AND TRAINING IN DEVELOPMENTAL DISABILITIES, 1110 North Glebe Road, Arlington, Virginia 22201-5704.
Education and Training in Developmental Disabilities

Editorial Policy

_Education and Training in Developmental Disabilities_ focuses on the education and welfare of persons with developmental disabilities. _ETDD_ invites research and expository manuscripts and critical review of the literature. Major emphasis is on identification and assessment, educational programming, characteristics, training of instructional personnel, habilitation, prevention, community understanding and provisions, and legislation.

Each manuscript is evaluated anonymously by three reviewers. Criteria for acceptance include the following: relevance, reader interest, quality, applicability, contribution to the field, and economy and smoothness of expression. The review process requires two to four months.

Viewpoints expressed are those of the authors and do not necessarily conform to positions of the editors or of the officers of the Division.

Submission of Manuscripts

1. Manuscript submission is a representation that the manuscript is the author’s own work, has not been published, and is not currently under consideration for publication elsewhere.
3. Each manuscript must have a cover sheet giving the names and affiliations of all authors and the address of the principal author.
4. Graphs and figures should be originals or sharp, high quality photographic prints suitable, if necessary, for a 50% reduction in size.
5. Five copies of the manuscript along with a transmittal letter should be sent to the Editor: Stanley H. Zucker, Special Education Program, Box 872011, Arizona State University, Tempe, AZ 85287-2011.
6. Upon receipt, each manuscript will be screened by the editor. Appropriate manuscripts will then be sent to consulting editors. Principal authors will receive notification of receipt of manuscript.
7. The Editor reserves the right to make minor editorial changes which do not materially affect the meaning of the text.
8. Manuscripts are the property of _ETDD_ for a minimum period of six months. All articles accepted for publication are copyrighted in the name of the Division on Developmental Disabilities.
Manuscripts Accepted for Future Publication in Education and Training in Developmental Disabilities

June 2008

Teacher’s perceived efficacy and the inclusion of a pupil with dyslexia or mild mental retardation: Findings from Sweden. **Lise Roll-Pettersson**, Stockholm Institute of Education, Department of Special Education, PO Box 34103, SE-10026, Stockholm, SWEDEN.

Descriptive analysis of classroom setting events on the social behaviors of children with autism spectrum disorder. **Brian A. Boyd**, Maureen A. Conroy, Jennifer M. Asmus, Elizabeth L.W. McKenney, and G. Richmond Mancil, University of North Carolina at Chapel Hill, UNC School of Medicine, Campus Box 7122, Bondurant Hall, Suite 2050, Chapel Hill, NC 27599-7122.

Further conceptualization of treatment acceptability. **Stacy L. Carter**, 4518 20th St., Lubbock, TX 79407.

Child-therapist interaction patterns in ordinary and adaptive toys. **Hsieh-Chen Hsieh**, Department of Occupational Therapy, Fu Jen Catholic University, NO. 510 Jhongjheng Rd., Sinjhuang City, Taipei County, 24205, TAIWAN.

Comparison of assessment results of children with low incidence disabilities. **Dennis J. Campbell**, AmySue Reilly, and Joan Henley, Department of Leadership and Teacher Education, University of South Alabama, UCOM 3130, Mobile, AL 36688-0002.

Teaching an algebraic equation to high school students with moderate developmental disabilities. **Bree A. Jimenez**, Diane M. Browder, and Ginevra R. Courtade, Department of Special Education, UNC Charlotte, 6928 Rollingridge Drive, Charlotte, NC 28211.

Do parents prefer special schools for their children with Autism? Javier Moreno, Antonio Aguilera, and **David Saldana**, Developmental and Ed. Psychology, Universidad D Sevilla, Camilo Jose Cela s/n., 41018, Sevilla, SPAIN.

Utah’s alternative assessment: Evidence regarding six aspects of validity. **Karen D. Hager** and Timothy A. Slocum, Department of Special Education and Rehabilitation Counseling, University of Kentucky, 229 Taylor Education Building, Lexington, KY 40506-0001.


Parent-delivered community-based instruction with simultaneous prompting for teaching community skills to children with developmental disabilities. **Elif Tekin-Iftar**, Anadolu University, Engelliler Arastirma Enstitusu, Eskisehir, 26470, TURKEY.
Guardianship: Its Role in the Transition Process for Students with Developmental Disabilities

Erin M. Payne-Christiansen and Patricia L. Sitlington
University of Northern Iowa

Abstract: The purpose of this qualitative study was to explore: (a) the underlying beliefs of those involved in determining the need for guardianship for young adults with developmental disabilities, (b) the overarching frameworks or theories that might explain some of the more predominate beliefs, and (c) the relationship of transition assessment, transition planning, self-determination, and age of majority to the guardianship process. The authors found that planning for guardianship was separated from the transition planning process and that full guardianship had become the set path for every student in the educational program. The authors made the following recommendations: (a) schools must begin with the assumption that each individual has the potential to lead his/her own life—from there supports in areas of need can be developed; (b) both the transition planning and guardianship process should be based upon an ongoing assessment of the student’s strengths, needs, preferences, and interests; (c) schools must recognize students as emerging young adults, and prepare them to assume a variety of adult roles by helping them develop and practice self-determination skills; (d) the transfer of rights at age of majority should be seen as a key point in the transition process; and (e) in working to prepare students for adult life, instructional and support staff need to be aware of the wide variety of alternatives to and options within the guardianship process.

Even though guardianship is a profound decision with serious implications both for and about the person labeled as having a developmental disability, the concept of guardianship has received little emphasis in the literature of the special education field. It seems logical that the determination of the need for guardianship should be made based upon an ongoing assessment of the student’s strengths, needs, preferences, and interests, as part of the transition planning process. Identifying the supports needed by the student as he/she makes the transition to adulthood should be incorporated into the transition planning process, so that less intrusive alternatives to guardianship may be possible. Training in self-determination should also provide skills that will assist the individual in taking control of his/her adult life, and advocate for these supports. The transfer of rights at age of majority is an ideal time for decisions regarding guardianship to be made.

Studies on Guardianship

The majority of research on guardianship has focused on the concerns of elderly people (Bulcroft, Kielkopf, & Tripp, 1991; Iris, 1988; O’Sullivan & Hoffman, 1995; Peters, Schmidt, & Miller, 1985). In particular, these studies have focused mainly on the abuses of and difficulties in monitoring guardianship (e.g., Bulcroft et al.; Kritzer, Dicks, & Abrahamson, 1993; O’Sullivan & Hoffman; Peters et al.). A number of authors have undertaken an analysis of court records of guardianship hearings for elderly persons. Analyses of court records in Florida (Peters et al.), Ohio and Washington (Bulcroft et al.), Wisconsin (Kritzer et al.), and Maryland (O’Sullivan & Hoffman) identified several similar concerns. These concerns included: (a) the questionable validity...
of the assessment or rigor used in determining incompetency; (b) late notifications to alleged wards; (c) lack of participation of (or even the presence of) the alleged ward; (d) inadequate independent counsel to serve the alleged ward; (e) the frequent assignment of a full guardian when a partial or limited guardianship may have sufficed; and (f) a lack of monitoring of annual reports filed by guardians (both low numbers of reports filed and the failure to notify or sanction guardians who failed to file an annual report).

**Guardianship and individuals with disabilities.** Concerns have also been raised regarding the use of guardianship for individuals with disabilities (e.g., Endicott, 1988; Hoyle & Harris, 2001; Pepper, 1989), and possible alternatives to guardianship have been proposed (Pierangelo & Crane, 1997; Racino, 1993; Wilber, 1991). As Stancliffe, Abery, Springborg, and Elkin (2000) pointed out, “One of the dangers of guardianship is that it can easily go beyond protecting rights and seriously interfere with self-determination if guardians exercise control in areas where persons could make their own decisions or engage in collaborative decision-making with support from significant others” (p. 409).

Stancliffe et al. (2000) examined levels of personal control exercised by 76 adults with mental disabilities, as related to their guardianship status. They found that individuals with no guardian exercised more personal control over their lives than did those with a limited guardian. Similarly, those with a limited guardian exercised more personal control than participants with a full guardian. These significant differences remained, even when controlling for competency in self-determination.

Millar and Renzaglia (2002) conducted an in-depth analysis of 221 court records of guardianship hearings for young adults between the ages of 17 and 29 with a disability who were living in one of nine counties in Michigan. The found the following: (a) 120 full guardians and 101 partial/limited guardians were appointed, but distinctions between the powers of these two guardianship types were often found to be minimal; (b) the wards’ primary disability was most often reported as “mental impairment”; (c) over 50% of the wards in the sample were 18 years of age; and (d) over 90% of the young adults were still in public schools at the time the petition was filed. In addition, petitions were most often filed by family members of the wards (74.7%), usually the mother. Mothers were the ones typically appointed as legal guardians.

Millar (2003) extended the findings of Millar and Renzaglia (2002) using the same court files to ask additional questions. She found the following reasons for petitions for guardianship: to make all decisions (37.1%), ward is not capable of making informed decisions (33%), specific tasks which the ward is unable to perform (13.5%), to assist the ward with decision making and specific daily living tasks (16.3%), and none given (1.8%). Millar also found the alleged ward was present at the hearing 86.8% of the time. If the individual were not present, the reason offered was that attendance would subject the individual to serious physical and/or emotional harm.

In addition, Millar (2003) found that evaluations tended to use standardized and norm-referenced intelligence tests. In all 221 court decisions, the judges stated that “clear and convincing evidence” was provided and that the ward was an individual with a developmental disability and required a guardian. Of the 105 full guardians, 88.2% had appointments for an indefinite term. Of the 101 limited guardians, 97% had durations of five years, the legal limit in the state. Thirty-three percent of the wards indicated no preference as to whom they believed should be appointed guardian; thirty-two percent indicated the same preference as their petitioner did. Based upon these findings, Millar (2003) suggested: (a) changes in the way evaluations are performed, to include evaluation of adult daily living skills (including decision making) on an ongoing basis throughout the guardianship term; (b) education for attorneys and judges in the area of disability, with an emphasis on the fact that persons with disabilities can and do lead quality adult lives when given the appropriate support; (c) education for families and educators related to the guardianship process and ramifications of guardianship imposition, well before the student reaches the age of majority, (d) increased participation of the alleged ward in the guardianship hearing; and (e) the selection and monitoring of
guardians who are knowledgeable about community resources, housing options, accounting, and public benefits for their wards.

Within almost all of the previously discussed studies there are similar difficulties: (a) problems in the assessment of incompetency, (b) inadequate due process procedures, (c) assignment of too high a level of guardianship (full when limited would have sufficed), and (d) poor monitoring of guardianships once assigned. Researchers are unsure, however, as to why these difficulties seem so widespread.

While these studies are interesting and useful, they fail to provide insight into the beliefs and attitudes of those involved in the process and how those beliefs and attitudes shaped the guardianship process. Also missing from these studies is the voice and beliefs of individuals with disabilities, those most affected by the guardianship process. Additionally, no studies have looked at the impact of the school system, or specifically, special education, on guardianship for young adults with disabilities. Within the schools, transition planning, mandated by law, is designed to prepare students for all of the adult roles they will assume. Discussion about guardianship, with the potential for the removal of rights and decision-making powers from the individual, should occur within the framework of four closely related concepts—(a) transition assessment, (b) transition planning, (c) self-determination, and (d) transfer of rights at the age of majority (Flower, 1994; Hoyle & Harris, 2001).

The Guardianship Process

To fully understand the results of this study, it is important to understand the guardianship and transition processes.

Our State’s Guardianship Process

Guardianship, including the process, terms and definitions used, varies by state. In the state in which this study was conducted, a guardian is defined as a “person appointed by the court to have the custody of the person of the ward” (Iowa Administrative Code; IAC§633.3(20)). A conservator is defined as a “person appointed by the court to have custody and care of the property of a ward” (IAC§633.3(23)). “Ward” refers to the individual who has been assigned a guardian. Additionally, there are two types of guardianships—full guardianship and partial guardianship. Full guardians have all rights allowed by law over their ward, while partial guardians have specific rights over their ward as assigned by the judge during the court hearing (IAC§633). We will first review our state’s legal process regarding guardianship, followed by the process regarding conservatorship.

Legal process for guardianship. The legal process for obtaining guardianship in the state takes the following steps. First, an individual files a petition for guardianship (IAC§633.552). The petitioner (who is not necessarily the proposed guardian) can be anyone. The petitioner files a document that lists the alleged ward and his/her contact information, as well as the proposed guardian and his/her contact information. (“Alleged ward” is the legal term used in our state to refer to a person who has not yet been assigned a guardian but for whom a guardianship petition has been filed.)

After a petition is filed, notice is sent to the alleged ward (IAC§633.554). The notice must inform the alleged ward that a petition has been filed on his/her behalf requesting a guardian, that he/she is entitled to representation, and of the rights that could possibly be taken away from him/her if assigned a guardian. Second, the court determines if the alleged ward needs a lawyer. The court can assign counsel if the alleged ward is incapable of voicing the need or if the alleged ward is indigent (the attorney fees, unless the alleged ward is deemed indigent, are paid for by the alleged ward) (IAC§633.556 and IAC§633.673). The lawyer’s obligations are described in the state’s code (IAC§633.556(1)). He/she must advise the alleged ward of the proceedings, must advise the alleged ward of his/her rights, must “personally interview” the alleged ward, and must file a report saying he/she has done these three things.

A hearing with a judge is the third step. The burden of proof is on the petitioner for an initial assignment (IAC§633.551). The lawyer for the petitioner must first “prove by clear and convincing evidence” that the alleged ward is indeed incompetent (IAC§633.556(1)). Incompetency is determined by
looking at whether the person has: (a) “a decision-making capacity which is so impaired that the person is unable to care for the person’s personal safety or to attend to or provide for necessities for the person such as food, shelter, clothing, or medical care” or (b) “a decision-making capacity which is so impaired that the person is unable to make, communicate, or carry out important decisions concerning the person’s financial affairs” (IAC§633.3(23)).

Next, there is a determination as to who will be the guardian. The only requirements are that the guardian be a “qualified and suitable person who is willing to serve in that capacity” (IAC§633.559). The rights that will be subsumed by the guardian are then identified. The court is to first consider a limited guardianship. There are, however, no specific definitions of “limited guardianship” contained within the state’s code. Limited/Partial guardians have only certain rights granted. Full/Plenary guardians have all rights allowed a guardian. These rights are divided into two categories: those that the guardian can do only with court approval and those that the guardian can do at his/her own discretion (IAC§633.635).

With court approval, the guardian may change the ward’s residency to a more restrictive one, arrange for elective surgery or non-emergency medical treatment, and consent to the withholding/withdrawal of life-sustaining procedures. Without court approval, the guardian may decide where the ward will live; select his/her educational program; choose the individual’s clothes, furniture, vehicle and other personal effects; determine what professional care and counseling might be needed; and make any other decisions specified by the court in the initial hearing.

Legal process for conservatorship. As mentioned previously, while guardians have rights over the person, conservators have rights over the property. Conservators “have a right to, and shall take, possession of all the real and personal property of the ward” (IAC§633.640). They have the responsibilities of protecting, preserving, and investing the ward’s assets (IAC§633.641). Powers of the conservator are broken down similarly to those of a guardian—with and without court approval. With court approval, the conservator may invest funds, execute leases, make payments (to the ward, to agencies providing services, to the guardian, to anyone who has custody of the ward), and carry out any other duties specified by the court (IAC§633.647). Without court approval, the conservator may collect income, defend or sue for the ward, sell/transfer personal property, vote in proxy at corporate meetings, and receive property for the ward (IAC§633.646).

Fulfilling the guardianship/conservatorship role. After the hearing and assignment of a guardian, the guardian is responsible for filing three types of reports (IAC§633.669). The initial report is to be filed within 60 days. From then on, reports are to be filed annually. A final report must be filed when guardianship is terminated (for any reason). Conservators have slightly different requirements, but the same type and frequency of reports (IAC§633.670 and IAC§633.671).

Hearings may be held to modify or terminate guardianship/conservatorship. The burden of proof rests on the guardian if he/she requests termination or modification (IAC§633.551). If the ward requests termination/ modification, the ward must first “make a prima facie showing of some decision-making capacity”; then the burden rests on the guardian to prove that the ward is incompetent (IAC§633.551). Changes may include adding additional restrictions, removing restrictions, or terminating the guardianship.

Alternatives to Full Guardianship

Because guardianship is a powerful legal control, many alternatives to guardianship are available. Often, these alternatives to guardianship offer monitoring and assistance to individuals with disabilities, but do not require that they define themselves as “incompetent,” nor that they give up their role in the decision-making process.

Typically, these alternatives can be grouped by type of service. These services include assistance in financial, educational, vocational, and/or daily living matters. Financial services may consist of: (a) a representative payee, a designated person who can receive Supplemental Security Income (SSI) or Social Security Disability Insurance (SSDI) payments for a person with a disability to assist the individual...
in budgeting and spending; (b) a special needs trust, a fund created to insure that an inheritance goes to the person designated (if this person has a disability) and the assignment of a trustee to help with money management; (c) joint bank accounts (Pierangelo & Crane, 1997), an account that would allow a second individual to assist the individual with a disability with banking and budgeting; and (d) daily money management services (Wilber, 1991), where a non-profit organization assists with financial affairs.

Educational services consist of educational power of attorney (P. Ehrenman, personal communication, November 14, 2001), a document that allows parents to retain the rights to make educational decisions beyond the age of majority. Vocational services typically consist of supported employment, a program to provide on-the-job support to an individual with a disability through the use of natural supports (supports occurring in the environment) or external supports, often using the support services of adult providers (Butterworth, Hagner, Kiernan, & Schalock, 1996).

Supported living services are also available, ranging from living in a group home to one’s own apartment or home, with supports provided by adult service providers, as needed. Some services have multiple functions, including power of attorney, a document that allows an individual appointed by the person with a disability to make decisions in one or more areas of adult life. This role can also be terminated by the individual with a disability.

Additionally, within the state’s code, it is specified that a limited or partial guardianship should first be considered (IAC§633.560), before consideration of a full or plenary guardianship. Because limited/partial guardians have fewer rights over the ward and because these rights are based on specific, focused needs of the ward, as determined in the court hearing, limited/partial guardianships are considered to be somewhat less restrictive and are therefore to be considered before full guardianships.

**Transition to Adult Life**

The Individuals with Disabilities Education Improvement Act (IDEA 2004) mandates individualized transition planning for movement to all areas of adult life. The definition for transition services in IDEA 2004 is a coordinated set of activities for a child with a disability that:

- is designed to be within a results-oriented process, that is focused on improving the academic and functional achievement of the child with a disability to facilitate the child’s movement from school to post-school activities, including postsecondary education; vocational education; integrated employment (including supported employment); continuing and adult education; adult services; independent living or community participation; and [602(34)(A)]
- is based on the individual child’s needs, taking into account the child’s strengths, preferences and interests. [602(34)(B)]

IDEA 2004 requires that a student’s IEP be updated annually at age 16 to address the following:

- appropriate measurable postsecondary goals based upon age appropriate transition assessments related to training, education, employment, and where appropriate, independent living skills;
- transition services needed to assist the student in reaching these goals, including the student’s course of study (e.g., career and technology education, college preparation courses)
- a statement that the student has been informed of the rights (if any) that will transfer to him or her on reaching the age of majority—no later than one year before reaching the age of majority under State law.

The entire thrust behind transition services is the preparation of young adults with disabilities for the variety of emerging adult roles they will assume, with all the rights and responsibilities accorded to an adult. There are four major concepts that are a key part of the transition planning process: (a) transition assessment, (b) transition planning, (c) self-determination, and (d) transfer of rights at age of majority.
Transition Assessment

IDEA 2004 clearly provides a mandate for including transition assessment in the IEP process. Transition assessment is an integral part of the educational process for students with disabilities during the secondary school years and serves as the foundation for planning for adult roles. Transition assessment encompasses age-appropriate methods to assist students in identifying individual needs, strengths, preferences, and interests and in obtaining information on future living, work, and education environments.

Sitlington, Neubert, Begun, Lombard, and Leconte (2007) defined transition assessment as follows:

Transition assessment is an ongoing process of collecting information on the student’s strengths, needs, preferences, and interests as they relate to the demands of current and future living, learning, and working environments. This process should begin in middle school and continue until the student graduates or exits high school. Information from this process should be used to drive the IEP and transition planning process and to develop the Summary of Performance document detailing the student’s academic and functional performance and postsecondary goals. (pp. 2–3)

Transition Planning

As stated in IDEA 2004, transition planning is individualized and is based upon the “student’s needs, taking into account the student’s strengths, preferences, and interests” (20 U.S.C § 1401 (30)(B)). A focus on preparation for and transition to a successful adult life can be seen throughout transition planning and education, which should begin as soon as the student enters the school system (Sitlington & Clark, 2006).

The skill and knowledge domains under the concept of transition are broad. Sitlington and Clark (2006) identified the following nine skill and knowledge domains: communication and academic performance skills; self-determination; interpersonal relationship skills; integrated community participation skills; health and fitness skills; independent/interdependent daily living skills; leisure and recreation skills; employment skills; and further education and training skills.

Transition strives to prepare students for the wide variety of adult roles they may assume. Therefore, the goal or outcome of the process of transition should be a high quality of life (Halpern, 1993). This long-term planning process brings together the student, family, school, outside agencies, and others to plan for and to prepare students for the variety of roles they may assume as adults, including such roles as worker, student, parent, friend, and citizen.

Within this broad focus on transition, there are many issues to consider. In terms of assuming adult roles, it is important for the student to be prepared to accept the responsibilities that come with adulthood. These responsibilities include the demands upon individuals to act autonomously and to self-advocate, as well as to assume the legal rights that are given at the age of majority.

Self-Determination

In recent years there has been a major focus on the concept of self-determination for all young adults with disabilities, but particularly individuals with developmental disabilities. The term “self-determination” attempts to encompass the themes of choice, control, and personally meaningful success for individuals with disabilities (Field, Martin, Miller, Ward, & Wehmeyer, 1998b). For students to transition successfully, it is critical for them to develop the skills considered under the concept of self-determination. However, studies focusing on the self-determination of individuals with disabilities indicate that adults with disabilities, particularly those with developmental disabilities, have low levels of self-determination (Wehmeyer & Metzler, 1995).

Many authors have defined self-determination. Field, Martin, Miller, Ward, and Wehmeyer (1998a) summarized these definitions as follows:

Self-determination is a combination of skills, knowledge, and beliefs that enable a person to engage in goal directed, self-regulated, autonomous behavior. An understanding of one’s strength and limitations together with a belief in oneself as capable
and effective are essential to self-determination. When acting based on these skills and attitudes, individuals have greater ability to take control of their lives and assume the role of successful adults. (p. 2)

Research is steadily mounting suggesting that enhanced self-determination may play a role in improving adult outcomes for students with disabilities, including employment status (Wehmeyer & Palmer, 2003; Wehmeyer & Schwartz, 1997) and participation in postsecondary education (Field, Sarver, & Shaw, 2003). As a result, promoting students’ self-determination is now an important component of recommended practices in the transition of youth with disabilities to adult life (Council for Exceptional Children, 2003; Field & Hoffman, 2002; Field et al., 1998b).


Wehmeyer and Schalock (2001) also offered what they termed “essential characteristics” of self-determined behavior: (a) choice-making skills; (b) decision-making skills; (c) problem-solving skills; (d) goal-setting and attainment skills; (e) independence, risk-taking, and safety skills; (f) self-observation, evaluation, and reinforcement skills; (g) self-instruction skills; (h) self-advocacy and leadership skills; (i) internal locus of control; (j) positive attributions of efficacy and outcome expectancy; (k) self-awareness; and (l) self-knowledge.

We will refer to self-determination as an individual’s autonomy and voice. While this may indeed simplify the concept when compared to other authors’ definitions, it clarifies the meaning and allows for discussion of the need for self-determination for all people, including those with developmental disabilities.

As transition planning occurs, it is necessary to attempt to develop and nurture an individual’s level of self-determination so that he/she is able to fulfill adult roles, exercising one’s autonomy and voicing one’s opinions. Students must be taught and given the opportunity to exercise skills related to self-determination (Wehmeyer & Schalock, 2001). This preparation for the assumption of adult roles must be planned for through the transition process. Within this process, the transfer of rights at the age of majority, as well as the related need to act in a self-determining way, need to be addressed.

**Age of Majority and Transfer of Rights**

The term age of majority refers to “the age at which an individual is no longer considered a minor and, as such, becomes legally able to exercise rights accorded to adults in that state or province” (Lindsey, Wehmeyer, Guy, & Martin, 2001, p. 3). The legal rights attained at the age of majority would allow individuals, including those with developmental disabilities, to express their voice, to have power with that voice, and to have autonomy. In essence, this transfer of rights is a necessary part of transition planning as youth assume adult roles and act in a self-determining way.

Thirty-three of the forty states that responded to a survey conducted by the National Association of State Directors of Special Education (NASDE, 1999) indicated that the age of majority in their state, which is when the transfer of rights occurs, was 18. IDEA 2004 requires that students with disabilities and their parents are made aware of the transfer of rights at least a year before the student reaches the age of majority. Individuals who have reached the age of majority, regardless of their disability label, are considered to have the rights accorded to an adult in that state, unless the individual has been declared legally incompetent (Lindsey et al., 2001).

In their position statement on the age of majority and individuals with mental disabilities, the Council of Exceptional Children’s Division on Mental Retardation and Develop-
ment Disabilities cited their concern that the discussion regarding age of majority required by IDEA may “lead to a circumstance where parents and family members will feel compelled to obtain guardianship or other legal decision-making status over their son or daughter when they might not otherwise do so” (Lindsey et al., 2001, p. 13). They also clarified that the way in which the school handles this notification of the transfer of rights will affect this possibility.

The legal basis for the personal choice and control emphasized within the concept of self-determination comes through the transfer of rights that occurs at the age of majority. “Transfer of rights” refers to the shift of responsibility from parent to child upon attaining the age of majority. This transfer of rights occurs for young adults with disabilities just as it occurs for those without disabilities. Upon attaining the age of majority, the individual is viewed in the eyes of the law as an adult, capable of making and responsible for his/her own decisions (Lindsey et al., 2001).

Transition and Guardianship

To assure that students are prepared to assume the diverse duties of adulthood, careful and thorough transition planning, with a broad-based focus, is essential. For students with disabilities, this transition planning is mandated. Guardianship, which may be abused, can work against the goals of transition planning. In attempting to understand how guardianship and transition are related, it is important to understand that, for students with disabilities, the transition planning process undergirds the movement from school to adult life. A seminal time or moment in this transition is at the age of majority when the transfer of rights occurs. It is essential that ongoing transition planning has led up to this moment. Part of this transition process is the development of such life-long skills as self-determination, which provides students with voice and autonomy. As mandated by IDEA 2004, the transition planning process must be based upon transition assessment.

A major part of this transition is the development of needed supports to allow students to act as self-determining adults. These supports will be individual to each student, and, for some, might include a form of guardianship or an alternative to guardianship. It is here that the connections between guardianship and transition are established. Each individual student will have a variety of needs upon entering the adult world.

The supports in place to meet these needs may include natural supports, those available to all in the adult world, or may be more formal and planned by those involved in the transition process. Regardless of the type of actual support, those that are planned should be as non-intrusive as possible, allowing the individual with a disability to retain as much independence and autonomy as possible (Wehman, Revell, & Brooke, 2003). For some individuals with developmental disabilities, guardianship may be seen as a necessary support. However, before opting to declare a young adult legally incompetent and removing certain rights, all other options and alternatives should first be considered.

**Purpose of Study**

Very little research could be found on the issue of guardianship for young adults with disabilities, particularly as it relates to the process of planning for the transition to adult life. In particular, no studies could be located that focused on the values, perspectives, and sociological frameworks of those directly involved in the guardianship process - individuals with disabilities, their families, teachers, support staff from intermediate units, and lawyers. The purpose of this study was to explore: (a) the underlying beliefs of those involved in determining the need for guardianship for one young adult with mental disabilities, (b) the overarching frameworks or theories that might explain some of the more predominate beliefs, and (c) the relationship of transition assessment, transition planning, self-determination, and age of majority to the guardianship process.

**Method**

In order to understand guardianship, the beliefs of those involved in the process and the relationship of this process to planning for the transition to adult life, we undertook a qualitative study, focusing on the beliefs of those
involved in the guardianship process for one
young man.

Selection of Qualitative Methodology

We chose to explore guardianship using a
qualitative methodology, because there are so
many complex issues imbedded within the
topic. Often, related to these complex issues
are responses that would be considered opti-
mal in their social acceptability. In exploring
the topic, we wanted to reach beyond these
more socially acceptable responses in an at-
ttempt to understand what ideas and under-
standings inform and motivate people who
are involved in the guardianship process. We
wanted to understand the way a small group of
inter-related people view the complex issue of
guardianship.

The letter and the spirit of a law often differ
somewhat from the actual practice of the law;
we attempted to delve into this issue as well.
The spirit of laws pertaining to guardianship
attempt to limit guardianship orders as much
as possible and offer the alleged ward a voice;
the letter of the law indicates that the alleged
ward is to have his/her own council and re-
ceive notification of all legal action being
taken. It was important to understand how
people negotiate the difference between how
a law is put into practice and what the spirit of
a law intends.

Participants

Purposeful sampling (Glesne, 1999) was em-
ployed to obtain information from individuals
who had been involved in the guardianship
process in some way or another. The guardi-
anship process is likely to include some or all
of the following individuals: those with disabili-
ties, their families, teachers, intermediate ed-
ucation unit staff (if applicable), and lawyers
who have worked with individuals with devel-
opmental disabilities. The intermediate edu-
cation unit staff member who is head of a
parent education project located a family, the
Smiths (a pseudonym), who had recently
gone through the guardianship process with
their son, Evan, who has a developmental dis-
ability. From the Smiths we branched out,
speaking with a current teacher, the interme-
diate education unit staff who were involved in
the student’s education, and the lawyer who
was employed by the family.

Evan and his family. The Smiths, a family
of four, live in a rural area of a midwestern
state. Larry (Evan’s father) works at a tractor
implement factory in a city about 40 minutes
from their home; Connie (Evan’s mother)
works in the same city’s county courthouse.
Katie, 22, and Evan, 20, both live at home with
their parents.

Important to this study on guardianship,
and something that will certainly be asked, is
the question, “Can Evan make it on his own?”
This question, which is asked about many in-
dividuals, with and without disabilities, is dif-
ficult to answer. Evan does indeed have signif-
icient problems in all academic areas. He reads
and writes poorly. He has well-developed so-
cial skills and excellent manners. Though his
opportunities to practice his decision-making
skills have been limited, both by his young age
and by the protective blanket that surrounds
him, he is aware of his likes and dislikes and
makes choices regarding his day-to-day life
with much success. It is our opinion that Evan
will need various supports throughout his life.
What these supports should consist of, how-
ever, should be determined by Evan, his fam-
ily, and those who support him, based upon
his future education, opportunities for
growth, and personal freedom.

The school and intermediate education unit staff.
Evan’s current teacher and two intermediate
education unit staff, both of whom work pri-
marily at Evan’s school, Lakewood, acted as
participants. Evan’s teacher, Laura Jenson, is
in her third year of teaching; she has taught
Evan for the past two years. Before teaching,
she worked in a group home setting and cur-
rently works part time for another adult ser-
vice provider supervising employees with dis-
abilities. Bonnie Potter has been a social
worker for the intermediate education unit
for 27 years; she has spent the last 15-16 years
at Lakewood. John Pitts, the intermediate ed-
cucation unit school psychologist, has been a
school psychologist at Lakewood his entire
career, for 24 years. Before working at Lake-
wood, he worked with individuals with severe
and profound disabilities in an institution set-
ting.

Lakewood is a school run by the intermedi-
date education unit for students with disabili-
ties. Typically, individuals served at Lakewood tend to have more significant developmental disabilities. The school and its grounds house all needed facilities, including a cafeteria, a gym, a swimming pool, accessible bathrooms, a “life skills” area, and classrooms. Many opportunities are provided for experiences in the community, including exploration and training experiences in community businesses.

The school population is low, allowing for classrooms of 5-8 students. Students range in age from 2-21 years and are typically grouped in classrooms by age and the perceived severity of their disability. It is not atypical for a student to spend his/her entire educational career at Lakewood. Almost all school staff know each student and their family members by name; the resulting environment is warm and protective. Families of the students placed at Lakewood are very loyal and have lobbied for the school’s continued existence. From casual discussion with family members, it appears that families of students feel the school offers their students a safe, protected environment where the students are among other individuals with developmental disabilities.

The lawyer. Geoff Ryder acted as the Smiths’ lawyer for the guardianship proceedings. He has been in practice for the past 25 years, and while he has received no specific training on working with individuals with disabilities, he estimated that he has been involved in two to three guardianship proceedings a year since he began his career.

Data Collection

Data collection focused on three sources of information: interviews, archival records, and field observations. All data were collected by the lead author. Interviews took place with all of the participants identified in the previous section. A primary interview was scheduled at the convenience of the participant. Follow-up interviews to clarify statements or request additional data were used as necessary. Archival data collection focused mainly on court documents and material used by intermediate education unit staff; field observations were also used to gain a clearer picture.

Interviews. The semi-structured interviews included both close-ended and open-ended questions. The close-ended questions provided a general overview of participants’ opinions, while the open-ended questions allowed a better understanding of the participants’ attitudes, beliefs, and sociological frameworks. Interview questions focused on several areas, including general background, familiarity with the guardianship process, and beliefs. Questions on the participants’ general background focused on demographic information and interactions with young adults with disabilities and young adults with disabilities who have guardians. Questions on the participants’ involvement with guardianship focused on their role in the guardianship process and awareness of and attitudes toward the scope of guardianship powers available. Questions on the participants’ beliefs focused on beliefs about the type of young adult with a disability who might need a guardian; beliefs on the role of the age of majority in precipitating the guardianship process; and attitudes toward the concept of self-determination.

All interviews took place at the convenience of the participant and each was tape-recorded with the participant’s permission. Each interview was transcribed by the lead author. All interviews were coded to identify emergent themes throughout. Memos and notes were written while coding, to help clarify themes and issues identified by the participants.

Archival data and field observations. Through contact with participants, we were able to identify other individuals who had obtained guardianship of a young adult with a disability and who were willing to allow for the review of court documents of the guardianship proceedings. In addition to court documents, we were given other archival data in the form of informal handouts received by the participants from school and intermediate education unit staff. The main observations focused on Evan as he interacted with his family in their home.

Self as Researcher

Because of our interest in this topic, experiences, and past reading in this area, we brought to this study some pre-theoretical dispositions. We were concerned that not enough questions were being asked as people labeled as having a disability were having per-
sonal rights removed through guardianship. Removal of these rights appeared to occur with relative ease. As a result, we entered the study with some skepticism and concern regarding guardianship. We attempted, deliberately, to challenge our beliefs and our cognizance. Identification of these concerns allowed us to constantly evaluate and re-evaluate our interpretation of data, as well as alert readers to our dispositions.

The Smiths’ Story

We first met the Smith family at their home; Connie opened the door, explaining that Larry was still out working in the garage but would drop in shortly. Katie and Evan were sitting in the living room. Katie worked diligently, preparing materials for the day care by which she is employed. Evan and Connie had been watching the news in the living room. Evan joined us as Connie detailed his history.

Evan was born on November 2nd, five weeks early, and with serious complications. He was moved from the small, local hospital to a large university-affiliated hospital an hour away. There he was diagnosed with Pierre Robin Syndrome, which is characterized by such features as a large tongue, cleft palate, and a small jaw. Evan underwent many surgeries, had a tracheotomy, and had a feeding tube inserted. When he finally was sent home almost a year later, he began early intervention with the local intermediate education unit, which provides support services. The staff members provided physical therapy for Evan and instruction for his parents. At the age of 2 1/2 he started preschool at Lakewood, a specialized school for children with disabilities administered through the intermediate education unit.

Shortly before Evan’s 18th birthday, the Smiths contacted a lawyer in their county of residence and obtained guardianship and conservatorship over Evan. Lakewood recommends, even stresses, that all parents obtain guardianship and conservatorship over their sons/daughters with disabilities, so the Smiths opted to do so. Lakewood staff has on hand the names of two lawyers in the county who routinely file guardianship papers, but as the Smiths live in a different county, they located a lawyer on their own. The lawyer they contacted recommended that the family apply for full guardianship and conservatorship of Evan so that there would be no additional costs to them if they decided they needed more power over aspects of his life. The $150 fee was paid and the papers were filed. Then, because this lawyer and county choose to waive the court hearing in cases where the parents of a “special needs child” are the petitioners and proposed guardians/conservators for their son/daughter, the papers allowing Evan’s parents to become his legal guardian were signed by the judge with no further discussion. The Smiths now file annually a brief form on Evan’s whereabouts and well being to maintain guardianship, as well as a more detailed form accounting all his funds to maintain conservatorship.

Beliefs, Perspectives, and Sociological Frameworks of the Participants

After an initial interview with the Smiths, the lead author interviewed Evan’s teacher, intermediate education unit staff at Lakewood, and the Smiths’ lawyer; she then returned for several interviews with the family. After speaking with these individuals, transcribing the interviews, making notes, and reading and re-reading the transcriptions and notes, we were able to identify several important themes recurrent in the data. First and foremost, as a whole, participants demonstrated few reservations or second thoughts when concluding that Evan and other students at Lakewood needed guardianship. Second, participants felt the need to protect Evan and other students and believed the way to do this was by pursuing guardianship. Third, participants lacked knowledge regarding alternatives to guardianship. Finally, the process in place for guardianship planning was separate from the students’ transition planning. In the following sections, we elaborate on and substantiate this assessment.

Preemptive Conclusion of Need for Guardianship

A declaration of incompetence is the first major step in determining the need for a guardian. An implicit statement is made regarding a student’s competency by advocating for or stating that there is a need for guardianship. It
is very important to look at how the determination of the need for guardianship, or a student’s competency, are made.

Evan’s placement at a segregated school for students with disabilities and his status as an individual with a disability undoubtedly contributed to his being viewed as “incompetent” and therefore in need of guardianship. John Pitts and Bonnie Potter felt that Evan’s attendance at Lakewood, a segregated school for individuals with disabilities, was indicative of his lack of or level of competence.

If school staff, educated in working with students with disabilities, feel that placement in a certain school is enough to determine competence or need for guardianship, it is not surprising that other adults, with less training in working with students with disabilities, might draw similar conclusions. Geoff Ryder, the Smiths’ lawyer, also concluded Evan was in need of guardianship. When asked how he had determined this, he responded, “Now this is when we have a special needs child – I rely more upon the parents. That’s because normally they aren’t going to go to the cost and the expense of this unless necessary.” So, if a parent went to the time and expense to request guardianship for a “special needs” child, Ryder indicated that he would assume the young adult was incompetent and proceed with the guardianship.

Troublingly, Ryder also noted that in other guardianship cases, he may be called upon to act as a guardian ad litem for an alleged ward. In this case, he would determine competency and identify what actions he believed to be in the best interest of the alleged ward. In doing so, he stated that he would contact the alleged ward, meet them, and have a conversation. “A lot of times,” he said, “they aren’t able to communicate.” In this statement, he was referring to an alleged ward’s ability to communicate in a traditional sense, specifically, orally. He tied great importance to the ability to communicate orally. In referring to a particular case, he noted that, even though staff doctors at a state mental health institution had labeled a woman incompetent, he, from talking with her, knew that she “had a certain level of understanding” and judged her competent.

These assumptions about the need for guardianship or incompetence appeared to be based on perceptions of disability, the meaning of a school program placement, and the label of “special needs.” No individual mentioned specific capabilities of Evan or of other students. Related to these assumptions of incompetence is the need to protect individuals viewed in this way.

Paternalism and the Related Push for Guardianship

The Smiths have concerns for Evan, as all parents might for their child. They wonder what he will do when he grows up, when he will leave the house, and if he will be able to maintain and prosper on his own. Additionally, there are other concerns related to Evan’s perceived ability to care for himself. Connie, his mom, admits, though, “it’s going to be, I think, a bigger leap for me” to adjust to his growing up and leaving the house. The school, though, seems to have used these natural concerns of parents to strongly encourage the Smiths to obtain guardianship.

When asked why she had pursued guardianship, Connie cited Lakewood’s emphasis on acquiring it and the importance they had placed on it. She added that she did have some fears for Evan. When asked to elaborate, she said she was concerned he might be “taken advantage of.” These vague suggestions of what might occur to a young adult with a disability, if left without a guardian, were noted in several other interviews. Laura Jenison, Evan’s teacher, stated the following in regards to what she might tell a parent during an IEP meeting:

A lot of parents ask, “Why would I want to be my student’s or my child’s guardian?” We just make suggestions, “If you do want to be your son’s guardian a good reason would be so someone couldn’t come along and take advantage of their money,” which is a certain possibility. . .

Along similar lines, Potter, the school social worker, provided some concerns regarding a student’s ability to protect or care for themselves.

Really, our kids are very gullible and can be taken advantage of easily and that’s where we come from with the parents. Our kids can be talked into something very easily. Unfortunately there are people out there
who are not trustworthy, and when our kids leave here (Lakewood) they go to other programs, you know, or they go to group homes, or into the workforce and they can be talked into something that is illegal or they can be taken advantage of and if they are their own guardians, they can sign papers or get involved with something they don’t understand if somebody talks them into it and then they are responsible for it if it’s some illegal activity.

Each participant stressed the need to protect and look after Evan and other young adults with developmental disabilities. Evan and other students at Lakewood were considered unable to make decisions and/or choices or, if they were allowed to do so, these decisions or choices would result in negative consequences due to poor decision-making capacity. To protect Evan from this, guardianship was needed. While the paternalistic desire to protect and keep safe may stem from love and concern for Evan and other young adults with disabilities, it acts to hinder his development as an adult. He is not seen as an adult, but as an eternal child, forever to be looked after.

*Lack of Knowledge Regarding Alternatives to Guardianship*

No other alternatives to guardianship were discussed with parents. Staff had no knowledge of or was reticent to discuss the legal process behind guardianship or of any alternatives to guardianship. Initially in the interview with Jenson, Evan’s teacher, she was very anxious and kept repeating that she was unsure she would be able to help us, as she knew very little about guardianship. Her role in the process at Lakewood is to refer students on to the intermediate education unit staff, the school psychologist, Pitts, or the school social worker, Potter. Jenson said she had no knowledge of the legal process that guardianship takes and that she relied on Pitts and Potter to provide information and resources to the parents of students at Lakewood.

When speaking with Potter, though, she admitted that she also had no knowledge of the legal process. Pitts also knew little; when asked if he had any idea of the process, he replied with a shrug and a shake of the head, “Not really.” So while Lakewood staff was unfamiliar with the legal process surrounding guardianship, they recommended it without discussing or exploring with parents possible alternatives to full guardianship. Though numerous and substantive, no alternatives were discussed by staff at Lakewood. It seems that any alternatives to full guardianship, even limited guardianship, were not discussed. These options could have been provided as part of the transition planning process.

*Separation of Planning for Guardianship from the Transition Planning Process*

Transition planning should be the driving force behind the movement from secondary school to adult roles. Without adequate transition planning, students leave school unprepared, and parents are left in even more uncertainty and worry about their child’s future. At Lakewood, planning for guardianship has been separated from transition planning. The result is a push for guardianship for all students without consideration of other aspects of their adult life. The resulting situation is problematic and includes the use of a blanket policy towards one particular option (in this case, guardianship), the use of the notification of the transfer of rights as a warning to parents, and a lack of emphasis on or belief in self-determination.

In the first interview with staff working at Lakewood, the lead author spoke with Laura Jenson, Evan’s classroom teacher. When asked if it is assumed that guardianship is appropriate for all the students at Lakewood, she responded, “Well, we leave that up to the parents to choose. We just, we just simply ask if they’ve started the process and recommend that they do if they want to.” As you can see, Jenson states that this decision should be made by the family, but does note that Lakewood takes a more aggressive path, by recommending guardianship. The intermediate education unit staff were much more certain of the role that Lakewood should play, advocating clearly for any family with a student at the school to obtain guardianship. Bonnie Potter, the school social worker, made numerous statements to this effect, including “We feel guardianship is a real necessity for our kids here in the building.” The school psycholo-
gist. John Pitts, felt similarly. “I would encourage,” he said, “all parents that have students here (at Lakewood) to pursue this, to obtain guardianship so that, so that they don’t run into any difficulties or problems on down the road if they don’t.”

The first dilemma is that while Lakewood staff, in their interviews, used words like “recommend” and “encourage,” it appears that the role they play in this decision is much stronger than recommending and encouraging. Connie Smith, Evan’s mom, went through the process. She said that different members of the school staff mentioned guardianship at every meeting she had with school staff for almost two years prior to Evan’s 18th birthday, including parent-teacher conferences, annual reviews, three-year re-evaluations, and meetings about the work experience program. Connie noted that even after the family had obtained guardianship, school staff still verified that she had completed the process.

Lakewood staff also discussed, with Evan’s family and with the lead author, their emphasis on the transfer of rights at the age of majority. This tenet was used by staff as a major push for guardianship. The age of 18, which is the age of majority in our state, became the deadline for the completion of the guardianship process. As Laura Jenson, Evan’s teacher, stated, “18 years old is when we recommend they have it done, because when they turn 18, if it’s not done by 18, that student is automatically in charge or is guardian of their finances and situations.” Bonnie Potter, the school social worker, discussed the concept in much the same way, saying things like, “Parents don’t realize what it means when kids turn 18.” Pitts, the school psychologist, also shared stories with parents about things that could happen if a student did not have a guardian at the age of 18, such as how they could buy a car or could move into their own apartment. The transfer of rights became a major reason why parents were encouraged to pursue guardianship. The transfer of rights and the powers that came with that were discussed in a way that highlighted only the negatives of this transfer, leaving the Smiths with a sense of alarm and dread. In essence, the notification of the transfer of rights was used as a warning and a further reminder of the need for guardianship.

The blanket policy towards guardianship and the questionable use of the transfer of rights tenet, when coupled with the aforementioned theme of lack of knowledge of alternatives, leads to the potential abuse of trust by Lakewood staff. Families often have long-standing relationships with the school and trust the input they receive from school staff. Evan’s family, who have interacted with Lakewood staff since he was 2 1/2 years, are pleased with the school. Connie felt, in developing Evan’s IEPs, that the school staff knew best. She stated, “Because they’ve worked with so many kids in the same category as him that they can say, ‘well, you know, maybe this would be best for Evan.’” Connie and the family have been happy with the decisions made by Lakewood staff and feel that it is the best place for Evan. She trusts what staff at Lakewood think and relies on the staff for support and input in working with her son. If Lakewood staff is not representing the wide array of options available and are advocating for one decision, guardianship, there is the possibility for an abuse of trust to occur.

An underlying problem is that staff at Lakewood is unable to see their students as being or becoming self-determined individuals. As a result, with the guardianship discussion separated from transition planning and self-determination, we see these decisions being made for students and families, with their care and protection in mind, as opposed to with students and families.

Many of these problems stem from the fact that the issue of guardianship has been removed from the concept of self-determination and the transition process, which brings together the student, family, school, adult service providers, and others involved with the student. Instead, it is a blanket policy, covering all students at Lakewood. Alternatives are not discussed and are therefore not made available to parents. The wide variety of adult roles that the student may assume is not fully considered alongside the issue of guardianship. A consideration of self-determination and the assumption of the rights that are transferred at the age of majority are not present in the decision regarding guardianship.
Discussion and Recommendations

Lakewood’s preemptive conclusion regarding the need for guardianship for all students is problematic. The root of the problems surrounding the issue of guardianship at Lakewood is that the planning for guardianship is separated from the transition process. The result is that the student, family, school, adult service providers, and others are not making a fully-informed, well-planned group decision. Discussion of the individual student’s strengths, needs, preferences, and interests in relation to the guardianship process has not occurred. Alternatives and options that may work for the student have not been discussed. Guardianship has not been considered in conjunction with the assumption of other adult roles. Full guardianship becomes a set path for every student, as opposed to a process, such as the transition process that is individualized for each student and family according to their needs and desires.

Based upon our observations, we make the following recommendations related to the role of the guardianship process within the transition planning process. First, both the transition planning and guardianship processes should be based upon an ongoing assessment of the student’s strengths, needs, preferences, and interests. This is a required component of the transition planning process (IDEA 2004). The transition assessment process is an ideal vehicle to identify the strengths, needs, preferences, and interests of the individual. The IEP team can then identify the supports and accommodations needed by the individual to transition to adult life. The Association for Persons with Severe Handicaps (TASH; 2003) in the TASH Resolution on Alternatives to Guardianship urged “the development and promotion of the use of accommodations and supports people need to make choices and decisions, to have their preferences recognized and honored, and to have their rights to self-determination protected.” In this same resolution TASH committed to the promotion and use of alternatives to guardianship.

Second, schools must recognize students as emerging young adults, and prepare them to assume a variety of adult roles. Third, schools should prepare students for the assumption of these adult roles by helping students develop and practice self-determination skills. Developing students’ autonomy and voice will allow them to participate in their transition planning to a greater degree and will allow them to advocate for themselves in the future.

Fourth, the transfer of rights at age of majority should be seen as a key point in the transition process, rather than a warning, or perhaps even a threat. Lindsey et al. (2001) addressed this concern, offering a reminder that schools cannot make judgments on the competency of students and voicing a concern that notification of this transfer could lead parents towards guardianship. As they stated, if schools “adopt a philosophy of supporting students to become more self-determined and to become meaningful participants in the planning process” (p. 13), then notification will not act as a threat. They also noted that how schools address this will greatly affect parents’ concerns. Millar and Renzaglia (2002) recommended that the IEP team could even tailor the IEP goals and objectives with the aim of preventing the imposition of guardianship.

Fifth, in working to prepare students for adult life, instructional and support staff need to be aware of the wide variety of alternatives to and options within guardianship. Knowledge of guardianship is necessary for all school officials, but especially if schools have a strong relationship with parents, and parents trust the input of school officials, as they do at Lakewood. School staff should be familiar with the legal proceedings and should educate themselves and families regarding possible alternatives; otherwise, full guardianship becomes the only option presented to families. Additionally, those outside the educational arena who interact with individuals with disabilities (i.e., lawyers) need education in these same areas.

Finally, the discussion regarding guardianship must be intertwined with the transition process, as this will help ensure that students, families, school staff, adult service providers, and others are considering all adult roles and all options to help the individual succeed within these varied adult roles. It seems logical that the determination of the need for guardianship should be made based upon an ongoing assessment of the student’s strengths,
needs, preferences, and interests, as part of the transition planning process. Identifying the supports needed by the student as he/she makes the transition to adulthood should be incorporated into the transition planning process, so that less intrusive alternatives to guardianship may be possible. Training in self-determination should also provide skills that will assist the individual in taking control of his/her adult life, and advocate for these supports. The transfer of rights at age of majority is an ideal time for decisions regarding guardianship to be made.

References


National Association of State Directors of Special Education. (1999). Age of majority. Washington,
Inclusive High School Service Learning Programs: Methods for and Barriers to Including Students with Disabilities

Stacy K. Dymond, Adelle Renzaglia, and Eul Jung Chun
University of Illinois at Urbana Champaign

Abstract: The purpose of this study was to determine methods for and barriers to including students with disabilities in high school service learning programs (HSSLPs) with non-disabled peers. Focus groups were conducted with adult stakeholders at five schools nominated as having exemplary inclusive HSSLPs and at least 3 years experience implementing such programs. Methods for including students with disabilities addressed the categories of activity selection and structure, collaboration, expectations, encouragement, grouping, and modifications. Barriers clustered around the areas of teacher attributes and experience, organizational structure, planning, resources, and student characteristics. Implications for inclusive education, universal design for learning, access to the general curriculum, Individualized Education Programs (IEPs), and instruction are discussed.

Service learning is a form of pedagogy that enables students to meet their educational goals while providing service to the community (Fertman, 1994). It offers hands-on, problem-based learning that is focused on meeting community needs and enhancing school-community collaboration (Fager, 1996; Perkins & Miller, 1994). Service learning offers a departure from traditional pedagogy by linking academic content, standards, and vocational goals addressed in the classroom setting with hands-on service activities that meet authentic needs in the student’s community (Gent & Gurecka, 1998; Hamilton & Hamilton, 1997). Almost half of all high schools nationally are reported to have service learning programs (Skinner & Chapman, 1999).

A service learning project typically includes four components: 1) learning (i.e., preparation for the activity), 2) service (i.e., performing the actual service), 3) reflection (i.e., processing what was learned), and 4) celebration (i.e., of accomplishments) (Fertman, 1994; Gent & Gurecka, 1998). For example, students might initially learn about homelessness in class and then engage in service activities at a local homeless shelter or soup kitchen. After the activities, students reflect on what they have learned. Educational goals (e.g., math, social studies, literacy, social skills) are embedded across classroom and community activities. Some of the benefits that have been attributed to service learning include an increased appreciation for diversity, heightened self-esteem and motivation, access to relevant learning contexts, the development of citizenship skills, an understanding of how to work collaboratively with others, and the establishment of connections to the community (Allen, 2003; Billig, 2000; Briscoe, Pitofshy, Willie, & Regelbrugge, 1996; Eisler, Budin, & Mei, 1994; Fager, 1996; Nelson & McFadden, 1995).

Service learning is increasingly being employed with students with disabilities. As a form of pedagogy, it supports many of the widely accepted tenants of effective curriculum and instruction in secondary special education. For example, it addresses academic, social, vocational, and life skills curriculum content in settings where the skills can be applied (Brill, 1994; Burns, Storey, & Certo, 1999; Everington & Stevenson, 1994; Yoder & Retish, 1994). Because service learning frequently occurs in the community, students receive instruction in inclusive settings with
people who do not have disabilities (Burns et al.). This in turn increases their visibility as contributing members of society (Everington & Stevenson; Kleinert et al., 2004) and expands the notion of “community-based instruction” to include volunteer work (Burns et al; Dymond, 2004). It also provides a vehicle for connecting students to socially significant projects where they can make a difference in their school and community (Gent & Gurecka, 1998; Muscott, 2001). All of these practices have the potential to assist students to generalize skills from school to real-life applications, build competence across skill areas (e.g., social, academic, behavioral, life skills), develop career awareness, and prepare for the transition to adulthood (Brill; Burns et al.; Dymond; Everington & Stevenson; Kleinert et al.; Carty & Hazelcorn, 2001; Muscott; Yoder & Retish).

Descriptions of service learning programs that include high school students with disabilities have profiled segregated and inclusive programs. In segregated programs, service projects are completed solely by students with disabilities. Typically these projects involve students from one particular disability group (e.g., emotional and behavioral disorders, severe disabilities, learning disabilities) and the service project is completed by an entire special education class. Examples of segregated service learning programs are widely available in the literature (see Abernathy & Obenchain, 2001; Everington & Stevenson, 1994; Frey, 2003; Jackson, 1996; Krajewski & Callahan, 1998; Carty & Hazelkorn, 2001; Muscott, 2001).

In inclusive service learning programs, students with disabilities work alongside their peers without disabilities to complete service projects. They may participate in service learning as part of an inclusive class in which they are enrolled (see Gent & Gurecka, 1998; Yoder & Retish, 1994) or as part of an extracurricular school club (see Kleinert et al., 2004). While the instructional goals and type of participation may vary among students, inclusive programs focus on group effort and include all students in planning, implementing, and evaluating the project (Brill, 1994; Gent & Gurecka; Kleinert et al.).

Conceptualizing service learning within an inclusive paradigm appears to be an emerging trend within the field of secondary special education. This is not surprising given the continued movement within the field toward inclusive education and the increasing emphasis placed on access to the general curriculum (Dymond & Orelove, 2001; IDEIA, 2004). Gent and Gurecka (1998) provide a particularly compelling justification for inclusive service learning. They argue that such programs meet the needs of all students because they easily blend academic and functional skills, and promote critical thinking. As a result, it is possible for students with very diverse abilities to actively participate in meaningful ways. For students with disabilities who need community-based instruction, service learning allows them to receive such instruction with their same-age peers within a meaningful context. Furthermore, performing service activities alongside peers without disabilities in the community enables students with disabilities to be seen as competent, equally contributing members of society.

Methods for including students with disabilities in inclusive high school service learning programs (HSSLPs) are not clearly defined or understood. In our review of the ERIC, PsychInfo, and National Service Learning Clearinghouse databases from 1990-2005, we found eight peer reviewed articles that addressed inclusive HSSLPs, only two of which reported empirical data. Although none of these articles specifically investigated methods for including students with disabilities, they do provide some direction for practitioners regarding promising practices. Methods for including students in inclusive HSSLPs consist of matching students’ skills with service activities that they are capable of successfully completing (Yoder & Retish, 1994), pairing students with and without disabilities to carry out projects (Gent & Gurecka, 1998; Kleinert et al., 2004; Yoder & Retish), actively engaging students with disabilities in planning service projects (Kleinert et al.), modifying materials (Gent & Gurecka), and having students with disabilities teach students without disabilities how to perform tasks (Brill, 1994). In inclusive HSSLPs, the Individualized Education Program (IEP) goals and objectives for students with disabilities should be linked to the service learning experiences (Brill; Gent & Gurecka; Kleinert et al.). This enables students to pur-
issue the general curriculum as well as individualized goals.

Barriers to including students with disabilities in inclusive HSSLPS were visibly absent from the literature. Yoder and Retish (1994) identified lack of time for engaging in service learning as one barrier. Students engaged in service learning expressed interest in volunteering for longer periods of time or on a more frequent basis than was possible. Given the relatively few articles addressing inclusive HSSLPS, it is surprising that little information is known about the barriers schools face in including students with disabilities.

Inclusive service learning appears to be a promising practice for assisting students with disabilities to access the general curriculum and address other important curriculum goals. It also incorporates a number of tenants of effective practices for educating students with disabilities. In order to understand how inclusive service learning is an effective pedagogy at the secondary level, more information is needed about the methods for and barriers to including students with disabilities. Hence, the purpose of this study was to explore the perceptions of stakeholders from inclusive HSSLPS about effective methods for including students with disabilities and barriers that limit or prevent their participation.

Method

One focus group was conducted with adult stakeholders in each of five inclusive HSSLPS in the state of Illinois. An “inclusive service learning program” was defined as one in which students with and without disabilities participated alongside each other to complete a service learning project. Students with disabilities were the providers of service, not the recipients or beneficiaries of the service.

Decisions about the inclusion of schools in the study were made collaboratively by the authors based on findings from the telephone interview. In addition to being identified as exemplary, criteria for inclusion in the study included having at least three years of experience implementing an inclusive service learning program. All four schools nominated as exemplary and recognized as leader schools met the criteria and agreed to participate. Two additional schools found to complement the demographics (i.e., geographic location, size, socio-economic status, and ethnicity) of the selected schools were then contacted for interviews. Although both schools met the criteria for participation, one school lacked suf-
ficient people to participate due to recent staff turnover, thus the other school was selected.
We would have included both schools in the study had each agreed to participate.

The five schools selected for participation served grades nine to 12 and had five to 12 (M = 8.6) years of experience including students with disabilities in service learning. These schools were purposefully diverse with regards to geographic location, school size, socio-economic status, and ethnicity (see Table 1). All of the schools included students with mild disabilities. Three schools included students with moderate disabilities and two included students with severe disabilities. One to two individuals coordinated the service learning program at each school. These coordinators simultaneously assumed other responsibilities at the school including teaching (social studies, foreign language, physical education, special education) or guidance counseling.

One focus group was conducted at each school. Each focus group was composed of adult stakeholders who were knowledgeable about the service learning program and its inclusion of students with disabilities. Views from at least three stakeholder groups (e.g., administrators, service learning coordinators, general education teachers, special education teachers, related services personnel, paraprofessionals, parents, and community members) were included in all of the focus groups. Participants were chosen by the service learning coordinator at each school in consultation with the focus group moderator. Two of the focus groups included parents and/or community members while three were composed exclusively of school personnel. Focus groups ranged in size from three to six participants (M = 5) and all participants received a small monetary stipend for participation in the two-hour interview.

Data Collection

The procedures selected for moderating the focus groups adhered to the guidelines provided by Krueger and Casey (2000). One researcher served as the moderator. She asked the pre-identified questions, probed for more information, summarized responses, and ensured all participants had equal opportunity to participate. A second researcher participated as an assistant moderator. She recorded notes on a flip chart and led the post-session
debrieing following data collection. Although a digital voice recorder was utilized to record each session, the flipchart notes allowed participants to see the ideas that had been generated previously and enabled the moderator to summarize the group’s responses prior to moving on to the next question.

Each focus group was held at the participants’ school in a room that was free from distractions. The moderator began each interview by facilitating participant introductions, clarifying the roles of the moderators and participants, explaining the purpose of the focus group, discussing confidentiality and how the results would be used, and reviewing the focus group questions. The moderator and assistant moderator convened following each focus group to discuss, clarify, and summarize the main points of the session.

Five structured questions were asked within each focus group interview. The first three questions gathered data on the participants’ service learning program and their beliefs about the key elements of inclusive HSSLPs (see Dymond, Renzaglia, & Chun, 2007). The fourth question requested participants to describe the methods they found most effective for including students with disabilities in service learning. The final question required them to identify what, if any, barriers they experienced in including students with disabilities in service learning. Findings from these last two questions are the basis for this article.

**Data Analysis**

Data were analyzed in two stages (Patton, 2002). The first stage involved a qualitative analysis. This method was chosen because it allowed a list of specific methods and barriers to emerge from the data, and the use of inductive analysis to determine categories that cut across schools. The second stage involved determining the number of schools that identified each method and barrier. This analysis was performed to clarify the extent to which the methods and barriers were prevalent across schools.

**Coding.** The digital recording of each focus group session was transcribed verbatim. Utilizing a content analysis procedure (Patton, 2002), each transcript was read several times in order to develop a list of codes to describe each method for and barrier to including students with disabilities in service learning. Once the codes were finalized, transcripts were re-read and a code was assigned to each method or barrier. A second researcher independently reviewed all coded data to verify the appropriateness of the assigned codes and the consistency used in applying the codes. Where differences of opinion existed, the two researchers discussed the coding until they arrived at agreement. The final codes are listed as methods in Table 2 and barriers in Table 3.

**Data reduction.** Using an inductive approach, methods across all five schools were examined and grouped into categories. Methods that were similar were included in the same category if they were complementary in meaning and helped to define the category. Each method was assigned to only one category. This process was repeated for the list of barriers. As with the initial coding, a second researcher independently reviewed the codes assigned to each category to confirm their appropriateness. Differences of opinion were discussed between the two researchers until agreement was obtained about the codes included in each category. The final categories are defined in Tables 2 and 3.

Following the qualitative analysis, a frequency count was performed to determine the number of schools that identified each method and barrier. This allowed for comparisons in the magnitude of responses and the level of agreement among schools. All methods and barriers, regardless of the number of participants or schools that identified them, were included in the analysis. We anticipated that the methods and barriers identified by each school might vary due to the nature of the school (i.e., geographic location, size, ethnicity, percent low income, type of students with disabilities served) so we purposefully selected schools that were diverse across these dimensions. The decision to retain all data was made because the primary purpose of the study was to capture the range of practitioner experiences and beliefs about methods and barriers. Deleting ideas mentioned by only one person or school would have diminished our understanding of practices advocated by stakeholders in diverse, inclusive HSSLPs.
Trustworthiness. Guba and Lincoln (1989) indicated that rigorous qualitative analyses use procedures that support “trustworthiness” of the data. In this study, trustworthiness was ensured by a) analyzing data transcribed verbatim from a high quality digital voice recorder, b) using a two-step process to understand the data, and c) verifying interpretations of the data between two researchers.

Results

Data from this study are organized around: a) methods for including students with disabilities in inclusive HSSLPs and b) barriers to
including students with disabilities in inclusive HSSLPs. Tables 2 and 3 provide a list of the methods and barriers that emerged and the number of schools that identified methods and barriers within each category.

Methods for Including Students with Disabilities

Methods clustered within six categories: a) activity selection and structure, b) collaboration, c) expectations, d) encouragement, e) grouping, and f) modifications (see Table 2). Participants provided varying levels of detail regarding the methods they employed. In fact, many initially struggled to identify specific strategies for including students with disabilities. A common remark among participants was that the methods they employed were ones they found to be effective with all students, regardless of whether they had an identified disability.

Activity selection and structure. Participants across all five schools emphasized the importance of selecting appropriate service learning activities for students with disabilities. Activities should be selected that are “at their level” and will enable them to be “successful” and “feel safe” with engaging in the project. Two methods were suggested for ensuring student success. One is to informally assess students to determine activities that match students’ strengths and promote active participation. Understanding students’ skills prevents teachers from assigning students to activities that extend beyond their abilities. A second method is to invite students with disabilities to

### Table 2

**Methods for Including Students with Disabilities in Inclusive HSSLPs**

<table>
<thead>
<tr>
<th>Category</th>
<th>Barriers</th>
<th># of Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity selection and structure</td>
<td>Not enough transportation</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Lack of money</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Too much effort required to coordinate the inclusion</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Lack of administrative support</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Not enough people/staff</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Staff turnover</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Lack of proper equipment (e.g., washroom, chairs) in the community</td>
<td>1</td>
</tr>
<tr>
<td>Teacher attributes and experience</td>
<td>Lack of knowledge about students’ disabilities</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Negative attitudes toward students with disabilities</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Low expectations of students with disabilities</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Lack of experience with students with disabilities</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Need for staff development and training</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Teachers don’t have the patience to work with students with disabilities</td>
<td>1</td>
</tr>
<tr>
<td>Organizational structure</td>
<td>Schedules of students with disabilities are not flexible</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Students with disabilities have a shortened school day</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Too many students with disabilities in service learning classes</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Students with disabilities need to be more visible in the school</td>
<td>1</td>
</tr>
<tr>
<td>Planning</td>
<td>Lack of communication among staff about students with disabilities</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Not enough time to co-plan</td>
<td>2</td>
</tr>
<tr>
<td>Student characteristics</td>
<td>Students with disabilities are afraid of participating in the service activities</td>
<td>2</td>
</tr>
</tbody>
</table>

**Note.** HSSLPs = high school service learning programs; *n* = number of schools contributing methods to each category.
participate in service learning projects initiated and planned by the teacher. As students with disabilities become more comfortable, they can be encouraged to design their own service learning projects.

Participants also spoke about methods for structuring activities to promote the participation of students with diverse abilities. Providing “choices” and “options” was viewed as a key method for encouraging reluctant students to participate and creating student ownership for the service project. Other methods include offering a variety of tasks and incorporating hands-on activities. The more hands-on the activity and the more choices and types of tasks available, the more likely all students will be able to participate in some component of the activity. As one participant commented, when activities are structured this way, “their disabilities aren’t so noticeable.”

Collaboration. All five schools deemed collaboration essential. Discussions across focus groups focused primarily on collaboration among school personnel. To effectively include students with disabilities, general and special education teachers need to meet regularly, collaborate to develop curriculum, share information about each student’s strengths and needs, and provide support to each other. In one school, the special education teacher provided general education teachers with a list of the strengths and weaknesses of each student included in his/her class. This information helps the general educator understand the student’s disability, adaptation requirements, and instructional support needs. Participants at another school discussed student participation in service learning more formally during IEP, transition, and/or 504 plan meetings. During these meetings, the student and his/her team review service learning requirements, determine how the student might benefit from this form of instruction, and identify the supports and accommodations necessary for participation.

Teaching assistants and other support staff are considered essential collaborators in programs that include students with severe disabilities or a large number of students with mild disabilities. These individuals provide instruction to students and help those with wheelchairs move to various locations during activities. One participant noted that there needs to be “support staff specifically geared towards those students” because they need more “one-on-one and hands-on” than other students. Another commented that having sufficient staff “facilitates the inclusion.” In addition to working directly with students with disabilities, participants recommended including support staff in meetings pertaining to student participation in service learning.

Collaboration was also defined as having support from the school faculty for the program. As one participant noted, “I think that you gotta have all the teachers involved and buy into it for it to work.” At another school, faculty buy-in was viewed as having teachers at the school who were flexible about letting students out of classes to participate in service learning. Even though those teachers were not leading the service learning activity as part of their class, they allowed students to participate in service learning as long as they made up the work they missed and maintained good grades.

Expectations. Participants’ expectations for students with disabilities were uniformly high across all schools. Those who spoke about expectations were adamant that teachers have the same expectations for students with and without disabilities, and treat students with disabilities the same way they treat students without disabilities. For one participant, providing equal treatment included allowing students to fail. “Everybody fails at something and a person with a disability has the right to fail just as much as the next person.” Although other participants did not echo this position, it demonstrates the extent to which this individual viewed the importance of providing equitable experiences for all children.

A few participants felt they treated students with disabilities differently from their non-disabled peers. For example, one participant admitted:

I think subconsciously, I’m gonna make it consciously, even a lot of time, we tend to treat those kids a little differently. I don’t know that it has anything to do with service learning, but I think sometimes we may tend to accept some of their behaviors a little more readily for them than we might from some other kids.
Another participant commented that she wasn’t always sure about students’ capabilities and would feel bad if her expectations were too low. Although these types of comments were voiced somewhat reluctantly, they underscore the issue inherent in determining appropriate expectations for students with disabilities.

Two rationales for having high expectations were provided. One rationale emphasized the impact high expectations have on students without disabilities. When teachers have high expectations for students with disabilities and treat them like all other students, students without disabilities are more likely to interact with and accept students with disabilities as equal members of the class. The other, more common, rationale voiced suggests that service learning activities do not limit the participation of any student and, thus, should not impact the expectations one has for students with disabilities. One participant summed this point up succinctly. “There’s no distinction if a kid has a disability or not. It (service learning) crosses every barrier there is. I don’t care what your limitation to learning is.” Another participant was emphatic in denying the need for students with disabilities to have special treatment. She stated, “The LD kids, it’s like, I ain’t given you a break cuz you have a learning disability. Just go and do it. What’s the problem?”

Across schools, participants’ focused on an expectation for active participation in activities. Because choices are available within activities, students are able to self-select out of completing tasks that are difficult for them or accentuate their weaknesses. For example, if a student experiences difficulty with writing, he would likely choose a different part of the service learning activity to complete that allows him to use his strengths. High expectations for participation were not necessarily tied to high expectations to perform at grade level in content area subjects.

**Encouragement.** Participants across four of the schools agreed that it is important for teachers to encourage students with disabilities to participate in service learning activities. They do this by “asking” students to participate, inquiring how they would like to be involved, and negotiating the role they want to assume. One participant explained it this way: We just need to encourage them more. I think some of the kids with needs or disabilities sometimes sit back and don’t want to be involved because they don’t think they can or they don’t think they should, and they don’t want anybody to know.

In three of the schools, participants advocated spending time getting to know students in order to make them feel comfortable with the teacher, the other students, and the activities. Teacher encouragement was viewed as a method to help build students’ confidence.

In addition to encouraging students to participate, students with disabilities also need to be encouraged to assume an active role in decision-making. One service learning coordinator was adamant about demanding student involvement as evidenced by this statement:

> Involve the kids from the get go. Ask their opinions. Seek them out. Ask them. If one thing is repeated more and more than anything else over the last ten years to me is they always say how do you get all these kids to do all these things? And the simple answer is you ask them. Seriously, if you stop and think about it, almost anybody would do anything for you.

When students are encouraged to provide input into the design of the activities, they gain increased ownership for the project and its success. As one participant noted, without this type of ownership, “the service is not going to fly.”

**Grouping.** Participants at four of the schools described strong rationales and strategies for pairing students with and without disabilities to perform service learning. When thinking about the benefits of diverse grouping, one participant commented, “We had a strength here, and a strength here, and a strength here. As a group they’ll work together, but if individually, they had to do all three (tasks), they’d struggle.” Teachers group students so that each person can contribute a different, yet complementary, strength to the group’s project.

Some participants carefully pair students to work together and some allow partners to emerge on their own. At one school, students with disabilities are paired with individuals
who are “more experienced” in service learning than the student with a disability. Experienced students were described as individuals who are “more mature” or “advanced” (e.g., a student taking Advanced Placement courses).

In another school, students with disabilities are paired with students who can serve as “role models.” For example, students with behavior problems are often paired with students who do not have behavior problems.

An alternative strategy to grouping is to have students select their own partners. Participants at one school indicated they do not purposefully group students. They believe that having students work with partners is important and that students need to choose their own partners. When partners do not work well together, the adults ask another student to “help out.” They do not force students to work together. Students always have choice about their partners. In order for this strategy to work, teachers need to be observant and sensitive to student interactions, and be prepared to “step in” when problems arise.

Although participants elaborated on strategies for grouping students with and without disabilities to work together, they also stated that the class as a whole (i.e., the large group) needs to include a normal proportion of students with disabilities. Over-representation of students with disabilities inhibits the effectiveness of the teacher and the ability of all students to adequately learn and participate. If controls are not put on the number of students with disabilities enrolled, it is easy for these classes to become a “dumping ground.”

Modifications. Modifications that facilitate inclusion of students with disabilities in service learning include providing additional instruction, monitoring students with disabilities more frequently than students without disabilities, providing supplementary instruction in the special education classroom (e.g., pre-teaching behavior expectations, providing consequences for misbehavior in the community), and modifying the rules and grading practices. Instructional modifications were only discussed within three schools and no participants provided specific examples (beyond those listed above) of the types of modifications they employ.

Barriers to Including Students with Disabilities

Five categories of barriers emerged. These categories include a) resources, b) teacher attributes and experience, c) organizational structure, d) planning, and e) student characteristics (see Table 3). Although all five schools contributed to the list of barriers, participants at two of the schools indicated that no barriers currently exist to including students with disabilities in service learning. They admitted that barriers might exist if they were asked to serve more students with disabilities, or students with more severe disabilities or behavior problems.

Resources. Participants across all five schools identified resources that were needed to improve the inclusion of students with disabilities. The two primary resource barriers cited were money and transportation. Limited funding for materials needed to complete projects can curtail the number and type of service learning projects available. Funding is also needed for specialized buses to accommodate students who use wheelchairs. Since these students cannot ride the regular school bus, there is an increased cost for an extra bus each time a student with a wheelchair performs service in the community. Lack of transportation for service learning activities that occur after school or on weekends was also cited as a barrier.

One school experienced difficulty finding appropriate equipment in the community. Students with disabilities need accessible washrooms and specialized chairs that may not be available in all community settings. This impacts students’ access to some service learning activities.

Staffing was viewed as another barrier to including students with disabilities. At one school participants commented that students with disabilities would be more successful if the staff had more time to work with them. There needs to be a peer mentor, another service learning student, or a staff person available to provide support when needed. At another school, staff turnover was viewed as a barrier to maintaining the program in general. Position cuts at the school eliminated many teachers who had been implementing service learning within their curriculum. Although pockets of people exist to champion
the program, time is needed to attract and train new teachers to incorporate service learning in their courses.

A concern was articulated about the amount of effort required to coordinate service learning programs and the impact that adding students with disabilities might have on a program. It could be very overwhelming to a service learning coordinator if he or she was expected to include all students with disabilities at once, particularly if that program had not included those students previously. Additional staff support would be necessary to include large numbers of students with disabilities, particularly if the students have severe disabilities.

Finally, lack of administrative support was viewed as problematic (either currently or in the past). Some felt that the administration was not supportive of service learning in general and had difficulty seeing how it “fit” with the general curriculum and overall academic program. This barrier was not specific to including students with disabilities. Others thought their administration was not knowledgeable about the needs of students with disabilities and offered minimal support to advance their participation in the community.

Teacher attributes and experience. Participants from four schools viewed their own lack of knowledge and experience with students with disabilities as a potential barrier to including students with disabilities. Teachers and community members need more information about students’ disabilities, the “problems” associated with the disability, and how to adapt the curriculum to meet student needs. All school faculty need to become more competent in working with students with disabilities.

In addition to lack of training, another barrier is the negative attitudes toward students with disabilities possessed by some adults. At one school, where students with severe disabilities are just beginning to participate in service learning projects, a participant noted, “I don’t think people know what to expect of students who have more moderate to severe disabilities. I think there’s fear out there.” At other schools, participants admitted that some teachers have low expectations for students with disabilities and lack the patience needed to work with them. One general educator/service learning coordinator eloquently commented on the attitude he aspired all teachers to embrace.

It’s a person with a disability. It’s not a disability on a person. We need to think beyond what we think they may or may not be capable of. We don’t allow those barriers to be put in front of the child without a disability.

This participant stressed the need for more adults to “think outside the box” when determining how to include students with disabilities.

Organizational structure. Three barriers emerged related to the organizational structure of the school. First, the schedules of students with disabilities prevent or limit their participation in service learning. Some students are on a shortened school day or leave early to go to work. Others participate in community-based instruction at times that overlap with service learning activities.

Second, classes that offer service learning need to be monitored so they do not become a “dumping ground” for students with disabilities. Over-representation of students with disabilities makes the classroom dynamics difficult to manage. Participants suggested putting a “cap” on the number of students with disabilities in each class so that all students are able to sufficiently benefit from service learning.

Third, students with disabilities need to be more visible throughout the school building and “more integrated into the population.” When students with disabilities are served primarily through self-contained special education classrooms, it is important for their classrooms to be integrated into the general classroom areas rather than placed in a separate part of the building. These students also need to be served in more general education classes in order to facilitate their inclusion in the service learning program and the school.

Planning. Four schools identified planning as a barrier to including students with disabilities. Insufficient time exists for staff to discuss the needs of students with disabilities, collaboratively plan activities, or coordinate activities and staff efforts across the school. For example, several participants voiced con-
cern that they were not always aware of which students in their classes had disabilities. One participant noted, “When I get some of these kids, I don’t know what is wrong. I don’t know that there’s a problem. I don’t know anything about these kids.” Communication breaks down and teachers are not informed of students’ disabilities, IEP objectives, and accommodation needs. In addition, some participants were not sure if all students with disabilities at their school participated in service learning. This was particularly true when the school housed full-time self-contained classrooms.

Student characteristics. Some students with disabilities have low self-esteem and do not want to be placed in a situation where they face potential embarrassment. They lack confidence in their abilities and are fearful of participating in service activities. Participants viewed student characteristics as a barrier at two of the schools. They also acknowledged that the self-esteem and confidence issues faced by students with disabilities are also prevalent among some students without disabilities. These student characteristics, more than the presence of disability, negatively impact students’ willingness and ability to participate in service learning.

Discussion

Findings from this study provide a preliminary examination of the methods for and barriers to including students with disabilities in HSSLPs alongside their peers without disabilities. Methods emerged in the categories of activity selection and structure, collaboration, expectations, encouragement, grouping, and modifications. Barriers clustered around the categories of resources, teacher attributes and experience, organizational structure, planning, and student characteristics. These methods and barriers support and expand on those identified previously in the literature on inclusive HSSLPs.

There are several limitations that should be acknowledged prior to discussing the findings. First, we did not observe the service learning programs at each school, therefore it is unclear the extent to which the methods and barriers identified by each school were actually present. Second, since stakeholders from five schools generated the data for this study, it is possible that the findings are not representative of the range of methods and barriers experienced by all inclusive HSSLPs. Third, school stakeholders (i.e., general educators, special educators, paraprofessionals, principals) were the dominant group present within the focus groups. Additional methods and barriers might have been identified if representation from parents and community members was higher within each focus group. Fourth, the data do not take into consideration the perspectives of students with and without disabilities. Their views may be very different than those of adults. Finally, a limitation of the focus group methodology is that it did not allow participants across schools to interact and comment on the methods and barriers identified by each school. As a result, the number of schools indicating each method and barrier (as reflected in Tables 2 and 3) may underestimate the actual number of schools where the methods and barriers were present.

A Philosophy of Inclusion: The Unspoken Method

Within each school there appeared to be an overall shared commitment for inclusive service learning. Each stakeholder, regardless of his or her role, conveyed the importance of including students with disabilities in service learning and spoke positively about his or her experiences. At each school, there was never an instance of service learning being championed by only a single person. Nor was inclusion an idea that was “owned” or “advocated” exclusively by the special education staff. Participants were united in their belief that all students, regardless of ability, could and should participate in service learning.

While no one specifically discussed the importance of having a philosophy of inclusion, one must wonder whether an unspoken and unacknowledged method for including students with disabilities in service learning is the presence of a group that philosophically supports inclusive education. Participants across schools were able to identify barriers that limit the inclusion of students with disabilities in service learning, but they also spoke openly about changes they would like to see to improve the overall inclusion of students with
disabilities at their school. For example, some participants felt the classrooms for students with disabilities should be located alongside other general education classrooms rather than in a non-classroom wing of the building. Others indicated that students with disabilities should be included in more general education classes. They stated that improving the visibility and inclusion of students with disabilities across the school day would enhance their inclusion in service learning projects because students and teachers would “already know them.”

Barriers to Inclusion or Inclusive Service Learning?

Barriers to inclusive service learning identified by the participants are consistent, in many ways, with barriers to inclusive education cited in the literature. Issues related to resources, staff knowledge and expertise, planning time, and program organization and logistics are widely acknowledged as constraints on the implementation of effective inclusive education (Janney, Snell, Beers, & Raynes, 1995; Mastropieri et al., 2005; Pearman, Huang, & Mellblom, 1997; Pivik, McComas, & Laflamme, 2002; Scruggs & Mastropieri, 1996; Werts, Wolery, Snyder, & Caldwell, 1996). Although two schools indicated that no barriers currently existed to including students with disabilities in service learning, participants were quick to point out that adding more students with disabilities or students with more severe disabilities or behavior problems could be problematic unless additional resources and training were available. They were able to envision events (e.g., reduced funding, changes in administration, teacher attrition) that could create barriers to including students with disabilities in the future.

Given the similarity between barriers identified in this study and those cited in the inclusive education literature, it seems plausible to infer that the barriers may be more characteristic of an inclusive practice as opposed to a phenomena specific to inclusive service learning. We suggest that it is not the educational pedagogy of service learning, per se, that causes or creates the barriers. It is the difficulty with implementing the practice of inclusive education (that transcends curriculum and pedagogy) that creates the barrier. Methods for overcoming barriers to inclusive education may well prove effective in addressing some of the barriers encountered by inclusive HSSLPs. It remains unclear which barriers, if any, are specific to inclusive service learning.

The Goal: Participation vs. Skill Acquisition?

For the schools in this study, inclusion was defined almost synonymously with participation. Implicit in this definition, as articulated through numerous examples, was an emphasis on active engagement and ensuring that all students made a contribution to the service project. Whether the student completed a task in whole or in part, with help or not, did not diminish the value of the participation. In fact, partial participation and collaboration with peers was clearly valued, as evidenced by the many descriptions provided of how teachers grouped students with and without disabilities to complete projects. Participation was a key term reiterated across schools and throughout each interview.

We found the emphasis placed on students’ active participation to be both refreshing and noteworthy. At the same time, we questioned whether the methods discussed for including students with disabilities extended appropriately far enough to ensure their access to the general curriculum and attention to individualized IEP objectives. In previous discussions with the participants (see Dymond et al., 2007), we found strong support for connecting service learning to the curriculum. Participants were adamant that inclusive HSSLPs should link to both the academic curriculum and to a functional life skills curriculum. We were, therefore, intrigued when these same participants failed to mention the connection between service learning and the curriculum as a method for including students with disabilities. Only one school’s participants suggested talking about service learning as part of an IEP, 504 plan, or transition plan, but no mention was made of how decisions were made about the curriculum to be addressed through service learning.

Across focus groups, stakeholders discussed the importance of allowing students to choose activities and to select activities that matched their skills. Yet, it seemed that the focus of the
service learning activity for students with disabilities was more highly focused on participation than it was on learning new skills. Students were channeled into activities that matched their skills and preferences rather than working on new skills or applying emerging skills. If students perceived an activity as too difficult, they were allowed to self-select out of the activity and choose a different one. The role of the teacher in directing student learning and teaching new skills was visibly absent from the list of methods for including students with disabilities. One might argue that this is appropriate since an important component of service learning is student participation in designing service projects. In our opinion, if service learning is to be linked to the curriculum, there needs to be a careful balance between allowing students to assume ownership and responsibility for projects and teacher oversight regarding the acquisition and application of new skills. Connections need to be made that illustrate not only that students with disabilities can be successfully included (i.e., participate), but that they can also achieve and learn as a result. It was not clear from the focus groups whether the intent of service learning for students with disabilities was to assist them in learning and practicing new skills, or whether it was to allow them to apply skills they had already mastered to new situations. We believe there should be a balance.

Are High Expectations Enough?

A truly admirable trait of participants was the emphasis they placed on having high expectations for students with disabilities. They considered students with disabilities capable. In addition, they believed that the structure of service learning activities (e.g., hands-on learning, activity-based projects, student choice, variety of tasks) was what allowed students with very diverse abilities to participate. Service learning, as a form of pedagogy, eliminated potential barriers to including students with disabilities, thus increasing teachers’ expectations for students to be successful.

In essence, participants viewed service learning as a form of universal design for learning (UDL). The premise of UDL is that the curriculum should be designed with the needs of all students in mind from the start. If the curriculum is designed appropriately, the need for modifications and adaptations should be greatly diminished or non-existent (CEC, 1998; Hitchcock, Meyer, Rose, & Jackson, 2002). In the present study, many participants initially expressed difficulty with identifying methods for including students with disabilities in service learning. They indicated that the methods they used were no different than the ones they used with students without disabilities. Some even stated that service learning was “the method” for including students with disabilities alongside their peers. Perhaps the service learning experiences at these schools embodied the principles of UDL such that specialized adaptations and modifications were rarely necessary.

Although numerous methods for including students with disabilities in service learning were ultimately identified, we were surprised to find limited mention of teaching methods. It is the absence of these methods that brings to question whether the expectations participants had for students with disabilities were sufficiently high. That is, did the participants have adequate knowledge and expertise in working with students with disabilities to clearly identify reasonable goals and effective teaching strategies for helping students learn? The nature of service learning may indeed make it a UDL strategy, but UDL does not preclude the need for teaching. UDL should make the curriculum accessible. An accessible curriculum is not equivalent to an easier or less demanding curriculum (CEC, 1998; Orkwis, 1999; Rose & Meyer, 2000).

Participants themselves seemed unclear about how their expectations for students with disabilities could or should be any different than they would be for students without disabilities. While they expressed support for holding students with disabilities to the same high standards as students without disabilities, they were not always sure what was reasonable or what the students were truly capable of accomplishing. This was evident by some of the barriers they identified, including lack of knowledge about students’ disabilities and accommodation requirements, a need for more experience and training in working with students with disabilities, and a desire for better communication and collaboration between
general and special educators. If information about the needs of students with disabilities is not regularly shared and discussed, it becomes less surprising that strategies for teaching students with disabilities failed to emerge strongly in our list of methods.

Implications for Research and Practice

The methods and barriers identified by participants in this study offer practical direction for high school personnel seeking to include students with disabilities in service learning. Their words and examples offer insights that can only be gained from their experiences with implementing an inclusive program. Based on the collective findings across schools, we believe there are several points that warrant additional consideration by school and community stakeholders.

- An inclusive HSSLP is bound together by a group of adult stakeholders from diverse disciplines that embody a philosophy of inclusion. The philosophy of this group needs to extend beyond the day-to-day operation of the service learning program to include goals toward increasing the overall inclusiveness of the school itself. The presence of an inclusive school philosophy will support and enhance implementation of an inclusive HSSLP.
- All students, regardless of their ability, are capable of participating in service learning. “Participation” is important and each student with a disability needs to be actively engaged, at his or her own level, to the extent they are capable.
- There is a need to move beyond defining inclusion as participation. Teachers and other adults who support students in learning need to create a balance between allowing students to apply skills they have already mastered and assisting them to learn new skills and practice emerging ones. Although service learning can be conceptualized as a UDL strategy, it does not preclude the need for specialized instructional strategies.
- Greater attention needs to be devoted to ensuring that methods for including students with disabilities in service learning take into consideration the curriculum needs of the students. IEP objectives should be infused into service learning projects where appropriate.
- In light of IDEIA (2004) and the No Child Left Behind Act (NCLB, 2002) measurable data must be gathered on the performance outcomes of students with and without disabilities who participate in service learning. These outcomes need to address curriculum linked to the state standards as well as performance on IEP objectives that address other curriculum areas such as life skills.
- School and community members need additional training in how to teach students with disabilities. They need to be informed of the unique needs of the students with disabilities for whom they are responsible. Time for teachers to collaborate and share information is essential to consistently meet the needs of students with disabilities across high school classes.

Additional research on inclusive HSSLPs should focus on validating the methods and barriers identified through this study. This information could provide useful information about the extent to which the findings from this study are representative of other inclusive HSSLPs and may help to extend the list of methods and barriers identified. Research should also seek to identify effective methods for overcoming barriers that prevent or limit the participation of students with disabilities in HSSLPs.

A more thorough examination of the methods used to include students with disabilities in HSSLPs is also needed. Observations of inclusive HSSLPs should be conducted to determine the extent to which the practices advocated by schools are present and result in desired student outcomes. The impact of students’ disability level (i.e., mild, moderate, severe), teacher to student ratio, general education teacher experience in working with students with disabilities, and role of the special education teacher should also be investigated in relationship to methods employed. Finally, we believe there is a need to define effective methods for linking the general curriculum and IEP to service learning activities. Additional work is needed to investigate how students with disabilities can address challenging curriculum content within HSSLPs and the
supports school personnel need to help students reach their potential.

References


Orkwis, R. (1999). *Curriculum access and universal design for learning*. ERIC/OSEP Digest #E586. Re-
ston, VA: ERIC Clearinghouse on Disabilities and Gifted Education. ED 437767


Received: 14 June 2006
Initial Acceptance: 28 July 2006
Final Acceptance: 10 October 2006
Using Pivotal Response Training with Peers in Special Education to Facilitate Play in Two Children with Autism

Laura R. Kuhn, Amy E. Bodkin, Sandra D. Devlin and R. Anthony Doggett
Mississippi State University

Abstract: This study evaluated the ability of peers in special education to implement pivotal response training (PRT) with two students with autism in order to increase social interactions. Peers were taught the strategies using modeling, role-playing, and feedback. After training, peers implemented PRT strategies with the children with autism. Picture prompts were provided to assist peers in recalling the strategies, but were completely faded until peers could implement the procedures with no instruction from observers. Increases in opportunities to respond were observed, as well as responses and initiations of social interaction by the children with autism.

In his original description of autism in 1943, Leo Kanner described problems related to the development of social relationships as inherent in the disorder (McConnell, 2002). Since this finding in 1943, researchers have thoroughly explored this characteristic, suggesting multiple forms of interventions to enhance social interactions among children with autism.

A significant body of research has focused on peer-mediated interventions (Goldstein, Kacamarek, Pennington, & Shafer, 1992; Stahmer, 1999; Goldstein & Ferrell, 1987; Garrison-Harrell, Kamps, & Kravits, 1997). Peer-mediated interventions involve teaching peers specific strategies to direct, respond, and reinforce children with autism (Goldstein et al., 1992). These strategies enhance the communicative interaction among children with autism, while minimizing the need for adult implementation and prompting. Additionally, the peers learn appropriate social behavior while assisting other peers in developing a communicative repertoire. However, many peer-mediated interventions include specific scripts with limited toys or activities, which make generalization of these skills to new settings difficult.

A specific peer-mediated strategy developed by Koegel, Schreibman, Good, Cerniglia, Murphy, and Koegel (1989) has been effective in increasing play behaviors in children with autism (Pierce & Schreibman, 1995; Thorp, Stahmer, & Schreibman, 1995). Pivotal response training provides a more naturalistic approach to peer-mediated intervention (McConnell, 2002). This strategy does not include specific scripts with limited toys or activities. Rather, it promotes a variation of peer prompts to elicit a larger range of responses from children with autism, thus promoting generalization and maintenance of interactions. Children with autism often engage in repetitive behaviors with toys rather than the toy’s common uses (Terpstra, Higgins, & Pierce, 2002), but with the implementation of PRT children possess little opportunity to isolate themselves and engage in repetitive behaviors. Furthermore, initiating play is a behavior not often observed among these children and research has demonstrated that PRT increases initiating behaviors (Pierce, 1993).

Pierce and Schreibman (1995) suggest that PRT is effective in the enhancement of social interactions among children with autism when implemented in a school setting by typical peers. However, without an intervention in place with adult supervision, typical peers are most likely to select other typical peers as playmates (Goldstein et al., 1992). Furthermore, due to the need for a continuum of
placements for students with disabilities, some children with autism are included in a typical classroom for part of the day and spend the remainder of the day in a special education setting, while others may spend the bulk of the day in a special education classroom.

The purpose of this study was to evaluate the ability of peers in special education to implement PRT in the special education setting. Across-the-day interventions implemented by typical peers are promising (Strain & Hoyson, 2000). Thus, if PRT is implemented in both the regular and special education classrooms, the student(s) with autism will have opportunities to engage in social interactions in both classes throughout the entire day.

Method

Participants

Participants were Colin, an 8-year-old Caucasian male, diagnosed with autism, and Wilson, a 7-year-old Caucasian male diagnosed with autism, and the treatment agents: five peers in special education (two in group one, three in group two). As pre-determined by the Battelle Developmental Inventory (BDI), Colin obtained a total standard score of 65 on the communication domain, indicating deficits in both receptive and expressive language skills. These results were obtained when Colin was age 3 years, 4 months. More current test results were unavailable. Colin’s educational placement was the special education classroom for the majority of the school day.

As determined by Project Memphis, a criterion-referenced instrument that assesses a child’s level of development in several areas including language, Wilson’s expressive language skills were the equivalent of a child of 14 months when in fact he was at the age of four. On the BDI, Wilson obtained a standard score of 65 on the communication domain, equivalent to a child aged 15 months. More current test results were unavailable. Wilson also attended special education classes all day.

Of the peers chosen to participate in the study, one peer had an educational diagnosis of mild mental retardation, three had diagnoses of specific learning disabilities, and one had a diagnosis of developmentally delayed (see Table 1). Four of the peers chosen attended the same special education class as the two children with autism. Three spent the bulk of the day in the setting, while one peer attended only morning classes in the same special education classroom.

The research took place in an empty classroom in the children’s school in a rural southeastern town. The special education teacher reported that the two students with autism engage in some self-stimulation and repetitive behaviors if not under direct supervision, but engage in little to no social interactions unless prompted by the teacher or other peers.

Materials

Training materials included a variety of toys with which a small group of children could play. Toys included Legos®, cars and trucks, airplanes, blocks, and dinosaurs. These toys were used during baseline and treatment sessions. Six picture prompts were used to teach peers the strategies. Rewards (i.e., sticker chart and candy) were used when peers were cooperative in learning the strategies and successful at implementing the strategies during treatment. A video camera was used to tape all sessions.

Dependent Measures

Interaction opportunities. Opportunities to interact, or peer prompts, were provided by
the trained peers during the sessions. Number of prompts provided were observed and recorded.

Responses. The target children’s responses to peer prompts were observed and recorded. A response was defined as a verbal, gestural, or physical indication that the child understood and/or answered the peer (e.g., answered a peer’s question, made eye contact when prompted by peer, nodded to answer a peer’s question, etc.).

Rate of responses to prompts. Rate of responses to prompts was defined as the number of responses divided by the number of prompts presented.

Initiations. Initiations were defined as beginning a conversation with a peer without a prompt, or approaching a peer to play with a peer without a prompt (e.g., handing a peer a toy, helping a peer with an activity, etc.).

Data Collection and Experimental Design

Data collection was completed individually for Wilson and Colin by reviewing video-taped sessions. Protocols included opportunities to record target children behaviors (verbal and physical responses, initiations) and whether or not prompts were provided by peers.

A multiple baseline design across peer groups was implemented. This design was used to control for reactivity, such that target children’s behavior did not change as a result of an increased number of play sessions during baseline. Additionally, differences in behavior among peer groups can be analyzed using this design.

Data Collectors

Two investigators were present at all sessions. Both were graduate students supervised by a faculty member. The faculty member reviewed all video-taped sessions for inter-rater agreement. All investigators were trained in pivotal response training, data collection procedures, and procedures for collecting treatment integrity and inter-rater agreement.

Inter-rater Agreement and Treatment Integrity

Inter-rater agreement was calculated for 100% of the intervals. Reliability was calculated by percent of agreement on each event (total number of agreements divided by total number of agreements plus disagreements). Video-tapes of sessions were reviewed by all investigators for reliability. Percentage agreement for all intervals of each behavior was 92%. Treatment integrity was assessed using a checklist of each step in the treatment (e.g., prompts were provided by observers, prompts were faded, reinforcement was provided by observers contingent upon each peer prompt). Treatment integrity was assessed on 33% of the sessions by reviewing the video-tapes. Treatment was implemented with 98% integrity.

Procedure

The pivotal response techniques that were implemented by peers of children with autism in the special education classroom were derived and defined from the sets of procedures developed by Pierce and Schreibman (1995) and Koegel et al. (1989). The strategies were modified to facilitate comprehension by all students in the study. Prior to training, peers to be included in the study were chosen based on functioning level and compliance.

During baseline, all toys were placed in the middle of an empty classroom in the children’s school. Several different rooms were used, dependent upon the school’s schedule of activities. The rooms did not have desks; thus play space was blocked off in the center of the rooms with cones or with a large rug. Students (two children with autism and groups of two or three peers) were told to play with the toys. Other than the boundaries of the play space, no other instructions or prompts were delivered during baseline. Baseline sessions lasted for ten minutes. At the end of the probe, students were instructed to help put the toys away before they returned to class.

Peer Training

For the next several weeks, peers of the children with autism participated in 20-minute intensive training sessions, two to three days per week. Training ended when observers noted mastery of strategies among the children, or demonstration of skills correctly 80% of time. The following behaviors and modified
definitions were selected by the authors from Pierce and Schreibman (1995) to teach the peers to implement:

1. *Paying attention.* Ensure that the target child is attending before delivering a prompt (i.e., “Wilson, look at me.”).

2. *Child’s choice.* Offer an option of different activities to the child in order to maintain his interest (i.e., “Would you like to play with the airplane or the dinosaur?”).

3. *Reinforce attempts.* Verbally reinforce the child after attempts at play or social interaction (i.e., “I like the way you’re playing with that car”).

4. *Extend conversation.* Ask questions or talk about topics related to play (i.e., “Do you have Legos® at home?”).

5. *Turn taking.* Model appropriate play and then offer the child a turn (i.e., “This is how you play with the car. Now, it’s your turn.”).

6. *Narrative play.* Provide descriptions of play actions (i.e., “I’m flying this airplane to the airport.”).

The observer(s) held a picture prompt in front of the peers demonstrating each action prior to modeling the behavior. After the peers observed the prompt and the behavior, they practiced. Feedback was provided by the observers until students demonstrated the behavior correctly. They role-played with each other and took turns playing the peer who was to initiate an interaction with the child with autism. During each training session, strategies were reviewed until the peers could look at the prompt and explain what he was supposed to do. Training lasted for eight 20-minute sessions. One peer moved to a different school and was replaced with another peer in Group A. Thus, Peer 1 of Group A received twice the training that Peer 2 and the peers in Group B received.

**Implementation**

Peers then began to generalize strategies to a play setting for treatment implementation. As in baseline, the group was told to play together with the same toys. Observers prompted peers with the picture prompts from training when needed. Ten prompts were delivered during the first session. Then prompts were gradually faded until peers could implement strategies independently by the final treatment sessions. Contingent upon each occurrence in which a peer engaged in an interaction and/or delivered a prompt to a child with autism, he received a sticker on a chart. At the end of the session peers received a prize for earning ten stickers, which is an average of one interaction per minute. Treatment steps were identical for group two, except there were three peers in Group B instead of two. As in baseline, the sessions were ten minutes in length and were videotaped.

**Results**

Results of the study indicate improved social interaction for target students and peers. Positive changes were noted for number of opportunities for interactions, responses to peer prompts, and initiations of conversation and play.

Results of the number of peer prompts, or interaction opportunities, presented to Wilson and Colin during baseline and treatment with Groups 1 and 2 are presented in Figure 1. For Wilson, opportunities to interact occurred an average of less than one time per session during baseline with Group A. During treatment, peers offered prompts for social interactions an average of 16 times per session. Group B offered an average of less than one opportunity for interaction per session during baseline, even though baseline was extended for Group B. During treatment, the group increased prompts to approximately four per session. Opportunities to interact, or peer prompts, were exhibited to Colin an average of two to three times per session in baseline and 18 times during treatment with Group A. Group B offered approximately two prompts per session in baseline, and increased prompts to over three per session during treatment.

Results of Wilson’s and Colin’s responses to peer prompts are exhibited in Figure 2. With Group A, Wilson responded to peers only once during baseline. During treatment, Wilson responded an average of 13 times per session. Colin responded to prompts from Group A less than once per session during baseline and over 13 times per session during treatment. He responded to prompts from
Group B between one and two times per session during baseline, and two to three times during treatment.

Wilson’s and Colin’s rates of responses to prompts appear in Figure 3. Wilson responded to peers an average of 20% of the
time prompts were presented during baseline with Group A. The rest of the prompts were ignored by Wilson. During treatment, Wilson responded to prompts an average of 84.16% of the time prompts were presented. Colin responded to prompts 18.7% of the time they were presented during baseline with Group A, and 73.8% of the time during treatment. Dur-
ing play sessions with Group B, Colin responded to 41.3% of the prompts during baseline and 70% during treatment. Initiations of interactions exhibited by Wilson and Colin are presented in Table 2. Wilson exhibited only two total initiations across

<table>
<thead>
<tr>
<th>Wilson</th>
<th>Colin</th>
</tr>
</thead>
</table>

Figure 3. Total number of responses.
five sessions during baseline of Group A. During treatment, he exhibited a total of five initiations across only three sessions. With Group B, an increase of initiations was not exhibited. During baseline, Wilson initiated an interaction only once across seven sessions. He did not initiate play at all during the three treatment sessions. Colin initiated only one interaction during baseline of Group A, and increased to eight initiations during treatment. Colin displayed an increase in initiations after PRT implementation of Group B by an average of one initiation more per session. During baseline, Colin initiated interactions an average of two times per session. During treatment, he exhibited an average of 3.25 initiations per session.

Discussion

Results indicate that some peers with disabilities can successfully implement pivotal response training with children with autism. Particularly with Group A, consisting of one peer diagnosed with a specific learning disability and one with mild mental retardation, social interactions increased among target children and peers. The teacher described Group B peers as lower functioning and less cooperative than Group A peers. This factor may contribute to the difference in results between Groups 1 and 2. Wilson experienced more significant gains with Group B than did Colin. This finding may be explained by the difference between functioning levels of Wilson and Colin. Colin was described as more sociable and higher functioning than Wilson, possibly higher functioning than a couple of the peers in Group B. Thus, one explanation for Colin’s lack of significant gains with Group B is that he possessed more social skills initially than one or two of the peers in Group B. Another explanation may be that Group B contained one more peer than did Group A. Perhaps the numbers of peers in the groups influenced the social gains of the target children. Future research should examine the differences in social interactions contingent upon peer group size.

A reason for the increases in rates of responding may be attributed to the fact that peers were taught to use different levels of prompts: verbal, gestural, and physical. Thus, if a target child did not respond to an opportunity during baseline, the peer ceased to try to interact. However, during treatment if the target child did not respond to a verbal prompt the peer continued to prompt him by repeating the prompt, using a gesture, or physically helping the target child to respond.

These findings indicate that peers with disabilities can be successful at implementation of pivotal response training. Thus, children with autism who attend both regular and special education classes can receive the training across a school day. Perhaps lower functioning peers selected to implement PRT need more intensive training and more programming for generalization from training setting to play setting. Perhaps some peers would benefit from more learning trials during the training of steps for implementation. Research related to the different methods of training for peers with different disabilities would contribute to present PRT research so that practitioners may individualize peer training sessions.

After training implementation was terminated, the peers were observed in their classroom and continued to implement PRT with the children with autism. A limitation of this study is that more generalization data was not collected. Thus, the long-term effects of PRT are not available. Future research should evaluate the effects of PRT over time.

Teacher training of PRT strategies may benefit the peers and children with autism in that booster sessions could be conducted to enhance the generalization and maintenance of play and social skills. Peers and children with autism both benefited from PRT in that they

---

### TABLE 2

<table>
<thead>
<tr>
<th>Child</th>
<th>Average initiations per session</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>BL</strong></td>
</tr>
<tr>
<td>Wilson</td>
<td>0.4</td>
</tr>
<tr>
<td>Colin</td>
<td>0.2</td>
</tr>
</tbody>
</table>

1 Baseline  
2 Treatment
learned to interact with others in order to enhance play and social skills.

References


Received: 14 June 2006
Initial Acceptance: 25 August 2006
Final Acceptance: 15 December 2006
Effects of Perspective Sentences in Social Stories™ on Improving the Adaptive Behaviors of Students with Autism Spectrum Disorders and Related Disabilities

Shingo Okada, Yoshihisa Ohtake, and Masafumi Yanagihara
University of Okayama

Abstract: This study examined the effects of adding perspective sentences to Social Stories™ on improving the adaptive behaviors of students with autism spectrum disorders (ASD) and related disabilities. In Study 1, two students with ASD read two different types of Social Stories: Social Story without perspective sentences (SS without PS) and Social Story with perspective sentences (SS with PS). ABC or ABCA designs were used, with an SS without PS presented in the B phase and an SS with PS presented in the C phase. A visual inspection revealed that Social Stories were likely to be effective in reducing inappropriate behaviors even without perspective sentences. In addition, adding perspective sentences appeared to have no impact on further improving the target behaviors. In Study 2, a perspective sentence was added, characterized as specific, valuable, and contingent to a Social Story in the SS with PS condition. An AA’BA’CA’ design was utilized, with a permanent visual step poster in the A’ phase, an SS without PS in the B phase, and an SS with PS in the C phase for a student diagnosed with attention deficit hyperactivity disorder. A visual inspection revealed that adding a perspective sentence to a Social Story contributed to further improvement of the target behavior. Based on these findings component and parametric analyses on Social Stories are recommended in future research.

Social Stories™ is a highly appealing strategy for improving the adaptive behaviors of students with autism spectrum disorders (ASD, Sansosti, Powell-Smith, & Kincaid, 2004). Social Stories use an individualized written short story with illustrations to help individuals understand social situations where they often have difficulty due to failure to understand or misunderstanding important social cues (Gray, 2004).

The underlying belief is that many problems exhibited by students with ASD in social situations may be caused by their deficits in reading the social script or others’ thoughts and feelings that are embedded in a given social situation. Thus, if the situations are described in ways that they can understand, their problem behaviors are believed to decrease and their adaptive behaviors will increase (Myles, Trautman, & Schelvan, 2004; Sansosti et al., 2004). In other words, Social Stories are believed to serve as an interpreting bridge for students with ASD and related disabilities, delineating how people behave and people think, and what social cues should be attended to social situations where they frequently have had or are likely to have (Gray, 2004).

To serve this interpreting function, a Social Story may include six types of sentences: descriptive, perspective, affirmative, directive, control, and cooperative (Gray, 2004). Briefly, descriptive sentences provide information about social rules governing the target situation and objective facts or events occurring there. Perspective sentences describe others’ thoughts or feelings associated with the target situation.
Affirmative sentences emphasize a value underlying a particular fact. Directive sentences provide information about how to behave in the target situation. Control sentences consist of a description developed by the student to help retrieve important information in the target situation. And finally, cooperative sentences describe who will help the individual and how to succeed in the target situation.

In brief, Social Stories focus on describing social situations in which a target behavior occurs, but not on directing how to behave. This is the essence that distinguishes Social Stories from other strategies such as direct instruction, visual cue card, or role playing. Therefore, descriptive sentences, perspective sentences, or other sentences describing social situations should be predominantly used in a Social Story (Gray, 2004).

As the number of practitioners using Social Stories has increased, researchers have been prompted to determine if this strategy is truly effective. For example, Kuttler, Myles, and Carlson (1999) successfully applied a Social Story intervention to eliminate inappropriate vocalization and dropping to the floor by a child with ASD. In this study, an ABAB design was utilized to demonstrate the functional relationship between the Social Story intervention and improvement in the target behavior. Similarly, Hagiwara and Myles (1999), employing a multiple baseline across settings, demonstrated the effectiveness of a multimedia Social Story intervention for three children with ASD in terms of improving hand-washing and on-task behaviors. Further, employing an ABAB design, Lorimer, Simpson, Myles, and Ganz (2002) presented empirical evidence showing that a Social Story itself was responsible for reducing vocalization, which interrupted adult conversations and was followed by tantrum, exhibited by a child with ASD.

In yet another study, using a multiple baseline across subjects design, Scattone, Wilczynski, Edwards, and Rabian (2002) demonstrated that Social Stories themselves contributed to decreasing chair tipping, staring girls, and shouting by two children and an adolescent with ASD. Finally, using an ABAB design, Bledsoe, Myles, and Simpson (2003) showed that a Social Story tailored for an adolescent who exhibited eating-related behaviors appeared to be responsible for reducing these problem behaviors.

More recently, research has started addressing which components of Social Stories are important for changing target behaviors. For example, Knoch and Mirenda (2003) used an ACABA design, with a children’s storybook in the C phase and a Social Story in the B phase, to determine whether the content of Social Stories contributed improved social behaviors or increased adult attention following reading a Social Story with adults. Results suggested that the content of the story, rather than increased adult attention, contributed to improving children’s adaptive behaviors.

Together, previous studies have revealed that Social Stories themselves are effective in improving various types of adaptive behaviors of individuals with ASD. However, only one study has thoroughly examined which components of a Social Story intervention are responsible for improving adaptive behaviors. That is, no studies have addressed how each type of sentences (e.g., descriptive, perspective, affirmative, directive) contributes to the improvement of adaptive behaviors, or whether or not all components of Social Stories are necessary to achieve the goal.

This study focused on the contribution of perspective sentences. Typically, descriptive sentences are predominantly used in a Social Story to describe what happens in the given situation, when and how it happens, and why it happens. In contrast, very few sentences are used to describe the perspectives of others. Therefore, it is unknown, for example, if adding a few sentences to a Social Story to describe the thoughts or feelings of others contribute to reduce problem behaviors or increase desirable behaviors in individuals with ASD or related disabilities.

The following two research questions were developed for this study:

(a) Is a Social Story effective in improving adaptive behaviors even though the story does not include any perspective sentences?

(b) Does a perspective sentence contribute to improving adaptive behaviors?
Study 1

Method

Participants

Two students, both of whom were enrolled in a same special school for students with cognitive disabilities, participated in Study 1.

Taro. Taro was a 12-year-old boy with moderate mental retardation. Although he had no referrals to a licensed pediatrician about a diagnosis of autism, his score on the Childhood Autism Rating Scale (CARS) administered by the primary investigator, was 30.5, indicating a mild to moderate level of autism.

According to his main special education teacher, Taro usually engaged in putting miniature cars in a line and singing a favorite phrase of a commercial song during free time. Although Taro made eye contact and initiated interactions with teachers, his teacher described that he always used the same phrases in a non-reciprocal manner. He used a verbal mode of communication to request and reject objects or social interactions.

According to his teacher, his reading and writing levels were equivalent to first grade. However, he rarely utilized a daily schedule with written words, specifically developed to help him move to the next activity smoothly and independently. Social Stories had been used to reduce his aggressive behaviors and to stay calm in an auditorium when this study commenced. His teacher reported that his problem behaviors did not occur when this strategy was implemented.

Kenji. Kenji was a 13-year-old boy with autism and moderate mental retardation. According to a Japanese version of the Adaptive Maturity Scale (Asahide-gakuen-kyoiku-kenkyu-sho & Nippon-shinri-tekisei-kenkyu-sho, 1980), the level of his adaptive behavior was equivalent to 7 years old. According to his former teacher’s records, he often had trouble with his peers because he did not know how to respond to their jokes. When he was not assigned a specific task, he tended to engage in repetitive behaviors such as hand-flapping and shoulder-patting. His main special education teacher noted that he sometimes talked about his favorite topics such as local cable TV or sign language. According to his teacher, his reading level was equivalent to the fourth grade. He did not use his personal schedule cards to regulate his behaviors. He took risperidone and fluvoxamine when this study was conducted.

Settings

Observations of the two participants took place in each of the students’ classroom. Both classrooms were physically structured so as to provide an individual work area, a group work area, and a meeting area. Each classroom had two special education teachers, who were in charge of five to six students.

Taro. The observational setting for Taro was an area surrounded by shelves on two sides and a wall and a closet for dressing on each of the remaining two sides. In the area, six desks with chairs for the students were arranged in a line. On the front wall, a visual reminder was posted to notify the “chair of the day.” During the morning meeting time, the chair of the day stood in front of the classmates asked them to tell the date, the day of the week, the weather, the schedule, and the lunch menu. The remaining five students sat in their chairs and responded to the directions or questions made by the chair. One of the teachers was close to the chair to provide necessary support. The other teacher sat behind the remaining students and helped them participate in the meeting.

Kenji. Kenji was observed during breaks when sitting in a sofa along a wall of his classroom. The sofa was 6 feet wide, so if one student lay down, there was no space left for other students to sit. During the break, the remaining five students typically engaged in independent work, changing clothes (They had two types of clothes; for commuting and for studying) and free play. The two teachers in the classroom rarely interacted with students, but provided support necessary for students to complete their own tasks.

Target Behaviors

The primary investigator contacted former and current teachers of the participating students to identify the behaviors about which they were the most concerned. After
identifying several important behaviors, the investigator conducted direct observation to determine which behavior occurred most frequently among the identified behaviors, and this, in turn, was selected as a target behavior for the present study.

**Taro.** For Taro, persistent and aggressive verbal behaviors were selected as a target behavior. A functional assessment revealed that these behaviors were related to his eagerness to be in the chair on Fridays. In his classroom, the chair of the day was rotated among the six students the five school days, Monday through Friday. Because the number of the students was not five but six, he was not allowed to be the chair every Friday. Throughout the days of the week when he was not allowed to be in the chair on Friday, his persistent and aggressive verbal behaviors dramatically increased, especially before and during the morning meeting. For example, he removed the picture of the classmate that was put up to indicate the chair of Friday, instead putting his picture up. In addition, he repeatedly said to the classmate who was Friday’s chair, “I’ll never make you the chair;” “You should be in the chair (the days other than Friday).” Sometimes, this verbal behavior escalated, culminating in calling the classmate’s name out loud and repeatedly saying, “You should not come to school,” or hitting the classmate.

Preventing aggressive verbal behaviors related to the chair on Friday was deemed effective in reducing hitting. Therefore, any of the following behaviors were targeted to prevent the escalated behaviors:

- utterances related to his eagerness to be in the chair on Friday (e.g., “I will be in the Friday’s chair,” “I will do it, I will do it, I will do it….”).
- utterances related to negative attitudes toward the classmate who was the chair of Friday (e.g., “[student’s name] is Boo [Boo represents a sound of buzzer, meaning incorrect],” “I will never make you the chair,” “Get out of here”).

**Kenji.** For Kenji, sitting neatly on a sofa was selected as a target behavior. He typically spent his free time sitting on a sofa. However, he tended to put his leg up on the sofa, to lie down there, or shake the sofa hard, blocking his classmates from sitting there. Although his teacher was not seriously concerned about this behavior, his mother had placed a high priority on working on changing this behavior.

His target behavior was recorded as occurring when one or more of the following behaviors were observed:

- placing his shoulder below the top line of the backrest on the sofa.
- placing either leg on the sofa.
- exhibiting repetitive behaviors such as locking or hand-flapping.

**Materials**

Two types of Social Stories were developed for each participant. One was a Social Story that did not include perspective sentences (hereafter referred to as SS without PS); the other was a Social Story that included perspective sentences (hereafter referred to as SS with PS). Gray’s Social Story guidelines do not eliminate the inclusion of the perspective of the individual from the concept of perspective sentences (Gray, 2004). However, Gray as well as the literature has emphasized the importance of understanding of perspectives of others. This study, therefore, used the term “perspective sentences” in ways that meant the thoughts and feelings of “others.”

Specifically, the perspective sentence included in the SS with PS for Taro was “When everybody complies with the turn, everybody feels good because everybody can be fairly in the chair.” For Kenji the statement “So many people in the hotel thought I am cool. Many people around me watched me do something and think I am cool” was included in the SS with PS. Both Social Stories were developed according to the guidelines proposed by Gray (2004), which includes but are not limited to (a) use of positive expressions, (b) a ratio of 2:1 or more between sentences describing social situations and sentences directing how to behave, (c) use of the terms “usually” and “about” to describe the target social situation as accurately as possible, and (d) delineating of the target social situation according to the functional assessment results. The text of the Social Story used for each participant is included in the Table 1.

For Taro, the SS without PS consisted of six panels, and the SS with PS consisted of seven panels. Each page included two panels; there-
fore, one Social Story consisted of three or four pages. One or two sentences and one illustration were included in one panel. For Kenji, all texts in both types of stories were printed on one page, with three illustrations exhibiting a point of “cool sitting” for each.

The story for Taro was written by the primary investigator and modified based on feedback from his teachers and the second author, whereas the story for Kenji was written by one of his teachers and modified based on feedback from the primary investigator and the second author. The teachers confirmed that the complexity and length of the stories were appropriate for the two students.

The text and illustrations of the Social Story were printed on A4 white paper, which was later laminated and bound by a metal ring on the upper left-hand side. The text, developed by PowerPoint 2002™ for Taro and by Ichitaro 2005™ for Kenji, was placed on the upper part of each panel. In the illustrations, icons were developed by Hanako 2005™ and digital photographs were retrieved from free internet sites, with some modifications, using Photoshop 6.0™. The illustrations were placed on the lower part of each panel for Taro and of a page for Kenji.

**Data Collection**

**Taro.** For Taro, Voice Trek™, an integrated circuit (IC) recorder, was utilized to record his persistent and aggressive verbal behaviors. The recorder was set by his teachers in a closet, which was invisible to the student but allowed the recorder to catch conversations effectively. The recorder was activated soon after Taro entered his classroom each morning. A 6-minute block was randomly selected from a 15-minute record in each session to be analyzed by the primary investigator, using a 10-second partial interval recording procedure. This observation was conducted during only the weeks when Taro was not in the chair on Friday.

---

**TABLE 1**

**Social Stories**

<table>
<thead>
<tr>
<th>Story Title</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The Social Story for Taro</strong></td>
<td>Who is in the chair of Friday?</td>
</tr>
<tr>
<td>I am Taro. I am a boy who loves Bob Sap. I am good at being in chair. I want to be in the chair of Friday.</td>
<td>The chair of Friday this week is (student name). (student name) is good at being in chair, too. So, it is OK. I will comply with the turn.</td>
</tr>
<tr>
<td><strong>The Social Story for Kenji</strong></td>
<td>Sitting in a cool way</td>
</tr>
<tr>
<td>There are cool people and non-cool people in the world. Whether the person is cool or non-cool depends on how the person does something. I am one of cool people because I write a lunch menu of the day neatly on the blackboard and I never take a break during morning exercise. When I ate lunch at a hotel, I did in a good manner. So, many people in the hotel thought I am cool. Many people around me watch me do something and think I am cool. As for sitting, there are a cool way and a non-cool way. Sitting in a cool way means placing hip all the way, making body upright, and putting heels near the sofa. The points are shown in the following figure (line drawing is shown). I will take care of the way of sitting.</td>
<td></td>
</tr>
<tr>
<td><strong>The Social Story for Tatsunori</strong></td>
<td>Why do I have to wash my hands?</td>
</tr>
<tr>
<td>I am Tatsunori, a boy who loves Giants. After toileting, people usually wash their hands. There are germs in a bathroom. When people go to a bathroom, germs may be put on their hands. But, germs are invisible. If people wash their hands, most of the germs on their hands are gone. So, people wash their hands. I will wash my hands with soap after toileting. Ms. (teacher’s name) thinks the person is wise when the person washes hands after toileting. Mr. (teacher’s name) thinks the person is cool when the person washes hands after toileting. Ms. (teacher’s name) thinks the person is lovely when the person washes hands after toileting.</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* The italic parts are perspective sentences that are withdrawn in SS without PS and not withdrawn in SS with PS.
Kenji. For Kenji, all observation sessions were video-recorded. The camera was set in a basket on a teacher’s desk, which was invisible to the student but allowed the camera to view his behaviors effectively. The camera was activated immediately after Kenji sat on the sofa during a break. The video was reviewed by the first author, using a 10-second partial interval recording procedure to determine the level of inappropriate sitting behaviors. Each observation was conducted for 10 minutes, for 5 days a week, except when Kenji was absent from school.

Inter-Rater Reliability

The data recorded for Taro by the IC recorder in the baseline and Intervention 1 conditions were accidentally deleted prior to a reliability test was implemented. Therefore, no inter-rater reliability was computed for the two conditions. A graduate student served as a second coder. The primary investigator explained the definition of each target behavior and showed examples and non-examples of the target behavior until the second coder felt ready to code. After the primary investigator coded the data recorded by the IC recorder and videotapes, the second coder independently coded the data for 25.2% for Taro and 33.3% for Kenji of all sessions across conditions with the exception of the baseline condition and the Intervention 1 condition of Taro, as mentioned above. Percentages of inter-rater reliability were computed by dividing the number of agreements by the sum of agreements plus disagreements and multiplying by 100%. Reliabilities ranged from 83.3% to 97.2% for Taro (M = 91.6%) and 93.3% to 100% for Kenji (M = 97.8%) and, therefore, were acceptable.

Experimental Design

An ABCA design was used for Taro, and an ABC for Kenji, with an SS without PS in the B condition and an SS with PS in the C condition. Some studies suggest that Social Stories may result in irreversible learning (Kuoch & Mirenda, 2003; Scattone et al., 2002), which in turn prevents us from using a withdrawal phase to reverse data to a baseline level. Implementing C followed by B may not allow us to detect the effect of including a perspective sentence in a Social Story because understanding a social situation described by the Social Story that includes a perspective sentence may remain intact even after withdrawing the perspective sentence from the Social Story. Therefore, to be able to detect the impact of adding perspective sentence as clearly as possible, we decided to implement B followed by C. Due to time constraints (i.e., the school year ended), a withdrawal phase for Kenji was not implemented.

Procedure

The teachers for each participant were asked to deal with target behaviors as they did prior to this study. Anecdotal records taken weekly by the primary investigator about the teachers’ behaviors indicated that both students’ teachers behaved in the same ways contingent on the occurrence of the target behaviors regardless of conditions. That is, Taro’s teachers provided verbal reprimands when his verbal behavior escalated. Kenji’s teachers did not interact with him even when he exhibited inappropriate sitting. In addition, both teachers implemented Social Story interventions as planned.

Baseline. No instructions related to Social Stories were provided to the participants.

Intervention 1. This condition was identical to baseline with the exception that a Social Story was read. That is, an SS without PS was read by one of the teachers for each participant.

Before implementing Intervention 1, the primary investigator explained the teachers, with modeling, the following four points related to effective use of the Social Story: (a) the Social Story sessions should be implemented in a calm and safe atmosphere, (b) a teacher should sit side-by-side, but a little behind the student’s shoulder, (c) when the student asked a question about the story, the teacher could answer the question, (d) according to the progress of the student’s reading, prompts for reading should be faded out. The primary investigator then asked the teachers to engage in Social Story instructions to determine if they implemented the procedure correctly. After making sure the teachers correctly implemented the procedure, the pri-
mary investigator asked them to initiate the first session.

In the first of the four sessions in Intervention, Taro’s teacher read the SS without PS for him. Taro, then, took a turn to read the Social Story out loud. His teacher provided controlling prompt (i.e., modeling) when he read the story incorrectly. The teacher for Kenji read the SS without PS with giving examples and explaining the meaning of the each sentence. Starting with the second session, both students read the SS without PS out independently. A formal reading time for SS without PS was provided once each day, just prior to initiating observation of the target behavior. During the rest of the day, the Social Story book was placed on a shelf to be accessible to the student.

Intervention 2. This condition was identical to Intervention 1 with the exception that perspective sentences were added to a story used in Intervention 1. The teachers provided students an SS with PS and asked them to read the story. Because the content of the SS with PS was identical to that of the SS without PS, with the exception of a perspective sentence, Taro read the story with a few prompts at the beginning of the intervention phase, followed by no prompts from the second session. For Kenji, his teacher asked him to read the SS with PS, explaining the meaning of the added perspective sentence the first session of the intervention phase. He did not have any questions, and he read the story independently from the second session.

Baseline 2. Taro’s did not provide him any opportunities to access the Social Story book (SS with PS) throughout the day. No Baseline 2 was implemented for Kenji due to the termination of the semester.

Results

Figure 1 shows the change of Taro’s persistent and aggressive verbal behaviors across Baseline, Intervention 1, Intervention 2, and Baseline 2. As illustrated, during the first baseline phase, the percentage of his inappropriate verbal behaviors was high, for an average of 49.1%, ranging from 19.4% to 86.1%. Following the implementation of SS without PS, his inappropriate behaviors showed a downward trend, for an average of 10.6%, ranging from 0.0% to 16.7%. It should be noted, however, that the difference in level between Baseline and Intervention 1 was not substantial. After
initiating SS with PS, the level of his inappropriate verbal behaviors remained low from Session 10 to Session 13 ($M = 6.6\%$), but rebounded in Sessions 14 and 15 ($M = 16.7\%$), resulting in an average of 9.7\%, with a range from 0\% to 16.7\%. Immediately after withdrawing the SS with PS in Baseline 2, no inappropriate verbal behaviors occurred.

Figure 2 presents the results of observations of Kenji’s inappropriate sitting across Baseline, Intervention 1, and Intervention 2. As illustrated, during the baseline phase, he frequently exhibited inappropriate sitting, for an average of 72.3\%, ranging from 52.5\% to 96.7\%. Immediately after sitting on the sofa, he initiated repetitive behaviors, followed by putting his leg on the sofa or lying down. In contrast, his inappropriate sitting behaviors disappeared immediately following introduction of the SS without PS ($M = 0.84\%$). Introducing the SS with PS was immediately followed by high percentage and low percentage of the target behavior alternately ($M = 23.9\%$, range = 0\% - 73.5\%).

Discussion

In Study 1, an ABBA or ABC pre-experimental design was used for two students with ASD to examine the effects of adding a perspective sentence on reducing problem behaviors. Visual inspection indicated that a Social Story was effective in improving adaptive behaviors even though the story did not include any perspective sentences. Adding a perspective sentence did not have any additional impact on improving the target behaviors.

“\textit{When everybody complies with the turn, everybody feels good because everybody can be fairly in the chair}” was added as a perspective sentence to Taro’s SS without PS. “\textit{So, many people in the hotel thought I am cool. Many people around me watched me do something and think I am cool}” were added as perspective sentences to Kenji’s SS without PS. This was done based on the belief that information was missing for each participant to understand why he needed to behave in a certain way and that consequently his inappropriate behaviors would improve when he obtained the information. However, the results were different from our expectation. One factor that may need to be addressed is motivation. In other words, it should be discussed whether or not the information conveyed by the perspective sentences can elevate the motivation of participants to the level that they want to change the behaviors.
To discuss the motivational issue of perspective sentences, introducing a framework of establishing operation may be helpful. The theory of establishing operation (Michael, 2000) explains that some antecedent events or stimuli contribute to changing behaviors because they change the value or meaning of the consequence of emitting the behaviors. Adding a perspective sentence to a Social Story would have impact on improving target behaviors of individuals with ASD and related disabilities if the perspective described by the sentence had the capacity to elevate the value of the consequence of engaging in appropriate behaviors. That is, if Taro obtained information about a contingency, “everybody feels good,” by reading the story that did not have a reinforcement value to him, he would not change his behaviors. Similarly, if Kenji obtained information about a contingency, “many people in the hotel thought I am cool. Many people around me watched me do something and think I am cool,” by reading the story, that was not a reinforcer to him, he would not change his behaviors.

The fact that adding perspective sentences did not have any impact on the participants’ target behaviors may be due partly to the lack of power of the sentence to enhance the value of the consequence. Based on this theory, when developing perspective sentences, it should be taken into consideration (a) not only what perspective is missing to explain why the individual needs to behave in a certain way but (b) also what perspective would enhance the value of the consequence contingent on engaging in the target behavior. Specifically, we hypothesized that the perspective selected is a strong determinator of the effectiveness of a perspective sentence. For example, “Everybody” or “Many people,” which were the terms used in this study, apparently were not deemed specific or relevant enough to the student to affect behavior.

In addition to the nature of the perspective sentences used in this study, drawbacks in the research design should be noted. We changed conditions prior to confirming the trend or stability of the data. We were forced to do so because the study did not start until the school year was almost over. As a result, we were not able to clarify the functional relationship between the two types of Social Story and decreased inappropriate behaviors. Second, and related to the first point, according to the anecdotal reports from the teachers of both participants, students’ daily routines totally changed at the time when SS with PS was initiated, specifically, prior to Session 10 for Taro and prior to Session 7 for Kenji. Because both students were in their graduation year, they were required to participate in practice for the graduation ceremony every day during Intervention 2. This irregular schedule reduced the length of recess and time for other activities that Taro was interested in, such as cooking, snack eating, and walking. For Kenji, the irregular schedule increased non-preferred activities (i.e., a practice for the graduation ceremony). This, in turn, likely contributed to increases in the target behaviors. It is unknown, however, why withdrawing Social Story instruction, which was implemented while the irregular schedule continued, resulted in complete suppression of Taro’s persistent and aggressive verbal behaviors.

These limitations and emerging hypotheses prompted us to conduct Study 2, which examined the effects of the following: (a) adding a perspective sentence that was likely to enhance the value of the consequence contingent on engaging in a target behavior, (b) keeping the same condition until the trend or stability was confirmed, and (c) conducting the experiment while a daily routine remained stable. Study 2 is described in detail below.

**Study 2**

**Method**

**Participants**

Tatsunori, an 11-year-old boy, participated in this study. Although he was enrolled in the same special school as the students in Study 1, the possibility of disrupting his daily routine was minimal because he was not in his graduation year. Due to family issues, he lived in a child-care facility. He was diagnosed with attention deficit-hyperactivity disorder (ADHD) and mild mental retardation (IQ 68, tested by Tanaka-Binet Intelligence Test) by a qualified pediatrician. Although he was capable of en-
gaging in complicated verbal communication, his reading level was equivalent to first grade. He often exhibited aggressive behaviors in response to directions or reprimands provided by his teachers. At the time of this study, he took carbamazepine in the morning and at night.

Target Behavior

Tatsunori’s target behavior was described as “Washing hands with water and soap after toileting without any prompts.” The selection process of the target behavior was identical to that of Study 1. That is, the target behavior was selected based on the interview with Tatsunori’s teachers and direct observations. Tatsunori’s teachers provided verbal prompts whenever they realized he did not wash hands after toileting. However, this procedure did not make a positive change of this behavior.

Setting

The observation of Tatsunori’s target behavior was conducted at the bathroom nearest to his homeroom. The sink where he was supposed to wash his hands was located closest to the entrance. Typically, one or two other students were using the bathroom with a teacher when Tatsunori used the bathroom.

Materials

As in Study 1, two types of Social Story were developed: one without PS and one with PS. The SS without PS consisted of six panels, whereas the SS with PS consisted of nine panels. The perspective sentences added to the SS without PS were “Ms. [teacher’s name] thinks the person is wise when the person washes hands after toileting. Mr. [teacher’s name] thinks the person is cool when the person washes hands after toileting. Ms. [teacher’s name] thinks the person is lovely when the person washes hands after toileting.” In these sentences, the names of teachers whom Tatsunori appeared to like and adjectives used frequently by these teachers were inserted. (The Table 1 shows the text part of both Social Stories.) The primary investigator wrote the Social Stories, with feedback from Tatsunori’s teachers and the second author. Tatsunori’s teachers confirmed that the level in complexity and length of the story matched his level of reading.

Data Collection

Tatsunori’s teachers took responsibility in data collection. Whenever he went to the bathroom and one of his teachers was available, observation was conducted. Because the teacher-to-student ratio was 2:6, the teachers were not always able to observe his hand-washing behaviors. Contingent on his toileting, the teachers classified his hand-washing behavior into one of four categories: 3 = wash hands with water and soup, 2 = wash hands with water only, 1 = wash hands with water and soup with verbal prompts, 0 = did not wash hands. One of the teachers (hereafter referred to as main teacher) recorded the data and sent them to the primary investigator.

Inter-Rater Reliability

When collecting functional assessment data, the primary investigator attempted to observe Tatsunori wash his hands in a bathroom. However, Tatsunori was extremely sensitive to be observed by the investigator, leading to verbally aggressive behaviors and more difficulty engaging in hand-washing. When one teacher followed him to the bathroom, the other was left alone to take care of the remaining students in the classroom. This kept him very busy and prevented another teacher from serving as a rater. Therefore, we had to totally rely on the data observed by one of the teachers.

Procedure

Tatsunori’s teachers were asked to deal with target behaviors as they had done prior to the study. Anecdotal records taken weekly by the primary investigator about teachers’ behaviors indicated that they behaved in the same way contingent on the occurrence of the target behaviors regardless of condition. In addition, the records indicated that both teachers implemented Social Story interventions as planned.

Baseline. In baseline, no Social Story interventions were implemented.
Baseline Dash. This condition was identical to baseline with the exception that a permanent visual step poster was added. In Session 15, the main teacher voluntarily developed a permanent visual support poster and posted it on the wall over the sink. The poster delineated each step of hand-washing, accompanied by words and illustrations. We classified this phase as Baseline Dash because adding the visual cue was not in our original plan. In addition, the main teacher thought that using a visual cue would be a natural and universal support and planned to use the poster continuously regardless of the Social Story interventions.

Intervention 1. This condition was identical to Baseline Dash with the exception that a Social Story was read. In this condition, the main teacher was asked to introduce an SS without PS. In the first session, the main teacher provided Tatsunori with an SS without PS and asked him to read the story. The main teacher found that Tatsunori independently read the story. When the teacher asked him if he understood the content of the story, he said, “I have no question.” Therefore, from the second session on, the main teacher sat a little behind the student’s shoulder and had no interaction with him, except for saying “it is time to read” at the beginning of the session. Although one Social Story session was scheduled daily, the story book was placed on a shelf that allowed Tatsunori to use it at any time.

Baseline Dash 2. In this phase, the main teacher stopped providing Tatsunori with sessions to read SS without PS. The teacher also eliminated the Social Story book from the shelf to prevent him from accessing the book at any time.

Intervention 2. This condition was identical to Intervention 1, except that the teachers read a Social Story from Intervention 1 to which a perspective sentence had been added.

Baseline Dash 3. After confirming the positive effect of SS with PS on Tatsunori’s target behavior, the main teacher withdrew the Social Story intervention, returning to the condition identical to Baseline Dash 1 and 2.

Experimental Design

A reversal design (AA’BA’CA’) was employed, with a baseline in the A Condition, a permanent visual step poster in the A’ Condition, an SS without PS + a permanent visual step poster in the B Condition, and an SS with PS + a permanent visual step poster in the C Condition, to examine the influence of a perspective sentence on the occurrence of the target behavior.
Results

The results of the Social Story intervention are presented in Figure 3. As illustrated, in the first baseline condition, Tatsunori never washed his hands with water and soap without prompts ($M = 1.1$, Range $= 0 - 2$). When introducing a permanent visual step support, he independently washed his hands for two consecutive times. However, his behavior was not stable ($M = 1.3$, range $= 0 - 3$), and he did not engage in hand-washing even with the teacher’s prompt in the last two sessions.

Initiating the SS without PS appeared to have some impact on improving his hand-washing. Certainly, the average of his correct behavior was improved ($M = 1.9$, Range $= 0 - 3$); still the last two sessions showed a downward trend. After withdrawing the SS without PS, Tatsunori’s behavior was stable, averaging 2.2, with a range from 2 to 3. His behavior was much more improved immediately after the SS with PS was initiated. In almost all trials, he independently washed his hands with soap, averaging 2.8, and ranging from 0 to 3. This effect was maintained even after withdrawing the SS with PS ($M = 2.7$, Range $= 1 - 3$).

Discussion

In Study 2, we examined the effect of adding a perspective sentence on the target behavior of a student with ADHD, with consideration of the following three things. First, we created a perspective sentence that described a consequence that immediately followed the occurrence of a target behavior and was likely to enhance the value of the consequence contingent on engaging in the target behavior. Second, we included sufficient sessions for each condition to clarify the trend or stability of the data. Third, we implemented the experiment when the daily routine was not disrupted by school events.

A visual inspection revealed that although the Social Story without a perspective sentence contributed to improving Tatsunori’s hand-washing, his target behavior did not constantly occur until a perspective sentence was added. The fact that positive and stable behavior change occurred immediately after an SS with PS was introduced seems to prove that adding a perspective sentence was responsible for the behavior change. Anecdotal reports from the main teacher showed that Tatsunori said “Shut up! You always tell me to wash hands” in the last session of Intervention 1. However, in the first session in Intervention 2, he voluntarily informed his teacher that he had engaged in hand-washing. This episode suggests that he recognized that engaging in hand-washing was followed by positive feeling of his teacher toward him, which may have functioned as a reinforcer. This, in turn, suggests that we successfully selected a perspective sentence that had capacity to enhance the value of consequence of hand-washing.

General Discussion

Previous research has used Social Stories themselves as the independent variable, but failed to determine the effect of the components of the story. Considering that Social Stories include several types of sentences (e.g., descriptive, perspective, directive), the strategy itself can be called “multi-component.” Unless we demonstrate empirical evidence of what is important among the components to better change of a target behavior, we are not able to develop better Social Stories.

In this study, we conducted a preliminary component analysis to narrow the gap between the Social Story practices and existing empirical evidence. Specifically, we examined the effect of adding perspective sentences (i.e., sentences describing the thoughts and feelings of others) on improving the adaptive behaviors of students with ASD and related disabilities. The results in Study 1 suggest that Social Stories may have positive impact on reducing problem behaviors even if they do not include perspective sentences. The results of Study 2, using more rigorous design, corroborate the suggestion in Study 1. However, Study 2 presented one more suggestion: adding a perspective sentence boosted the improvement of the target behavior if some parameters of the perspective sentence were changed.

Specifically, in Study 2, the perspective sentence was chosen by taking into consideration that the sentence not only described why Tatsunori needed to engage in hand-washing but also that the sentence was likely to raise the value of a consequence contingent on engag-
ing in the target behavior. To raise the values of the consequence, we identified the persons who were relevant to or had established rapport with Tatsunori, and then described the feelings they might experience when he engaged in appropriate behaviors, using the phrases that they typically used. Retrospectively, we changed three parameters in the perspective sentence from Study 1 to Study 2: a specificity parameter, a time parameter, and a likeability parameter.

A specificity parameter has a continuum, ranging from a specific perspective to a general perspective. Specific perspective sentences include the thoughts and feelings of an individual specific and relevant to the student. For example, Scattone et al. (2002) used “Ms Ann will be happy if I do not holler” (p. 542) in their perspective sentences. Kuoch and Mirenda (2003) used “(Interventionist) will be very happy to see everyone playing games and having fun” “Mom will be happy if Henry eats the food” (p. 227).

In contrast, general perspective sentences describe the perspectives of people in general (e.g., friends, we, people, everybody) who are not specific or relevant to the student. For example, Thiemann and Goldstein (2001) used “Friends like to show each other what they are doing,” “This means they want to show me something, and they like it if I look” in a Social Story (p. 432). Similarly, Ivey, Heflin, and Alberto (2004) used “Usually people like to have a party to celebrate” in their Social Story (p. 170). Between the two loci of the continuum, “my friends” “my teachers” or “my neighbors” are placed. For example, Brownell (2002) included “If I say things that I heard on TV, my friends might not know what I’m talking about” (p. 128).

With respect to a time parameter, two types of perspectives may be used: non-contingent perspective and contingent perspective. A non-contingent perspective uses others’ perspectives that might exist regardless of the occurrence of a target behavior. For example, Thiemann and Goldstein (2001) used “Friends like playing with different toys and games,” “Friends like to show each other what they are doing” (p. 432) in their perspective sentences. These perspectives may exist regardless of the occurrence of contingent responses, securing attention, initiating comments, and initiating requests, which were selected as target behaviors. Similarly, a Social Story used by Lorimer et al. (2002) included “Adults like to talk” (p. 56) as a perspective sentence. These perspectives may exist regardless of the occurrence of interrupting vocalization or tantrum, which was targeted to be reduced.

In contrast, contingent perspectives describe others’ perspectives that emerge immediately following the occurrence or non-occurrence of target behaviors. For example, Adams, Gouvousis, Vanlue, and Waldron (2004) used “Mom and Dad are sad when I get upset,” “When I use my quiet voice, Mom and Dad are happy” for a perspective sentence. In this study, crying, screaming, falling, and hitting were selected as target behaviors. Similarly, Kuoch and Mirenda (2003) used “It makes people very sad when Andrew doesn’t share” in their perspective sentences. For this participant, aggression, yelling, and crying were selected as target behaviors, which often followed sharing objects.

Finally, a likeability parameter shows a continuum of a reinforcement value of the person whose perspective is described in a Social Story, ranging from least to most valuable. Logically, the perspectives of people who are not specific to the individual are likely to be of less valuable to him or her. However, even among persons specific to the individual, the value of perspective varies, depending on whose perspective it is.

For Taro, we used a perspective sentence (“When everybody complies with the turn, everybody feels good because everybody can be fairly in the chair”) that described the perspective of people who were not highly specific (specificity parameter) and not highly valuable (likeability parameter), and that emerged contingent on the occurrence of his target behaviors (contingency parameter). For Kenji, we used perspective sentences (“So, many people in the hotel thought I am cool. Many people around me watch me do something and think I am cool”) that describe the perspective of people who were highly general (specificity parameter) and not highly valuable (likeability parameter), and that existed regardless of the occurrence of his target behaviors (contingent parameter).

In Study 2, we used a perspective sentence (“Ms. [teacher’s name] thinks the person is wise...
when the person washes hands after toileting. Mr. [teacher’s name] thinks the person is cool when the person washes hands after toileting. Ms. [teacher’s name] thinks the person is lovely when the person washes hands after toileting”) that included a perspective of others who were specific (specificity parameter) and valuable (likeability parameter) to Tatsunori and that emerged contingent on engaging in his target behaviors (contingency parameter).

Theoretically, the perspectives of others who are specific and valuable to the student are more likely to be meaningful. Furthermore, describing others’ perspectives that occur contingent on a target behavior are much more helpful in understanding the meaning of the behavior being exhibited (Gray, 2004). Therefore, using a perspective sentence describing a specific, valuable, and contingent perspective is more likely to be effective in improving target behaviors. However, the negative side needs to be noted, too. For example, using the perspective of a person specific to the individual may hinder generalization of behavior change. Therefore, if the goal of the intervention is to enable the individual to use a skill in a variety of situations, using a perspective of a person less specific to the individual may be appropriate.

It cannot be emphasized enough that we did not demonstrate the effectiveness of the parameter change in this study. In addition to changing the parameters of Social Stories, we changed participants from Study 1 to Study 2. Taro and Kenji in Study 1 were diagnosed with or scored in a range of autism, whereas Tatsunori in Study 2 was diagnosed with ADHD. Adding a perspective sentence may have changed Tatsunori’s hand-washing, not because the parameters of the perspective sentences were changed to be specific, valuable, and contingent but because he was more motivated by others’ perspectives than Taro and Kenji, who was diagnosed with or considered to have autism. Many more participants with autism spectrum disorders and related disabilities need to be studied to determine if using a sentence including more specific, valuable, and contingent perspective is effective in improving any type of adaptive behaviors in any situations. Not only component analyses (e.g., the effect of perspective sentences) but also parametric analyses (e.g., the effect of specificity, contingency, and likeability parameters) warrant future research.

References


Received: 20 May 2006
Initial Acceptance: 22 July 2006
Final Acceptance: 22 December 2006
Effectiveness of the Picture Exchange Communication System as a Functional Communication Intervention for Individuals with Autism Spectrum Disorders: A Practice-Based Research Synthesis

Kai-Chien Tien
University of Kansas

Abstract: This research synthesis verifies the effectiveness of the Picture Exchange Communication System (PECS) for improving the functional communication skills of individuals with autism spectrum disorders (ASD). The research synthesis was focused on the degree to which variations in PECS training are associated with variations in functional communication outcomes (Dunst, Trivette & Cuttpec, 2002). The communication consequences of PECS were examined in 13 studies, which included 125 participants with ASD who had been identified as having limited or no functional communication skills. Claims that PECS is an effective intervention for improving functional communication skills appeared to be supported by the available research evidence.

The purpose of this practice-based research synthesis was to verify the effectiveness of the Picture Exchange Communication System (PECS) for improving the functional communication skills of individuals with autism spectrum disorders (ASD). The synthesis focused on the degree to which variations in the PECS training are associated with variations in functional communication consequences. In general terms, a practice-based research synthesis differs from more traditional meta-analyses by systematically examining and unpacking the characteristics of practices that are related to differences in outcomes or consequences. Specifically, this type of analysis focuses more on understanding how the same or similar characteristics exert the same or similar observable effects and not solely on statistical or observation-based relationships between or among these variables. The reader is referred to Dunst et al. (2002) for a detailed explanation of this framework.

Individuals diagnosed with ASD share significant deficits in communication (American Psychiatric Association, 2000). In order to address the communication challenges of children with ASD, behavior analysts, speech-language pathologists, and special educators increasingly have turned to augmentative and alternative communication (ACC) (Frea, Arnold, & Vittimberga, 2001). The Picture Exchange Communication System (PECS) is one of such augmentative communication system designed to increase functional communication skills and potentially provide a bridge to speech acquisition.

The Picture Exchange Communication System has been supported by a small number of case studies and a large body of anecdotal literature (Charlop-Christy, Carpenter, Le, LeBlanc, & Kellet, 2002; Magiati & Howlin 2003; Mirenda, 2001; Mirenda & Erickson, 2000). Thus few published experimental studies have specifically investigated the effectiveness of PECS for children with ASD or other developmental disabilities. Furthermore, the majority of the anecdotal literatures reviewing the effectiveness of PECS were contributed by its developers, Andy Bondy and Lori Frost.

Bondy and Frost’s first published article (1993) on PECS detailed its use with children and adults with developmental disabilities. Specifically, they described the procedures
used to train school-based staff in Peru to use the system over a five-month period. Although no formal data were collected, the school reported that of the 74 students who received the PECS training, at the end of a 3-month period, 28 were working on mastering Phase I, 28 were working on mastering Phases II, and 18 were working on mastering Phase III of the PECS training protocol.

In another study, Bondy and Frost (1994) reported outcomes for 85 noncommunicative preschool children with ASD aged 5 years or younger. While children’s cognitive abilities were not assessed, they were estimated as ranging from near-normal to profoundly disabled. Over 95% learned to use two or more pictures within the exchange format; almost all learned at least one picture within one month of starting the PECS. For the 66 children who used PECS for more than a year, 41 were able to use speech independently, whereas the remaining 25 children were using a combination of pictures or symbols and speech. All children mastered using pictures or symbols to communicate, although not all reached the highest levels of PECS. Bondy and Frost (1994) also presented anecdotal data from a number of single-case and small-group studies. Most indicated encouraging results in terms of increased spontaneous communication and speech and, in some case, decreased behavioral problems.

The impact of PECS on problem behaviors was also examined in several studies beyond that of Bondy and Frost. For example, PECS was reported as an effective intervention for a 4-year-old with autism to decrease aggressive behavior in a general education preschool classroom (Frea et al., 2001). Dooley, Wilczenski, and Torem (2001) reported a dramatic decrease in problem behaviors and increase in compliance during transitions following PECS on a 3-year-old boy with a diagnosis of pervasive developmental disorders (PDD).

**Description of PECS Practice**

Developed in 1985 by Andrew Bondy and Lori Frost, PECS originally was primarily used for preschool-age children with ASD and other social communicative disorders who displayed no functional or socially acceptable speech (Frost & Bondy, 2002, pp. 46). The rationale behind PECS is that the exchange of a picture for a reinforcing item parallels the communicative exchange that takes place in typical conversation (Bondy & Frost, 1993, 1994). The PECS training is based on research and practice in the principles of applied behavior analysis. Thus, distinct teaching strategies, reinforcement strategies, error correction strategies and generalization strategies are essential for teaching each skill (see Frost & Bondy, pp. 46-47).

PECS is different from other communication systems in three main ways: (a) it does not require prerequisite skills; (b) it was designed to address the lack of motivation for social reinforcement; and (c) it immediately teaches initiating, instead of teaching responding before initiating (Bondy & Frost, 1994). The PECS training consists of six phases, which will be described in detail in the following.

**Phase I—“How” to Communicate.** In this phase, the terminal objective is that upon seeing a “highly preferred” item, the child will pick up a picture of the item, reach toward the communicative partner, and release the picture into the trainer’s hand (Frost & Bondy, 2002, pp. 67). One trainer entices the child with an object that is highly desired. As the child reaches for the desired object, the second trainer, the facilitator, physically assists the child in picking up a picture for the desired object. The first trainer immediately gives the child a reward along with an appropriate comment, such as “Oh, you want M&M!” when he/she receives the picture.

**Phase II—Distance and Persistence.** In this stage, the exchange continues with attempts to increase the child’s independence. Thus, the terminal objective is that the child goes to his communication book where his picture is stored, pulls the picture off, goes to the trainer, gets the trainer’s attention, and releases he picture into he trainer’s hand (Frost & Bondy, 2002, pp. 93). The child now is encouraged to use greater spontaneity and persistence, and to generalize the skill he acquired. The facilitator is still available for as needed assistance. Thus, the child learns to remove the picture from a display board for the exchange and must engage in more physical movement than in Phase I in order to accomplish the exchange. However, the child
is still encountering only one symbol on a board at any one time.

**Phase III – Picture Discrimination.** The terminal object for this phase is that the child requests desired items by going to a communication book, selecting the appropriate pictures from an array, and going to a communication partner and giving him/her the picture (Frost & Bondy, 2002, pp.123). In this stage the child is asked to discriminate between several items on a board, choosing which item he wants, or which activities he wants to try. The child begins by answering forms of the question “What do you want?” but these are faded quickly so the child will make choices spontaneously as well as in response to a question. As the child becomes more comfortable making discriminations, a third item may be added, and so on.

**Phase IV – Sentence Structure.** The terminal objective is that the child requests present and non-present items using a multi-word phrase by going to the book, picking up a picture/symbol of “I want,” putting it on a sentence strip, picking out the picture of what she wants, putting it on the sentence strip, removing the strip from the communication board, and finally approaching the communicative partner and giving the sentence strip to him (Frost & Bondy, 2002, pp.159). Thus, the child is taught to combine the object picture with the carrier phrase “I want” on a sentence strip and to give the strip to the adult or communication partner. The two pictures are attached to a sentence strip and the entire strip is exchanged with the communicative partner in return for the pictured item.

**Phase V – Responding to “What do you want?”** In this stage the child learns to respond to the question “What do you want?” by exchanging the sentence strip. Thus, this phase extends the sentence structure begun in Phase IV. Use of the questioning phrase is deliberately delayed until this phase because the exchange behavior should be automatic by that point in the programming sequence (Frost & Bondy, 2002, pp. 209). Adjectives and other words may be added to the child’s repertoire to help her further refine her requests.

**Phase VI – Commenting.** In this final stage, the child learns to respond to the questions “What do you want?” “What do you see?” “What do you have?” This phase makes a fundamental shift in the child’s communication as well as the expected outcome from the teachers or peers. That is, it is designed to introduce the child to commenting behavior, while the previous stages focused on requesting behavior. Through the use of pictures for “I see,” “I hear,” “I smell,” etc., the child is taught to comment on elements of his/her environment.

**Search Strategy**

**Search Terms**

Relevant studies were identified by using the keywords “PECS” and “Picture Exchange Communication System.” The term “autism” was used to further restrict the search. Further, an author search was conducted using “Andy Bondy” and “Lori Frost.”

**Sources**

A computer-assisted bibliographic search was conducted. The Psychological Abstracts (PsycINFO), Educational Resources Information Center (ERIC) database, Expanded Academic ASAP, Wilson OmniFile, MEDLINE, Dissertation Abstract Online, Center for International Rehabilitation Research Information and Exchange (CIRRIE), and REHABDATA were the primary information databases searched for relevant studies. An online search of the Internet via the Google search engine was also conducted. The reference lists of all acquired sources were also reviewed. In addition, hand searches were completed for journal articles, book chapters, and books to locate additional studies of PECS that may have been omitted from the bibliographic search findings. Finally, repeated sweeps of various sources were made until no further studies could be located.

**Selection Criteria**

Studies were included in the research synthesis if they met all the following criteria: (a) the focus of the study was to establish the effectiveness of PECS for improving functional communication skills; (b) the PECS training was described in sufficient detail to ascertain that the intervention applied in a review study
was the same as the intervention described under Description of the Practice; (c) individuals involved in the study were diagnosed with ASD; (d) communication consequences were the major outcome measured; and (e) articles were written in English.

Exclusion criteria. It was necessary to exclude on study (Cummings & Williams, 2000) that appeared to have met all the inclusion criteria during the initial phase of the search process. Close inspection of the study revealed that the PECS training was only one component of the treatment so as to warrant its exclusion.

Search Results

Eleven articles, including 13 studies and 125 participants, met the selection criteria and were included in the research synthesis. Table 1 shows selected characteristics of the participants. Table 2 lists the research designs used in the studies, dependent measures, and the characteristics of the intervention.

Participants

The 125 participants who participated in the studies all exhibited limited or no functional communication skills (see Table 1). Ages ranged from one to twelve years old at the baseline assessment. Participants’ gender was reported in 10 of the studies (77%). The vast majority (65%) of the participants were reported as males (female = 36, male = 68). Across all the studies, participants’ ethnicity was only reported in three studies (Charlop-Christy et al., 2002; Ganz & Simpson, 2004; Tincani, 2004).

Participants’ language age was reported in five studies (36%); however, different methods were used for assessment and reporting. Eight studies (57%) did not report participants’ language age, but provided descriptions of their speech abilities (Adkins & Axelrod, 2002; Ganz & Simpson, 2004; Heneker & Page, 2003; Liddle, 2001; Schwartz, Garfinkle, & Bauer, 1998; Tincani, 2004). In the two studies (Charlop-Christy et al., 2002; Jones, 2005) that specifically reported expressive and receptive language ages, the participants’ expressive language ages ranged from 1.2 to 1.8 years, with a mean age of 1.4; the participants’ receptive language ages ranged from 1.8 to 1.9 years, with a mean age of 1.9 years.

Participants’ developmental age was reported in three studies (Anderson, 2002; Ganz & Simpson, 2004; Kravits, Kamps, Kemmerer, & Potucek, 2002), but different methods were used for assessment and reporting. One study (Tincani, 2004) reported participants’ standardized intelligence scores on the Developmental Profile-II. Nine studies (64%) did not report any IQ, developmental ages, or other related information on participants; however, one study (Schwartz et al., 1998) indicated that the participants were identified as having cognitive delays.

Research Designs

Table 2 summarizes the research design employed by the studies included in this synthesis. Twelve studies (92%) used single-participant designs. One study used a retrospective analysis of archival data to examine pre-/post-intervention outcomes (Schwartz et al., 1998).

Among the 12 studies employing single-participant designs, four types of research designs were employed. First of all, an AB or a variation of the design was used in four studies (Ganz & Simpson, 2004; Heneker & Page, 2003; Magiati & Howlin, 2003). Second, two studies employed multiple-baseline design across participants (Charlop-Christy et al., 2002; Jones, 2005) while one study used multiple-baseline designed across settings (Kravits et al., 2002). Third, two studies used a changing-criterion design to eliminate the need to withdraw the intervention and include several interventions subphases (Ganz & Simpson; Liddle, 2001). Last, an alternating-treatments design was employed in three studies comparing the effectiveness of PECS and sign language training (Adkins & Axelrod, 2002; Anderson, 2002; Tincani, 2004).

Three of the 12 single-participant studies (25%) reported follow-up data after post treatment (Charlop-Christy et al., 2002; Jones, 2005; Schwartz et al., 1998). Length of time between post-treatment and follow-up ranged from 1 month to 12 months. Two studies conducted by Heneker and Page (2003) reported follow-up results but did not provide data.

In addition, all 12 single-participant studies employed outcome measures that require ob-
# TABLE 1

## Characteristic of Participants

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>M</th>
<th>F</th>
<th>Ethnicity</th>
<th>Chronological Age (years/months)</th>
<th>Language Age (years/months)/ Other Info.</th>
<th>Developmental Age/IQ/ Other Info.</th>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adkins &amp; Axelrod (2002)</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>N/A*</td>
<td>7</td>
<td>No functional language</td>
<td>N/A</td>
<td>PDDb and ADHDc</td>
</tr>
<tr>
<td>Anderson (2002)</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>N/A</td>
<td>2–4</td>
<td>0:8–1:6 (CDId Production) 0:8–1:4 (CDI Comprehension)</td>
<td>1:3–1:7 Years (Bayley)</td>
<td>a. Autism b. PDD</td>
</tr>
<tr>
<td>Heneker &amp; Page (2003)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>1–3</td>
<td>No functional language</td>
<td>N/A</td>
<td>Autism</td>
</tr>
<tr>
<td>Jones (2005)</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>N/A</td>
<td>5:1–8:2</td>
<td>0:10–1:10 (VABS Adaptive Communication) 1:9–1:11 (PPVT Receptive) 1:4–1:10 (PLS Expressive)</td>
<td>N/A</td>
<td>Autism</td>
</tr>
<tr>
<td>Kravits et al. (2002)</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>N/A</td>
<td>6</td>
<td>27% rank (WPPSI-R Verbal Behavior)</td>
<td>2:8 Years (VABS) 2–2:5 Years (PEP-Ri)</td>
<td>Autism</td>
</tr>
<tr>
<td>Liddle (2001)</td>
<td>21</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Limited or no functional language</td>
<td>N/A</td>
<td>a. Autism b. Severe learning disabilities</td>
</tr>
<tr>
<td>Magiati &amp; Howlin (2003)</td>
<td>34</td>
<td>29</td>
<td>5</td>
<td>N/A</td>
<td>5–10:6</td>
<td>0:8–2:8 (VABS Communication Domain)</td>
<td>N/A</td>
<td>Autism</td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>22</td>
<td>9</td>
<td>N/A</td>
<td>3–6</td>
<td>Limited or no functional communication skills</td>
<td>Cognitive delay</td>
<td>a. Autism b. PDD-NOSk c. Other developmental disabilities</td>
</tr>
</tbody>
</table>
servational coding. Interrater reliability data were only presented in eight of the studies (67%), 5 studies (Adkins & Axelrod, 2002; Heneker & Page, 2003; Liddle, 2001; Magiati & Howlin, 2003) did not report reliability data.

Characteristics of Application of PECS

PECS was delivered in a variety of natural settings, such as homes and schools, across the 13 studies. With two exceptions, intervention agents were reported (85%). PECS was implemented specifically by experimenters or trained personnel in three studies (Adkins & Axelrod, 2002; Charlop-Christy et al., 2002; Ganz & Simpson, 2004), while the remaining eight studies utilized teachers or parents as the intervention deliverers.

Selected characteristics of the PECS intervention implemented in each study are also presented in Table 2. As illustrated, nine studies indicated how many phases of the PECS training were conducted; the remaining studies did not (Adkins & Axelrod, 2002; Heneker & Page, 2003; Schwartz et al., 1998). In five of the studies that indicated PECS phases, the participants received the entire six phases of the PECS training. The remaining four studies (Anderson, 2002; Ganz & Simpson, 2004; Kravits et al., 2002; Tincani, 2004) reported that the participants received three or four phases of the training.

Treatment fidelity. Information regarding the fidelity of treatment implementation was reported in all the studies. However, fidelity data were only reported in three studies; the remaining studies (77%) just stated that the treatment was implemented according to the procedures described in The Picture Exchange Communication System Training Manual (Adkins & Axelrod, 2002; Charlop-Christy et al., 2002; Ganz & Simpson, 2004; Kravits et al., 2002; Schwartz et al., 1998) or that the implementers were formally trained to use PECS (Heneker & Page, 2003; Liddle; 2001; Magiati & Howlin, 2003). In the three studies that reported fidelity data, two independent observers coded sessions or session videotapes to establish the implements’ degree of adherence to the treatment manual content (Anderson, 2002; Jones, 2005; Tincani, 2004). For those three studies, the mean interobserver agreement for treatment fidelity was 93.86% (range from 91.675 to 96.8%).

Outcomes

Participants’ communication outcomes were measured in all the studies using a range of data collection methods and a range of re-
TABLE 2
Characteristics of the Research Designs and Interventions

<table>
<thead>
<tr>
<th>Study</th>
<th>Research Designa</th>
<th>Dependent Measures</th>
<th>Natural Intervention Setting</th>
<th>Intervention Agent</th>
<th>PECS Phase</th>
<th>Average Length of Follow-up</th>
<th>Fidelityb</th>
<th>Reliability</th>
</tr>
</thead>
</table>
b. Mastery rate
c. Most preferred responding technique                                      | Y                            | Experimenters            | N/A*                  | N/A            | M                             | N/A       |
b. Mastery rate
c. Frequency of initiation
d. Behavior
e. Eye contact
f. Vocalization.                                                 | N                            | N/A                     | I–III                  | N/A            | M, O                         | Y         |
| Charlop-Christy et al. (2002) | (S) Multiple baseline | a. Spoken language
b. Social-communicative behavior
c. Problem behavior                    | Y                            | Therapists              | I–VI                   | 10 months       | M                             | Y         |
b. Intelligible words
c. Non-word vocalization                                       | Y                            | Experimenters            | I–IV                  | N/A            | M                             | Y         |
| Heneker & Page (2003)  | (O1XO2O3)                  | a. Amount of communication
b. Function of communication
c. Methods of communication
d. Level of adult support                                        | Y                            | Teachers                | N/A                    | 10 months       | C                             | N/A       |
|                      | (O1XO2O3)                  | a. Amount of communication
b. Function of communication
c. Methods of communication
d. Level of adult support                                        | Y                            | Teachers                | N/A                    | 6 months        | C                             | N/A       |
| Jones (2005)           | (S) Multiple baseline       | a. Spontaneous requests
b. Time delay
c. Generalization                                                  | Y                            | N/A                     | I–VI                   | 1 month         | C, O                         | Y         |
| Kravits et al. (2002)  | (S) Multiple baseline       | The frequency of spontaneous language                                               | Y                            | Teachers               | I–III                  | N/A            | M                             | Y         |
| Liddle (2001)          | (S) Changing criterion      | PECS acquisition                                                                   | Y                            | Teachers               | I–VI                   | N/A            | C                             | N/A       |

spondents. The majority of communication outcomes were measured through two individual observation reports or through observational coding of sessions videotapes by two independent observers. Outcomes assessed included (a) observer reports of mastery rate of
PECS acquisition, (b) frequency of spontaneous requests initiated by participants, (c) method and function of the participants’ communication, and (d) number of pictures and spoken words used by the participants following introduction of PECS. In addition, participants’ behavior outcomes were measured in three studies, Anderson (2002), Charlop-Christy et al. (2002), and Magiati and Howlin (2003). The behavior outcomes examined included frequency of problem behaviors participants engaged in and the incidence of frustration showed by participants.

**Synthesis Findings**

Table 3 summarizes the findings of the synthesis regarding the communication outcomes of PECS reported across studies. The summary includes a description of the influence of the PECS training on functional communication outcomes as reported in each study. In addition, it contains information about the degree to which change in communication status was demonstrated as a direct result of the PECS training. As illustrated, there was little variation across the 13 studies regarding the specificity of documenting appropriate implementation of PECS.

For purposes of the synthesis, studies that lacked data demonstrating implementers’ mastery of the PECS skills were categorized as having Low Specificity (N = 0; 0 %). Studies that provided evidence of implementers’ mastery of PECS skills but did not report any treatment-fidelity procedures were categorized as having Moderate Specificity (N = 9; 69%). Finally, studies that provided data regarding implementers’ skill mastery and the treatment fidelity procedures used were classified as High Specificity studies (N = 4; 31%). The studies with High Specificity provided the strongest evidence that change in communication outcomes were a direct consequence of the PECS training.

**Results**

**Communication consequence.** Across the studies, participants who received the PECS training experienced positive gains in functional communication skills. Thus, communi-
### TABLE 3

**Major Findings**

<table>
<thead>
<tr>
<th>Study</th>
<th>Communication Consequences</th>
<th>Other Consequences</th>
<th>Report of Generalization</th>
<th>Relation to PECS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adkins &amp; Axelrod (2002)</td>
<td>The use of PECS produced a better acquisition rate, more spontaneous usage, and a higher generalization rate than the use of sign language for the child with PDD. PECS was a more effective method for the child with PDD, and it generalized under different conditions. PECS was the preferred response method used by the child. The child began to imitate some sounds and one-syllable words.</td>
<td>The child appeared to be able to achieve correspondence to the presented object.</td>
<td>Y</td>
<td>M</td>
</tr>
<tr>
<td>Anderson (2002)</td>
<td>For the majority of the children, rates of acquisition in the PECS condition were uniformly faster than rates of acquisition in the sign language condition. All of the children mastered more items in the PECS condition than in the sign language condition. All the children demonstrated response generalization in the PECS condition; four out of the six children demonstrated skill generalization in the sign language condition. Three of the children appeared to behaviorally prefer PECS; the other three children appeared to behaviorally prefer sign language. All the children initiated with PECS more often than with sign language when both modalities were available. The three children who appeared to prefer sign language initiated the greatest number of sign trials during the free choices without PECS probes.</td>
<td>Five of the six children demonstrated more eye contact in the sign language condition than in the PECS condition. Several children began vocalizing during treatment in both the sign language and PECS conditions. However, the three children who vocalized during correct responding did so significantly more often in the sign language condition than in the PECS condition. Tantrum and avoidance behaviors decreased for all the children in both PECS and sign language conditions. Three of the six participants demonstrated significant increases in positive affect in the sign language condition, while only one significant increase was found in the PECS condition. Two children demonstrated more self-stimulation in the sign language condition, while two children engaged in significantly more self-stimulated in the PECS condition.</td>
<td>Y</td>
<td>H</td>
</tr>
</tbody>
</table>

Functional Communication Intervention / 69
<table>
<thead>
<tr>
<th>Study</th>
<th>Communication Consequences</th>
<th>Other Consequences</th>
<th>Report of Generalization&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Relation to PECS&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charlop-Christy et al. (2002)</td>
<td>All the children demonstrated approximately 30.7 more spontaneous initiations per hour if they were using sign language than if they were using PECS.</td>
<td>All children showed increases in spontaneous imitation speech and mean length of utterance. All children had collateral gain in social-communicative behavior, such as joint attention and eye contact, following the PECS training.</td>
<td>A 70% or greater reduction was observed for 10 of 12 problem behaviors, and four problem behaviors were eliminated.</td>
<td>N</td>
</tr>
<tr>
<td>Heneker &amp; Page (2003)</td>
<td>The children were using more sophisticated forms of communication and need less prompting to do so.</td>
<td>Requesting was the main function of communication.</td>
<td></td>
<td>Y</td>
</tr>
</tbody>
</table>

<sup>a</sup>Report of Generalization: N = No, Y = Yes.<br>
<sup>b</sup>Relation to PECS: M = Medium, L = Large.
<table>
<thead>
<tr>
<th>Study</th>
<th>Communication Consequences</th>
<th>Other Consequences</th>
<th>Report of Generalization</th>
<th>Relation to PECS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The children were spontaneously attempting to exchange the symbols in 95% of cases.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Requesting was the main function of communication.</td>
<td>The children showed an increase in spontaneously gaining the adult’s attention.</td>
<td>N</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>The children were observed to move towards using more formal methods of communication across all contexts.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spontaneous exchange occurred on average 96% of the time for all interactions that involved a symbol.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The PECS training was highly successful for three of the five children. They learned to use target utterances, made gains in length and variability of spontaneous utterances, generalized those gains across items and people, and maintained those gains.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>One of the five children showed only minimal change (no generalization and no change in variability) in spontaneous speech. The remaining one did not show gains in spontaneity, but did show important gains in the prerequisite skill of imitation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Four out of the five children showed an increase in their mean length of utterances for training items after the PECS training.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jones (2005)</td>
<td>Three children showed an increase in word variation during the PECS and time-delay sessions. One child showed no increases in new word use after the preliminary increases seen in baseline, while one child introduced new words during each of the procedural phases of the study and followup.</td>
<td></td>
<td>Two children increased their ability to imitate target utterances, while one child decreased her ability to imitate.</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>Four of the five children began to use target utterances spontaneously during PECS and time-delay sessions. Only one maintained this ability during followup, and only one generalized this ability across communicative partners.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>One child significantly increased his ability to expressively label attributes; the remaining four children remained level through PECS.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Communication Consequences</td>
<td>Other Consequences</td>
<td>Report of Generalization</td>
<td>Relation to PECS</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>--------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Kravits et al. (2002)</td>
<td>The child demonstrated successful use of PECS.</td>
<td>The child’s spontaneous language, which includes verbalizations and icon use, increased with the intervention.</td>
<td>Y</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>The child demonstrated significantly more initiations and verbalizations during intervention sessions than during baseline session.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The child did not significantly increase the range of spoken vocabulary during intervention.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The duration of the child’s peer interactions significantly increased.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liddle (2001)</td>
<td>Twenty of the children learned to use PECS to request items, and one child failed to achieve phase I.</td>
<td>Eleven out of 20 children who learned to use PECS learned to use sentence strips to request items.</td>
<td>Y</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>The remaining nine children improved in their ability to interact with others by being able to initiate requesting.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nine out of 21 children were been observed to have increased their attempts at spoken language.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magiati &amp; Howlin (2003)</td>
<td>The children showed significant improvements in their use of PECS, with the level of PECS, frequency of the PECS use, and extent of PECS vocabulary all increasing over time.</td>
<td>There was a significant reduction in the children’s total score on the Rimland Autism treatment Evaluation Checklist (from a mean of 74.9, SD = 20.98 to 65.1, SD = 20.89, t = 3.91, p &lt; .001), indicating an overall improvement in problem behaviors.</td>
<td>Y</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>The children were found to show an improvement in their overall level of communication.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>There were increases in the children’s use of the other forms of communication, such as signs/gestures, spoken words and phrases.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Changes in the less speech group were slow to occur, but became marked over time. For children with higher level of speech large gains occurred initially, but these tended to be plateau out.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
cative behavior change was documented in all studies. The most commonly reported communication consequences of PECS included: (a) successful use of PECS as a communication tool (reported in 100% studies); (b) an increase in overall level of communication and language (reported in 62% studies); (c) an increase in spontaneous language/speech/imitation (reported in 46% studies); (d) an increase in initiations of communication (reported in 31% studies); and (e) an increase in mean length of utterance (reported in 23% studies). Furthermore, the studies that included a follow-up assessment indicated maintenances of the gains identified at the time of posttesting (Charlop-Christy et al., 2002; Heneker & Page, 2003; Jones, 2005; Magiati & Howlin, 2003; Schwartz et al., 1998).

The studies that compared PECS against sign language training demonstrated that (a) rates of acquisition in PECS were faster than rates of acquisition in sign language, (b) PECS was the preferred method of communication for most participants compared to sign language, and (c) children who learned PECS demonstrated increased use of different untrained communicative functions. Additional studies found that children who learned PECS demonstrated increased use of different untrained communicative functions, and that children who received training in one communicative function demonstrated increased use of different untrained communicative functions.

### TABLE 3—(Continued)

<table>
<thead>
<tr>
<th>Study</th>
<th>Communication Consequences</th>
<th>Other Consequences</th>
<th>Report of Generalization</th>
<th>Relation to PECS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schwartz et al. (1998)</td>
<td>14 months on average (range = 3-28 months) after the beginning of PECS training, children were using the PECS system in a functional manner to communicate with adults and peers. The children mastered the fundamental PECS protocol within 11 months, and learned to exchange with peers in an additional 3 months. Children who learned PECS use the system across settings. Forty-four percent of the children acquired unprompted, non-echolalic spoken communication, and all children demonstrated many successful communicative interactions across trained and untrained functions and settings. Children who received training in one communicative function demonstrated increased use of different untrained communicative functions.</td>
<td></td>
<td>Y</td>
<td>M</td>
</tr>
<tr>
<td>Tincani (2004)</td>
<td>One child with weak hand-motor imitation skills learned PECS more rapidly than sign language. On the other hand, another child with moderate imitation skills learned sign language more rapidly than PECS. Sign language training produced more vocalization for both children; however, a procedural modification to the PECS system increased one child’s vocalization to a level similar to that in sign language training.</td>
<td></td>
<td>Y</td>
<td>H</td>
</tr>
</tbody>
</table>

*a Y = Yes, N = No.  
*b H = High specificity, M = moderate specificity, L = Low specificity (see text for a more detailed description of specificity ratings).
to sing language, and (c) PECS was associated with significantly greater improvements for the participants without hand-motor imitation relative to the sign language training (Adkins & Axelrod, 2002; Anderson, 2002; Tincani, 2004).

*Other consequences.* Positive behavioral change was documented in three of the studies (Anderson, 2002; Charlop-Christy et al., 2002; Magiati & Howlin, 2003). The most commonly reported behavior consequence were significant reductions in problem behaviors.

*Rival Explanations*

A number of rival explanations might explain the positive findings reported in the studies reviewed in this synthesis. However, many of these rival explanations can be refuted as a consequence of the generally high quality of the research designs.

First, the fact that studies typically employed observational coding as the primary method of data collection could have resulted in observer or rater bias. However, every study employed two independent observational data recorders and sections of different intervention phases (e.g., baseline, intervention). Moreover, with strong reliability data reported for eight of the 13 (62%) studies available, concerns that measurement variations in maternal interactions were a result of observer bias are minimized.

Second, the positive changes of communication consequences may have been emerged as part of maturation. However, this possibility is mitigated by the fact that many behavioral, social, and communicative deficits exhibited by children with autism spectrum disorders do not spontaneously remit over time if untreated (American Psychiatric Association, 2000). In addition, 12 out of 13 studies used a single-subject design, and single-subject design methodology establishes the casual relationship between treatment and outcomes by as series of intrasubject or intersubject replications of treatment effect (National Research Council, 2001). Furthermore, in single-subject, multiple-baseline designs, participants serve as their own control group. The presence of a control group can serve to separate the effects of maturation and those of treatments.

Third, the fact that the experimenter him/herself implemented the treatment in several of the studies could lead to problem with experimenter bias; that is, the experimenter might influence the participant’s responses. However, this concern is mitigated somewhat by the fact that in most of the studies reviewed (62%), the person implementing PECS was someone other than the experimenter.

In summary, a number of common threats to internal validity were addressed within the research designs of these studies. Therefore, despite such potential threats to the generalizability of the practice, the synthesis findings support the effectiveness of the PECS training.

*Conclusion*

The primary focus of this synthesis of the literature was to summarize findings regarding the effectiveness of PECS for enhancing the functional communication skills of children with ASD. In brief, the evidence for the intervention’s effectiveness was provided by studies that (a) assessed the level of adherence to a standardized treatment protocol (i.e., treatment fidelity); (b) utilized appropriate and well-executed research designs; (c) used measures with well-established reliability to assess outcomes; (d) replicated finding across participants; and (e) employed a follow-up component to demonstrate the stability of treatment effects. Taken as a whole, therefore, results of the studies reviewed provide evidence for the effectiveness of PECS; specifically, PECS is effective in enhancing functional communication skills of individuals with ASD. Therefore, PECS is recommended as an evidence-based intervention for this purpose.

Nevertheless, several points should be considered regarding recommending of PECS as an evidence-based intervention. First, most of the participants of the studies included in this synthesis were male (65%), which most likely is a reflection of the differential prevalence rates of autism across genders. The pattern of gains exhibited by the participants was similar for males and females, which indicates that the PECS training had the same effect regardless of gender.

Second, children in the studies were diag-
nosed as having ASD. Therefore, PECS can only be recommended as an evidence-based intervention for individuals with ASD, rather than for individuals with other diagnoses. Further research involving individuals with other types of diagnoses will be needed to determine whether or not PECS is effective as a functional communication intervention for other populations.

**Implications for Practice**

For practitioners working with children with ASD, there are two primary implications for practice that can be derived from this research synthesis. First, PECS training can easily be incorporated into an individual’s usual routine without requiring large-scale changes to class or home routines. Thus, similar programs may successfully be implemented by teachers and parents. Second, the value of PECS may lie not only in its ability to enhance communication skills initially, but also to facilitate easy maintenance and application to new situations. This is especially critical when considering that other interventions sometimes require constructed environments and, therefore, are not likely to generalize outside of specially designed environments.

In summary, the evidence reviewed in this synthesis supports the claim that PECS is effective in enhancing functional communicational skills of children with ASD. In addition, the implications derived from this synthesis suggested that PECS can be easily integrated into an individual’s usual routine and that the skills acquired from PECS training can be maintained and generalized across different situations. Insofar, PECS is recommended as an evidence-based intervention for enhancing functional communication skills of individuals with ASD. However, further research involving individuals with other types of disabilities is recommended.

**References**


Kravits, T. R., Kamps, D. M., Kemmerer, K., & Po-


Received: 3 May 2006
Initial Acceptance: 28 June 2006
Final Acceptance: 19 December 2006
Preschool Teacher Perceptions of Assistive Technology and Professional Development Responses

Julia B. Stoner, Howard P. Parette, Emily H. Watts, and Brian W. Wojcik
Illinois State University

Tina Fogal
Bloomington District 87 Schools

Abstract: This study investigated the perspectives of teachers in an early childhood center concerning their thoughts and feelings about the implementation of a school wide assistive technology (AT) program designed to enhance emergent literacy skills for children identified as being at-risk or having special needs. Qualitative methodology was used to gain perspectives of all participants. Semi-structured interviews, observations in the classroom, and a self-assessment of AT knowledge and practice were used to collect data. Data were analyzed using a multiple coding approach resulting in identification of four major themes: (a) perceptions of technology, (b) perceived challenges to implementing technology, (c) perceptions of AT and literacy and (d) self-reported AT use. Discussion and recommendations focus on best practices of implementing school wide AT in early childhood settings.

Young children with disabilities have increasingly been placed in child care and preschool settings since the passage of the Individuals with Disabilities Education Act of 1997 (IDEA 97; National Early Childhood Technical Assistance Center, 2003). To serve these children appropriately in such settings, an individual education program (IEP) is developed for each child in which assistive technology (AT) devices [20 U. S. C. § 1401(1)] and services must be considered [20 U.S.C. 1401(2)]. Both devices and services can result in a range of developmental benefits for young children with disabilities (Drasgow, Yell, & Robinson, 2001; Mistreet, Lane, & Ruffino, 2005; National Association for the Education of Young Children [NAEYC], 1996; Reed & Bowser, 2005; Wiekle & Hadadian, 2003). However, the potential of AT to benefit these children is contingent on “thoughtful integration into the early childhood curriculum” (NAEYC, p. 3).

While IDEA 97 provides a clear requirement for ‘thoughtful’ consideration of AT in developing young children’s service plans, the No Child Left Behind Act of 2001 (NCLB) also provides additional demands for teachers by (a) requiring that children with disabilities be taught to the same standards as all children, and (b) holding schools accountable for student achievement. However, “taking full advantage of their rights to a high quality education requires support to learn in ways that meet their educational needs” (National Center for Technology Innovation, 2005, p. 3). AT affords many young children with disabilities with the necessary learning supports to learn and achieve, especially with regard to developing emergent literacy skills that provide the foundation for later success when entering public schools (Parette, Stoner, Watts, & Wojcik, 2006).

Use of technology to develop emergent literacy skills has been examined by numerous authorities (Beck, 2002; Pierce & Porter, 1996; Smedley et al., 1997; Scooter & Boss, 2002; Wright & Shade, 1994). In typical classrooms, early childhood teachers plan and implement an array of emergent literacy activities for chil-
dren that emphasize oral language, experiences with print, storybook reading, and writing for different purposes (Beck; Donovan, Milewicz, & Smolkin, 2003; Van Scooter & Boss). Sadly, AT is infrequently used in many classrooms to support emerging literacy activities, and its potential to help develop important skills needed for later learning and success may be minimized. This is compounded by the fact that most early childhood education preservice programs still do not prepare teachers to be able to effectively consider AT during IEP development processes (Derer, Posgrove, & Reith, 1996; Lahm, 2003; Lesar, 1998; Mistreet et al., 2005; Parette, Peterson-Karlan, & Wojcik, 2005), nor do they rapidly integrate AT into their curricula (Zorfass & Rivero, 2005). The net result has been that (a) relatively few children receive AT in early intervention programs (RESNA Technical Assistance Project, as cited in Long, Huang, Woodbridge, Woolverton, & Minkel, 2003); (b) few professional publications discuss AT usage with young children (Edyburn, 2001, 2002, 2003); and (c) little is known about effective AT emergent literacy integration practices with early childhood populations.

Thus, it seems appropriate to ask the questions, “Why are teachers not considering and using AT for young children with disabilities?” and “What are the concerns that teachers have about AT?” Ashton (2005) noted that if negative perceptions or attitudes towards AT exist among practicing professionals, it is virtually an insurmountable task to change their mindsets. Ashton further observed that “Forcing teachers to learn something they perceive as unnecessary will prove a fruitless endeavor” (p. 236).

Exploring Early Childhood Teacher Needs

One project designed to address this need is the Making A Difference Using Assistive Technology (MDAT) Project, funded by the Illinois Children’s Healthcare Foundation in 2005 (Parette, Stoner, & Watts, 2005). The goal of this project was to develop an AT toolkit to enhance emerging literacy skills with preschool children who were at-risk or who had disabilities. However, the project involved the potential for substantive organization changes with regard to curricula approaches and professional development strategies used in schools. Research has indicated that when an organization is facing change there should be a systematic and deliberate process in place to ensure success and it is vital to involve those individuals affected by change in the initial planning process (Kotter, 1999). Similarly, attitudes of education professionals toward AT and its implementation in school programming has been reported to be a major challenge nationwide (SEAT Center, National Center for Technology Innovation, and Kansas University, 2005).

Consequently, before the MDAT Project could be implemented and an AT toolkit developed, it was imperative to examine teacher perceptions regarding technology and literacy to assist project staff in decision-making regarding effective professional development and subsequent intervention approaches. This preliminary work prior to project implementation was guided by the following research questions:

1. How do teachers of preschool children describe their perceptions AT?
2. How do preschool teachers describe their concerns about implementation of a school-wide AT program?
3. How do preschool teachers perceive AT for assisting with literacy skill development?
4. What are the preschool teachers’ experiences and self-reported uses of AT?

Method

Participants

Participants were nine teachers at a self-contained preschool facility in a Midwestern city. Four of the teachers were teaching children with identified disabilities and the remaining five taught children who were identified as being ‘at-risk.’ All teachers held state teaching certificates (see Table 1).

Research Design

The study employed qualitative strategies described by numerous researchers (e.g., Bogdan & Biklen, 1998; Leedy & Ormrod, 2001; Millan & Wergin, 2002). Specifically, qualitative research allowed the researchers to deeply
explore the perspectives and gain insight into the feelings, emotions, and thought processes of the participants (Creswell, 2002; Strauss & Corbin, 1998). The study of perspectives of teachers who were designated to participate in the implementation of a school-wide AT program lends itself to qualitative methodology precisely because it is a phenomenon about which little is known. Additionally, understanding the perspectives of teachers as users of the AT was deemed essential prior to the implementation of the AT program.

Interview questions were developed to address the research questions (Kvale, 1996) and semi-structured interviews lasting approximately a half-hour were conducted with all participants. Semi-structured interviews allowed the researchers to ask for clarification or additional information. (See Table 2 for a list of interview questions.) All interviews were audio-taped and transcribed verbatim to ensure accuracy.

The Early Language and Literacy Classroom Observation (ELLCO) Toolkit, (Smith, Dickinson, Sangeorge, & Anastasopoulos, 2002) was used to assess environmental variables related to language development and literacy in each of the teachers’ classrooms (i.e., morning classes for the 3-year-old students and afternoon classes for the 4-year-old students). The ELLCO has three distinct parts: the (a) Literacy Environment Checklist, (b) Classroom Observation and Teacher Interview, and (c) Literacy Activities Rating Scale.

Two researchers observed each classroom to determine the extent of the diversity of reading and writing materials and classroom layout. Next, interactions between teachers and students were observed during reading and writing instruction, use of technology, oral language use, and assessment strategies. Finally, student-teacher and student-student interactions were observed for the number of times and length of time for book reading and writing during classroom activities. Inter-rater

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Education Level</th>
<th>Yrs Experience</th>
<th>Classroom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barbara</td>
<td>B.A.</td>
<td>10</td>
<td>At-risk</td>
</tr>
<tr>
<td>Carole</td>
<td>B.A.</td>
<td>17</td>
<td>At-risk</td>
</tr>
<tr>
<td>Donna</td>
<td>M.A.</td>
<td>12</td>
<td>Special needs</td>
</tr>
<tr>
<td>Ellen</td>
<td>B.A.</td>
<td>30</td>
<td>Special needs</td>
</tr>
<tr>
<td>Jane</td>
<td>B.A.</td>
<td>1</td>
<td>At-risk</td>
</tr>
<tr>
<td>Karen</td>
<td>B.A.</td>
<td>5</td>
<td>At-risk</td>
</tr>
<tr>
<td>Sara</td>
<td>B.A.</td>
<td>18</td>
<td>Special needs</td>
</tr>
<tr>
<td>Toni</td>
<td>M.A.</td>
<td>35</td>
<td>Special needs</td>
</tr>
<tr>
<td>Teri</td>
<td>B.A.</td>
<td>3</td>
<td>At-risk</td>
</tr>
</tbody>
</table>

1 All teachers hold state teaching certificates

1. Describe your classroom.
2. Describe the literacy activities in your classroom.
3. Can you tell me about your experiences with assistive technology?
4. Describe your involvement with AT.
5. Tell me about your feelings using assistive technology with your students.
6. What additional information would you like concerning assistive technology?
7. How do you think assistive technology can help your students?
reliability was conducted between the researchers on all three parts of the ELLCO.

Additionally, an Assistive Technology Self-Assessment Survey was delivered to participants in person, prior to classroom observations and interviews (see Table 3). The paper-pencil survey was developed using recommended best practices from the Division for Early Childhood (DEC) (Sandall, McLean, & Smith, 2000) for the application of technology in settings for young children who attend early intervention and early childhood special education programs. Content of the survey included the definition of assistive technology according to IDEA and 16 questions related to DEC’s recommended technology practices. The format of response options followed a five-point common rating scale focusing on agreement and disagreement (Fink, 1995).

**Data Analysis**

This study employed collective case study methodology (Stake, 2000), involving the study of more than one case in order to “investigate a phenomenon, population, or general condition” (p. 437). This approach assumes that investigating a number of cases will lead to better comprehension and better theorizing. Cross-case analysis was used to analyze each individual participant responses as a whole entity. A comparative analysis of all participant responses was then conducted which allowed researchers to see processes and outcomes across many participants, thereby developing a deeper understanding of the emerging phenomena through more powerful descriptions and explanations (Miles & Huberman, 1994).

After completion of the interviews, data were analyzed using a line by line multiple coding approach (Barbour, 2001). The researchers then met frequently as a group and developed categories based on their individual line-by-line coding. Disagreements about the categories were discussed, categories were refined, expanded, and/or deleted as needed, and concordance was reached (Barbour). The constant comparative method by which researchers continually returned to the data for analysis was used as an overall methodological framework (Charmaz, 2000). Three members of the research team (i.e., three faculty members in a Midwestern university’s Department of Special Education) analyzed the data. NVivo® 2.0, a data management software program, was used to manage the data (Richards, 2002).

**Confirmability**

Confirmability of the findings was achieved through three approaches: (a) triangulation (Creswell, 2002) of incidences that occurred across cases and confirmed through observations in the classroom, results of the ELLCO, and responses to an Assistive Technology Self-Assessment Survey; (b) respondent validation (Creswell, 2002), i.e., confirmation of graphic and textual findings presented to participants regarding the researchers’ understanding of observations; and (c) member checks (Janesick, 2000), or allowing participants and the school principal the opportunity to review and quotes used in this report. All participants confirmed the findings.

**Findings**

Four major themes emerged from the data analysis: (a) perceptions of technology, (b) perceived challenges to implementing technology, (c) perceptions of AT and literacy, and (d) self-reported AT use. Each of these themes is discussed in the following sections, with participant quotes supporting the findings (see Table 2).

**Theme 1: AT Use**

The use of AT was assessed by two means: observations and self-reports. Prior to the structured interviews conducted with teachers, observations were made by two of the researchers using the ELLCO. An Assistive Technology Self-Assessment Survey was also completed by each of the participants.

*Observed AT use.* Limited use of AT was observed in the classrooms identified as “at-risk” and, while there was more use of AT in the classrooms which had students with disabilities, not all classrooms used AT at the same level. The ELLCO instrument was used as an observation tool because it has a section that focuses on the use of AT in preschool
TABLE 3
Assistive Technology Self-Assessment

**Code Number:** __________
**Date:** __________

*Directions:* Read the definition of AT and circle one number for each item.

Assistive technology (AT) is defined as “any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of children with disabilities” (IDEA, 1997).

<table>
<thead>
<tr>
<th>Item</th>
<th>Scale</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am confident in using assistive technology (AT) as a vehicle for</td>
<td>1-5</td>
<td>Great Extent</td>
</tr>
<tr>
<td>more effectively serving children and families.</td>
<td></td>
<td>Not at all</td>
</tr>
<tr>
<td>I am confident in my ability to consider assistive technology</td>
<td>1-5</td>
<td>Great Extent</td>
</tr>
<tr>
<td>applications to increase children’s ability to function and</td>
<td></td>
<td>Not at all</td>
</tr>
<tr>
<td>participate in diverse and less restrictive environments.</td>
<td></td>
<td>Great Extent</td>
</tr>
<tr>
<td>I am confident in my ability to consider chronological age</td>
<td>1-5</td>
<td>Great Extent</td>
</tr>
<tr>
<td>appropriateness for children when selecting types of assistive</td>
<td></td>
<td>Not at all</td>
</tr>
<tr>
<td>technology in assessment and intervention.</td>
<td></td>
<td>Great Extent</td>
</tr>
<tr>
<td>I am confident in my ability to consider developmentally</td>
<td>1-5</td>
<td>Great Extent</td>
</tr>
<tr>
<td>appropriate practices for children when selecting types of assistive</td>
<td></td>
<td>Not at all</td>
</tr>
<tr>
<td>technology in assessment and intervention.</td>
<td></td>
<td>Great Extent</td>
</tr>
<tr>
<td>I am confident in my ability to match assistive technology tools/</td>
<td>1-5</td>
<td>Great Extent</td>
</tr>
<tr>
<td>devices to individual children’s capabilities and limitations.</td>
<td></td>
<td>Not at all</td>
</tr>
<tr>
<td>I am confident in my ability to consider the least intrusive,</td>
<td>1-5</td>
<td>Great Extent</td>
</tr>
<tr>
<td>least intensive, yet effective low-tech tools/devices in making</td>
<td></td>
<td>Not at all</td>
</tr>
<tr>
<td>decisions about assistive technology for individual children.</td>
<td></td>
<td>Great Extent</td>
</tr>
<tr>
<td>I am confident in my ability to use assistive technology to</td>
<td>1-5</td>
<td>Great Extent</td>
</tr>
<tr>
<td>facilitate the assessment process of children.</td>
<td></td>
<td>Not at all</td>
</tr>
<tr>
<td>I am knowledgeable of sources for funding assistive technology.</td>
<td>1-5</td>
<td>Great Extent</td>
</tr>
<tr>
<td>I am confident in my ability to select and use assistive technology</td>
<td>1-5</td>
<td>Great Extent</td>
</tr>
<tr>
<td>based on families’ preferences.</td>
<td></td>
<td>Not at all</td>
</tr>
<tr>
<td>I am confident in my ability to provide assistance to individual</td>
<td>1-5</td>
<td>Great Extent</td>
</tr>
<tr>
<td>families in the use, maintenance, and generalization of assistive</td>
<td></td>
<td>Not at all</td>
</tr>
<tr>
<td>technology to facilitate child development.</td>
<td></td>
<td>Great Extent</td>
</tr>
<tr>
<td>I am confident in my ability to provide children access to</td>
<td>1-5</td>
<td>Great Extent</td>
</tr>
<tr>
<td>assistive technology across situations and settings where</td>
<td></td>
<td>Not at all</td>
</tr>
<tr>
<td>instruction and interaction can take place.</td>
<td></td>
<td>Great Extent</td>
</tr>
<tr>
<td>I am confident in my ability to be responsive to the culture,</td>
<td>1-5</td>
<td>Great Extent</td>
</tr>
<tr>
<td>language, and economics of the family when making decisions</td>
<td></td>
<td>Not at all</td>
</tr>
<tr>
<td>concerning assistive technology applications.</td>
<td></td>
<td>Great Extent</td>
</tr>
<tr>
<td>I am confident in my ability to identify and evaluate educational</td>
<td>1-5</td>
<td>Great Extent</td>
</tr>
<tr>
<td>software to meet the needs of children.</td>
<td></td>
<td>Not at all</td>
</tr>
<tr>
<td>I am confident in my ability to integrate or embed assistive</td>
<td>1-5</td>
<td>Great Extent</td>
</tr>
<tr>
<td>technology within children’s school activities.</td>
<td></td>
<td>Not at all</td>
</tr>
<tr>
<td>I am confident in my ability to verify proper implementation of</td>
<td>1-5</td>
<td>Great Extent</td>
</tr>
<tr>
<td>mechanical and electrical safety practices in the assembly and</td>
<td></td>
<td>Not at all</td>
</tr>
<tr>
<td>integration of the technology to meet the needs of children.</td>
<td></td>
<td>Great Extent</td>
</tr>
<tr>
<td>I understand the legislative mandates and governmental</td>
<td>1-5</td>
<td>Great Extent</td>
</tr>
<tr>
<td>regulations and their implications for technology in special</td>
<td></td>
<td>Not at all</td>
</tr>
<tr>
<td>education.</td>
<td></td>
<td>Great Extent</td>
</tr>
</tbody>
</table>
classrooms. For each of the three “at-risk” classrooms, the presence and use of technology were scored at a ‘basic’ level within the general classroom environment. Indicators of ‘basic’ technology use included (a) computers accessible to children with use being limited to unmonitored game-playing; (b) infrequent instructional use of overhead projectors, audiotapes, or digital cameras; and (c) lack of a range of technology used for a variety of purposes. Across the four classrooms that had students with disabilities, the availability and use of technology varied from a ‘basic’ level to an ‘exemplary’ level. Exemplary use was characterized by daily use of a range of technologies (e.g., switches, adaptive keyboard, computer, picture schedules, and communication boards) for a variety of purposes.

Self-reported AT use. There was a range of AT use reported by teachers. Teachers in the four classrooms with children having disabilities had the most extensive experiences with AT; two had children with severe disabilities and already had some AT devices. Two of the five teachers—Jane and Terri—who were in at-risk classrooms, had graduated in the previous two years and each had an AT course in their teacher certification curriculum. The three other teachers—Karen, Barbara, and Carole—in the at-risk classrooms reported limited experience and use of AT. Teachers were forthright in assessing their AT experiences. For example, Karen stated that her experience was very minimal:

I am familiar with the computers and things, and the touch screens. I know that there are certain kinds of mouse that help the children use that easier. But I haven’t really worked with much of that, just have seen it.

Overall, the Assistive Technology Self-Assessment Survey revealed that all teachers indicated a basic level of confidence in their abilities in making decisions concerning low-tech/devices for individual children and were least confident in two areas: understanding AT legislation or regulations in special education and sources of funding for assistive technology. Comparison of the teachers of “at-risk students” and teachers of students with disabilities indicated that both groups of teachers did not differ significantly in their AT self-assessment, except in one area. Teachers of students with disabilities were more confident in their abilities to provide assistance to families when using AT to facilitate child development than teachers of “at-risk” students.

Overall, observations of classroom activities confirmed the teachers’ self-reported limited use of AT. However, all teachers, regardless of their AT experience, stated that they were (a) excited about the school-wide project, (b) willing to learn, and (c) desired to use their new knowledge to benefit their students. As noted by Carole: “You know, I hear of all of these new things that are going on, and I know that the horizon is expanding. I am willing to do anything that would promote that.”

Theme 2: Perceptions of Technology

All teachers identified AT in terms of computers, software, augmentative and alternative communication (AAC), or items such as digital cameras or tape recorders. For example, Carole defined AT as,

My first vision would be a non-verbal child touching something and saying “I want that” or picking up a card to say ‘eat.’ So, when you say assistive technology, it means to me, you are helping those who are non-verbal to communicate.

The majority of the teachers defined AT in terms of devices or objects that children could use to assist them in completing specific tasks. Two teachers with previous AT experiences identified a wider variety of tools. Ellen described her experience as,

We do use communication books at snack/breakfast, beginning PECS. We use ‘I need a break’ cards, sabotaging something so they have to ask for it. I use Big Mac switches for participation. In the morning we say ‘yo’ for attendance, and if they can’t make that verbalization, we use a recording. We use Go Talk, minimally at the moment for recognizing classmates. I use Tech Speak, and again with kids that are more non-verbal, more physical disabilities, to be able to answer questions about colors, shapes, classmates, letters, etc.
Integration or supplemental perspective. During the interviews teachers specifically described how they used or could use AT and how AT affected or could affect their students' learning. From their responses emerged two broad categories of perspectives. There were two teachers who described AT as something integrated in the curriculum. These two teachers—Sara and Ellen—worked in classrooms with children with disabilities and perceived AT as being an integral and vital component of their curriculum. A statement by Ellen revealed her comfort level and recognition of the value of AT:

Right now I am real comfortable with low tech, use of pictures, switches. I feel like with the students I teach, I want them to participate, be challenged, and do something, and that is my best option. I couldn’t live without AT. I couldn’t be comfortable as a teacher and not use some of those things.

Similarly, Sara described the benefit of AT for her students: “It fosters independence, pride because they can participate, and it makes them active learners.” These teachers, because of their knowledge, their experience, and their student’s needs, appeared to integrate AT actively into their curriculum.

The remaining seven teachers perceived AT as a supplement rather than an integrated aspect of their curriculum. This was illustrated by Terri’s response to a request to describe how she uses AT in the classroom, “This will be short! Basic use of a computer and digital camera. I haven’t used the computer as much because we had so many pictures already, but I am very limited in assistive technology.” The research team observed that these teachers had worked hard to meet the needs of their students and foster learning. AT had been demonstrated to them at various points in their careers, although they had no inservice professional development experiences in AT, and had no support for the limited amount of technology in their classrooms. All teachers recognized their limitations, stated their desire to learn, and spoke of the challenges awaiting them with regard to using AT in their classrooms.

Theme 3: Perceived Challenges to AT Use

All teachers spoke of challenges regarding the implementation of school-wide AT. These challenges were categorized into three primary sub-themes: (a) support, (b) time, and (c) student population characteristics. Each of these sub-themes is discussed in the following sections.

Support. Teachers noted their intense need of AT support, especially technical support and professional development. Technical support was defined as supports related to use of computers, the ability to problem solve technical difficulties, and the need for guidance in choosing appropriate AT. There was consensus on the desire for a new operating platform for their computers. Teachers spoke frequently of the difficulty they had with the current operating system in the Macintosh (Macs) computers that were in their classrooms. The primary difficulty was not in the performance of the Macs, but in their own level of knowledge as to how to use them. All teachers had a Windows operating system on their home computers, used that operating system primarily, and stated that they had little time to learn to use the Macs proficiently. Carole flatly stated, “We are not too happy with the Macs. I just don’t think they are as easy. I just don’t care for them.” And when probed with a question about her use of Windows she added, “Yes, and that could be the difference, that I am used to working with Windows.”

Additional technical support needs were the need for a network color printer that would consistently print, in color, and could be accessed directly from the classroom. When equipment did not function properly, teachers were frustrated since they had spent limited free time to produce a product. Ellen spoke of a particular instance that illustrated her frustration:

All that time you just spent, and then you have to redo it [Boardmaker pictures] on another computer. And I told you about another time, getting my breakfast cards done; I paid for it, went to Kinkos, laminated it, put Velcro on it, all that kind of stuff. Then I bring it back here, and the pictures came off. All the time you spent was just gone.
Needed support for professional development in specific areas was identified by all teachers. One particular need was professional development focusing on the technical skill of operating AT. Terri spoke of her willingness to receive training in this area: “I would be very positive towards it if somebody trained us, I’m very open to it, I just need to learn about it.” Additionally, teachers identified a need to be informed or guided towards purchasing AT that would benefit their students. For example, Toni commented, “I guess I would like to know what there is to help the kids. High or low tech, I don’t even know what to ask for.”

**Characteristics of student population.** All teachers discussed challenges with the student populations they served. Sara was only at school in the morning when the initial interviews were conducted; however, she is currently at the school full time. The structure of the school day, having both morning and afternoon groups, coupled with varying ability levels among these groups, provided substantive challenges. Additional challenging factors that the teachers identified were (a) poverty; (b) high mobility among the children; (c) English as a second language; and (d) differences in maturity between the younger, morning group \((Mage = 3.5\text{ yrs})\) and the older, afternoon group \((Mage = 4.5\text{ yrs})\). The high mobility rate was noted to be both particularly challenging and disturbing. Carole said, “Yeah, especially for the children that need it the most, they’re the ones that are here for three weeks and then take off. We open the door for the homeless, or if we find out they are in the Mission. They come for two days and then we’ll never see them again because they’ve moved, and that’s tough. We had a little girl that was here for 6 days, and was here for our class picture, and then she was gone. And then you know you look at that, and you say ‘Where’s she at?’ I hope she is safe and warm.”

Teachers cared deeply about their students. They recognized that some of their students had no opportunity to experience technology other than what was provided in the classroom, and even then such opportunities were of short duration.

Instructional goals for the morning and afternoon groups differed also, with teachers identifying the afternoon groups as more academically oriented while the morning groups required a significant amount of social instruction. Donna describes her morning class as needing instruction in social skills: “We have just gotten a couple of really interesting students. In the morning class, we’ve got such a variety, the range is incredible. There are some self-help things that we really need to push.” Teachers wanted AT that would benefit both their morning classes, with a focus on social skills, and their afternoon classes, which focused more on academic skills.

**Time.** A prevalent theme that emerged was the issue of time constraints. All teachers discussed their concern that AT would cost them time—a limited commodity in preschool settings. Time concerns included time (a) required to learn AT, (b) required to incorporate the AT into lessons, and (c) needed to teach the children how to use AT. Observations of the classrooms confirmed that the typical day was filled with activities, with children being engaged in a range of centers, activities, and therapy sessions (for children with disabilities). Carole described a typical class:

> From the moment they walk in here in the morning or in the afternoon, for the two hours and 40 minutes they are in here, there is not one time when we sit down. There’s just constant motion, constant transitions, not only for us but for the kids.

An additional concern related to time, was the time required to assist children with AT, specifically with computer use. Karen described this issue as, “If things [computer software programs] get too difficult then me or my assistant have to be over there to show them. You know, I don’t mind helping them, but I have 20 other children.” Observations confirmed that 20 3- and 4-year-olds required consistent attention by both teacher and paraprofessional in each of the classrooms.

Ellen spoke of the time required to make the products using AT. Ellen was one of the teachers that used AT consistently in her classroom and knew first-hand of the time required to produce products for use with 10 children with disabilities. She explains her concern,
I don’t know if there are any answers to that [time required to produce products]. If you want to use that stuff, you do have to make it, and I know there is time involved. [I would like] Any ease in that process, and making it practical or efficient in the classroom.

Teachers’ perceptions of challenges to implementing AT technology in their classroom were grounded in the knowledge of their classroom students, their classroom schedules, and their need for additional time.

Theme 4: Perceptions of AT and Literacy

Teachers described the literacy in the curriculum and consistently made references to reading. Reading was the primary focus of all literacy activities; activities that incorporated writing were not mentioned. Most of the writing in the classrooms was focused on students’ learning to write their names. This perception of literacy being comprised almost exclusively by reading activities was confirmed by observations in the classroom and the observational structure provided by the ELLCO. Terri’s description of her classroom literacy activities is typical of other teachers’ responses:

Oh yeah, we use the large picture books, and books on tape, we do a lot of that. Yesterday, we were doing some role play with it, we have a lot of fun with it, and expand a lot of the stories. We try to use pictures and different kinds of things with that also.

Sara, one of the teachers with the most AT experience, described her inclusion of AT during literacy activities:

When we are in calendar we have those Boardmaker® pictures and we make the sentences, “Today is ____.” Different things with the Intelliekeys®. We are beginning to make the letters of our names and recognizing our names, without pictures now, which I’m very excited. So much of it [AT] wraps into every little activity it’s hard to separate it out.

However, most of the teachers did not use AT during reading, or during writing. The exception was if one of the children was receiving occupational therapy services; then the occupational therapist may have recommended a low tech AT device to assist with the technical aspects of writing.

The overall finding was that teachers perceived literacy, at this young age, as primarily reading activities and writing was minimally addressed. The incorporation of AT during reading or writing activities was also minimal. More incorporation occurred in the two classes where teachers (Ellen and Sara) had more experience and knowledge of AT.

Discussion

Implementing AT into a literacy curriculum in any preschool program requires substantial organizational change. Consistent with the research on successful organizational changes, one of the primary stakeholders in this preschool setting—the teachers—were interviewed to understand their perspectives about AT, AT and literacy, and to understand their perceived challenges regarding implementation of the project. Such understanding was critical before developing any intervention approaches—particularly professional development support strategies. The following discussion is organized around each of the four major themes.

Assistive Technology Use

Findings regarding lack of familiarity with AT and infrequent usage is consistent with previous studies (Derer et al., 1996; Lesar, 1998; Parette, 1997; Scott, 1997). Involving teachers in AT planning processes, whether for a single device or a school-wide AT program, has been strongly recommended in the literature (Carey & Sale, 1994; Copley & Ziviani, 2004; Riemer-Reiss & Wacker, 2000; Todis & Walker, 1993). Prior to any professional development approach designed to increase teacher familiarity with AT, it was critical to ask teachers about their concerns, knowledge, and perceptions of AT. Interviews were the first step in enhancing teacher involvement with the MDAT project.

The teacher participants in this study readily admitted their lack of training and lack of knowledge regarding types of AT, while also noting their willingness to learn. Kotter
(1999) observed that the first step to effective change in organizations is creation of a sense of ‘urgency’ for the change. All teachers were well aware of the impact of the NCLB student achievement emphasis on their profession. They were also aware that emerging literacy skills provided the foundation for children’s success on entering school. This knowledge, supported by administrative support for the MDAT grant (i.e., expressed and fiscal support by the school administration), appeared to drive their own commitments to participate in the project.

**Perceptions of Technology**

Consistent with previous research (e.g., Hutinger, Johanson, & Stoneburner, 1996) participants in this study, with the exception of two of the special educators, viewed AT as supplemental to the curriculum, rather than being integrated. Approaching AT use from this paradigm is limiting to both teachers and students. The participants most commonly viewed AT narrowly, specifically in terms of computer and educational software. Only two special educators saw AT from an integration perspective. It was determined that all teachers must learn, experience, and receive support when implementing AT as an integral part of the curriculum. Changing this perspective of current teacher paradigm is viewed as a major challenge confronting this project, and most preschool programs currently. Strategies to deal with such challenges include direct contact in classrooms by intervention staff regularly, and engaging students and teachers in hands-on activities that model integrative AT.

**Perceived Challenges to AT in the Classroom**

The anticipated challenges identified by teachers were support, time, and student needs. Interestingly, even with their limited AT experience and use, the teachers clearly articulated challenges that are consistently identified in the literature. Support challenges, specifically technical support and professional development, have been documented as barriers to the use of AT (e.g., Beukelman & Mirenda, 1998; Carey & Sale, 1994; Copley & Ziviani, 2004; Riemer-Reiss & Wacker, 2000).

The challenge of time focused on finding time to learn and implement the AT into the classroom. In earlier studies involving instructional technology, researchers concluded that something on the order of 3 to 5 years is required for teachers to become really adept at incorporating technology into their teaching practice (Sheingold, 1991, 1992). Currently, time to learn and effectively use technology in classrooms remains a concern for many teachers (Valmont, 2003). More recent publications have emphasized essential conditions for effective use of technology in classrooms, including (a) a shared vision for integration; (b) standards and curricula support; (c) required policies (e.g., use of the Internet, legal use, equity); (d) access to hardware, software, and other resources; (e) trained personnel; (f) technical assistance; and (g) appropriate teaching and assessment approaches (Roblyer, 2006; Whitehead, Jensen, & Boschee, 2003). However, less is known about the time commitment required for teachers to become comfortable with integrating AT into their curricula (see, e.g., Randle & Harris, 2004). Ideally teachers should have time to learn the AT, experiment with it in the classroom, and discuss any difficulties with support staff (MacArthur, 2001).

The reality of teaching in an early childhood setting with children identified being at-risk or having disabilities is that time is a ‘precious commodity’ and adequate time—both for professional development in learning to use devices, planning for integration, and implementation of devices in the curriculum—are critical elements for successful technology integration (Speck & Knipe, 2005). Challenges of time to the project staff continue to be of prime concern.

When the MDAT project was first implemented students did not attend school on Friday, and that day was designated for professional development several times a month. Within the first year of project implementation, students began attending school five days a week. The original professional development schedule was significantly affected and adaptations, consisting of hands-on activity groups in the classroom conducted by project staff and graduate students, early morning abbreviated training sessions, half day Institute
sessions, and the establishment of user groups, was immediately implemented. However, time for professional development continues to be a challenge for all involved.

Characteristics of students in the preschool classrooms also presented unique challenges. It was found that access to AT in the homes varied, and the mobility rate of the students was high, i.e., children across classrooms were transitioning in and out of the program. Teachers also repeatedly reported that dealing with behavioral concerns often took precedence in all activities occurring in the classrooms. One particular AT strategy that can assist teachers with behavioral concerns in the classroom would be to incorporate visual strategies to promote appropriate behavior. Teachers in this project have been instructed in the use of Boardmaker™ and Writing with Symbols™ to create visual schedules for classroom routines and sequences in specific classroom activities. This and other strategies will be systematically infused into the AT professional development approaches to ensure that teachers develop the necessary skill sets to use AT effectively in the curriculum.

**AT and Literacy**

The philosophy of emergent literacy views individuals who are either “chronologically or cognitively young learners” as capable of learning literacy (Pierce & Porter, 1996, p. 142). Skills that emerge during early literacy learning include an understanding of the function and concept of print. Understanding the function of print can be facilitated by activities such as reading a story, making lists, or scribbling and drawing (Justice & Pullen, 2003; Sulzby & Teale, 1991). Similarly these activities can also facilitate concepts of print such as turning the page from right to left, reading from left to right and recognizing printed vocabulary (Pierce & Porter). Additionally, early literacy intervention is critical because young children who exhibit difficulties with emergent literacy skills rarely attain the literacy level of peers who have adequate emergent literacy skills (Juel, 1988). The students in the targeted preschool were identified as at-risk or had identified disabilities, which underscored the importance of facilitating emergent literacy skills.

**Summary and Recommendations**

The MDAT project has been implemented with the goal of using AT to foster emerging literacy skills. However, the first step of this project was to investigate the teachers’ use and perspectives of AT, address their needs of professional development and minimize their challenges to making AT integral to their curriculum. Supported by the knowledge of teachers’ needs and perceived challenges the project staff has provided teachers with an AT toolkit, implemented professional development for AT within the toolkit, and modeled use of AT during group activities. The following recommendations are based on initial experiences with this project that should have applicability to programs nationally.

**Strategy 1. Gain perspectives of stakeholders.**

All too often, top-down approaches are used in public school settings (Kolderie, 1990) that are sometimes characterized by such artifacts as lack of teacher input regarding selection and development of curricula, budgeting, and decisions regarding professional development needs. However, for professional development to be successful, teachers need opportunities to discuss their beliefs about technology and its relationship to pedagogy (MacArthur, 2001). This project assumed that teacher input was critical to developing effective approaches for the integration of AT into the preschool curricula. For example, had the research team not explored teacher perceptions prior to developing intervention strategies and an AT toolkit to facilitate writing literacy skills, a decision may have been made to use currently available computers (Macs). However, interviews with teachers revealed that preferences for operating platforms should be incorporated into the AT toolkit to maximize their use. The change of the platform has increased teacher involvement with the project, increased their use of AT, and facilitated their enthusiasm for the changes this project has required. Similarly, at every phase of project decision-making regarding curricula approaches, ideas were presented to teachers for feedback, and teacher suggestions were systematically considered.

**Strategy 2. Ensure flexibility in professional development approaches.**

With the loss of a designated professional development day, project
staff had to make adjustments in key strategies to meet the identified needs of training. Training sessions were scheduled before school, which were minimally successful since they were of short duration and offered no opportunity to have hands-on experience with the technology. Moving into the classroom and modeling activities for the teachers has been received well. The activities embed AT and writing assessments and teachers are provided with a time to observe the implementation of AT.

**Strategy 3. Use stipends to support teachers.** Even though the U.S. Department of Education has recommended that 30% of a school district’s budget be allocated to support professional development, only about 6% is allotted for such activities (International Reading Association, 2001). Zabala and Carl (2005) argue that education agencies have obligations to (a) include AT in the technology planning and budgeting processes, and (b) provide continuous AT learning opportunities for teachers. Though it may be difficult to secure internal funding in school systems to support teachers for professional development, numerous approaches have been promoted in recent years to expand the professional growth of teachers, including (a) school/university partnerships (Bauer & Anderson, 2001; Maring, Boxie, & Wiseman, 2000; Wojcik, Peterson-Karlan, Watts, & Parette, 2004); (b) use of online professional development resources [cf. Infinitec Assistive Technology Coalition, 2006; North Central Professional Development Laboratory, n.d.; Special Education Assistive Technology [SEAT], 2004; (c) cybermentoring (Boxie & Maring, 2001); (d) and increased access to professional organization training (cf. Center for Applied Special Technology, n.d.; Don Johnston, n.d.; Intellitools™, n.d.), and listers (Quality Indicators for Assistive Technology [QIAT], n.d.). Securing small mini-grants (Parette, Murdick, & Gartin, 1996) from local community groups, and grants from state and national private foundations may also be helpful in securing resources to support professional development activities of teachers. While some on-line professional development resources are free (e.g., QIAT), others require membership fees or payment for participation (e.g., Infinitec Assistive Technology Coalition).

Regardless of costs for professional development, teacher participation in any AT curricula integration effort can be enhanced by providing teacher stipends (Hirsch, 2006; Reichardt, 2001). As noted by the National Staff Development Council (Hirsch), schools must increase their capacity for teachers to learn and use technology by using stipends for teacher leaders who serve as mentors for new teachers, team leaders for learning teams, and trainers. One strategy that holds particular promise is the use of AT User Groups. Generally, a user group is defined as “a set of people who have similar interests, goals, or concerns. The members have regular meetings where they can share their ideas” (Whatis.com, 2006). Creating such groups requires a commitment on the part of (a) one or more individuals having expertise with specific AT applications to serve as a facilitator, and (b) a small group of 6-8 teachers who express interest in developing new AT integration skills. User groups would meet at regularly scheduled times, such as after school, for 1-2 hours, and allow teachers the opportunity to share ideas with one another regarding AT solutions used in their classrooms. It would also allow for more intensive instruction and creative problem-solving in collaboration with one or more facilitators having more advanced skills. Integral to the creation and maintenance of these groups is a stipend to support participation. In this project, the research team will employ a user group approach currently used in a collaborative project—the Heart of Illinois Low Incidence Association (HILIA)—which involves a cadre of teachers having AT interests, and who represent Illinois State University, and five school districts in Central Illinois (SEAT Center, 2006). In this project, a decision was made to offer interested teachers a small stipend to participate in minimum of 6 out of 8 scheduled user group sessions that would be held in scheduled after-school sessions. Since teachers have other demands placed on their time (e.g., families) and given the lack of time available during typical school days for professional development, monetary incentives are both appropriate and necessary. They ensure teacher buy-in, and also support the development of critical AT competencies.
that would be difficult to develop outside of a formal, ongoing professional development program.

References


Received: 20 May 2006
Initial Acceptance: 20 July 2006
Final Acceptance: 1 October 2006
Effects of the STAR Intervention Program on Interactions between Campers with and without Disabilities during Inclusive Summer Day Camp Activities

Christina M. Boyd, Jeffrey L. Fraiman, Kelly A. Hawkins, Jennifer M. Labin, Mary Beth Sutter, and Meghan R. Wahl
University of Maryland

Abstract: The purpose of this study was to examine the effects of a peer intervention program designed to increase interactions between children with and without disabilities in an inclusive summer camp. A multiple probe single subject design was used to determine the effects of the STAR intervention on six dyads of campers aged five through ten over two week sessions. Each dyad consisted of one camper with a mild to moderate disability and one camper without a disability. The results showed an overall increase in the number of interactions and demonstrated that the STAR program was effective in increasing interactions between campers with and without disabilities. Factors contributing to the success of the intervention are discussed as well as limitations.

Many studies have investigated the dynamics of social interaction between young children with and without disabilities. In particular, the use of peer training has been examined as an intervention to increase social interactions in preschool and elementary school settings (Garfinkle & Schwartz, 2002; Goldstein, Kaczmarek, Pennington, & Shafer, 1992; Hundert & Houghton, 1992; Odom, Chandler, Ostrosky, McConnell, & Reaney, 1992). English, Goldstein, Kaczmarek, and Shafer (1996) developed a peer skills training program that taught children to “stay,” “play,” and “talk” with a peer with a disability. English, Goldstein, Shafer, and Kaczmarek (1997), Goldstein and English (1997), and Laushey and Helfin (2000) investigated the effectiveness of the “stay-play-talk” training procedure in preschool and kindergarten children. In all three studies, children without disabilities received training sessions during which they were taught how to interact with a child with a disability. The results showed a substantial increase in the interactions within the dyad after the “stay-play-talk” procedure was taught.

Gonzalez-Lopez and Kamps (1997) provided information about disabilities to typically developing peers. In addition, they taught social skills to children with autism and their peers, which increased the incidence of positive interactions between the children. Sasso, Mundschenk, Melloy, and Casey (1998) examined the effects of multiple variables on the social behavior of children with autism and other developmental disabilities. Results of the research suggested that dyads promoted social interaction on the part of the child with a disability better than triads. Furthermore, the study showed that social behaviors were more prevalent during peer-initiated free play than when peers were instructed to teach a child with a disability how to play a specific game. Despite these findings, few research studies have been published regarding attempts to increase social interaction between children with and without disabilities outside of the school setting. Though preschool and elementary schools are critical arenas for social development in young children, they are not the only settings where children come together, interact, and make friends.

Authors are members of the University of Maryland Gemstone Program, a multidisciplinary four-year research program for selected honors students. Dr. Francey Kohl, the faculty mentor, assisted in preparing the manuscript. Correspondence concerning this article should be addressed to Dr. Francey Kohl, 1308 Benjamin Building, Department of Special Education, University of Maryland, College Park, MD 20742.
One widely overlooked arena for social interaction is community recreation programs. There is a demonstrated benefit of social interaction during leisure activities for children with disabilities (Bedini, 2000). Studies have examined methods to improve inclusive recreation in areas such as staff training and administrative or structural modification (Herbert, 2000; Schleien, Germ, & McAvoy, 1996). In addition, several studies have demonstrated the benefit of inclusive recreation on the social acceptance of children with disabilities (Anderson, Schleien, McAvoy, Lais, & Seligmann, 1997; Devine, 2004; Sable, 1995). However, these studies did not address improving interactions between children with and without disabilities, which is an extensively studied area in educational settings. Due to the lack of intervention studies in leisure settings, research is needed to determine the impact of peer training at recreation sites. Therefore, the purpose of this investigation was to examine effects of a peer intervention procedure designed to increase interactions between children with and without disabilities during an inclusive summer day camp.

Method

Participant Selection

The study was conducted in an inclusive summer day camp organized by a suburban community recreation program in the mid-Atlantic region of the United States. The investigation took place during regularly scheduled camp hours (9am-5pm) at indoor and outdoor camp facilities. The camp program included activities such as organized team sports, games, arts and crafts, and swimming. The ratio of camp staff to children was approximately 1 to 5. The ratio of children with disabilities to children without disabilities was approximately 1 to 10. There were four two-week camp sessions in which approximately 20 campers attended per session. The study was implemented during two camp sessions, the first and third of the sequence. During each camp session, campers at three different sites were observed. Participants were summer day campers between five and ten years of age and consisted of a combination of boys and girls. Table 1 displays participant characteristics, including age and gender.

<table>
<thead>
<tr>
<th>Camp Session</th>
<th>Gender</th>
<th>Age</th>
<th>Gender</th>
<th>Age</th>
<th>Disability (Verbal Ability)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-A</td>
<td>Male</td>
<td>7</td>
<td>Female</td>
<td>5</td>
<td>Emotional Disorder (Verbal)</td>
</tr>
<tr>
<td>1-B</td>
<td>Female</td>
<td>7</td>
<td>Male</td>
<td>10</td>
<td>Autism (Verbal)</td>
</tr>
<tr>
<td>1-C</td>
<td>Male</td>
<td>5</td>
<td>Male</td>
<td>5</td>
<td>Autism (Language Delay)</td>
</tr>
<tr>
<td>2-A</td>
<td>Male</td>
<td>8</td>
<td>Male</td>
<td>8</td>
<td>Visual Impairment (Verbal)</td>
</tr>
<tr>
<td>2-B</td>
<td>Female</td>
<td>7</td>
<td>Male</td>
<td>10</td>
<td>Autism (Verbal)</td>
</tr>
<tr>
<td>2-C</td>
<td>Male</td>
<td>7</td>
<td>Male</td>
<td>7</td>
<td>Autism (Limited language usage)</td>
</tr>
</tbody>
</table>

CHILDREN WITH DISABILITIES. Recreation coordinators were asked to mail an information letter and a permission form to parents of all campers with disclosed disabilities, maintaining confidentiality until there was an agreement by parents for their child to participate in the research. Three campers with disabilities participated in each camp session, for a total of six campers with disabilities over all camp sites. All children with disabilities for whom a parental permission form was returned were potential participants. Severity of the disabilities ranged from mild to moderate.

CHILDREN WITHOUT DISABILITIES. On the first day of camp, campers without disabilities and their parents were approached. The research was explained and parents were asked if they would allow their child to participate. If parents agreed to have their child participate, information letters and permission forms...
were provided and parents were asked to return them by the second day of camp. Once permission was granted, three campers without disabilities from each camp session were selected based on counselor recommendations or random selection from those who volunteered by returning their permission form.

Procedure

Experimental design. A multiple probe single subject experimental design was used. During the second day of camp, baseline observations of interactions between campers with and without disabilities began. Camper A was observed for a minimum of three baseline sessions at the same time that Campers B and C were observed for one observation. When baseline data were stable for Camper A, the intervention procedures were implemented. The intervention continued with Camper A until a noticeable increase in the number of interactions was observed and then Camper B was observed for three additional baseline observation sessions and Camper C was observed for one additional baseline session. When Camper B had a stable baseline, the intervention procedure was implemented. Likewise, intervention continued until Camper B showed a noticeable increase in the number of interactions. Intervention observations were continued for Campers A and B, while Camper C was observed for an additional three baseline observations before the intervention began.

Dependent variable and data collection. The dependent variable was the percentage of intervals in which an interaction between campers with and without disabilities occurred. The primary focus of each observation interval was the camper without a disability, namely Camper A, B, or C. Interactions were defined as social behaviors occurring between campers with and without a disability including: (a) non-verbal communication (e.g., sustaining eye contact for three seconds, smiling, waving); (b) talking to each other; (c) directing an activity (e.g., explaining the directions for an art project); (d) sharing materials; (e) participating in an activity together (e.g., assembling a puzzle); (f) prompting a skill (e.g., gesturing to cut materials, modeling how to open a jar of paint); (g) physical assistance (e.g., taking the hand of camper with a disability to connect the dots); and (h) physical or verbal encouragement (e.g., patting on the back, giving a high five, saying "good job").

Data were collected during 5 minute observation sessions. Within the 5 minutes, there were a total of twenty 10 second intervals for observing that were separated by 5 second intervals for recording. The observer was prompted via an earphone with a tape recorded signal to start observing, to stop observing, or to record. A partial interval recording system was used in which an interval was marked indicating that an interaction was observed regardless of the frequency of interactions or length of time for each interaction. At the end of each observation session, the percentage of intervals in which interactions occurred was determined. Data collection procedures were identical for all baseline and intervention conditions across all campers and camp sessions.

Independent variable. After baseline data were completed for the campers without disabilities, the first part of the peer intervention was implemented. Using the "stay-play-talk" training by English et al. (1996) as a basis, the STAR intervention was developed for this study to target elementary school aged children in recreation settings. The intervention consisted of four behaviors that were modeled and taught to the campers without disabilities to increase interactions with campers with disabilities: “S” stood for stay, “T” for talk, “A” for assist, and “R” for reward. Campers without disabilities were asked after their baseline observations were completed if they would participate in the STAR intervention. Before the training session began, the campers without disabilities were each read an assent form and participation in the research was agreed to by the campers.

At the time of the STAR intervention, campers without disabilities were separated from the group for no longer than 20 minutes. The session began with a series of questions posed to the campers: (a) What is a disability? (b) What are different types of disabilities? and (c) What are possible similarities and differences between their camp experience and the way campers with disabilities may experience the camp? If the campers did not respond,
appropriate answers were provided. The campers without disabilities were told that during an activity such as arts and crafts, they would be given a button illustrating the STAR acronym, which would be used as a reminder of how to interact with campers with disabilities. The campers were partnered with campers with disabilities and asked to be a “STAR.” After showing the campers the button during the intervention, the acronym was explained. The explanation included examples as well as opportunities for the campers to participate in role playing the four behaviors of “STAR.” The scenarios, which were used in the role play, were chosen based partly on the disabilities of their assigned campers. After the STAR intervention was completed, the campers returned to the group. Each day, when the targeted activity occurred (e.g., arts and crafts), the second part of the STAR intervention was implemented. The campers without disabilities were partnered with the assigned campers with disabilities, given the STAR button, and reminded by one of the researchers to stay, talk, assist, and reward the campers with disabilities.

Interobserver reliability. Six observers (all authors) acted as the primary and secondary data collectors. Prior to the implementation of the study, all observers became familiar with the definition of the dependent variable and what qualified as an interaction between campers. Data collectors were paired off and given a tape recorder with a double jack for two separate ear phones. Observers practiced data collection and calculations on a video of children interacting until a reliability agreement of 90% or above was reached. A point by point formula was used to calculate reliability: number of agreements of interaction intervals divided by the number of agreements plus disagreements of interaction intervals multiplied by 100. During camp observations, two observers entered the room with the tape recorder and double jack earphones, sat as far away as possible from one another and listened for the observe, record, or stop prompts with separate headsets.

Procedural reliability. Procedural reliability was calculated for two different aspects of the study: (a) during all training sessions in which the campers without disabilities were taught the STAR intervention and (b) before daily observation sessions when a reminder of the STAR procedures was given along with the STAR button. Procedural reliability was observed and recorded by one of the authors. A checklist of steps that was to be followed for the STAR intervention was used to insure all training steps were completed. During procedural reliability, the researcher observed and recorded the number of steps completed correctly. To calculate reliability, the following formula was used: number of steps completed divided by total number of steps multiplied by 100.

Results

Results of the STAR intervention program on the percentage of interactions between campers with and without disabilities in Camp Session 1 are presented in Figure 1. The baseline condition for Camper 1-A consisted of three observation periods with no interactions occurring with the camper with a disability. The intervention condition for Camper 1-A consisted of 12 observation periods with an average of 33.8% interactions with the camper with a disability, ranging from 5-55%. The baseline condition for Camper 1-B consisted of four observation periods with an average of 3.8% interactions with the designated camper with a disability and a range of 0-15%. When the intervention condition was introduced for Camper 1-B over 12 observation periods, an average of 20.4% interactions occurred, ranging from 0-45%. The baseline condition for Camper 1-C consisted of five observation periods during which no interactions occurred with the camper with a disability. The intervention condition for Camper 1-C consisted of three observation periods with an average of 35% interactions with a range of 10-75%.

Results of the STAR intervention program on the percentage of interactions between campers with and without disabilities over each observation period in Camp Session 2 are presented in Figure 2. The baseline condition for Camper 2-A consisted of three observation periods with an average of 1.7% interactions with the camper with a disability, ranging from 0-5%. When the intervention condition for Camper 2-A was in effect for 16 observation periods, the average percentage of interactions was 31.6% with a range of 10-
Figure 1. Effects of STAR intervention program on percentage of interactions between campers with and without disabilities during camp Session 1.
Figure 2. Effects of STAR intervention program on percentage of interactions between campers with and without disabilities during camp Session 2.
The baseline condition for Camper 2-B consisted of four observation periods with an average of 2.5% of interactions occurring with the camper with a disability, ranging from 0-10%. Once the intervention condition was introduced for Camper 2-B over 12 observation periods, the average percentage of interactions was 16.7% with a range of 0%-60%. The baseline condition for Camper 2-C consisted of five observation periods with an average of 1% of interactions occurring with the designated camper with a disability, ranging from 0-5%. The intervention condition for Camper 2-C consisted of 12 observation periods with an average of 20.8% interactions with a range of 0-65%.

Results of this investigation showed that after the intervention training was given to each camper without a disability, the average percentage of interactions between campers with and without disabilities increased across all six campers. The mean percentage of increased interactions for all six campers from baseline to intervention conditions was 26.4%.

Interobserver reliability. During the baseline conditions for Camp Session 1 (N = 12) across all three campers, reliability measures were taken on 75% of all sessions and the mean reliability calculation was 100%. During intervention sessions for Camp Session 1 (N = 27) across all three campers, reliability measures were taken on 44% of all sessions, with a mean of 97.5% agreement and a range of 90-100%. Therefore, in Session 1 across all conditions and campers, reliability was taken on 54% of all observations with a mean of 99.2% agreement and a range of 90-100%.

During baseline conditions for Camp Session 2 (N = 12) across all three campers, reliability measures were taken on 75% of all sessions and the mean reliability calculation was 100%. During intervention conditions for Camp Session 2 (N = 40) across all three campers, reliability measures were taken on 27.5% of all sessions, with a mean of 95.8% agreement and a range of 90-100%. Therefore, in Camp Session 2 across all conditions and campers, reliability was taken on 36.5% of all observations with a mean of 98% ranging from 90-100%. Overall, for Camp Sessions 1 and 2 across all baseline conditions, intervention conditions, and six campers, interobserver reliability was obtained on 44% of all observations with a mean of 98.6% agreement and a range of 90-100%.

Procedural reliability. On 100% of all STAR intervention training sessions across both camp sessions with six campers, procedural reliability was taken by a secondary observer. A checklist of 20 critical steps necessary to implement the STAR intervention program was generated. During the intervention training sessions, the secondary observer indicated whether the trainer implemented the STAR intervention consistently. The number of steps implemented during the intervention training divided by the total number of steps (N = 20) multiplied by 100 yielded procedural reliability results. For Camp Sessions 1 and 2, the mean procedural reliability was 100%.

On 38.9% of all daily reminder sessions across both camp sessions, procedural reliability was taken by a secondary observer. A checklist of five critical steps necessary to implement the daily reminders was generated. During the daily reminder sessions, the second observer indicated whether the trainer implemented each step. The number of steps implemented during intervention conditions divided by the total number of steps (N = 5) multiplied by 100 yielded procedural reliability results. For Camp Sessions 1 and 2, the mean procedural reliability for the reminder procedures was 100%.

Discussion

The STAR program was shown to be an effective intervention to increase interactions between campers with and without disabilities in each of the six pairs in an inclusive summer day camp. These results were similar to those found by English et al. (1997), Goldstein and English (1997), and Laushey and Heflin (2000) in school settings. It is believed that the increase in interactions between campers with and without disabilities during the two week camp sessions was a direct result of a combination of variables. First, the initial training session provided useful information on disabilities by emphasizing similarities across all campers and helped to make the campers feel more comfortable around their peers with disabilities. The importance of training for children without disabilities re-
Regarding how to effectively interact with children with disabilities has been echoed by several other studies (Goldstein & English; Gonzalez-Lopez & Kamps, 1997). Secondly, the STAR procedures (specifically, “stay, talk, assist, and reward”) were effective because campers without disabilities were given specific ways to initiate and sustain interactions with campers with disabilities. Finally, the daily reminders were beneficial and necessary because they prompted the campers to assist campers with disabilities in specific camp activities.

However, there were sudden drops in interactions for certain observation sessions. In most of these cases, camp circumstances beyond the researchers’ control led to the decreased frequency of interactions. Decreases in interactions occurred when observed activities ended prematurely. The remainder of the observation session was then conducted while transitioning to another activity and interactions were not as likely to occur. In instances where the frequency of interactions dropped to zero, the primary reason was that the camper without a disability became too engrossed in his or her own assigned activity and failed to interact with the camper with a disability.

The atmosphere surrounding the camp also affected the frequency of interactions between campers. On multiple occasions the observation periods were affected by changes in the daily schedule that resulted in all or part of the observation occurring during activities where interactions were made difficult by the constraints of the activity. Not all observations were able to occur during the passive activity of arts and crafts as originally planned and it was found that physical, outdoor activities often produced fewer interactions between campers. Some observation periods were also conducted during unstructured activities because field trips occupied the majority of the day, which also decreased the frequency of interactions observed. Another factor was daily absences by either camper, interrupting the flow of the intervention. Also, counselors, particularly the counselors in training (CIT) who were adolescent volunteers, on occasion interfered with the campers during observation sessions. Most of the campers with disabilities were assigned a CIT by the recreation department who would sometimes monopolize the attention of his or her camper, which obstructed the camper without a disability from assisting his or her partner.

Despite the success of the intervention, the program could be improved by refining the STAR procedures. It was found that the training for some of the campers without disabilities appeared to have been too advanced for their age, which ranged from five to eight years. The concept of a disability was not always understood by the younger campers, which affected the implementation of the STAR procedures. This was especially true of situations where campers had a disability that was not visible. Some of the campers had mild disabilities, such as an emotional disorder, which were not discernable to other campers. Additionally, some campers without disabilities would focus on only one or two components of the STAR intervention, such as stay and talk. One possible way to remedy the problem would be to use picture symbols for stay, talk, assist, and reward displayed on an index card that could be placed in front of the camper. The modeling and role-playing component of the intervention was also essential. Adding more practice to the role-playing component may help the camper without disabilities to better understand the expectations of the STAR procedure. This could be accomplished by including a guided approach that would start with modeling, then a prompted role-playing situation, and finally lead to independent role-playing by the camper.

Although the daily reminders were critical to the success of the STAR program, they could also be improved in three ways. The first recommendation is to implement a role-playing component similar to the initial intervention into the daily routine by having the campers act out specific behaviors of the STAR interventions before receiving the button each day. This may enhance younger campers’ understanding of the procedures and further increase their interactions. The second recommendation would be to allow the camp staff to give the daily reminders. This familiarity may help the campers feel more comfortable in asking questions about the campers’ disability, how to assist, and what is expected of them, as well as facilitate generalization of the STAR behaviors across the entire day. The
last recommendation would be to provide constructive feedback at each daily reminder session to the campers without disabilities about their interactions the previous camp day.

**Limitations**

There were several factors both foreseen and unforeseen that produced limitations to the results of the STAR intervention. As is often the case with inclusive recreation programs, there were very few participants with disabilities at each camp site. For this study there were only one or two campers with disabilities who had permission to participate in the study at each camp site and these campers had mild disabilities that were not apparent to the other campers. It is unclear if the results of the study would have been different if the campers with disabilities had impairments easily recognizable to the other campers (e.g., a child in a wheelchair).

An additional limitation to the research comes as a result of the design of the intervention itself. During the baseline condition, the campers with and without disabilities were seated away from each other, essentially eliminating any opportunity for interaction between the two. During the intervention observations, the campers with and without disabilities were seated next to each other. Simply placing the campers next to each other may have increased the incidence of interaction between them. The campers without disabilities were always free to move during the intervention; however, most stayed in the seat they were asked to sit in. Had the participant pool been larger, it may have been possible to take baseline data and complete the intervention with a camper who was initially sitting next to the camper with a disability.

**Future Directions**

The positive results of the STAR intervention have far-reaching directions for future research. It is important to replicate across different variables so the STAR intervention may be used by a variety of recreation programs in the future. It is also important to replicate the procedures using campers with a variety of disabilities and a range of severity. This should include campers with physical, emotional, and cognitive disabilities. Procedures should be replicated using different recreation settings and activities, such as team sports, games, swimming, and dance. A final factor to consider for future research is the age and gender similarities of the pair of campers. Gender and age differences in the dyads may have affected the results of this investigation, but future replications with pairs of the same gender or age versus pairs of differing gender and age will give further insight into facilitating interactions in camp settings. Future studies could also explore different interventions based on the age of the child, such as the use of pictures for younger children versus abstract presentations for older children. Future research will strengthen the effectiveness of the STAR intervention and will expand the opportunity for many recreation programs to use this method to increase friendships among campers with and without disabilities.

**References**


Goldstein, H., Kaczmarek, L., Pennington, R., &


Received: 23 August 2006
Initial Acceptance: 17 October 2006
Final Acceptance: 9 January 2007
Use of a Handheld Prompting System to Transition Independently Through Vocational Tasks for Students with Moderate and Severe Intellectual Disabilities

David F. Cihak
University of Tennessee

Kelby Kessler and Paul A. Alberto
Georgia State University

Abstract: The use of a handheld prompting system by four students with moderate to severe intellectual disabilities to independently transition between an ordered chain of tasks was examined in a community vocational setting. Effectiveness of the handheld prompting system was assessed using a multiple-probe design across participants. Analysis of the data revealed that students successfully used the handheld system to increase independent transitions from task to task. Independent transitioning was maintained at a 100% level for up to nine weeks.

The need to shift stimulus control from a teacher to some other stimulus in the natural environment provides a foundation for the development of self-management procedures (Cooper, Heron, & Heward, 1987; Kazdin, 1994; Repp, 1983). Self-management procedures frequently limit discriminative stimuli allowing the individual to focus attention on a target behavior (Gifford, Rusch, Martin, & White, 1984). One self-management procedure that promotes a shift in stimulus control by limiting discriminative stimuli is the use of handheld prompting systems (Cihak, Kessler, & Alberto, in press; Davies, Stock, & Wehmeyer, 2002a, 2002b, 2004; Ferguson, Myles-Smith, & Hagjwara, 2005; Furniss et al., 2001; Riffel et al., 2005).

Workers with moderate and severe intellectual disabilities often are asked to change from one task to the next without help. Those who are unable to do so may experience decreased success (Lagomarcino, Hughes, & Rusch, 1989; Mank & Horner, 1988), maintain excessive dependence on job coaches and exhibit limited behavioral maintenance (Rusch, 1986), engage in off-task behavior while waiting for external delivered prompts (Browder & Shapiro, 1985; MacDuff, Krantz, McClannahan, 1993), and maintain low productivity rates (Agran, Fodor-Davis, & Moore, 1986). The probability of those undesirable outcomes was decreased by instruction in specific self-management skills (Certo, Mezzullo, & Hunter, 1985; Rusch, Martin, Lagomarcino, & White, 1987). Thus, the use of handheld prompting systems by workers with moderate and severe intellectual disabilities may result in employee autonomy and decrease dependence on coworkers, teachers, job coaches, and peers (Cihak et al., in press; Davies et al., 2002a, b, 2004; Ferguson et al., 2005; Furniss et al., 2001; Riffel et al., 2005).

Handheld computers (e.g., PDA, Pocket PC) are promising technology devices because they are portable, inexpensive, reliable, easy to maintain, program, use, and are socially desirable. One way to distinguish between handheld computer technologies is between commercially available devices and those that are custom made for an individual person (Cook & Hussey, 2002). The term commercially available refers to devices that are mass-produced. These include commercial devices designed for the general population. Increasingly, commercial products are being designed according to the principles of universal design. Universal design is the design of technologies to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. In this ap-
approach, features are built into the product (e.g., various display options—visual, auditory; alternatives to reading text—icons, pictures), which makes a product more accessible to individuals with disabilities. This is much less expensive than adapting a product after production in order to meet the needs of an individual with a disability.

If commercially available devices cannot meet an individual’s needs, it may be modified. However, when modification or commercial devices are not appropriate, it is necessary to design one specifically for the task-at-hand. This approach results in a custom device. Since custom products are not mass-produced, a custom device costs are much higher because it is a special product or a “one of a kind” and the costs of development must be recovered from the smaller production.

Using a custom-made handheld device and software, Davis et al. (2002a, 2002b, 2004) reported that participants with intellectual disabilities were more independent, required fewer external prompts, were more productive, and made fewer errors. Custom-made handheld computers and software have been used successfully across various disability characteristics including, developmental delay, autism, and Prader Willi Syndrome (Riffel et al., 2005). Moreover, custom-made devices have supported individuals with special needs in career and leisure activities (Furniss et al., 2001). Furniss et al. concluded that the use of a custom-handheld prompting system was more effective than static picture prompts in a booklet, it was easily used in real work settings, and that students with severe disabilities preferred the handheld device to the picture booklet.

Using a commercially produced handheld device and software, Ferguson et al. (2005) successfully decreased adult reliance to complete tasks at home and school for one adolescent with Asperger’s Syndrome. Cihak et al. (in press) also used a commercially produced handheld device to successfully teach students with moderate intellectual disabilities to operate the use of the handheld prompting system and to generalize skills across increasing complex vocational tasks in the work setting without additional training. Although the literature has noted that handheld computers efficacy for task acquisition, generalization, and maintenance, Davies et al. (2004) noted that further research was needed to assess the effectiveness of handheld computers as a prompting system across a variety of tasks, domains, and ecologically valid work and employment settings.

The purpose of this study was to determine the effectiveness of a commercially-produced handheld computer, as a prompting system to facilitate the independent transitions from task to task in a community-based vocational instructional site for students with moderate and severe intellectual disabilities.

Method

Participants

Four students, Aaron, Bill, Cate, and Doug were selected to participate based on the following: (a) willingness to participate, (b) level of cognitive functioning within the moderate to severe intellectual disability range, (c) current participation in a high school program with regularly scheduled community-based instruction, (d) no sensory deficits, (e) parental permission, and (f) the student’s verbal agreement to participate. Aaron and Doug were 16 years olds with a full-scale IQ of 36 and 40, respectfully. Bill and Cate were 17 years old with a full-scale IQ of 48 and 50, respectfully. IQ’s were assessed using the Wechsler Intelligence for Children (Wechsler, 1991) for Aaron, Bill, and Doug. The Standford Binet (Thorndike, Hagen, & Sattler, 1986) was used to assess Cate. Students were able to independently complete individual tasks; however, each was dependent on an external source for task transitions. According to teacher reports, after the completion of individual task, if students were not prompted immediately to begin the next task, each student would usually engage in some form of off-task behavior.

Settings

Pretraining instruction using the handheld computer occurred in each student’s school resource classroom. Baseline, handheld prompting, and maintenance phases occurred during community-based instruction (CBI) in three community settings; grocery store, department store and restaurant. Stores and res-
restaurant were selected because of the convenient location to the students' neighborhood school. Community instruction for Aaron and Bill was at a grocery store, Doug at a restaurant, and Cate at a department store.

**Materials**

A Kodak DX3600 Zoom digital camera was used to digitally photograph each task analyzed step. Digital photos were then downloaded into an Axium X30 handheld computer that was used to deliver the picture and auditory prompts. The Axium X30 was selected since it was the least expensive device that allowed capabilities of photo display and to record narration. Picture Perfect software was used to develop the picture and auditory prompts task sequence. The Picture Perfect software was selected due to its relative inexpensive price and capabilities of creating a relatively easy picture and auditory prompting system. Students placed the handheld computer in a pack fastened to their waist with a small headphone that attached around the ear. The headphone wire was worn under the uniform to reduce interference during task engagement. Students advanced the prompting system by pressing an arrow hardware button.

**Tasks**

Ten vocational tasks were identified for each student at each work site. Table 1 displays the list of tasks each student completed and transitioned to and from. Tasks were randomly ordered so that no two individual tasks would follow one another from session to session.

**Data Collection**

Event recording was used to record the number of times a student independently transitioned to a separate vocational task within a prescribed chain of tasks. Ten tasks were identified for each student. Since each student began their workday in the employees’ breakroom, a total of 10 transitions were available. An independent transition was defined as the student’s ability to move from task to task without relying on an individual to direct him or her. A student’s independent transition to a task was recorded as correct when the student completed the first task, physically moved to the second task area, and completed the first step of the next task. These transitions occurred after correct completion of each individual ordered task. A transition was considered assisted if the student asked for directions on what was next, waited for someone to provide assistance (a verbal reminder to use a the handheld prompting system was provided after 10s), or received unanticipated instructions from a coworker (such as gestures). If a student, after receiving a handheld prompt, moved to an unprompted task out of sequence, he or she was provided with a verbal reminder of the next task and the response was recorded as assisted. The total number of

<table>
<thead>
<tr>
<th>Students</th>
<th>Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aaron</td>
<td>1) Gathering carts, 2) Stocking milk, 3) Vacuuming, 4) Preparing rolls, 5) Putting back returns, 6) Stocking cans, 7) Making cookies, 8) Cleaning registers, 9) Cleaning windows, 10) Sweeping</td>
</tr>
<tr>
<td>Bill</td>
<td>1) Gathering carts, 2) Stocking milk, 3) Vacuuming, 4) Preparing rolls, 5) Putting back returns, 6) Stocking cans, 7) Making cookies, 8) Cleaning registers, 9) Cleaning windows, 10) Sweeping</td>
</tr>
<tr>
<td>Cate</td>
<td>1) Straightening mushrooms, 2) Stocking bananas, 3) Stocking pineapples, 4) Cleaning fitting room, 5) Cleaning registers, 6) Clothes processing, 7) Sweeping, 8) Cleaning windows, 9) Stocking picture frames, 10) Dusting shelves</td>
</tr>
<tr>
<td>Doug</td>
<td>1) Preparing coleslaw, 2) Preparing broccoli, 3) Skewering shrimp, 4) Preparing tea, 5) Rolling silverware, 6) Bussing tables, 7) Setting tables, 8) Sweeping, 9) Cleaning windows, 10) Taking out trash</td>
</tr>
</tbody>
</table>

---

**TABLE 1**

Tasks assigned to each student
independent transitions were totaled and divided by 10 to compute a percentage of independent transitions for each student.

**Experimental Design**

A multiple-probe design across participants (Barlow & Hersen, 1984) was used to determine the efficacy of the handheld prompting system and student’s independent transitions. The multiple-probe design allowed sequential application, comparison effectiveness, and an opportunity to replicate the effects of the handheld prompting system across students. The study included three phases; baseline, acquisition of handheld prompting instruction, and maintenance phases. Prior to baseline a pre-training period occurred during which the students were taught to operate the handheld prompting system, to select the different tasks to perform, to press the hardware button to advance to the next step of the task analysis and to follow the recorded directions.

Tasks were ordered in a semi-random fashion on a session-by-session basis to ensure that no two individual tasks would follow one session to the next ensuring different task-to-task transitions for each session. Before the implementation of the intervention phase, the names all 10 tasks were written on a piece of paper and randomly drawn. If a task was drawn, that followed the same task from the previous session, it was returned to the drawing and another task was selected. The randomization of task ordering allowed different transitions to occur on a session-by-session basis, which reduced the likelihood of practice effects and students remembering what transition was next.

**Experimental Procedures**

**Pretraining.** Similar to Cihak et al. (in press), prior to baseline, students’ participated in a pretraining period. For the first phase of pretraining, students were instructed how to operate the handheld computer. They were instructed to physically turn on the device, to wear the headphones, to select color-cued icons representing the different tasks or jobs to perform, and to select a color-cued hardware button to advance to the next step of the task analysis.

In the second phase, students were required to turn-on the device and select a prerecorded icon, which caused a popped-up window to occur with a familiar picture plus auditory prompt, and to follow each instruction. Students also were required to press the hardware button to display the next direction. The prerecorded device instructed students to complete a two-step task familiar to students and normally associated with their morning classroom routine. Students were instructed to “close the door and hang up your coat,” or “sit down at the table and pick-up your pencil.” Each student was required to reach a criterion of 100% accuracy for two consecutive sessions.

**Baseline.** During baseline, the number of independent transition students made between assigned tasks within a vocational site was recorded. If a student was unable to independently move to the next ordered task and simply waited for assistance, relied on a coworker or peers to direct him or her to the next task, or asked a teacher or supervisor for directional assistance, assistance was provided and the transition was recorded as “assisted.” Assistance for all transitions was provided by an external source only after 10-s interval of no response. Data were collected until a stable baseline was achieved for a minimum of five sessions.

**Handheld prompting procedures.** All students started their workday in the employees’ breakroom. Students were provided with the handheld prompting system and headphones and instructed to turn on the device. After the device was activated, a pop-up window with an icon of the targeted task was displayed. After the student pressed the icon, a picture and auditory prompt of the first step of the task was displayed. After the student progressed through the entire chained task, a picture and auditory prompt cued the student to transition to the next task. This process continued until all 10 tasks were complete. If a student did not transition, requested assistance, and/or 10-s interval elapsed with no response, the student was prompted to watch the handheld device screen. Criterion for completion of this phase was 100% independent transitions for three consecutive sessions.
Maintenance procedures. Follow-up probes were collected nine weeks after the student meet acquisition criterion. Follow-up probes occurred in the community setting where the student was initially trained. Follow-up probes were collected to determine if the initial instructional affected the student’s performance over time.

Reliability

Interobserver reliability data and procedural reliability data were collected simultaneously by the primary investigator and the classroom teacher. Interobserver and procedural reliability data were collected during 33% of baseline and each concurrent phase. Observers independently and simultaneously recorded the number of steps the student performed independently or the required prompt and response time. Interobserver agreement was calculated by dividing the number of agreements of student responses by the number of agreements plus disagreements and multiplying by 100. Interobserver reliability ranged from 96 to 100%, with a mean of 99% agreement. The mean interobserver reliability agreement for each student across conditions was Aaron, 97%; Bill, 100%; Cate, 100%, and Doug, 97%.

Procedural integrity measures check the investigator’s performance by using the correct prompting hierarchy and response time. The classroom teacher was trained using an itemized checklist that listed the task-analyzed steps of each task and the level of prompt. The teacher was considered successfully trained after completing 100% of the checklist for three consecutive trials. The procedural agreement level was calculated by dividing the number of observed teacher behaviors by the number of planned teacher behaviors and multiplying by 100 (Billingsley, White, & Munson, 1980). Procedural reliability ranged from 97-100%, with a mean of 99%. The mean procedural reliability agreement for each student across conditions was: Aaron, 99%; Bill, 100%; Cate, 96% and Doug 100%.

Results

Number of independent transitions made by students during baseline, handheld prompting intervention, and maintenance phases in the vocational setting is presented in Figure 1. During baseline, students demonstrated limited ability to independently transition between specific work tasks. Number of independent task transitions made by students during this phase was zero. When students used the handheld prompting system during intervention, increases in the number of independent transitions were apparent. Number of independent transitions ranged from 40% to 100% with a mean of 86%. Aaron demonstrated no independent transitions during baseline and increased independent transitioning to a mean of 82% (range = 40-100%) during intervention. Bill demonstrated no independent transitions during baseline and increased independent transitioning to a mean of 84% (range = 50-100%) during intervention. Cate demonstrated no independent transitions during baseline and increased independent transitioning to a mean of 80% (range = 50-100%) during intervention. Doug demonstrated no independent transitions during baseline and increased independent transitioning to a mean of 94% (range = 80-100%) during intervention. Number of instructional sessions to reach criteria ranged from nine to five with a mean of six. Moreover, all students maintained transitioning nine weeks later with 100% independence.

Discussion

The purpose of this study was to determine the effectiveness of a commercially-produced handheld computer, as a prompting system to facilitate independent transitions from task to task in a community-based vocational instructional site for students with moderate and severe intellectual disabilities. Analysis of the data indicated a functional relationship in task transitions performance between baseline and intervention replicated across participants. The current investigation contributes to a growing body of research examining strategies to increase vocational skills of students with intellectual disabilities. This study replicates findings from previous studies which found that students with moderate to severe intellectual disabilities can learn to effectively use handheld prompting systems, increase student autonomy at the workplace, and de-
crease dependency on coworkers, teachers, job coaches, and peers (Cihak et al., in press; Davies et al., 2002a, 2002b, 2004; Ferguson et al., 2005; Furniss et al., 2001; Riffel et al., 2005).

Prior to the handheld prompting interven-
tion, all students relied on specialized services and personnel to assist in meeting the students’ vocational needs. Unfortunately, natural support options in the workplace are reduced greatly for individuals who require extensive and pervasive services or who are unable to work independently. Nisbet (1992) referred to natural supports as reliance on persons within typical environments. Before placement of a worker with disabilities, the workplace should be examined carefully to determine the availability of natural supports and social interactions so that supported employment services can build upon what is already in place. That is, supervisors and coworkers, rather than job coach or vocational counselors, would be responsible for providing some services to assist in successful job placement and job retention. However, the concept of natural supports also includes assuring employers of their minimal involvement (Nisbet & Hagner, 1988). Although businesses have begun to recognize the need to support all workers, how much support is minimal?

Natural supports are successful for individuals with disabilities who require minimal assistance. However, natural supports become problematic if the expectation is that the employer and/or coworker must consistently direct and supervise the worker. Issues including (a) training in strategies and techniques, and (b) employers and coworkers’ skill level to reliably implement intervention plans become heightened when workers require extensive and pervasive assistances. Additionally, if the student requires extensive supports and services, do employers or coworkers find the individual with disability an interference with their performance?

This study extends the research literature of handheld prompting systems by enabling students to use the handheld prompting system to independently transition from task to task in a vocational setting. Workers with moderate and severe intellectual disabilities often are asked to change from one task to the next without help. Those who are unable to do so may experience decreased success resulting in low productivity rates and dependency on job coaches. These prompts were effective for teaching students to manage their own task change behaviors. The use of the handheld prompting system served as the stimulus control for the desired behavior of independent transitioning. With this methodology, teachers and professionals can increase the level of independence, self-sufficiency and the quality life of students with disabilities.

A second purpose of this study was to increase the probability of long-term maintenance of skills addressed by the use of the handheld prompting system. Since the professional literature recognizes that maintenance is a difficult skill for students with moderate and severe intellectual disabilities to learn, it is incumbent upon teachers and professionals to address these concerns in instructional program planning and teaching strategies. The use of a handheld computer prompting system is one way of enhancing this instructional component.

A third purpose was to use a commercially available handheld computer to enhance skill acquisition and maintenance. The advantages of using commercially available products include lower costs and the availability of supports and technical assistances. Moreover, when the universal design approach is applied, accessibility and usability of handheld computers increases. More individuals with disabilities can then utilize this promising technology, which promotes greater independence.

Several limitations of this study may have affected the results and interpretations. First, students were familiar with the vocational site; they could easily navigate to other areas of the store or restaurant. Novel vocational sites may require additionally prompts and directional cues, which may produce differentiated outcomes. Second, the study was conducted with students who had extensive CBI experiences. Students with less extensive community experiences may require more intensive instruction to acquire, generalize, and maintain targeted skills. Third, all students demonstrated no resistant behaviors toward wearing the device and were extremely motivated using the handheld computer. Students who are less motivated or resistant to using the handheld computer may perform differently.

Future research is needed to verify the results of this study and to investigate generalization across novel work settings. Additionally, different type of transitions (e.g., place to place, preferred to nonpreferred tasks) and a
type of skills (e.g., domestic, leisure, and community) needs to be investigated. Future research also should attempt to replicate these results across natural support instructors (e.g., job coach, coworker, and parent), student characteristics, and the inclusion of self-evaluation steps.

References


Received: 3 May 2006
Initial Acceptance: 1 July 2006
Final Acceptance: 10 October 2006
Peer-Implemented Time Delay Procedures on the Acquisition of Chained Tasks by Students with Moderate and Severe Disabilities

Janet Read Godsey
Christian County Schools, Hopkinsville, Kentucky

John W. Schuster, Amy Shearer Lingo, Belva C. Collins, and Harold L. Kleinert
University of Kentucky

Abstract: This study evaluated the effectiveness of and reliability of peer tutors implementing a constant time delay procedure when teaching four high school students with moderate and severe disabilities to prepare foods using picture recipes. We used a multiple probe design across subjects to determine the effectiveness of the peer tutor implemented constant time delay procedure on the acquisition of chained food preparation tasks. Data indicate that the tutors were effective in teaching the four students to prepare food using picture recipes. Peer tutors also implemented the procedure with a high degree of reliability. In addition, all students maintained the tasks at high levels and responded with 100% accuracy during the final maintenance assessment. Discussion includes a comparison of reliability data with other studies utilizing teacher-implemented constant time delay and chained tasks.

Finding the personnel required to provide high quality, individualized instruction for students with moderate and severe disabilities is one of the most difficult obstacles classroom teachers face. Because the intellectual and physical capabilities of many students with moderate and severe disabilities require repeated, systematic, individualized instruction, teachers often find that that students may have to do a lot of waiting and “seatwork” activities while teacher time is spent for individualized and small group instruction elsewhere. Teachers who have many students requiring this type of instruction find it nearly impossible to provide students with sufficient opportunities to respond during instructional sessions, thereby limiting the student’s opportunities in building acquisition skills to fluency, maintenance, and generalization levels (Kamps, Locke, Delquadri, & Hall, 1989).

Although placement of students with moderate and severe disabilities into general education classrooms has produced mixed reactions from educators and given the ever-growing number of peers without disabilities in high school special education classrooms in credit generating peer programs, it does provide an opportunity to utilize instructional assistance in the form of peer tutors. Classroom teachers may be reluctant to use this instructional arrangement for numerous reasons. First, teachers may wonder if peer-delivered instruction is as reliable or efficient as teacher and paraprofessional instruction. Second, they also may expect that peer tutors will lack the discipline to perform the procedures systematically. Finally, teachers may have concerns that peer tutors, even after extensive training, may not generalize their use of systematic procedures when assigned to teach different skills or with different students.

This study was the first author’s thesis and was completed as part of the requirements for a Master of Science degree in the Department of Special Education and Rehabilitation Counseling at the University of Kentucky. Correspondence concerning this article should be addressed to John W. Schuster, 229 Taylor Education Building, Department of Special Education and Rehabilitation Counseling, University of Kentucky, Lexington, KY 40506-0001. E-mail: jwschu01@uky.edu
Research has supported the use of peers when teaching skills to students with moderate and severe disabilities (e.g., Koury & Browder, 1986; Miracle, Collins, Schuster, & Grisham-Brown, 2001; Romer, Busse, Fewell, & Vadasy, 1985; Tekin-Iftar, 2003; Tekin & Kircaali-Iftar, 2002; Werts, Caldwell, & Wolery, 1996). For example, Kamps et al. (1989) used a multiple probe across behavior design to teach discrete tasks to two elementary school students with autism. Two fifth graders without disabilities served as peer tutors. Tutors used verbal reinforcement, instructive feedback, and model and verbal prompts to effectively teach skills such as identification of coins, naming of opposites, and reading comprehension.

Peer tutors also can successfully teach chained tasks to students with disabilities. Werts et al. (1996) taught elementary-aged peer tutors to implement an observational learning strategy to teach students with disabilities a variety of chained tasks. Target skills included sequencing numbers using tiles, playing a cassette tape, sharpening a pencil, using a calculator to compute simple addition problems, and using a computer game. The research found that peer tutors were successful in teaching the target skill and used the training procedure with a high degree of procedural reliability indicating that peer tutors can provide highly effective instruction of simple chained tasks.

In addition to research finding that peer tutors can effectively teach students with disabilities, studies also have addressed whether peers can deliver instruction as effectively and efficiently as teachers (Romer et al., 1985; Miracle et al., 2001). Romer et al. compared the efficiency of peer tutor instruction to teacher instruction on the performance of vocational skills by students classified as deaf-blind with severe mental retardation. Results indicated that acquisition measures of targeted skills by students were similar for both peer tutor instruction and teacher instruction. Students with disabilities, on the average, took fewer sessions to reach criterion with peer tutor instruction but required more assistance than for tasks taught by the teacher. Results indicated that there was little difference between peer instruction and teacher instruction. Additionally, Miracle et al. compared teacher-delivered instruction to peer-delivered instruction when teaching high school students with moderate disabilities to read sight words with the constant time delay procedure. An adapted alternating treatments design was used to compare the two interventions. Results indicated that peer-delivered and teacher-delivered instruction was effective. The teacher-delivered instruction occurred at a quicker pace (i.e., less time per session) but the differences were minimal.

Although research has demonstrated that peers can implement a variety of instructional strategies with discrete, and to a much lesser extent, chained tasks, there is little research involving peer tutors using systematic response prompting strategies (Wolery, Ault, & Doyle, 1992) like the system of least prompts, simultaneous prompting, and constant time delay. Tekin-Iftar (2003) researched the effectiveness of peer tutors in delivery of a simultaneous prompting procedure to four students, aged 10 through 13, with a variety of disabilities. The author found that peer tutors successfully (a) taught students with disabilities to expressively identify community signs and (b) embedded instructive feedback (i.e., definitions of the signs) in the consequent event. These results also occurred when Tekin-Iftar and Kircaali-Iftar (2002) had peer sibling tutors implement both constant time delay and simultaneous prompting to teach children with mental retardation to expressively name animals. The authors found that the tutors implemented both procedures reliably.

Constant time delay has been the subject of numerous studies and has been shown to be effective, easy to use, and more efficient than other near errorless strategies such as the system of least prompts (Schuster et al., 1998). Researchers have taught peer tutors to implement constant time delay with students with disabilities. Peer tutors without disabilities have successfully used constant time delay to teach basic sight word reading to high school students with moderate disabilities (Miracle et al., 2001), generalized reading of cooking labels to high schoolers with mental disabilities (Collins, Branson, & Hall, 1995), and sight word identification to elementary-aged students with severe disabilities (Wolery, Werts, Snyder, & Caldwell, 1994). All of these studies...
show that peer tutors can reliably implement constant time delay procedures with discrete tasks.

The research studies described have supported the effectiveness of peer tutors as reliable implementers of systematic instruction. While few studies used peer tutors to teach chained tasks and several studies used constant time delay, no study could be found that has examined the effectiveness of peer tutors implementing constant time delay to teach chained tasks. This investigation was designed to answer the following research questions (1) Is a triadic instructional arrangement with instructor modeling and role-play effective in teaching high school-age peer tutors to implement the constant time delay procedure? (2) Will high school-age peer tutors without disabilities reliably implement the constant time delay procedure in teaching chained tasks across participants and over time? and (3) Will a peer tutor implemented constant time delay procedure be effective in teaching high school students with moderate and severe disabilities the acquisition and maintenance of chained cooking tasks?

Method

Participants

Students. Four students (all male), ranging in age from 15 to 20 years, enrolled in a public high school participated. All attended at least one general education class, lunch, and assemblies with students who did not have disabilities.

Jake, a 16-year-old student who on the Wechslar Intelligence Scale for Children – WISC – III (Wechsler, 1991), obtained an IQ of 40, was diagnosed with moderate mental retardation. Jake had a sight word vocabulary of 100-125 words, could read and respond to many environmental signs, proper nouns, and words from computer pull-down menus. He was unable to read simple directions. Jake wrote and verbalized his personal information (e.g., name, guardian’s name, etc.). He prepared simple snacks (e.g., cold cereal, microwave popcorn). He attended general education class for weightlifting and attended a social skills class and math class for students with mild mental disabilities. He went out of the building twice a week for vocational training at a local grocery store. Jake’s Individualized Education Plan (IEP) included objectives for using tools and equipment in a safe manner, following pictorial directions, behavior self-management, employability skills, and functional mathematics.

Louis, a 20-year-old student who obtained an IQ of 40 on the Wechsler Adult Intelligence Scale (Wechsler, 1997), was diagnosed with moderate mental retardation. He was in his fifth year of enrollment at the high school and attended general education classes in lifetime sports physical education, art, and food services technology. Louis had a sight word vocabulary of 150-200 words. He read and responded appropriately to many environmental signs, proper nouns, and commonly used words drawn from vocational experiences, and could prepare several simple foods from memory (such a cold cereal and microwave popcorn). He did need supervision to monitor proportions used (e.g., overflowing the cereal bowl with milk, etc.). He received vocational training in the community at the library and at a local community service agency 2-3 times a week. Louis was unable to comprehend written directions, and his IEP objectives were in the areas of food preparation, employability skills, and purchasing.

Charlie, a 15-year-old male with an IQ of 40 on the WISC – III (Wechsler, 1991), was diagnosed with moderate mental retardation, Down syndrome, and a severe speech deficit. He attended a general education class in physical education. Charlie went out of the building two times per week for community-based instruction in safety and shopping instruction. Charlie had a sight vocabulary of 25-30 words. He read and responded appropriately to many environmental signs, product names, and names of family members, teachers, and fellow students. His speech often was difficult to understand, and during the time of the study the teacher and speech pathologist were trying several voice-output devices to supplement speech. Charlie could follow verbal/model directions for making several simple snacks such as cold cereal and crackers with spreadables. Charlie was unable to read simple written directions, and his IEP included objectives in the areas of food preparation, following pictured directions, and self-monit-
toring of behavior. He received speech therapy at school 2 times per week.

Jonah, a 17-year-old male with a *Kaufman Brief Intelligence Test* (K-BIT) (Kaufman & Kaufman, 1990) composite score of 40, was diagnosed with moderate mental retardation, a moderate hearing impairment in one ear, and a severe visual impairment in the opposite eye. He attended general education classes in physical education and food services technology, and also was out of the building 1-2 times per week for community-based instruction in safety and shopping skills. Jonah had a sight word vocabulary of 25-50 words. He read and responded appropriately to many environmental signs, product names, and names of family, teachers, and fellow students. His speech often was difficult to understand, and at the time of the study was in the process of obtaining a dynamic-screen, voice-output augmentative communication device to supplement his speech. Jonah followed verbal/model directions for making several simple snacks such as cold cereal and crackers with spreadables. He followed 1-2 step instructions without redirection if given adequate processing time. Jonah was unable to read simple written directions, and his IEP included objectives in the areas of following pictured directions, communication, and self-care. He received weekly speech therapy and occupational therapy at school and services for vision impairment on a consultative basis.

**Peer tutors.** Eleven peer tutors, 2 males and 9 females, ranging in age from 16 to 18 years (high school juniors and seniors), and enrolled in a peer tutoring class for high school credit were tutors during the study. Five of the peer tutors were enrolled in advanced level classes and were on a pre-college curriculum. The other seven were enrolled in standard level classes and were on a vocational education track for either industry or business related fields. All tutors who participated met prerequisite skills including availability for after school training sessions, faculty performance ratings, and interest in the research study. Faculty performance rating forms were distributed to faculty members and they rated students’ personal characteristics and work ethic on a scale of 1 to 5 (5 was the highest rating). Students must have received an overall 3.5 from at least five faculty members in order to be eligible for participation.

**Setting**

All experimental sessions occurred in a kitchen/living area adjacent to the students’ self-contained classroom. Because the kitchen area was a separate room with a door that could be closed and because only one student at a time was permitted to be in the kitchen to prepare a snack, additional control for distractions did not occur.

**Materials/Equipment**

The teacher and/or peer tutors used the following materials: (a) digital camera for creating the pictorial recipes, (b) dishes and utensils, (c) food stored in cabinets, a refrigerator or freezer, (d) pictorial recipe cards with written directions beneath each photo with photos in sequence according to the task analysis and held in order by a large metal ring, (e) data sheets, and (f) reliability forms for the dependent and independent measures.

**Skill Selection**

All participating students had food preparation or the following of pictorial directions as objectives included on their IEP. In addition, the teacher interviewed the students’ parents, former teachers, and the students about the foods they would prefer to cook. After determining that the students had no prior experience in preparing the target recipes, the teacher screened the students for their ability to follow a verbal/model prompt and to motorically imitate specific skills required to prepare the target recipes. Target recipes for Jake and Louis included making a milkshake in the blender (27 critical steps) and making a grilled cheese sandwich (32 critical steps). Target skills for Charlie and Jonah included making a waffle in the toaster (27 critical steps) and making juice from a frozen concentrate (25 critical steps). In addition, each task analysis included a “turning the page” step in between each critical step for students to turn the pages of the picture recipe in order to see the next step.
**General Procedures**

The dependent variable was the percent of correct steps completed independently on the chained food preparation tasks. Peer tutors implementing the constant time delay procedure was the independent variable. Initially, peer tutor training occurred followed by skill selection of the target recipes. Then single opportunity baseline sessions occurred before training started (Schuster, Gast, Wolery, & Guiltinan, 1988). After the teacher collected stable baseline data, Jake began training on making a milkshake. When he reached or approached criterion, Jake started training on making a grilled cheese sandwich at the same time that Louis began training on making a milkshake. When Jake and Louis reached or approached criterion, Louis started training on preparing a grilled cheese sandwich while Charlie began training on toasting a waffle. When Charlie reached or approached criterion on making a waffle, he began training on making juice while Jonah began training on making a waffle. Then Jonah was trained to make juice. Intermittent maintenance probe sessions occurred on the average of once every 15 sessions for acquired tasks.

**Peer Tutor Training**

Prior to implementing the constant time delay procedure, the teacher trained the peer tutors through direct instruction, modeling, and triadic role-play with peer tutors acting the in the roles of data collector, prompter, and student (trainee). The teacher trained the peer tutors during two 90-minute after school sessions. During training sessions, the teacher taught the peer tutors how to implement the constant time delay procedure and to record student responses. At the conclusion of the training sessions each peer tutor had to demonstrate performance of data collection and implementation of constant time delay steps with at least 90% accuracy to participate. In addition to performance criteria, the teacher required the peer tutors to correctly answer at least 90% of questions on a written exam before they were allowed to participate in implementing the constant time delay procedure with the students. Twelve students initially completed training; however, one tutor failed to meet the criteria for inclusion. The 11 peer tutors randomly served as both prompter and data collector throughout the study and worked with a variety of students (i.e., peer tutors were not relegated to one role and assigned to one student).

**Baseline Sessions**

The teacher conducted a single opportunity baseline session on all eight skills (two skills per student) at the beginning of the study. Intermittent probe sessions occurred at least once every five sessions on untrained tasks for Jake and Louis and every 10 sessions for Charlie and Jonah to help control for repeated testing and maturation effects. Three consecutive baseline sessions occurred immediately prior to intervention on each task. The teacher used single opportunity probe sessions to help control for repeated testing and maturation effects as well as to reduce the costs associated with duplicate materials.

The teacher conducted all baseline sessions. During these sessions, the teacher gave students an attentional cue, a task request to make the food, and waited for a student’s response. If the student initiated a correct response within 5 s and completed the response within 20 s, the teacher recorded a correct response, provided verbal praise, and waited 5 s for the student to initiate the next step in the task analysis. The sessions continued until a student committed an error (i.e., did not initiate a response within 5 s, or initiated a response within 5 s but completed the wrong step, completed the step incorrectly, or took too long to complete the step). If this occurred, the student was praised for attempting the task and the session was terminated. In addition, at the end of the session, students were allowed to eat a snack (previously prepared by the teacher or student).

**Training Procedures**

After stable baseline data, training occurred. One peer tutor acted as the prompter and the other peer tutor as the data collector. For each task for Jake, Louis, and Charlie, two 0-s sessions occurred. For Jonah, three 0-s sessions occurred. Thereafter, all sessions used a 5-s constant time delay procedure.
During 0-s sessions, the prompter gave an attentional cue, stated a task request (e.g., “Make ______”), immediately provided the controlling prompt (i.e., a verbal/model prompt of the step to be completed), and waited 5 s for a student response. If a student initiated a response, the prompter allowed the student 20 s to complete the step. After the prompter provided consequences for each step the tutor waited 5 s for the student to initiate the next step in the task analysis.

During 5-s sessions, the prompter gave an attentional cue, stated a task request (e.g., “Make the ______”), and waited 5 s for a student response. If no response occurred after 5 s, the prompter provided the controlling prompt and waited 5 s for the student to imitate the prompt. If the student initiated a response within 5 s, the prompter allowed the student 20 s to complete the response. After the prompter provided the consequences, the tutor waited 5 s for the student to initiate the next step in the task analysis.

The data collector recorded five possible responses during training sessions. The data collector recorded a correct response before the prompt (i.e., correct anticipation) when a student initiated a response before the controlling prompt and completed the step within 20 s. All correct anticipations resulted in specific verbal praise. The data collector recorded an incorrect response before the prompt (i.e., non-wait error) when a student initiated a response before the prompt but completed the step (a) out of sequence (sequence error), (b) incorrectly (topographical error), or (c) with too long of a duration (duration error). When these errors occurred, the prompter redelivered the controlling prompt and waited for a student response. If the student still did not complete a correct response, the prompter notified the teacher. When a student did not initiate a response within 5 s of the controlling prompt the data collector recorded a no response, and the prompter delivered an additional attentional cue and prompt while completing the step for the student.

At the end of each session, the student ate the prepared food. Training sessions continued until each student reached three sessions at 100% correct anticipations.

Maintenance

After criterion was reached on each task, the teacher conducted maintenance sessions at least once every 15 sessions until all students reached criterion on all cooking tasks. The trainer conducted these sessions like 5-s delay sessions.

Experimental Design

We used a multiple probe across subjects and behaviors design to demonstrate experimental control. Experimental control was demonstrated when a change occurred in the dependent variable when, and only when, the independent variable was applied and this change occurred across tiers in a time-lagged manner.

Reliability

Peer tutor training. A general education teacher collected procedural reliability data on the teacher’s implementation of the peer tutor training procedure during 100% of the training sessions. The teacher calculated these data by dividing the number of trainer behaviors observed by the number of trainer behaviors planned and multiplying by 100 (Billingsley, White, & Munson, 1980). Some of the trainer behaviors measured included providing definitions and examples of key terms, passing out materials, demonstrating the constant time delay procedure, having students role play, providing written examinations, and providing feedback.
Skill training. The teacher and one peer tutor collected both dependent and independent variable reliability data. They collected these data during 25% of all baseline sessions and 26% of all intervention sessions. The point-by-point method was used to calculate dependent variable reliability data (i.e., dividing the number of agreements by the number of agreements and disagreements and multiplying by 100). Procedural reliability data (i.e., independent variable reliability data) were calculated according to formula cited by Billingsley et al., 1980. Some of the behaviors measured, when appropriate, included delivering the attentional cue, stating the task request, waiting the appropriate delay interval, providing the controlling prompt, waiting the response interval, and providing correct consequences.

Results

Reliability Data

Reliability data of the instructor training, modeling and triadic role-play procedure for training the peers tutors indicated 100% accuracy during both peer tutoring training sessions.

During baseline sessions, student response reliability data (i.e., dependent variable) resulted in a 100% agreement. During intervention sessions when student data collectors recorded student responses, student response reliability resulted in a mean agreement of 98% (range = 94-100%).

During baseline sessions conducted by the teacher, procedural reliability data resulted in an overall mean accuracy of 99.5% (range = 98-100%) in following the required intervention behaviors. Procedural reliability data during intervention sessions indicated that the prompters followed the planned behaviors with an overall mean accuracy of 93.1% (range = 84-99%).

Student Acquisition Data

Student acquisition data are displayed in Table 1 and Figures 1 and 2. Data are graphed using separate symbols to represent total task steps (the steps of turning the page between each picture card are included) with open squares and critical steps (turning page steps omitted) by open triangles. All students achieved criterion on all tasks. Overall, students required a total of 69 instructional sessions to reach criterion on all tasks. Individual students required between 6 and 12 sessions per task to reach criterion (an average of 8.6 sessions). Across all tasks, students committed a total of 40 errors through criterion. Individually, students committed between 3 and 11 errors per task for an overall error percentage of 1.04%. Error percentage was calculated by dividing the number of errors committed by the product of the total number of intervention sessions per skill by the total number of steps in each task analysis each student performed (Schuster et al., 1988). Of the 40 total errors, 39 (97.5%) were non-wait errors (i.e., errors before the prompt). The remaining error was a wait error (i.e., an error after the prompt) committed by Jake when acquiring the grilled cheese task.

Student Maintenance Data

Maintenance data indicate that Jake and Charlie maintained all tasks with 100% accuracy throughout the length of the study. Louis’ performance decreased to 94% of total task steps and 96% of critical steps during the second maintenance probe session but returned to 100% accuracy during the final maintenance probe session. The teacher did not collect maintenance data on Jonah due to the end of the school year.
Discussion

The first research question this study sought to answer concerned the effectiveness of a peer tutor-training program consisting of instructor modeling and triadic role-play. High procedural reliability data for these training sessions occurred. Eleven of the 12 peer tutors selected to participate in this study met both the written and performance criteria within the allotted time. Both dependent and independent variable reliability data collected during intervention sessions supports the effectiveness of the peer tutor training procedure. The fact that peer tutors were counterbalanced across students and tasks suggests that the peer tutor training procedure was effective in programming for peer tutor generalization across different students and different tasks within the cooking curricular area. The success of this program contributes to the peer tutoring literature through replicating, in part, the peer tutor training procedures used by Collins et al. (1995). However, while the Collins et al. study addressed peer tutoring...
with discrete tasks, results of this study extend the expectations of peer tutors’ abilities to chained task instruction, increasing their versatility in the classroom.

The second research question addressed the degree of reliability with which peer tutors could implement constant time delay in teaching chained tasks. Dependent variable reliability data indicate that overall peer tutors collected student response data with 98% agreement (range = 94-100%) with the reliability observer. Peer tutors as a whole were able to implement the response prompting strategy with 93% accuracy (range = 84-99%). Wolery, Bailey, and Sugai (1988) state reliability above 90% is desirable, above 80% is acceptable. Nine out of the 11 peer tutors performed the steps of the constant time delay procedure with 90% or better accuracy.

Results of the peer tutoring reliability data
in this study contribute to the peer tutoring literature due to the similarity to studies utilizing teacher-implemented constant time delay. Numerous studies (e.g., Braham, Collins, Schuster, & Kleinert, 1999; Fiscus, Schuster, Morse, & Collins, 2002; Graves, Collins, Schuster, & Kleinert, 2005; Griffen, Wolery, & Schuster, 1992; Hall, Schuster, Wolery, Gast, & Doyle, 1992; Miller & Test, 1989; Miracle et al., 2001; Schuster et al., 1988) using constant time delay with chained tasks have shown that teacher-delivered instruction with this procedure has resulted in similar levels of acceptable and desirable procedural reliability data.

There were some interesting findings when using peer tutors to deliver the instruction. First, most of the errors made by peer tutors involved not providing descriptive verbal praise after each correct response. When given feedback about this omission, many questioned the need for a continuous reinforcement schedule. The peer tutors complained that it “felt unnatural” to praise students for every step. This could be of significant interest in future research, considering that failure to provide continuous verbal praise did not appear to adversely affect student acquisition. Second, having peer tutors work in pairs as prompter and data collector resulted in some disagreement at times. For example, peer tutors would disagree on the amount of butter that was spread on the bread and therefore whether the response was correct or not. Other similar differences of opinion also occurred that required the teacher to intervene.

The third research question addressed the effectiveness of peer-tutor implemented constant time delay on the acquisition and maintenance of chained cooking tasks by students with moderate and severe disabilities. Data indicate that students only acquired the skills when the time delay procedure was implemented. Intervention data indicate that students reached criterion quickly with no overlap between baseline and intervention conditions. A low occurrence of errors with noted absences of wait and no response errors may support the peer tutors’ effectiveness in providing clear, consistent, verbal/model prompts. Maintenance data show that students retained the skills up to 22 sessions after meeting criterion. The noticeable lack of variability in student response data supports the interpretation that student acquisition was not adversely affected by the interchanging of peer tutor roles as data collector and prompter and across students.

Several other findings about the intervention are noteworthy. First, each student, there was a slight increase in baseline data percentages in the second skill after the first zero second session occurred in the first skill. This was most likely due to the fact that the first few steps of the pictorial recipes were identical (e.g., select recipe book, wash hands, etc.). In each of these instances, the baseline data became stable prior to intervention. Second, it should be noted that each student learned their second task in fewer sessions than their first. This could be the result of (a) the second task being easier than the first (though this is doubtful given that two different sets of skills were targeted), or (b) students were “learning to learn” a picture recipe with constant time delay. Third, the overall error percentage in this study (i.e., 1.04%) is lower than reported in the constant time delay chained task literature (Schuster et al., 1998). This is especially noteworthy given that peer tutors delivered the instruction.

When teaching tasks that contain consumables, costs should be considered. Grocery items for this study amounted to $74.03. Students purchased groceries during community-based instruction trips using funds from an annual community-based budget provided by the school district. The district supplied the camera, disks, and ink cartridges as each special education classroom in the district received these materials to assist in developing student alternate portfolios and instructional materials. The district also provided the computer, printer, paper, and laminating film. The teacher spent $84.00 of her personal funds on various fast food gift certificate as incentives for peer tutors to remain as participants throughout the study.

Results of this study are significant for classroom teachers in that they demonstrate the value and capability of peer tutors in delivering quality one-on-one instruction to students with moderate and severe disabilities. Because students with these disabilities often are placed in the same classroom, time and personnel to meet the individual needs of such a
heterogeneous group of students is difficult. If peer tutors can provide the same or similar quality of instruction as classroom teachers and instructional assistants for particular tasks, classroom staff may take on more of a supervisory role, while students receive more time for one-on-one instruction. Freeing up time for classroom teachers may allow them to more closely monitor the effectiveness of instructional procedures and to modify instruction in a timelier manner. Furthermore, peer tutor instruction may be preferable to students with disabilities because it may be perceived a more enjoyable and less stigmatizing than instruction from an adult, especially if it is paired with opportunities to develop social relationships. If the teacher promotes development of social relationships and emphasizes the role of peer tutors as same-age learning partners rather than “mini teachers”, students may perceive the instruction from peer tutors favorably. It may be helpful for future research to address such social validity issues.

This study contributes to the literature in several ways. First, it contributes to the time delay literature because no study has addressed teaching chained tasks through the use of peer tutors. Second, it contributes to the peer tutoring literature because we could find no study that addressed peer tutors teaching chained tasks with a systematic response prompting strategy with high school students. However, the study was limited in external validity because of the small number of participants. It also may be difficult to replicate the study in settings where peer tutors are not graded for performance (as in this study where peers were enrolled in a credit generating class) or in settings where peer tutors cannot be trained at the same time during large blocks of time. Further research should train peer tutors to use other systematic instructional procedures with chained tasks, train students to perform chained tasks from other instructional domains, or to use response prompting strategies in community based settings. In future studies it may be wise to include generalization measures for both peer tutors and students with respect to using other materials in other settings. Future studies also may address whether peer tutors could reliably code student errors (i.e., duration, sequence, or topographical) or implement the procedure alone, acting as both data collector and prompter.

References


Miller, U. C., & Test, D. W. (1989). A comparison of constant time delay and most-to-least prompting in teaching laundry skills to students with moder-


Received: 28 July 2006
Initial Acceptance: 27 September 2006
Final Acceptance: 7 January 2007
States’ Eligibility Guidelines for Mental Retardation: An Update and Consideration of Part Scores and Unreliability of IQs

Renee Bergeron, Randy G. Floyd, and Elizabeth I. Shands
The University of Memphis

Abstract: Mental retardation (MR) has traditionally been defined as a disorder in intellectual and adaptive functioning beginning in the developmental period. Guided by a federal definition of MR described in the Individuals with Disabilities Education Act, it is the responsibility of each of the United States to describe eligibility guidelines for special education services. The purpose of this study was to examine eligibility guidelines for MR for the 50 states and the District of Columbia. This study examined the terms used to describe MR, the use of classification levels, the cutoff scores, and the adaptive behavior considerations for each state. In addition, this study examined guidelines for consideration of intelligence test part scores and consideration of the unreliability of IQs through consideration of the standard error of measurement (SEM) or an IQ range. As found in previous studies, results revealed great variation in the specific eligibility guidelines for MR from state to state. The greatest variation appeared to be across the adaptive behavior considerations. Approximately 20% of states (10) recommend consideration of intelligence test part scores, and approximately 39% of states (20) recommend attention to unreliability of IQs through consideration of the SEM or an IQ range.

Individuals with mental retardation (MR) have been described in literature and historical documents for many centuries. Since around 1900, definitions of MR in the United States have included three general aspects: deficits in intellectual functioning, impaired functioning in the daily environment, and onset during the developmental period (Sheerenberger, 1983). Although these three criteria have been included in nearly all recent definitions of MR proposed by professional organizations (e.g., American Association on Mental Retardation [AAMR], 2002; American Psychiatric Association [APA], 2000), the specific criteria within each domain have been more variable across organizations and over time.

Deficits in intellectual functioning are usually defined by poor performance on norm-referenced intelligence tests via IQs. IQs are often considered reflections of general intelligence, which represents intelligence as a single, global factor (Jensen, 1998). Research has established the predictive validity of IQs on various outcomes, such as academic achievement and adaptation to environmental demands (Brody, 1997; Neisser et al., 1996). The use of IQs to determine deficient intellectual functioning has been included in most definitions of MR across professional groups since the American Association on Mental Retardation (AAMR) first specified the use of intelligence tests in its 1959 definition of MR. Most current definitions adopted by professional organizations set the upper IQ cutoff for MR at two or more standard deviations below the population mean (i.e., IQs of 70 or below; AAMR, 2002; APA, 2000). Moreover, because some degree of measurement error is inherent in obtained IQs, many professional organizations now include an IQ range (e.g., IQs below 70 to 75) or specify that the standard error of measurement (SEM) be considered rather than a strict IQ cutoff criterion.

Whereas IQs have long been used to satisfy the intellectual deficit criterion for MR, there...
has been less agreement across professional organizations as to how adaptive behavior deficits should be evidenced. Adaptive behavior generally refers to the capacity to meet one’s daily functional needs based on the individual’s age and the culture in which the individual lives. To determine deficient adaptive functioning, some definitions specify the use of global adaptive behavior composite scores, others specify the use of scores reflecting adaptive domains (e.g., conceptual, social, and practical; AAMR, 2002), and others specify the use of scores reflecting adaptive behavior skill areas (e.g., self-care and community participation; APA, 2000). However, some definitions do not define requirements for deficient adaptive functioning. To best evaluate an individual’s adaptive functioning from an ecological perspective, most professional organizations specify that the individual’s adaptive functioning be assessed in multiple settings to ascertain the pervasiveness of deficient functioning.

Mental Retardation in the Educational Setting

The Individuals with Disabilities Act (IDEA; P.L. 108-446, 2004) guarantees a free and appropriate public education to all students. Consistent with the educational focus of impact on academic functioning, IDEA defines MR as “significantly subaverage general intellectual functioning, existing concurrently with deficits in adaptive behavior and manifested during the developmental period, that adversely affects a child’s educational performance” (National Archives and Records Administration, 2005, p. 35836). Although the federal definition provides a general framework for determining eligibility for special education services under the MR category, states are permitted to refine eligibility guidelines and to operationalize deficient functioning.

Purpose of the Study

Previous studies examining differences across states’ eligibility criteria for MR under IDEA have found significant variations in terms (e.g., mental retardation and mental disability), use of classification levels (e.g., mild, moderate, and severe), IQ cutoff scores, and adaptive behavior consideration and specified criterion (Denning, Chamberlain, & Polloway, 2000; Frakenberger, 1984; Frakenberger & Franzaglio, 1991; Utley, Lowitzer, & Baumeister, 1987). This study was designed to provide an updated examination of states’ guidelines and to investigate two issues that have not received much attention in previous surveys.

Despite the historical reliance on IQs in MR definitions, researchers and advocates often assert that the over-reliance on a single score ignores the complexity of abilities (Daniel, 1997; Horn & Noll, 1997). Research and theories focused on cognitive abilities indicate that important information about an individual’s specific cognitive abilities may be overlooked if the focus is on only a single score, an IQ. Based on this reasoning, test authors and publishers have drawn increasingly on theories describing specific cognitive abilities during test development to develop composite-based part scores representing these abilities (Alfonso, Flanagan, & Radwan, 2005). Recent guidelines for the assessment and diagnosis of MR have also placed greater emphasis on part scores. For example, the Social Security Administration (SSA) released new guidelines in 2002 for disability determination for MR that allow certain part scores to be used in place of the IQ in the diagnosis of MR when there is reason to doubt the validity of the IQ (National Research Council [NRC], 2002). With the increasing emphasis on theory-based test development and interpretation, as well as the introduction of the SSA guidelines for MR eligibility that allow use of part scores in certain situations, this study investigates the prevalence of intelligence test part score consideration.

It is well known that some degree of measurement error is inherent in obtained IQs, and many professional organizations specify that a range of scores (e.g., 70 to 75) or the $SEM_M$ be considered in determining deficient intellectual functioning. However, the federal definition of MR under IDEA provides no indication that such measurement error be considered in determining eligibility for MR. Therefore, this study examines the use of score ranges or the $SEM_M$ in determining deficient intellectual functioning across states.
Method

Procedure

The first author developed a spreadsheet to record data from states’ eligibility guidelines based on a review of similar studies (e.g., Denning et al., 2000; Utley et al., 1987). Items included the following: state, year guidelines were last published, term used, whether levels of MR were specified, the IQ threshold, the practices for identifying adaptive behavior deficits, and whether adaptive behavior requirements should be evident across multiple settings. In addition, two items were added to determine whether states included consideration of intelligence test part scores and consideration of either the $SE_M$ or a score range around IQs.

Through an iterative process, the first and third authors initially obtained eligibility guidelines from the Department of Education websites for the 50 states and the District of Columbia. (Hereafter, for the sake of simplicity, the District of Columbia is referred to as a state.) Next, all state Departments of Education were contacted via telephone, e-mail, or both to confirm that the guidelines posted on their websites were currently used for establishing eligibility for MR. Guidelines were confirmed for 48 states during the period from September to December 2005, and all guidelines (including California, Maine, and Texas) were confirmed by May 2006. Data from the guidelines were then entered into the spreadsheet by the first author. To ensure accuracy in data recording, the third author first reviewed guidelines from a random selection of 20 states (39%) and independently coded the data. Across all items, there was 97.4% agreement. Although these estimates of inter-rater agreement indicate a high level of consistency in coding, most of the disagreements between coders occurred with the three items devoted to adaptive behavior assessment. For these three items, there was only 95.0% percent agreement. After criteria for these items were further developed, the first author again coded data for these three items for all 51 states, and the third author independently coded another random selection of 20 states. Percentage agreement across these three items was 98.3%. Across both rounds of coding, disagreements were evaluated and resolved by consensus.

Results

Table 1 summarizes the eligibility criteria for MR for the 51 states that were obtained by reviewing the official documents including the states’ guidelines. Overall, 53% of states use the term mental retardation to describe the condition, 12% use the term mental disability, and 6% use the term intellectual disability. Other terms used by two or fewer states include cognitive delay, cognitive disability, cognitive impairment, cognitively impaired, developmental cognitive disability, intellectual impairment, learning impairment/delay in learning, mentally handicapped, and significant limited intellectual capacity. Of the 51 states, 18 differentiated MR according to level of impairment or degree of severity based on IQs. Most states used the terms mild, moderate, and severe/profound, and three used the terms educable MR, trainable MR, and severe/profound.

Intellectual Deficit Criterion

To satisfy the intellectual deficit criterion, the majority of states (59%) use an IQ cutoff of at least two $SD$s below the normative mean (or standard scores of 70 or below). Approximately 6% of states require an IQ to be below two $SD$s (or standard scores below 70), and one state uses an IQ cutoff of at least one and a half $SD$s below the normative mean (or scores approximately 78 and below). However, 22% of states’ guidelines contained only the federal definition of MR without specific eligibility criteria and one state (Iowa) uses a noncategorical approach and does not provide eligibility criteria specific to MR. As noted in Table 1, two states’ guidelines include exceptions to their IQ cutoff criterion. Nebraska guidelines specify that students may be eligible for special education services for MR based on either (a) an IQ $\geq 2$ $SD$s below the normative mean with commensurate (not specified) deficits in adaptive functioning or (b) an IQ $\leq 80$ with significant deficits in one or more adaptive skill or achievement areas (defined as standard scores $\geq 2$ $SD$s below the normative mean). Wisconsin guidelines require students initially being considered for
<table>
<thead>
<tr>
<th>State</th>
<th>Year</th>
<th>Term</th>
<th>Levels</th>
<th>IQ range</th>
<th>IQ part scores</th>
<th>AB Score</th>
<th>AB criterion</th>
<th>Multiple AB settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>2005</td>
<td>Mental Retardation</td>
<td>N</td>
<td>≥ 2 SD</td>
<td>N</td>
<td>N</td>
<td>Either composite or 2 domains/skill areas</td>
<td>≥2 SD</td>
</tr>
<tr>
<td>Alaska</td>
<td>2005</td>
<td>Mental Retardation</td>
<td>N</td>
<td>≥ 2 SD</td>
<td>N</td>
<td>N</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Arizona</td>
<td>2003</td>
<td>Mental Retardation</td>
<td>Y</td>
<td>≥ 2 SD</td>
<td>N</td>
<td>N</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Arkansas</td>
<td>2004</td>
<td>Mental Retardation</td>
<td>N</td>
<td>≤ 70–75</td>
<td>Y</td>
<td>N</td>
<td>Domains/skill area (2)</td>
<td>NS</td>
</tr>
<tr>
<td>California</td>
<td>2005</td>
<td>Mental Retardation</td>
<td>N</td>
<td>FED</td>
<td>N</td>
<td>N</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Colorado</td>
<td>2005</td>
<td>Significant Limited</td>
<td>N</td>
<td>&gt; 2 SD</td>
<td>N</td>
<td>N</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Connecticut</td>
<td>2000</td>
<td>Intellectual Disability</td>
<td>N</td>
<td>≥ 2 SD</td>
<td>Y</td>
<td>Y</td>
<td>Domains/skill area (majority)</td>
<td>≥ 1.5 SD</td>
</tr>
<tr>
<td>Delaware</td>
<td>2004</td>
<td>Mental Disability</td>
<td>Y</td>
<td>≤ 70</td>
<td>Y</td>
<td>N</td>
<td>Domains/skill area (2)</td>
<td>NS</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>1997</td>
<td>Mental Retardation</td>
<td>Y</td>
<td>FED</td>
<td>N</td>
<td>N</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Florida</td>
<td>2005</td>
<td>Mentally Handicapped</td>
<td>Y</td>
<td>≥ 2 SD</td>
<td>Y</td>
<td>Y</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Georgia</td>
<td>2002</td>
<td>Intellectual Disability</td>
<td>Y</td>
<td>≤ 70</td>
<td>Y</td>
<td>N</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Hawaii</td>
<td>2000</td>
<td>Mental Retardation</td>
<td>N</td>
<td>≥ 2 SD</td>
<td>N</td>
<td>N</td>
<td>Domains/skill area (2)</td>
<td>NS</td>
</tr>
<tr>
<td>Idaho</td>
<td>2005</td>
<td>Cognitive Impairment</td>
<td>N</td>
<td>&lt; 70</td>
<td>Y</td>
<td>N</td>
<td>Domains/skill area (2)</td>
<td>NS</td>
</tr>
<tr>
<td>Illinois</td>
<td>2003</td>
<td>Mental Retardation</td>
<td>N</td>
<td>FED</td>
<td>N</td>
<td>N</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Indiana</td>
<td>2002</td>
<td>Mental Disability</td>
<td>Y</td>
<td>≥ 2 SD</td>
<td>N</td>
<td>N</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Iowa</td>
<td>2005</td>
<td>N/A</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Kansas</td>
<td>2001</td>
<td>Mental Retardation</td>
<td>N</td>
<td>≥ 2 SD</td>
<td>N</td>
<td>N</td>
<td>Domains/skill area (2)</td>
<td>NS</td>
</tr>
<tr>
<td>Kentucky</td>
<td>2000</td>
<td>Mental Disability</td>
<td>Y</td>
<td>≥ 2 SD</td>
<td>N</td>
<td>N</td>
<td>NS</td>
<td>≥2 SD</td>
</tr>
<tr>
<td>Louisiana</td>
<td>2004</td>
<td>Mental Disability</td>
<td>Y</td>
<td>≥ 2 SD</td>
<td>N</td>
<td>N</td>
<td>Both composite and domains/skill area</td>
<td>NS</td>
</tr>
<tr>
<td>Maine</td>
<td>2003</td>
<td>Mental Retardation</td>
<td>N</td>
<td>FED</td>
<td>N</td>
<td>N</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Maryland</td>
<td>2005</td>
<td>Mental Retardation</td>
<td>N</td>
<td>FED</td>
<td>N</td>
<td>N</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>State</td>
<td>Year</td>
<td>Term</td>
<td>Levels</td>
<td>IQ range</td>
<td>IQ part scores</td>
<td>AB Score</td>
<td>AB criterion</td>
<td>Multiple AB settings</td>
</tr>
<tr>
<td>---------------------</td>
<td>------</td>
<td>-----------------------</td>
<td>--------</td>
<td>----------</td>
<td>----------------</td>
<td>----------</td>
<td>--------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Massachusetts</td>
<td></td>
<td>Intellectual Impairment</td>
<td>N</td>
<td>NS</td>
<td>N</td>
<td>N</td>
<td>NS</td>
<td>Considered in multiple settings</td>
</tr>
<tr>
<td>Michigan</td>
<td>2002</td>
<td>Cognitive Impairment</td>
<td>Y</td>
<td>≥ 2 SD</td>
<td>N²</td>
<td>N</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Minnesota</td>
<td>2005</td>
<td>Developmental Cognitive Disability</td>
<td>Y</td>
<td>≥ 2 SD</td>
<td>Y</td>
<td>Y</td>
<td>Both composite and domains/skill areas (4)</td>
<td>Composite ≤ 15th %tile; documentation of needs in 4 of 7 domains</td>
</tr>
<tr>
<td>Mississippi</td>
<td>2003</td>
<td>Mental Retardation</td>
<td>Y</td>
<td>≥ 2 SD</td>
<td>Y</td>
<td>Y</td>
<td>Both composite and domains/skill areas</td>
<td></td>
</tr>
<tr>
<td>Missouri</td>
<td>2005</td>
<td>Mental Retardation</td>
<td>N</td>
<td>≥ 2 SD</td>
<td>N</td>
<td>N</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Montana</td>
<td>2004</td>
<td>Cognitive Delay</td>
<td>N</td>
<td>≥ 2 SD</td>
<td>Y</td>
<td>N</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Nebraska</td>
<td>2004</td>
<td>Mental Handicap</td>
<td>Y</td>
<td>≥ 2 SD or ≤ 80</td>
<td>N</td>
<td>Y</td>
<td>Domains/skill area (1)</td>
<td>≥ 2 SD (if using IQ ≤ 80 criterion)</td>
</tr>
<tr>
<td>Nevada</td>
<td>2000</td>
<td>Mental Retardation</td>
<td>Y</td>
<td>≥ 2 SD</td>
<td>N</td>
<td>Y</td>
<td>Domains/skill area (2)</td>
<td>NS</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>2002</td>
<td>Mental Retardation</td>
<td>N</td>
<td>FED</td>
<td>N</td>
<td>N</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>New Jersey</td>
<td>2003</td>
<td>Cognitively Impaired</td>
<td>Y</td>
<td>≥ 2 SD</td>
<td>N</td>
<td>N</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>New Mexico</td>
<td>2005</td>
<td>Mental Retardation</td>
<td>N</td>
<td>≤ 70</td>
<td>Y</td>
<td>N</td>
<td>Either composite or domains/skill area (1)</td>
<td>≥ 2 SD</td>
</tr>
<tr>
<td>New York</td>
<td>2004</td>
<td>Mental Retardation</td>
<td>N</td>
<td>FED</td>
<td>N</td>
<td>N</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>North Carolina</td>
<td>2004</td>
<td>Mentally Disabled</td>
<td>Y</td>
<td>&lt; 70</td>
<td>Y</td>
<td>N</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>North Dakota</td>
<td>1999</td>
<td>Mental Retardation</td>
<td>Y</td>
<td>≤ 70</td>
<td>Y</td>
<td>N</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Ohio</td>
<td>2002</td>
<td>Cognitive Disability</td>
<td>N</td>
<td>≤ 70</td>
<td>Y</td>
<td>N</td>
<td>Domains/skill area (2)</td>
<td>NS</td>
</tr>
<tr>
<td>State</td>
<td>Year</td>
<td>Term</td>
<td>Levels</td>
<td>IQ</td>
<td>Score range</td>
<td>IQ part scores</td>
<td>AB Score</td>
<td>AB criterion</td>
</tr>
<tr>
<td>---------------</td>
<td>------</td>
<td>--------------------------</td>
<td>--------</td>
<td>----</td>
<td>-------------</td>
<td>---------------</td>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>2002</td>
<td>Mental Retardation</td>
<td>Y</td>
<td>$\geq 2 , SD$</td>
<td>Y</td>
<td>Y</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Oregon</td>
<td>2004</td>
<td>Mental Retardation</td>
<td>N</td>
<td>$\geq 2 , SD$</td>
<td>N</td>
<td>N</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>2001</td>
<td>Mental Retardation</td>
<td>N</td>
<td>FED</td>
<td>N</td>
<td>N</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>2000</td>
<td>Mental Retardation</td>
<td>N</td>
<td>FED</td>
<td>N</td>
<td>N</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>South Carolina</td>
<td>2002</td>
<td>Mental Disability</td>
<td>Y</td>
<td>$\geq 2 , SD$</td>
<td>Y</td>
<td>Y</td>
<td>Composite</td>
<td>$\geq 2 , SD$</td>
</tr>
<tr>
<td>South Dakota</td>
<td>2004</td>
<td>Mental Retardation</td>
<td>N</td>
<td>$\geq 2 , SD$</td>
<td>Y</td>
<td>N</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Tennessee</td>
<td>2003</td>
<td>Mental Retardation</td>
<td>N</td>
<td>$\geq 2 , SD$</td>
<td>Y</td>
<td>N</td>
<td>Composite</td>
<td>$\geq 2 , SD$</td>
</tr>
<tr>
<td>Texas</td>
<td>2002</td>
<td>Mental Retardation</td>
<td>N</td>
<td>$\geq 2 , SD$</td>
<td>N</td>
<td>N</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Utah</td>
<td>2003</td>
<td>Intellectual Disability</td>
<td>N</td>
<td>$\geq 2 , SD$</td>
<td>N</td>
<td>Y</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Vermont</td>
<td>2003</td>
<td>Learning Impairment/Delay in Learning</td>
<td>N</td>
<td>$\geq 1.5 , SD$</td>
<td>N</td>
<td>N</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Virginia</td>
<td>2002</td>
<td>Mental Retardation</td>
<td>N</td>
<td>FED</td>
<td>N</td>
<td>N</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Washington</td>
<td>2002</td>
<td>Mental Retardation</td>
<td>N</td>
<td>FED</td>
<td>N</td>
<td>N</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>West Virginia</td>
<td>2005</td>
<td>Mentally Impaired</td>
<td>N</td>
<td>$\leq 70$</td>
<td>Y</td>
<td>N</td>
<td>Domains/skill area (2)</td>
<td>NS</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>2002</td>
<td>Cognitive Disability</td>
<td>N</td>
<td>$\geq 2 , SD$ or $\geq 1 , SD$</td>
<td>Y</td>
<td>N</td>
<td>Domains/skill area (2)</td>
<td>$\geq 2 , SD$</td>
</tr>
<tr>
<td>Wyoming</td>
<td>1999</td>
<td>Mental Disability</td>
<td>N</td>
<td>$\geq 2 , SD$</td>
<td>Y</td>
<td>Y</td>
<td>NS</td>
<td>NS</td>
</tr>
</tbody>
</table>

Note: AB = adaptive behavior, FED = federal definition only, NS = not specified.
1 Under Georgia guidelines, more than one formal measure of intelligence is required.
2 According to Michigan guidelines, IQs at or below approximately $2 \, SD$ satisfy the intellectual deficiency criterion. Similarly, Utah guidelines stated that IQs should “generally” be less than or equal to $2 \, SD$ below the mean. However, because the guidelines do not define “approximately” or “generally” the score ranges were coded as N.
eligibility to exhibit an IQ two or more SDs below the normative mean, but the guidelines allow continued eligibility for students who, upon reevaluation, exhibit IQs between one and two SDs below the normative mean if the student is expected to exhibit intellectual deficits indefinitely. Approximately 39% of state guidelines specify consideration of measurement error using either an IQ range (e.g., 70 to 75) or the $SE_m$ (and associated ranges) surrounding IQs in determining the intellectual deficit criterion.

Most states specify the use of a comprehensive intelligence test battery, which typically yield both an IQ and part scores, but approximately 20% of states (10 states) mention the use of part scores in the MR definition or require school-based multidisciplinary teams to consider part scores in eligibility determination. Most states with provisions for the use of part scores do not allow the use of a part score in isolation to satisfy the intellectual deficit criterion but require consideration of part scores in eligibility decisions. For example, some guidelines require that profiles of part scores be within the deficient range, some specify a cutoff criterion for part scores, and some require examination of part scores and further investigation of a student’s abilities if there are discrepancies between part scores. However, only one state (South Carolina) requires normative deficiencies to be evidenced in part scores rather than an IQ.

**Deficient Adaptive Functioning Criterion**

Procedures for determining adaptive behavior deficiencies vary greatly across states. The majority of states (63%) do not specify whether composite scores reflecting global adaptive functioning or scores reflecting adaptive behavior domains or skill areas be used to establish deficient functioning. Among states whose guidelines specify the necessary scores, two states specify the use of adaptive behavior composites reflecting overall adaptive functioning, 11 states specify the use of scores for adaptive behavior domains or skill areas, three states require that both composites and domains or skill areas be used, and two states allow for either composite scores or domains or skill areas to be used. Most states (77%) do not include a specific score criterion for deficient functioning. 16% require scores of least 2 SDs below the normative mean, and 2% require scores of at least 1.5 SDs below the normative mean. In contrast, 2% of states require deficient adaptive functioning to be based on separate criteria for the adaptive behavior composite and the adaptive behavior domains or skill areas. Although the diagnostic criteria outlined by most professional groups specify that adaptive skill deficits be evidenced across settings, only six states (12%) require adaptive functioning to be measured in multiple settings, and only four additional states specify that adaptive functioning be considered in multiple settings. (We coded the following two instances as indicating that adaptive behaviors were considered in multiple settings: descriptions that indicated only considerations of or informal observations of behaviors in non-school settings and descriptions of ratings completed by a single rater to describe behaviors in school and other settings.) In contrast, two states (4%) specify procedures for measuring adaptive functioning in one setting, and 37 states (73%) do not address the settings in which adaptive functioning be measured.

**Discussion**

This study provided an updated summary of states’ guidelines and investigated two issues that have not received much attention in previous reviews of state guidelines. In a manner almost identical to Denning et al (2000), we found the term *mental retardation* is used by approximately half the states to describe the condition and that *mental handicap* is used by approximately 12% of states. In contrast, fewer states than reported in Denning et al. now require differentiating levels of MR according to degree of impairment or severity based on IQs. We found that only 18 states in our study require these levels, whereas Denning et al. reported 27 states. Perhaps this decreased prevalence was influenced by criticisms, such as that by Wehmeyer (2003), noting that the focus on labels related to levels of impairment lowers expectations by encouraging educational placements and interventions based on perceived global impairment rather than on individual needs.

States require consideration of IQs with an
upper cutoff ranging from a low of 69 to a high of 80 for initial evaluations and a high of 85 for re-evaluations. Approximately 39% of state guidelines specify consideration of measurement error using either an IQ range or the $SEM$ (and associated ranges) surrounding IQs in determining the intellectual deficit criterion. This percentage is only slightly higher than that reported by Utley et al. (1987), which was 36%.

Effects of recent theory-based test development and interpretation and the SSA guidelines (NRC, 2002) focusing on composite-based part scores do not appear to be far reaching as of yet. For example, fewer than one-fifth of states make reference to part scores, and only one state requires normative deficiencies to be evidenced in part scores rather than in IQs. Furthermore, when states guidelines made reference to part scores, they were most often to those scores that are not based on recent theories of intelligence (e.g., Verbal IQ and Performance IQ; Alfonso et al., 2005; Kaufman & Lichtenberger, 2005; Wechsler, 2003).

Across the eligibility guidelines, there was little consistency (a) in the descriptions of which adaptive behavior scores (i.e., composites or domains/skill areas) were required for identification and (b) in the criteria used to judged adaptive behaviors as deficits (e.g., $\leq 70$). If there was any consistency in these areas, it was revealed in the majority of state guidelines omitting descriptions of which adaptive behavior scores are required and in the majority of state guidelines failing to specify the criterion indicating adaptive behavior deficits. However, in general, a few more states (five more) now appear to list specific practices recommended for adaptive behavior assessment than they did about eight years ago (cf. Denning et al., 2000). It is required that those making judgments about special education eligibility for children suspected of having MR consider foremost educational impairment because of the risk of identifying “6-hour retarded children” whose deficits are not apparent across settings (President’s Committee on Mental Retardation, 1969). Thus, it was quite unexpected that well less than one-tenth of the states require adaptive functioning to be measured in multiple settings. Despite this serious limitation across the states, perhaps it is beneficial to acknowledge that progress in this area appears to have been made across almost two decades. Our review revealed that all states but one (Nebraska) require the presence of adaptive behavior skill deficits for identification of mental retardation, whereas Utley et al. (1987) and Frakenberger and Fronzaglio (1991) revealed that only approximately two-thirds of states require the presence of adaptive behavior skill deficits.

**Advantage and Limitations**

The accessibility of information from the World Wide Web allowed us direct access to the eligibility guidelines for MR from most every state. Therefore, unlike previous research, state department administrators were not surveyed by paper-and-pencil methods. With careful contact and follow-up by phone to such individuals to ensure that we had accessed the most recent versions of these guidelines, limitations of our approach to data collection are minimal. As with all such research, we anticipate that there have been changes to the eligibility guidelines since we obtained the information summarized in this manuscript. Similarly, it is possible that our coding of the information found in the state guidelines does not match perfectly with the manner in which the guidelines are interpreted by those within states. For example, it is likely that our interpretation of the wording in the guidelines often led us to conclude that specific criteria were not specified well enough to code as something other than “not specified,” when those using the guidelines may have interpreted the wording in the guidelines differently. Thus, despite relatively high levels of inter-rater agreement in our study, the coding may not reflect actual practices in the field.

**Conclusion**

Psychologists and other professionals involved in assessment of children with or expected to have MR should be not only (a) well informed about their state’s and neighboring states’ eligibility criteria but also (b) knowledgeable about best practices in the use and interpretation of intelligence tests and adaptive behavior assessment instruments. Our results reveal that some notable variations exist in the eli-
Variability guidelines for MR from state to state. Variations include the terms used to describe this exceptionality, the criterion used to identify an intellectual deficit, and the scores and criteria used to identify adaptive behavior deficiencies. Despite the finding that few states require that adaptive behavior deficits be apparent in more than one setting, psychologists and other professionals should continue to follow best practices by ensuring that such deficits are considered from an ecological perspective through assessment in multiple settings. Similarly, despite what is known about inconsistencies in measurement due to random influences on test performance, fewer than half of states recommend attention to unreliability of IQs through use of $SE_M$ and associated score ranges. Although some psychologists and other professionals may place emphasis on part scores that are theoretically based and reliable measures from recently published intelligence tests, less than a quarter of states require such consideration of them during eligibility. We urge those conducting such assessments and policy makers to consider best practices and advancements in theory and measurement of intelligence and adaptive behaviors during upcoming revisions to their state guidelines for MR.

References


Received: 23 August 2006
Initial Acceptance: 11 October 2006
Final Acceptance: 20 January 2007