Education and Training in Developmental Disabilities

Focusing on individuals with cognitive disabilities/mental retardation, autism, and related disabilities
Consulting Editors

Martin Agran
Reuben Altman
Richard Bartlett
Phillip J. Belfiore
Sharon Borthwick-Duffy
Michael P. Brady
Freda Brown
Mary Lynne Calhoun
Caroline Dunn
Lise Fox
David L. 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
Gale M. Morrison
Gabriel A. Nardi
John Nietupski
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 Stoddlen
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 $20.00 for regular members and $8.00 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. Education and Training in Developmental Disabilities is abstracted and indexed in Psychological Abstracts, PsycINFO, e-psyche, Abstracts for Social Workers, International Journal of Rehabilitation Research, Current Contents/Social and Behavioral Sciences, Excerpta Medica, Social Sciences Citation Index, Adolescent Mental Health Abstracts, Educational Administration Abstracts, Educational Research Abstracts, and Language and Language Behavior Abstracts. Additionally, it is annotated and indexed by the ERIC Clearinghouse on Handicapped and Gifted Children for publication in the monthly print index Current Index to Journals in Education and the quarterly index, Exceptional Child Education Resources.


Division on Developmental Disabilities
The Council for Exceptional Children

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

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.
An Exploration of the Self-Determination Construct and Disability as it Relates to the Diné (Navajo) Culture

H. CORINE FRANKLAND
ANN P. TURNBULL
MICHAEL L. WEHMEYER
LAVINE BLACKMOUNTAIN

The Search for an Integrated Paradigm of Care Models for People with Handicaps, Disabilities and Behavioural Disorders at the Department of Orthopedagogy of Ghent University

ERIC BROEKAERT
GEERT VAN HOVE
PHILL BAYLISS
FRANKY D’OSTERLINCK

Assistive Technology Use and Stigma

PHIL PARETTÉ
MARCIA SCHERER

Attitudes of Japanese Adults toward Persons with Intellectual Disability: Comparison over Time and Across Countries

TOSHIKAI TACHIBANA
KANJI WATANABE

Embedded Video and Computer Based Instruction to Improve Social Skills for Students with Autism

AMBER SIMPSON
JOHN LANGONE
KEVIN M. AYRES

Comparison of Two Approaches for Identifying Reinforcers in Teaching Figure Coloring to Students with Down Syndrome

DILEK ERBAS
ARZU OZEN
CIMEN ACAR

Choice, Degree of Preference, and Happiness Indices with Persons with Intellectual Disabilities: A Surprising Finding

LISA SCHWARTZMAN
GARRY L. MARTIN
C.T. YU
JOHN WHITELEY
Manuscripts Accepted for Future Publication in Education and Training in Developmental Disabilities

December 2004

Teaching social problem solving to individuals with mental retardation. Steven A. Crites and Caroline Dunn, Rowan University, Special Education Services and Instruction, 201 Mullica Hill Road, Glassboro, NJ 08028.

Cross-cultural comparison of the concept of “otherness” and its impact on persons with disabilities. Nikki Murdick, Paul Shore, Mary M. Chittooran, and Barbara Gartin, 3750 Lindell Blvd., Saint Louis University, St. Louis, MO 63108.

Collaboration among parents and professionals with discrete trial training in the treatment for Autism. Sandra D. Devlin and Melissa M. Harber, Mississippi State University, Box 9727, Mississippi State, MS 39762-5247.


Learning set instruction in seriation and the oddity principle for a child with severe mental disabilities. Robert Pasnak, Elise M. Maccubbin, Jessica L. Campbell, and Marinka Gadzichowski, Psychology 3F5, George Mason University, Fairfax, VA 22030-4444.

Similarities and differences in addition strategies of children with and without mental retardation. Lisa F. Huffman, Kathryn L. Fletcher, Norman W. Bray, and Lisa A. Grupe, Department of Educational Psychology, Teachers College 514, Ball State University, Muncie, IN 47306.

Teaching pointing to numerals to individuals with autism using simultaneous prompting. Nurgul Akmanoglu and Sema Batu, Anadolu Universitesi, Engelliler Arastirma Enstitusu, Eskisehir, 26470, Turkey.

Sensory issues in children with Asperger syndrome and autism. Brenda Smith Myles, Taku Hagiwara, Winnie Dunn, Louann Rinner, Matthew Reese, Abby Huggins, and Stephanie Backer, The University of Kansas, Special Education, 1122 West Campus Road, Room 521, Lawrence, KS 66045-3101.

---

Address is supplied for author in boldface type.
An Exploration of the Self-Determination Construct and Disability as it Relates to the Diné (Navajo) Culture

H. Corine Frankland
Western New Mexico University

Ann P. Turnbull and
Michael L. Wehmeyer
University of Kansas

Lavine Blackmountain
Navajo Nation Department of Vocational Rehabilitation

Abstract: Recent literature in the field of transition studies emphasizes importance of creating self-determination supports to promote independence, autonomy, and quality of life in students with disabilities. Much of that literature, however, has not taken cultural and familial factors into consideration. A review of the Navajo family and disability literature indicates that most traditional and semi-traditional Diné (the preferred term for referring to the Navajo people, a term that translates in the Native language to “The People”) indicates that the component elements of self-determined behavior are relevant to and important to Diné people, but that the ways in which these are expressed differs from an Anglo perspective. While the Diné people value self-regulation and autonomy, they are operationalized more in an emphasis on the importance of interdependence and group cohesion above independence and autonomy. This examination of application of self-determination within context of the Diné culture and traditions illustrates the universality of certain aspects of self-determination while at the same time indicating critical need for educational services that reflect cultural, racial, and familial values of the student.

The Individuals with Disabilities Education Act (IDEA) requires that students with disabilities receive broad-based, outcome-oriented transition services to enable them to pursue a range of post-school options, including: (a) community living, (b) competitive and supportive employment, and (c) vocational training. To ensure decisions made in the transition planning process represent the student’s desires and choices, recent emphasis has been placed on providing environmental supports and instruction to foster self-determination. According to Wehmeyer, Kelchner, and Richards (1996), self-determined people must possess four essential characteristics. First, they must be self-realizing. To be self-realizing, persons must have reasonably accurate knowledge of their strengths and limitations within their given environment and act in such a manner as to capitalize on this knowledge. Second, they must be self-regulating. To be self-regulating, persons must be able to set goals, problem solve, and make decisions regarding their preferences. Third, they must be psychologically empowered. People who are psychologically empowered believe that they possess skills and opportunities to perform certain tasks and behaviors and that their actions will bring positive outcomes. Fourth, they must be empowered to act autonomously. To be autonomous, persons must act according to their own preferences free from undue external influence or interference. Further, it is assumed that as self-determination skills are developed, quality of life and adult outcomes will improve (Wehmeyer & Schwartz, 1997, 1998).

As depicted in Figure 1, the self-determination construct emerged in the late 17th Century as part of the philosophical debate (in England and Europe) concerning determinism (the philosophical doctrine that all behavior is the effect of a cause) and the ‘free-will
John Locke, (1689). Determinism is a philosophical doctrine positing that events, including human behavior and actions, are effects of preceding causes. Locke proposed that human behavior is the effect of human thoughts, free will and volition as opposed such actions being predetermined (by God) or indeterminant (no cause). In Locke’s self-deterministic view, humans are free to act (self-determined) even if behaviors are actually ‘caused’ by sensation and reflection (thought).

1700s – 1800s Europe: Dating, in essence, from the French Revolution emerges an understanding that the people of a nation are sovereign, not monarchs, and that the citizens are recognized to be ‘the nation.’ This sense of the right of people to self-governance is at the heart of writings of Payne and others.

January 8, 1918. American president Woodrow Wilson gives his famed ‘Fourteen Points’ speech to Congress, outlining fourteen points for a post WWII settlement that would lead to world peace. Six of the fourteen points referred specifically to ensuring that nations who were defeated in the war would be assured the opportunity for national self-determination. Wilson’s speech is generally credited with popularizing the use of the term as a geo-political construct, although it is first used in that sense in 1911.

1920s. Drawing from both the understanding of self-determination as a geo-political right and as a personal construct, the field of Social Work establishes values for practice based on principles.


1970s onward: Principles for developmental disabilities services changed from previous models by widespread adoption of normalization principal. Independent living movement emerges as political and social-change force, providing evidence that people with disabilities can and should live in their communities.

1890 – 1930: Psychology emerges as a discipline distinct from philosophy. Emergence of personality psychology as a discipline in 1930s provides theoretical foundation for psychological exploration of human behavior as ‘caused’ by internal determinants (self- or autonomous-determinism) or external determinants (other- or heteronomous-determinism).


1990s. Self-determination emerges as critical educational domain for promoting effective transition from school to post-school life.
problem.’ That is, in its earliest usage, the construct was applied as part of the debate concerning whether humans were free to act (volitional behavior) or whether all human behavior was predetermined by God (theological determinism). As the construct was applied to explain human behavior in other disciplines and domains, particularly psychology (and subsequently social work and education), the construct’s meaning changed slightly to refer to whether behavior was caused by factors internal to the individual (self-determination) or factors external to the individual (other-determination).

In the early 20th Century the constructs usage as pertaining to self-control and self-governance was used to refer to geo-political entities, typically with regard to the rights of the peoples of nations to self-governance. As that century progressed, use of the term to refer to rights of peoples for self-governance and self-control was applied to groups of people who were not citizens of a common country, but instead shared some common background, cause or issue. Among these uses of the geo-political sense of the term was the ongoing struggle by Native Americans for sovereignty and self-governance, codified in the Native American Self-Determination Act, the rights of African-Americans for self-governance (exemplified by the inclusion of one day for self-determination during the African-American holiday Kwanzaa), and proclamations for rights of citizens with disabilities for self-governance and greater autonomy to control resources (Nerney & Schumway, 1996; Nirje, 1972; Vaughn, 1993).

In the early 1990s the U.S. Department of Education initiated a focus on promoting and enhancing the self-determination of children and youth with disabilities (Ward & Kohler, 1996). While geo-political sense of the construct has proved to be quite portable and readily applicable to persons who are denied basic rights to self-governance, personal sense of the term is more complex when considered across cultures and applied to members of non-Anglo-European groups. As the construct has been applied in the fields of disability services and special education, it is important to note that values inherent in most efforts to promote self-determination are those values associated with Anglo-European cultures and societies (Lynch & Hanson, 1999). These values generally include: (a) personal control over the environment, (b) importance of time, (c) individualism, (d) self-help, (e) competition, (f) future orientation, and (g) goal orientation [U.S. Department of Agriculture & U.S. Department of Health and Human Services (1986) cited in Lynch & Hanson, 1998].

The self-determination movement in education, as it now can reasonably be called, is growing in both theory and practice and has potential to significantly impact how transition services will be designed and implemented for students with disabilities. Thus, it is critical that attempts to promote self-determination be consistent with cultural orientation and values of each student and family. Recently, the self-determination movement has recognized this need and has determined that any conceptualization of self-determination must recognize and be able to accommodate for wide variations in how self-determination is understood (and, therefore, promoted and enhanced) as a function of a greater variety of cultural and societal factors (Turnbull & Turnbull, 1997; Wehmeyer, 1997b).

This paper explores how the theory and practice of self-determination relates to values and beliefs of the Diné people. Topics addressed include: (a) Diné families: Structural and cultural factors, and (b) essential characteristics of self-determined behavior (Wehmeyer, Kelchner, & Richards, 1996) as they relate to the Diné culture and various sub-groups within the Diné tribe. Significance of the paper is in promoting the design and implementation of transition services that are responsive and tailored to specific preferences and needs of students from culturally and linguistically diverse backgrounds and in promoting a wider dialogue about such issues.

Figure 1. Emergence of Self-Determination.
Dine Families: Structural and Cultural Factors

Despite 200 years of contact with Anglo-European values and assimilation initiatives, the Dine tribe has, to a remarkable degree, maintained its cultural value system, even though there are differing opinions regarding the importance of formal education, employment, and bi-cultural skills within members of the Dine tribe. Despite current differences that exist among tribal members, however, the Dine language, clan system, and cultural belief system provide a cultural umbrella under which Dine tribal members share important beliefs and cultural connections. As a foundation for exploring the cultural perspective of transition and self-determination initiatives, the following structural factors are explored: (a) resident patterns, (b) socioeconomic status, (c) levels of acculturation, and (d) colonialization factors. Further, cultural factors influencing transition and self-determination are explored, including: (a) Dine family structure and expectations, (b) child development expectations, and (c) expectations as they relate to persons with disabilities.

Structural Factors Influencing Transition and Self-Determination

Resident Patterns

The Dine people live on the largest Indian reservation within the United States. The Dine tribe consists of approximately 270,000 members, of which 165,614 live within the Dine Nation borders (Utah Division of Indian Affairs, 2000). The Dine Nation encompasses 25,000 square miles, approximately the size of the state of West Virginia, and spans across the four states of Arizona, New Mexico, Colorado, and Utah. Despite 200 years of contact with surrounding Anglo society and government influence to assimilate the Dine peoples into mainstream society, the Dine culture is remarkably stable and enduring (Connors & Donnellan, 1998). Today, over 50% of Dine people live in reservation towns of 2000-3000 people, while the other 50% are scattered throughout remote areas of the reservation. Of those tribal members living in rural, remote areas, the majority live in small camps on land that has been passed down matrilineally. Because losing land is equated with loss of life and security, Dine people living in rural areas make strong efforts to retain their land base, despite the poverty and unemployment that is rampant in such remote areas (O’Connell, Minkler, Dereshiwsky, Guy, & Roanhorse, 1992).

Socioeconomic Status

As is the case with most Indian reservations, poverty rates are high in the Dine Nation and comparable to those found in some underdeveloped third world countries. According to the Utah Division of Indian Affairs (2000), 56% of Dine people live below the poverty line compared to 13% for the total United States population. Additionally, the average annual per capita income for a Dine person in 1990 was $4,106, compared to the national average of $19,082.

Today, many Dine families who reside in rural areas within the Dine Nation rely upon sheep, cattle, small gardens, and federal assistance for survival. Due to the remote nature of the rural communities, many communities lack paved roads and other amenities, while homes often lack electricity, running water, and telephones. Although many Dine people endure sparse economic and living conditions, Dine perspectives regarding financial stability are often different from those values held by Anglo-Europeans. For example, many Dine gauge their financial success upon (a) having reliable shelter, (b) a vehicle for transportation, (c) sufficient livestock for personal consumption and sale, and (d) a dependable, united family.

Poor economic conditions on the Dine Nation are exacerbated by a lack of jobs for its tribal members. Annual unemployment rate for the Dine Nation ranges from 36% to over 50% seasonally, compared to the national unemployment rate ranging from roughly 4.0% to 6.0% (Bureau of Labor Statistics, 2003). Primary employment agencies on the reservation are government-funded institutions that include Indian Health Services, Bureau of Indian Affairs, and public schools (Utah Division of Indian Affairs, 2000).

Because work is difficult to find on the reservation, many residents move away from the
reservation to secure employment. From 1980 to 1990, the on-reservation population grew by 22% while the numbers of enrolled Diné tribal members living off the reservation in the states of Arizona, New Mexico, and Utah increased by 124.5%. This significant demographic shift is also evident in nationwide statistics that indicate that Diné people are leaving the comforts of their ancestral lands for employment in cities across the United States (Utah Division of Indian Affairs, 2000).

Acculturation Factors

As a result of Anglo-European attempts to assimilate Diné people into mainstream society over the past 200 years, various levels of acculturation exist within the Diné tribe. Given the complexity of these acculturation factors, it is impossible to assign a specific cultural continuum for Diné tribal members. Despite this difficulty, there is general consensus that variations in Native American beliefs and behaviors can be attributed to the degree of exposure or contact with Anglo-European beliefs and values (Duran & Duran, 1995).

Recognizing the impact of acculturation on Navajo beliefs and behaviors, Connors and Donnellan (1993) provided three levels of acculturation for the Diné people: (a) traditional, (b) semi-traditional, and (c) modern Diné. According to Connors and Donnellan, traditional refers to those Diné whose first language is Diné and who may have limited fluency in the English language. Traditional Diné people most often live in the remote areas of the Diné Nation and rely on livestock and farming. Traditional Diné people often have little to no formal education, adhere to traditional tribal practices, and are often non-Christian. Semi-traditional Diné people are fluent in both Diné and English languages, derive some income from wage work, have at least an eighth grade education, and often combine Christianity with native ceremonies. Semi-traditional Diné people may live in rural areas, but most often live in small towns within the reservation or in towns bordering the reservation. Modern Diné people usually only speak English, profess Christianity or no religion at all, declare ignorance of Diné ways, derive all income from wage work, and have high school and/or some college technical training. This population often lives in cities off the reservation, apart from their immediate relatives, but maintain close obligatory ties with parents, sisters, and brothers (Connors & Donnellan, 1993, p. 269).

Colonialization Factors Influencing Self-Determination

On August 12, 1868, the United States government entered into the Treaty of 1868 with the Diné tribe. This treaty formally recognized the Diné tribe as a self-governing body and granted homeland to the tribe (Treaty Between the United States of America and the Navajo Indians, article 6, 15 Stat. 667). Although the Diné tribe was recognized as a self-governing body, the United States’s Bureau of Indian Affairs served as the manager of tribal finances, schools, and medical facilities.

In 1975, Congress recognized the need for increased self-governance for all Native American tribes. As a result, The Indian Self-Determination Act of 1975 (25 U.S.C.A § 450 et seq., 1975) was implemented. This Act of Congress authorized the Secretaries of Interior and Health, Education, and Welfare to enter contracts under which the tribes themselves would assume responsibility for the administration of federal Indian programs (Canby, 1991). Under this Act, the United States government provides federal funding directly to the Diné Nation to encourage them to manage their own affairs under a trust relationship with the government (Henson, 2000). As a result, both the United States government and the Diné people refer to the Diné reservation as a sovereign nation. As such, the Diné Nation has its own police force, its own courts and legal system, and a three-branch government that includes a legislature that enacts the laws for the general benefit of the Diné people.

Yet, while the Diné Nation is considered a sovereign nation, it like all tribes, is also simultaneously considered as a “ward” of the United States (25 U.S.C.A. § 450 et seq., 1975). Under such terms, the United States is in the position to unilaterally assert power over the Diné Nation, eliminating the “sovereign status” of the Diné Nation if it so wishes (D’Errico, 1997). As such, the United States...
government has ultimate power over tribal funding, tribal programs, and benefits to the Diné people. As a result, a dependent relationship continues between the United States government and the Diné Nation, and it is the United States government that ultimately determines to what degree the Diné Nation is allowed to self-govern.

Many Diné regard historical and current relationships with the United States government as detrimental to their people. According to Judge Robert Yazzie, the Chief Justice of the Diné Nation, all Diné people currently suffer from some form of post-traumatic stress syndrome as a result of the United States government’s attempts to control the Diné people and their culture (Yazzie, 1995). Duran and Duran (1995) described this illness as intergenerational posttraumatic stress disorder. This disorder is suggested to be a result of many decades of physical, emotional, and spiritual abuse at the hands of oppressive government and religious entities and internalization of pathological patterns that stem from such abuse. Both internalized historical mistreatment and “ward” status have played a large part in the high rate of alcohol-related crimes, violence, apathy, and abuse that have become part of daily life for many residents of the Diné Nation.

Cultural Factors Influencing Transition and Self-Determination

Family Structure

Diné culture is organized in two ways: (a) immediate family and (b) extended family or clans. For the Navajo, immediate family members are usually blood related and most often include parents and siblings, but can also include grandparents, aunts, uncles, and cousins. Within the immediate Diné family, members have specific roles to perpetuate the family’s survival and support. For example, within each family, certain members may be relegated responsibility to care for livestock, tend area farms, care for the home, and provide assistance for the elderly. Further, members of Indian Nations are expected to formally or informally guide, counsel, or teach children that belong to the clan (Subia Sipes Bigfoot, 1993). With an emphasis on communal spirit, Diné children are raised to believe in the importance of a “one for all and all for one” philosophy (McWhirter & Ryan, 1991).

Extended family to the Diné includes both distant blood-related relatives and distant non-related blood relatives. Extended family for the Diné is not traced specifically blood relations, as in Euro-American culture, but is traced by a clan structure that was originally formed to protect against marriage between tribal members who were related by blood (Frazier, 2000). Diné clan structure originated with four clans and the number of clans grew as non-Diné women with their own tribal clans were adopted into the Diné tribe. Today, over 130 clans are recognized within Diné society (Frazier). The mother’s clan determines clan membership for both boys and girls. In addition to protecting against intermarriages between relatives, Diné clan structure provides a foundation for ethics that guide social interactions, status, and responsibilities within one’s tribe and in the community (WITHERSPOON, 1975). For example, a young woman, although not related by blood, may be a mother to some, sister to others, daughter or grandmother, all at the same time, according to the Diné clan system. As such, the young woman is expected to fulfill role responsibilities governed by the Diné clan system. Ultimately, the Diné clan system provides a mechanism for role prescription and a structure for uniting the Diné people regardless of blood lineage. This serves to strengthen the identity of the Diné people as a family and as a tribe.

For modern Diné people who are aware of their clans, the organizational system provides a mechanism for providing a Diné identity and connection to their family, as well as serving to prevent incestuous relationships and marriages. However, because many modern Diné homes are organized similar to Anglo-European nuclear families (e.g., mother, father, siblings) and may not know or value the Diné clan relationships, they may unconsciously or consciously choose to marry within their clans. Often, modern Diné people do not prescribe to traditional communal values nor do they actively participate in the continual protection and functioning of persons outside the nuclear family.
Beliefs of modern Diné people are generally rooted in Anglo-European conceptualizations of proper child development. Thus, significant differences do not exist between modern Diné perception of child development and Anglo-European perceptions on child development. However, traditional and semi-traditional Diné people may hold very different beliefs and expectations regarding their children’s development (Connors & Donnellan, 1998; Deyhle & LeCompte, 1994; Joe & Malach, 1998). In the following section, roles and expectations are given of the following age brackets: (a) birth to 3, (b) 6 to 9, and (c) 10 to 15. These age brackets represent the natural progression of Diné child development.

Birth to three. From the time a child is born, until the age of 6, Diné children are encouraged to become a person in their own right and are encouraged to develop their own unique identities (Connors & Donnellan, 1998; Deyhle & LeCompte, 1994). Diné people believe that children enter the world with pre-determined identities given by the Creator and that it is the responsibility of the parent to encourage the child to develop their identities virtually free of constraints. During these early years, Diné children are provided protection and guidance from harm. The primary focus of parenting, however, is to encourage children to explore their surroundings and develop an understanding of their fit in both their immediate family and the larger world (Connors & Donnellan). It is at this young age that Diné children are taught the importance of tækweajíteegó – “self-determination” in the Diné language. Tækweajíteegó refers to the process of children learning all they can about themselves and their environment, so that one day they will be a person who is equipped with both mental strength and an understanding of where they fit in the universe. When Diné children develop these qualities, they then possess the ability to overcome mental and physical hardships, including hunger, jealousy, and laziness.

Six to nine. Between the ages of 6 and 9, Diné children are perceived as capable of learning and assuming adult responsibilities. During this phase of development it is typical for Diné students to be left alone in the house without parental supervision. Further, children at this phase of development assume greater gender-appropriate responsibilities associated with semi-traditional and traditional Diné culture. Appropriate responsibilities for boys within this culture may include caring for younger siblings, caring for elderly family members, and assisting with cooking and housework. Appropriate responsibilities for girls within this culture may include assisting with livestock, farming, or upkeep on family dwellings (Connors & Donnellan, 1998; Deyhle & LeCompte, 1994).

Ten to fifteen. Between the ages of 10 and 15, Diné children assume increased responsibilities in the home and are allowed to make decisions regarding their life, including schooling, with little deference to parental authority. At the onset of puberty, or by the age of 15 if puberty has yet to occur, Diné children are regarded as socially and physically mature adults who are capable of exercising socially mature behavior and assume life’s consequences (Deyhle, 1991; Deyhle & LeCompte, 1994). Having reached adulthood, it is expected that they should be able to contribute to the family’s well-being, whether by providing financial support or physical labor. Ultimately, they should be self-sufficient, able to care for themselves, and serve as contributing members for the well-being of the family and community.

Perceptions of Disability

Historically, the Diné people have not recognized disabilities as “handicapping conditions,” and there is not specific term used to refer to persons with disabilities (Connors & Donnellan, 1998). Only recently has there been an attempt to translate terms such as learning disabilities, mental retardation, autism, and other disabilities into Navajo, yet to many traditional and semi-traditional Diné parents, these labels provide insufficient information. Although a western diagnosis may fit the needs of modern Diné people who rely heavily on western science and medicine, traditional and semi-traditional parents are more concerned with why the disability manifested in their child (Joe & Malach, 1999).

Diné culture maintains a distinct and
unique explanation for health and illness, based on identifying and treating the causal agent rather than the illness (Connors & Donnellan, 1998; Joe & Malach, 1999). Whereas modern Navajos are more likely to attribute disabilities to environmental factors (e.g., alcoholism, uranium exposure) and accept Western diagnoses, traditional and semi-traditional Navajos are more inclined to attribute disabilities to disharmony with the Universe and seek out ceremonies to “correct” this imbalance. Hózhóójí (“The Blessingway Ceremony”) is conducted by a Diné medicine man to first determine the cause of the disability. The ceremony is often attributed to something detrimental that the mother did while pregnant (e.g., weaving rugs, visiting yééí kéé dances, butchering sheep, tying knots), but may also be attributed to negative actions taken by the father (e.g., roping horses or cows). After cause of the disability is determined, the family will then seek out additional traditional ceremonies to help assist the person with a disability, and their family, to accept his or her condition. The purpose of these ceremonies is to integrate the mind, body, and spirit in such a way that it enables persons with disabilities to live in harmony with their condition (Connors & Donnellan). Once the healing ceremonies have been performed, the individual is a “whole” person again, not only in his or her own eyes, but in the perspective of family and community members as well.

In traditional and semi-traditional families, there is a general acceptance of persons with disabilities (Connors & Donnellan, 1998). Persons with disabilities are accepted as socially competent according to their own unique personal abilities and limitations. Most Diné people tolerate and accept behaviors of individuals with disabilities, however disruptive the behavior might be (Connors & Donnellan, 1993). Further, traditional and semi-traditional Diné people are more willing to allow their children to develop into the type of person they want to be and are less motivated to “fix” or “correct” behaviors, typical of modern Diné people and Anglo-Europeans (Connors & Donnellan, 1998). It is the perception of traditional and semi-traditional Diné that children born with disabilities can attain a level of self-governance when they are provided guidance and support of immediate and extended family members. As a result of this belief, many traditional and semi-traditional families will not seek out special services for their children. Rather, these families will focus on finding ways in which they can support the child to be self-governing and ways in which the child with a disability can contribute to the family’s overall well-being.

Traditional and semi-traditional families hold similar expectations for children both with and without disabilities, with the prevailing expectation that all children will be contributing members of the family (Connors & Donnellan, 1998). Although children with disabilities may not be able to function fully in the family, they are expected to help out with tasks that are appropriate with their functioning level. For example, youth with less severe disabilities may assist with carrying groceries, gathering firewood, or being able to dress themselves. This example illustrates the importance of inclusion into the functioning of the family, irrespective of type and severity of the disability.

**Essential Characteristics of Self-Determined Behavior, Causal Agency, and the Diné Culture**

In this section, the four essential characteristics of self-determined behavior identified by Wehmeyer et al. (1996) – (a) autonomy, (b) self-regulation, (c) psychological empowerment, and (d) self-realization – are defined and compared with those values held by traditional and semi-traditional Diné people.

**Self-Regulation**

People who are self-regulating have learned self-management strategies that enable them to set goals, problem solve, and make decisions regarding their preferences. In order to attain these outcomes, a variety of self-management strategies are implemented, including: (a) self-monitoring, (b) self-instruction, (c) self-evaluation, (d) self-reinforcement, and (e) observational learning strategies (Wehmeyer, 1999).

**Traditional and semi-traditional Diné beliefs regarding self-regulation.** In the Diné culture, development of self-regulating behaviors be-
comes important at age 6, when children begin to assume family and adult responsibilities. In both traditional and semi-traditional Diné families, Diné families consider training of all children the responsibility of all adults and believe that teaching of Diné children within the family circle should be by example and explanation rather than direct interference (Deyhle & LeCompte, 1994). Praise and encouragement are particularly important at this age. For example, a Diné family member may frequently use the expression nízhóní shiyázhí meaning: “that is good work my child.” The purpose of this continual praise is to help young children understand that they are valued, thereby instilling a healthy sense of self-worth. Through having a healthy sense of self-worth instilled at an early age, the Diné child is prepared to master challenges that will present themselves in the future. In addition to instilling a sense of self-worth into their young children, Native American parents traditionally teach by example and provide lengthy explanations of the reasons for family and tribal guidelines and preferred behaviors (Subia Sipes Bigfoot, 1993). Further, Diné parents use traditional stories to help children understand behaviors that are profitable or nonprofitable, enhancing the children’s problem-solving and decision-making skills.

After young children have received a period of thorough instruction, Diné families assume that their children should be able to determine right from wrong, and will act accordingly, in the best interest of their family and the larger community. Although Diné children are given much leeway to make decisions during their childhood and youth, these opportunities for important decision-making are critical to the well-being and perpetuation of the larger Diné tribe. It is the belief that children must learn to make good decisions early in life, if they are to make sound decisions for the well-being of the tribe upon reaching adulthood. Because of such high expectations held by the family and community, it is imperative that children learn early self-regulation skills to please and contribute to their families and larger community.

Cultural comparisons. Self-determination literature connects self-regulated behavior with self-management strategies that promote decision-making consistent with individual preferences. On one hand, the concept of self-regulation supports Diné expectations that children should possess the skills to make decisions between positive and negative behaviors. Further, they should have the skills to regulate their behaviors without adult prompting and interference. On the other hand, unilateral decision-making may conflict with the Diné values of interdependence and group consensus. When evaluating these two opposing functions, it is important to consider that, when making decisions, Diné students may place the family’s needs above their own.

Psychological Empowerment

People who are psychologically empowered believe that they possess the skills and opportunities to perform certain behaviors and that these behaviors will bring positive outcomes (Wehmeyer, 1999). Psychological empowerment is rooted in perceived control over one’s environment and abilities and leads to learned hopefulness. According to Zimmerman (1990), learned hopefulness is created when persons are provided opportunities to assume control over their lives; as a result, they perceive more control over their environment. As a result of opportunities to control environmental factors in one’s life, persons are empowered and are therefore less likely to feel alienated, powerless, or experience social isolation.

Traditional and semi-traditional Diné beliefs regarding psychological empowerment. Psychological disempowerment or hopelessness is evident in many Diné communities and manifests in several harmful behaviors, including alcoholism, child abuse, suicide, and domestic violence (Duran & Duran, 1995). Traditional and semi-traditional Diné people attribute negative social behaviors to a variety of sources, including: (a) witchcraft, (b) negative experiences with the animal and spirit world, (Connors & Donnellan, 1998) (c) a history of government policies and paternalism (Duran & Duran), and (d) serving in various wars. Despite prevalence of negative social behaviors in many Diné communities, most Diné strive to “walk in beauty.” To walk in beauty means to walk, exist, or function within the concept or confines of wellness, peace, harmony, and completeness (Carrese
& Rhodes, 1995). Further, to walk in beauty means to honor and embrace spirituality, group identity, and group cohesiveness.

Importance of spirituality is a central theme in lives of most traditional and semi-traditional Diné people. Persons with strong spiritual beliefs consider the harmony of the mind, body, and spirit integral to personal and family well-being. Psychological empowerment stems from holistic well-being and the understanding that one is living in harmony with the natural environment and spirit world. Disempowerment, which often leads to learned helplessness, occurs when a person is regarded as “out of balance” with the spirit world or his environment. Despite the source of illness, various healing ceremonies are conducted to rebalance the well-being of persons who become spiritually ill, with the overriding purpose of integrating the mind, body, and spirit in a manner that empowers the person to live a more harmonious existence within the family and community. Because of the variety of psychological stressors present in Diné society, both prevention and intervention ceremonies are conducted on a routine basis in Diné communities.

Further, the importance of group identity and cohesiveness is also central to psychological empowerment among Diné people. Understanding and honoring one’s place in Diné clan structure serves as a source of psychological empowerment for many traditional and semi-traditional Diné people. Knowledge of one’s clans provides an understanding of how each individual fits into the universe, the tribe, and the community. Ultimately, clan relationships serve as a source of psychological empowerment because the structure provides a sense of identity, group cohesiveness, and group support.

Cultural comparisons. Self-determination literature consistently emphasizes the importance of personal beliefs about one’s capacity and one’s ability to influence outcomes in one’s life as critical to positive adult outcomes. Wehmeyer (1999) regards psychological empowerment as the positive result of using effective problem-solving skills to achieve a sense of control over the activities and influences of one’s life. When interpreted within an Anglo-European context, this results in the circumstance that individuals feel empowered to act as causal agents in their own lives, with the concomitant result that persons will feel less alienated and isolated in society. For traditional and semi-traditional Diné people, however, ultimate psychological empowerment is the outcome of “walking in beauty,” living harmoniously in the universe and honoring and actively participating in one’s clan system. Additionally, by knowing one’s clan relations, it is said that one will never feel alone or isolated in Diné society (H. Baldwin, personal communication, September 15, 2000).

Self-Realization

People who are self-determined are self-realizing in that they use a comprehensive and reasonably accurate knowledge of themselves and their strengths and limitation to act in such a manner as to capitalize on this knowledge (Wehmeyer, 1999). This self-knowledge and self-understanding is influenced by evaluation of significant others, reinforcement, and attributions of one’s own behavior. As a result of self-realization, persons know what they do well and act accordingly.

Traditional and semi-traditional Diné beliefs regarding self-realization. In traditional and semi-traditional Diné families, self-knowledge is very important and ties directly into the importance of being a member of the Diné tribe and a member of specific clans. From the time Diné children are born, they are provided affirmation for significant accomplishments. A baby’s first laugh, naming ceremonies, the achievement of puberty, and school graduations are all causes to celebrate accomplishments of the child (Office of Diné Culture, Language, and Community Services, 1996). In traditional and semi-traditional families, a child’s efforts and accomplishments are noted by ceremonies where all activities, including songs, music, and prayers focus of the child’s continued success. Through the sharing of gifts, songs, prayers, and statements of appreciation, children receive positive affirmations regarding their significant accomplishments and as a result children gain a greater understanding of their strengths, identity, and fit into their family and community (Subia Sipes Bigfoot, 1995). An important facet of self-realization occurs
when Diné children reach puberty. At the onset of a girl’s first menarche, a four-day kínáldá ceremony is conducted. All family members, as well as the larger community, are invited to honor the child’s progression into womanhood. During the ceremony, the young woman is taught traditional values to instill both a sound mind and physical endurance. The purpose of these teachings is to instill values necessary to ensure that the young woman will act in a respectful and honorable manner, which leads to status as a well-respected family member. Less common, yet still practiced by some traditional and semi-traditional families, is the puberty ceremony for Diné boys. The teachings are similar to those reflected in the girls’ ceremony, but often take place in a sweatlodge or in a Native American church prayer meeting.

Further, in traditional and semi-traditional Diné families, expectations are held regarding the future roles to be assumed by Diné children. In many Diné families, parents pay attention to their children’s special qualities. For example, a daughter who is especially patient and nurturing with younger children may be persuaded to stay near the family’s home and assume full-time childcare activities after reaching adulthood. A second example is of a son who is especially good at handling livestock. In this case, the son may be expected to remain near the family’s house to take charge of the livestock on a full-time basis after reaching adulthood. Other examples include: (a) becoming a medicine person for the family as indicated by visions or natural ability or (b) becoming a teacher or other type of professional as denoted by strong school performance.

Cultural comparisons. The current conceptualization of self-determination implies that “self-realization forms through experience with an interpretation of one’s environment and is influenced by evaluations of significant others and by reinforcements and attributions of one’s own behavior” (Wehmeyer, 1997a, p. 118). Self-realization is equally important in both the Anglo-European and Diné culture. However, in the Diné culture, emphasis is placed on both individual self-realization and on realization of the self within the immediate family and within the Diné clan structure. For traditional and semi-traditional Diné people, emphasis is placed on creating environments and supports in which children can discover their own personal identity, strengths, and roles within the parameters of their immediate family and within the parameters of their designated clans. As a result of comprehensive family and community supports that teach and celebrate success of Diné children, the value of the Diné culture and the future role of Diné children in the family is well-defined. Ultimately, attainment of self-realization in the Diné culture is consistent with understanding one’s culture, one’s responsibilities to the immediate family, and one’s place and roles within the Diné clan structure.

Autonomy

Most applications of the self-determination construct in special education and transition place a great deal of emphasis on behavioral autonomy. Often, and mistakenly (Wehmeyer, 1998), that emphasis has been interpreted as referring to either the independent performance of, primarily, self-care and independent living skills and behavior or acting exclusively from a point of personal preference and interest. However, examining Figure 1 again, it is evident that the basis for understanding the personal self-determination construct is much more complex than the relatively simplistic notion of doing things for oneself or acting strictly out of personal preferences.

Wehmeyer et al. (1996) noted that the focus on autonomy in promoting and enhancing self-determination is more in line with the use of the term within developmental psychology, in which the movement to autonomy is synonymous with the individuation process in which the child moves from being largely dependent upon others for care and support to being largely dependent upon herself or himself. There is, however, a sense of acting as a basis of personal preferences inherent in this understanding of autonomy. Wehmeyer (1997a), for example, noted that:

Autonomous individuals have the capacity to indicate preferences, make choices based on those preferences, and initiate action based on these selections. Persons who are self-determined are able to act based on the basis of personal beliefs and values,
thoughts and emotions, and likes and dislikes instead of exclusively on social norms or individual group pressure (p. 117).

Traditional and semi-traditional Diné beliefs regarding autonomy. In Diné culture, formation of one’s personal identity is valued from the time a child is born until the age of six. Traditional and semi-traditional Diné people regard each child as being born with a pre-determined identity and pre-determined skills. Further, traditional and semi-traditional Diné people view childhood as a time of experiential learning to discover one’s personal identity and their fit in the larger world (Connors & Donnellan, 1998). To honor this spiritual belief, childhood is a time of permissiveness where Diné parents enable their children to develop their personality consistent with their own desires and provide the opportunities to explore and learn from their surroundings without significant adult interference.

When traditional and semi-traditional Diné children reach the age of 6, they are expected to begin assuming adult responsibilities. At this age, parents begin to insist on appropriate behavior and begin to mold the child into the expected model of the Diné adult (Connors & Donnellan, 1993). At this phase of development, children are expected to learn the values and skills that are pleasing and supportive of the family. These skills include: (a) assuming duties and responsibilities of adulthood, (b) contributing to the family’s welfare, and (c) recognizing and applying proper kinship terms to family and clan members. Interestingly, as Diné children are in the process of learning the proper behaviors of what constitutes a successful Diné adult and family member, they are afforded a great deal of autonomy in their actions and preferences. Deyhle (1991) describes these differences as two opposing functions within the Diné culture – the autonomy of the individual regarding personal actions is strongly maintained, while at the same time the consensus and cooperation with the group is actively desired. This dichotomy is rooted in the Diné belief of respecting and honoring the choices of each individual, while simultaneously expecting the Diné child to be loyal and a contributor to one’s family and community.

Cultural comparisons. Because of the significant emphasis placed on loyalty and contribution to family, autonomy if defined exclusively as ‘acting independently,’ is too often the case in the self-determination literature, is inconsistent with the values held by traditional and semi-traditional Diné people. Certainly autonomous actions are respected in Diné children and youth, and when the understanding of autonomy is broadened to reflect the process of individuation, or the formation of one’s identity, it becomes more consistent with the Diné tribal values and beliefs. Thus, although there is a cultural value for autonomous behavior, it is expected that these behaviors will reflect the importance of fulfilling expected immediate family and clan roles. Although such a heavy emphasis on interdependence and group membership may be perceived by Anglo-Europeans as undue external influence or interference, these collective norms have served to perpetuate the Diné immediate family and clan system and, ultimately, the longevity of the Diné culture and tribal system.

This does not negate the understanding of self-determined behavior as including action based on personal preferences, but instead emphasizes that it may be a personal preference, a choice, to abide by rules, processes, and structures established as the norm in one culture that may require the individual to cede ‘control’ over to others in some fashion. There are many ways to come to decisions. Because the largely Anglo-European community in America chooses to do so in an individually-directed manner does not, in fact, make that the only (or even the best) way to come to decisions. Ewalt and Mokau (1995) noted this when writing about self-determination (as a value inherent in social work practices) in the context of several Pacific island nations:

A more complex understanding of self-determination, extending beyond identity solely with individualism, is provided by cultures other than those descended from Northern Europe. Inherent in many cultures are values that emphasize the collective over the individual as a perspective on self-determination. In addition, populations of color have experienced histories of op-
pression that have further affected their ideas of autonomy and maturity (p. 169).

Expanding on this notion of separating autonomy and individuation from the Anglo-European sense of independence and individualism, Ewalt and Mokau conclude (again, from a social work perspective):

Self-determination has two definitions. One is concerned with self-direction. In this connotation, the client’s self-direction for what to do and be is held preeminent over decisions that the professional authority might prefer. The burden of proof for a departure from this rule rests with the professional person. The second definition is that one should be free to do or be what one wants without group restraints. However, reference to one’s own wishes separate from one’s social ties is not necessarily appropriate. Decision making is more complex than separating into exclusive categories what is in other people’s interest and what is in one’s own interest. It is necessary to appreciate how contributions to group interest may ultimately strengthen the person as well (p. 169).

What is evident from examining the self-determination construct within the context of societies that place greater value on communal processes and societal structures than do many Anglo-European Americans is that autonomy is an important value and one which is part of becoming self-determined, but it is autonomy as better understood as the process of moving from less dependence upon others for care and support, though not necessarily less involvement in communal processes, including more group-oriented decision-making processes.

Summary

Best practice in the field of transition services includes providing environmental supports and instruction to foster self-determination in students with disabilities. The literature indicates that students with disabilities will secure a greater quality of life when they possess the four essential characteristics of self-determined behavior: (a) self-regulation, (b) self-realization, (c) psychological empowerment, and (d) autonomy. A review of the literature indicates that the four essential characteristics of self-determination are highly relevant in Diné culture, yet the process by which the four essential characteristics are realized depends on the degree of acculturation of the Diné student and family.

Because quality transition services are critical to the well-being of all persons with disabilities, it is imperative that educators strive to create transition services that reflect the beliefs, values, and expectations reflected in the student’s culture. When planning services for traditional or semi-traditional Diné students, professionals should foster a flexible self-determination perspective to support the best interest of the student and family. Professionals should seek to understand how specific cultural beliefs, values, and expectations shape the present and future for each Diné student and family. Through striving to understand cultural similarities, differences, and nuances related to self-determination, culturally-responsive transition services can be created to support a quality of life that best reflects and supports the cultural values and preferences of each student and family.

As importantly, however, it is only by examining issues of self-determination within the context of different cultures and cultural values that we can come to a fuller and richer understanding of the construct itself. This, in turn, will enable us to design more effective supports that enable people to become more self-determined, not simply ‘self-determined’ as a segment of society understands it.

References


Treaty Between the United States of America and the Navajo Indians, article 6, 15 Stat. 667.


Received: 19 February 2003
Initial Acceptance: 15 April 2003
Final Acceptance: 30 August 2003
The Search for an Integrated Paradigm of Care Models for People with Handicaps, Disabilities and Behavioural Disorders at the Department of Orthopedagogy of Ghent University

Eric Broekaert, Geert Van Hove, and Phill Bayliss
Ghent University

Franky D’Oosterlinck
Orthopedagogical Treatment Centre, Ghent, Belgium

Abstract: This paper reviews underlying systems of worldwide thought, which underpin the organisation of care, support and (special) education for people with disabilities and behaviour disorders. As the world enters a postmodern age, there is no longer one central and dominant theory by which to guide action. The article reviews a range of theoretical positions, which have supported intervention for people with disabilities and behaviour disorders. It traces historical development of one institution, Ghent University, in the field of orthopedagogy in order to understand how systems of thought have developed and influenced practical action. The paper also provides a critique of existing models of care and (special) education, which sets an agenda for change.

Action in the field of disability has historically taken the form of intervention undertaken by professionals, in which concepts of simple dichotomies: normal/abnormal, sick/healthy, able/disabled, are no longer tenable. This paper argues for a new paradigm of understanding in order to better support professional "reflection in action" (Parker, 1997). Reflection in action in the field of disability is constrained by theory, or theories, which lead to a cycle of planning and intervention (Schön, 1987). It is also controlled by institutions, which provide professional development in terms of their institutional discourse (Foucault, 1970).

In the Netherlands and Flemish Belgium — the Low Countries — intervention in the field of disability has taken place within a discipline known as "orthopedagogy."

The word orthopedagogy derives from Greek: the prefix orthos meaning right or correct and the word ped or pais meaning child. Agogy originates from agein and means action or doing. "Pedagogy" is the "science of education," and the prefix ortho distinguishes it from ordinary education, in that it implies a return to order (normality).

Orthopedagogy is defined as a return to correctness through use of educational theories and more specifically as a science of action aimed at children and adults experiencing difficulties in educational situations.

The Dutch orthopedagogue Gieles (1992, p.304) describes this action as "seeing man as a being who can act — that is: who can give meaning, set aims, standards and rules and can choose and justify methods". In this sense orthopedagogy concerns a meeting or encounter between persons, a search for adapted methods and ethical positioning. Orthopedagogy is not only concerned with disabled persons (who may experience mental, physical or sensory impairments) but also with people who are deemed deviant (whose behaviour is seen as "difficult," "disturbed," "disordered" and which is caused by adverse social conditions, such as neglect, delinquency, drug abuse). The term was used for the first time in 1949 at an international congress in Amsterdam (Schoorl, 1997). Participants wanted to create a new scientific discipline and stressed...
its strict “educational” character. By combining psychiatric, developmental psychological and educational knowledge (Schoorl, Van Den Bergh, & Ruijssenaars, 2000), they strove to differentiate their approach from that of medically inspired paedology which saw the individual as a sick organism. At the same time they tried to move away from religious and ideological connotations of the previous term heilpedagogiek (Nijssen, 1942), and base their new discipline on humanist principles. Heilpedagogiek — close to the German Heilpädagogik — had a double meaning. It was used in Germany since 1861 and was based on the concept of curative intervention (Heilen-to heal) through pedagogical measures, or as a message of religious salvation (Heil / heiligholyl / holy-wholly; Bleidick, 1978). Orthopedagogiek acquired the connotation special in Anglo-Saxon countries (special education) or healing in the Germanic countries (heilpedagogiek) or disturbance-defect in Russia (defectology; Broekaert, 1997). From the 1970’s, orthopedagogiek developed practices (in accordance with influences in the Anglo-Saxon world), related primarily to its specialisms: mental retardation (Van Gennep, 1980), physical (Nakken & Loots, 1987) and sensory impairment (Van Uden, 1984), learning difficulties or disorders (Ruijssenaars, 1997), behavioural problems (Kok, 1986), and substance abuse (Broekaert, Vanderplasschen, Temmerman, Ottenberg, & Kaplan, 2000).

Since the nineties, the paradigm alteration in European thought was reflected by some “low country” — orthopedagogues, who promoted a change in approach.

The medical model saw the “disabled individual” as a group of symptoms with an organic basis (impairment within the International Classification of Functioning, Disability and Health, ICIDH, 2001) where the role of intervention was to “repair,” “fix,” “remedy” or “normalise” problems (Heshusius, 1995; Wolfensberger, 1980).

Thanks to the shift towards a social paradigm (Bayliss, 1998; Van Hove, Van Loon, & De Cuypere, 2001), the concept of handicap is seen as socially constructed, and relates to environmental conditions (including the social environment, broadly described as attitudes; Avramidis & Bayliss, 2000).

The orthopedagogical tradition has further moved away from classification, labeling and institutionalisation and now advocates the promotion of basic rights and quality of life for people with disabilities (Barnes, Mercer, & Shakespeare, 1999; Goodley, 1997; Oliver, 1996). The new orthopedagogiek embraces ideas of inclusion (Daniels & Garner, 2000; Van Hove, 2000; Villa & Thousand, 2000), instead of integration and normalisation. It favours concepts of empowerment (Van Hove & Roets, 2000) and self advocacy (Dybwad & Bersani, 1996) of the disabled and supports social engagement. The paradigm shift in Ghent is in line with worldwide developments and orthopedagogiek has aligned itself with changes in both thinking and practice. However it is not easy to implement a simple shift from the medical to the social model, from remedy to rights (Embregts, 2000). But despite criticism from traditional sources, influence of the new approach grows steadily and its concepts are appreciated by current policymakers (Van Gennep, 1999; Van Hove et al., 2001; Van Loon & Van Hove, 2001).

**Integration of Paradigms**

The paradigm-shift in thinking (Kuhn, 1970) challenged existing paradigms of knowledge. The dichotomy between the nomothetic and the interpretative paradigms that has driven intervention is no longer tenable.

The objective/realist position that describes the phylogenetic characteristics of normality that is used to define programmes of intervention has been challenged by the interpretivist/subjective response to the ontogenetic characteristics of the individual. The “tyranny of the normal” (Canguilhem, 1989), which understands abnormality as deviant or pathological, is no longer sufficient when posed against the subjectivist view which sees difference as ethically neutral.

However, for the practitioner, ethical neutrality creates individual ethical dilemmas and professionals should base a theory of action (intervention) on sound principles. If they fail to do so, vulnerable people in our society can be harmed through the good intentions of professionals who apply the “wrong theory” (whether or not this is either nomothetic or interpretative). We need a synthesis of the different (existing) paradigms and their train...
to interventional practice (De Fever, 1994; Schoorl et al., 2000; Skrtic, 1995).

**Man as Knowledge: The Empirical-Analytical Paradigm**

The empirical-analytical paradigm strives for knowledge, clarity and explanation. It seeks to test statements of reality empirically and to test causal relationships between identified variables. It looks for objective and verifiable conclusions. Hypotheses are deduced and either accepted or rejected. One limits oneself to facts and to what can be corroborated. The tested knowledge then forms basis of the educational work and intervention becomes the application of universal statements to individual cases. *Knowledge* is thus constructed within a process of reductionism - factors relating to a particular syndrome, condition or pathology are determined and related to *developmental schemata*, which relate individual ontogeny to (empirically defined) classes. Thus, *discrepancy modeling* (Cole, Dale, & Mills, 1992) defines the process of intervention in that (objective) standardized measurements are used to “place” a child or adult within a conceptual space and which then determines the direction and rate of growth or development. This process led to “programmes of intervention,” which exist independently of the child (and in many ways, independently of the professionals who apply such processes). The objective nature of reality inherent in this approach does not allow the child or adult to exist as a thinking, rational or social being: discernible behaviour is to be distinguished from consciousness and spirit, the starting point for projected change: “Man as knowledge.”

This model leads to:

- a) a science of special educational instruction which is based on a universal understanding of human behaviour (Kauffman, 1999);
- b) remedial teaching and cognitive development through muscular movement and sensory training (Bladergroen, 1978);
- c) cognitive training programs for learning disorders (Dumont, 1971; Ruijssenaars, 1997);
- d) behaviour modification techniques and token systems to improve learning with the mentally retarded (Duker, 1989);
- e) prediction and measuring of multiple risks of behaviour disorders in children and their social networks (Van Der Ploeg, 1990);
- f) epidemiological research of behaviour disordered and emotionally disturbed children (Hellinckx, De Munter, & Grietens, 1991).

This paradigm is best represented by the categorizing of analytical assessment and practice, and in the many quantitative and statistical research developments in special education and medicine. It strives for objectivity. *Learning disabilities or behaviour disorder* is reified to become an independent ontological category that has validity and reliability, but does not relate to *person.* “People with learning disabilities,” “people with drug dependency problems” have replaced the “learning disabled child” or “drug addict” in the discourse, but again, the category of problem is something that a person has. Once assigned to a category, the individual is subjected to a program developed for that particular target group. In order to support the objectification of deviance, deficit or disorder, a symptomatology is needed, which in turn requires a professional to apply the symptomatology within the boundary of what constitutes professional knowledge. Within this paradigm professional training (and the induction of the next generation of professionals) requires that students or practitioners assimilate the pre-given (objective) knowledge and demonstrate competence in applying it to individual cases according to the diagnostic-prescriptive process.

**Man as Story: The Existential-Phenomenological Paradigm**

In contrast, the existential phenomenological model strives towards meaningful action and understanding, not explanation. Man, as a subjective being with his own story, is situated in the meeting with the other, in the heart of existence. Essence of reality cannot directly be perceived, but manifestation of it, the phenomena, can be thoroughly interpreted and thus understood. Meeting with the other leads
to meaningful dialogue, action and self-fulfillment. The individual ontogeny does not recapitulate phylogeny; rather the “science of the singular” seeks to map an individual within his/her life-historical process where the concept of “problem” becomes a complex of interrelationships of subjective being. Validity and reliability are not issues within the subjectivist paradigm, and the paradigm does not seek universal application. The therapeutic process becomes (following the analytic tradition) an exploration of metaphor and symbol whereby therapist and client can reach an understanding of the problem and work towards a common goal of healing and growth. Developmental schemata or measurement do not determine this model. Here, orthopedagogy is seen as a process: “Man as story,” and “Man as history.”

This model leads to:

a) intervention, which can be considered as a human encounter; we have to listen to and try to understand the other (Langeveld, 1979);

b) expressive communication and imagination and priority of the educational/therapeutic relation (Van Gelder, 1953);

c) importance of touching, caring, living, eating, playing, learning, talking together, writing to each other etc. (Ter Horst, 1980);

d) humanistic education and psychology, educational strategies of trust, working in group and individual treatment (Kok, 1986).

This paradigm is best represented in psychoanalysis, the new school movement and the action oriented orthopedagogy. It applies to the modernist period in qualitative research and integrates quantities in qualitative approaches. It strives for subjectivity, and considers it as enlarged objectivity.

**Man as Justice: The Critical Paradigm**

The critical orientation strives for social justice and believes that structural intervention is a condition necessary to attain this. Language and thought are considered social products. There is a connection between thought and action, between achievement and science, practice and theory. Human labour leads to emancipation and discourages alienation. Man must free himself from these social structures and institutions, which are detrimental to his development, and strive for the well being of all. Man as an individual is entitled to human rights, emancipation and empowerment “Man as justice.”

This movement leads to:

a) fair rights of the weakest (Barnes et al., 1999);

b) de-institutionalisation (Van Loon & Van Hove, 2001);

c) self-advocacy (Garner & Sandow, 1995);

d) inclusion (Zollers, Ramanathan, & Yu, 1999);

e) empowerment, and Quality of Life (Brown, 1998; Schalock, 1990).

The critical paradigm starts from the *social model* of disability (Van Hove & Roets, 2000). This model does not deny the existence of individual restrictions (impairments, or the loss or poor performance of a part of the body or a function of the body), but emphasizes the environmental and social barriers that contribute to society’s interpretation of impairment. If the critical paradigm sees “Man as an ethical being” with his/her civil rights, this vision can influence the way in which orthopedagogy and special education are seen. Intervention revalues *curriculum access* and *differentiation*, which entails adapting educational processes to meet individual needs. The critical paradigm is forcing rethinking about allowing access for previously barred individual children access to ordinary schools and providing them with support. A recent upsurge of parents demanding inclusive education for their children, together with changes in Belgian law, which now grant personal budgets for parents of children with significant disabilities, is increasing number of children in ordinary settings. This trend is changing the professional role of the orthopedagogue away from rehabilitation and remediation, towards support. These trends have to be understood in an international context where for example United Nations with their Standard Rules and UNESCO with its Salamanca Statement offer global frameworks that support the human rights discourse.
This paradigm has its critics within the field of special education for “denying” disability (Kauffman & Hallahan, 1995; Nakken, 2000; Vlaskamp, 2000) saying that a discourse of rights is not applicable for people with severe and multiple impairments. They state that the critical paradigm has been translated into legal and economic terms, but has little impact in social terms. This group of people is seen as being heavily dependent on care and the above cited authors fear that this new paradigm demands conditions for this group that cannot be realised. (Nakken; Vlaskamp). Other authors (Reinders, 2000) go further and propose the view that because societal conditions are inherently antagonistic to people with disabilities, the social model needs to be treated with caution in extending a full range of rights to the disabled minority. They state that ordinary social environments offer this minority group little opportunity for participation. If existing societal conditions do not, of themselves, offer full participation, then the critical paradigm must focus on the concepts of relationships and community which underpin the inclusion paradigm (Bogdan & Taylor, 1989; O’ Brien & O’ Brien, 1993; Taylor & Bogdan, 1989; Van Gennep & Van Hove, 2000).

If we apply the critical paradigm to the question of professional development, the focus for orthopedagogy moves towards supporting the growth of knowledge within the field of society and the nature of institutions. The shift away from objective knowledge of impairment towards understanding social environments requires a different knowledge base.

A Post-modern Critical Quality of Life and Human Rights Paradigm

International developments in the field of disability or difference have led to different conceptions of what constitutes the core elements of the discipline. Orthopedagogy takes as its focus the concept of “improvement through educational practice” and seeks to establish processes and procedures based on in-depth understanding of the child. Special education in the form advocated by Kaufman (1999) is based on a science of instruction, which in turn is based on a universal science of behaviour. This positivist stance has been severely attacked by adherents to the concept of inclusion, which proposes understanding complex systems through the application of postmodern, constructivist/deconstructionist theories.

Disability studies take as its premise that it

a) “crosses academic boundaries and draws on a variety of disciplines, including philosophy, sociology, psychology, history, anthropology and technology in order to analyse issues concerning the relationship between disability, social justice and political understanding” (Johnstone, 1998, p. 1), and:

b) “People working in the field of disability are articulating and theorizing a political, social and ideological critique (and who place) disability in a political, social and cultural context, that theorizes and historicizes deafness or blindness or disability in similarly complex ways to the way race, class and gender have been theorized” (Davis, 1997, pp. 2-3).

The different conceptualisations of what should be done for children with learning and developmental needs are only partial in their analyses. We argue for a synthesis based on holistic views, which can understand and explain the nature of “special” education. The rise of inclusion as a way of thinking about the role of schools and institutions and ways in which they can meet, range of children’s needs. This has challenged existing paradigms of theory and practice. As we enter the postmodern age, the challenge is to develop a theory and practice which can meet the needs of the individual child and place him or her within an educational context creating the opportunity to participate in the community and become an integral part of it (Bayliss, 2000). This locates professional development within a changing field and we would argue that this requires that role of the specialist change from a direct provider of expert knowledge to one of consultant. This is because

“the knowledge required for a teacher to educate all students with special needs in his or her classroom without the benefit of consultation from specialists is clearly beyond the bounds of professional capacity. A
teacher supporting students with special needs may be required to implement instructional programmes to address social competency, specific learning disabilities, gross and fine motor habilitation, emotional adjustment, vocational readiness and challenging behaviour” (Littlejohn, 1998, p. 491).

As well, a teacher may be required to “understand the socio-cultural context of the inclusive classroom or institution which can support the understanding of ‘philosophy, sociology, psychology and history, in order to analyse issues concerning the relationship between disability, social justice and political understanding” (Johnstone, 1998, p. 1). It is here, where philosophy meets the logistics of implementation/intervention that the development for future systems of professional development will tend.

These changes are reflected within the Department of Special Education at Ghent, and we would like to present a brief history to show how the paradigm-shift has worked within our institution.

The Ghent Application

In 1936, Nijssen, (a psychiatrist) was appointed to The Higher Institute of Education at Ghent University and charged with the “medical and educational treatment of abnormal children.” He had been the adjunct physician of the well-known “State Colony” for the “mentally disturbed” in Geel — one of the oldest psychiatric institutions in Europe. Since the Middle Ages, this hospital offered foster family treatment. In 1942, Nijssen, together with his assistant Wens (a pedagogue), started a consultation unit for children and adolescents at the university (Broekaert, D’Oosterlinck, & Bradt, 1993). At the height of the war, he published a textbook on child psychiatry and special education (Nijssen, 1942). Nijssen’s study was a classic medical work, based on categorical thinking and classification of “illnesses.” He was influenced by sensorialism. His work drew attention to the psychiatric treatment of children at a time when Nazi’s generally prosecuted psychiatric patients and disabled people.

Nijssen’s successor, J. De Busschere, assumed the chair in 1946. He expanded the consultation unit (1964-1973) with a “medical-educational” observation day centre and a school for approximately fifty children aged between three and fourteen, with emotional and behavioural problems (Broekaert et al., 1993). In contrast to his predecessor, he had a psychoanalytic background and was interested in clinical neurology. Although he published work on the relative importance of the analytic perspective in treatment of difficult children, he was the leading neuro-psychiatrist of the university, and was aware of the phenomenological tendencies in psychiatry. It was the pedagogue Wens who assumed daily responsibility for the care service and development of student courses on children.

In 1970, Wens was appointed to the Faculty of Psychological and Educational Sciences. She became the first director of the Department of Orthopedagogics. As a former schoolteacher, she had been trained by the Dutchman K. Boeke — a Quaker — and a well-known member of the International Movement on School/Educational Reform. Both of them were active promoters of the New School Movement and both strived for active and global education to further the interests of the children. Under her leadership, the medical approach to children with learning problems, or emotional and personality disorders changed into an educational approach and orthopedagogy became an independent department at the university, catering for some sixty students at master’s level (licentiate) enrolled in a three year study programme. The Observation Unit changed into an “Orthopedagogical Observation and Treatment Centre” that also functioned as a training centre for students (Broekaert et al., 1993). Most of the publications of Maria Wens were concerned with The New School Movement (Wens & Coster, 1950). At the same time, she was director of one of Belgium’s largest institutions for children with behaviour disorders. During the eighties this large institute was the focus of major institutional conflicts; it became decentralized after periods of staff strikes and Wens had to leave the institution.

In recent years some interesting changes have taken place. The university department significantly increased its number of students (e.g., around 200 students at master’s level
over the three years). The “Orthopedagogical Observation and Treatment Centre” became an independent unit with privileged links to the university. It cares for some seventy children with major behavioural problems. The care remains special but there is much more outdoor treatment, crisis and family interventions. A second centre for consultation, orientation, accompanying and training of some fifty disabled adults was inherited. Both centres serve as training units for the students. Two professors were appointed. The first, also first author of this article, specialized in behavioural disorders and substance abuse. He founded a drug free therapeutic community based on self-help and social learning. Under the influence of new managed care, it developed into integrated treatment systems. He has published extensively on that topic in the tradition of modernist, descriptive, historical and qualitative research (Broekaert et al., 2001). The second, also second author of this paper initiated the supervised independent living movement in Flanders. He favours disability studies and de-institutionalisation and publishes on current policies (Van Hove & Schelfhout, 2000) concerning that topic in the post-modern subjective, qualitative tradition. The study program of the students is based on a balanced interaction between behaviour disorder, substance abuse, and disability studies. The directors of the centres play a more independent role.

Changes mentioned above were also reflected in the curricula of the students. Before 1945, there were only two courses; one on “psychiatry of abnormal children,” the other on “medical educational treatment.” Later, the courses gradually changed from a medical towards an educational perspective. However, it wasn’t until 1964 that the departments of neurology, psychiatry and orthopedagogy were separated. Then, on the education of children with intellectual and character problems became the central point. Partial learning disorders (indicating that there is a discrepancy between the global intellectual possibilities and some partial defects) became part of the program. Attention was paid to the ethical aspects and practical training challenges theory. Psychology remains an integral part of the educational sciences. By the eighties, the post-graduate program was fully developed (after bachelor in psychology and education). It is now an independent specialty in the faculty (separate from pedagogy, social agogy, clinical, industrial, and experimental psychology). Theoretical and organizational orthopedagogy develops and underpins the educational action with children in problematic situations. Attention is now more focused on the action than on the disorder. Medical and psychological courses are fully integrated and attention is paid to diagnosis and treatment. Over the last ten years, the educational and psychological sciences developed separately and orthopedagogy is more connected to teaching and social sciences. As far as the theoretical and practical aspects are concerned, attention is focused on research (mainly qualitative). Within the department further specialties develop and attention is paid to substance abuse, behavioural problems and disability studies.

Discussion

During the many years of the department’s experience, there has never been one all-encompassing theory that covered all aspects of care. Theory and practice were permanently reflexive in that clinical experience from clinical application (as part of the department’s daily activities) informed theoretical understanding and vice versa. Over a period of time clinical diagnosis and observation in day care centers was replaced with work. This took place in both decentralised and specialised institutions and was combined with ambulatory and family work. This trend reflected the international trend/policy of de-institutionalisation for people with disabilities. The discipline changed from medical to educational. There was a transition from individualised pathology and remediation towards teamwork, self-help and emancipation. Theoretical orientations shifted from the classic medical empirical-analytical paradigm to a psychoanalytic phenomenological approach, and in later years towards a global child-oriented action approach, embedded in phenomenology. Last but not least, orthopedagogy has adopted a post-modern critical quality of life and human rights paradigm.

In that sense orthopedagogy connects with the position of Kunneman (1994) who states...
that: “the science of orthopedagogy embodies an interesting and fruitful casus to analyse the changed position and epistemological status of the social sciences in the postmodern situation. Broadly speaking these changes concern firstly the relinquishment of the notion of an objective social reality, and secondly that the rationality of the practical interventions undertaken by the social sciences depends first and foremost on the truth of the knowledge legitimating these interventions” (Kunnen, 1994, p. 104).

The department has always conducted research, and the process of research followed the changes noted above; research was always empirically based but has changed from classic objectivist methodologies and methods, to modernist grounded qualitative methodologies, which embrace postmodern subjective and intersubjective orientations.

Since its inception, orthopedagogy in Ghent has followed humanist and systemic (or holistic) intervention methodologies that reflect the quest for social justice. Rigorous behaviourist conditioning was never adopted. Orthopedagogy changed from taking care of the weakest to empowerment and self-advocacy of people with disabilities. It often entailed struggling against the alienating aspects of society and against explicitly economically based managed care systems. The process of de-institutionalisation was a difficult one but became accepted. In fact there was never a real conflict between special education and disability studies, but a need to balance and differentiate between the two.

**Conclusion**

The post-modern agenda, which denies existence of a “grand narrative” of one all-encompassing theory has been a lesson learnt through experience at the Department (Bohm, 1985, pp. 32-33); the search for a global, whole or integrative theory remains an illusory task. There are many forms of holism (Apostel, 1992, p. 125). All-embracing theories do not exist, but insights taken from different theories can help us — which is not to suggest that education, care and support for people with disabilities should proceed in an eclectic fashion. Indeed, as we have argued above, that it is the dynamic and methodical nature of orthopedagogy, which differentiates it from special education; different theoretical positions need to be integrated to provide a model of intervention (and more importantly to provide understanding when not to intervene). In this sense, disability, person, community, society, and knowledge, experience and justice cannot be considered on their own, but are interdependent and transactional (cf. Wilemans, 1993). Rucker describes this process of integration (Rucker, 1986) in terms of complementarities. The competing paradigms alternatively complement each other and, at the same time, exclude an alternative interpretation of reality. The dynamic and interdependent transactions between different positions approach can be seen as an inaccessible synthesis, which in its turn includes its own anti-thesis and a new move towards synthesis. It is important to understand that parts and totality are in permanent organic interaction. In a sense the parts compose the totality, and the totality the parts. This occurs simultaneously but with individual qualities. As a “unity which is the unity of a multiplicity,” (Plato) or as “The Beautiful in which the many is still seen as many becomes one” (Coleridge). The search for globality includes relativity and uncertainty, but can include a belief in the future. This change from certainty to uncertainty is acceptable if we understand that the goal of education, care and support has shifted from the certainty of cure to the uncertainty of improvement. Improvement is defined for an individual or group, within a specific context at a particular sociocultural/historical moment — the direction and processes for change are predicated according to an analytic understanding of the complex interrelationships as they pertain in any given case. Such knowledge can only ever be partial — we learn by our mistakes and successes. Experience can be defined as intellectual and physical effort and emotional encounter acquired during the fulfillment of daily tasks. This experience can be further explained (objectivist) or understood (subjectivist) by theory, but caregiver (and student) must understand that experience inevitably remains incomplete.

Thus, pedagogues’ attempts to develop a model of reflective daily action in the search for a solution, does not assume generalising
overtones. The solution pertains to the given socio-cultural and historical context. The caregiver has to make ultimate, sometimes impossible decisions and accept professional responsibility for those decisions. Professional responsibility (and its development through training) rests on one understanding that the object of study is unknowable in any finite way and that there is no “one answer.” The professional and aspiring professional must subscribe to “open-mindedness.”

“Open-mindedness is a willingness to construe knowledge from a variety of perspectives without loss of commitment to one’s own values. . . . It asks that we be accountable for how and what we know, but it does not insist that there is only one way of constructing meaning, or one right way. It is based on values best suited to deal with the changes and disruptions that have become so much a feature of modern life. (Bruner, 1990, p. 30)

References


Schalock (Eds.), *Cross-cultural perspectives on quality of life*. Washington, DC: AAMR.


Received: 6 March 2003
Initial Acceptance: 18 April 2003
Final Acceptance: 20 September 2003
Abstract: Issues related to stigma and its impact on assistive technology (AT) use with persons having developmental disabilities are addressed. While stigma has been known to be associated with presence of disability for many years, relationship between stigma and AT usage, particularly when working with families across cultures, has only just begun to be examined. Issues confronted by AT decision-making teams related to stigma include family expectations of AT, visibility resulting from use of AT in public settings, and perceptions that children will not attain important developmental skills if they become reliant on devices. While numerous approaches for AT decision-making have been implemented in the field, absence of validity and reliability data related to such approaches emphasizes importance of understanding potential influences of stigma associated with AT use. Specific areas that can contribute to stigmatization include (a) device aesthetics/cosmesis, (b) gender and age appropriateness, (c) social acceptability, (d) sublimation and professional deference, (e) teachers and acceptance of disability, and (f) universal design principles. Importance of future research that explores stigma and government policy and impact on AT decision-making is noted.

The experience of stigma is common among human beings (Crandall, 2000). As noted by Crocker, Major, and Steele (1998), “A person who is stigmatized is a person whose social identity, or membership in some social category, calls into question his or her humanity—the person is devalued, spoiled, or flawed in the eyes of others” (p. 504). All persons have experienced some degree of stigmatization at some point in their lives, whether it is feelings of isolation, alienation, exclusion, or embarrassment resulting from being different in some way.

References to the phenomenon of stigmatization of individuals having disabilities may be found throughout the professional literature (see e.g., Barker, 1948; Fine & Asch, 1988; Goffman, 1963; Gray & Hahn, 1997; and Jones, Farina, Hastorf, Markus, Miller, & Scott, 1984). For persons with developmental disabilities, stigmatization is often a reality having varying effects, including, but not limited to, (a) less than ideal treatment (Crocker et al., 1998); (b) disrupted social relations (Goffman); (c) person avoidance, anxiety, and depression (Crandall & Coleman, 1992); and (d) a distorted self-image and resulting poor self-esteem (Wright, 1983). Some people may even attempt to hide their developmental disabilities from others to avoid the stigma (de Torres, 2002; Liu, 2001; Lopez-De Fede & Haeussler-Fior, 2002; Miller, 2002; Napier-Tiberere, 2002; Pinto & Sahu, 2001).

Stigmatization has also been suggested to be associated with assistive technology (AT) usage for persons with acquired disabilities in later life (Brickfield, 1984; Luborsky, 1993; Zimmer & Chappell, 1999), often resulting in abandonment of devices. For example, elders with disabilities may choose not to implement AT that is not routinely used by the general population (e.g., wheelchairs, walkers) given the message communicated to others that they are vulnerable, or if it creates social barriers (Lebbon & Boess, 1998; Luborsky, 1993; Polgar, 2002). Persons of any age, however, can feel stigmatized by devices that signal loss of function. As one woman in her 40’s born with cerebral palsy noted when surgery on her neck left her paralyzed from the neck down, resulting in the need for a more sophisticated wheelchair:

To everyone’s relief, the doctor said I didn’t need either the cervical collar or my corset when I used the wheelchair. I was especially
glad, as I didn’t like to look that disabled, or you could say, I wasn’t accustomed to having that many people stare at me. (Scherer, 2000, pp. 93-94)

Hearing aids are perceived as stigmatizing by many aging persons, but also to those who require them at younger ages. One woman said about the need to wear hearing aids at age 20:

But after getting my hearing aid, every time I went outside I wore a scarf, so that if the wind blew, people would not see that I wore a hearing aid. You just didn’t see twenty year-olds wearing a hearing aid. It was not an easy thing to get used to. (Scherer, 2003)

The choice to wear a hearing aid and feel stigmatized, or not wear a hearing aid and possibly miscommunicate is a dilemma with strong implications for one’s self-esteem. Additionally, the personal and social aspects of coming to terms with a hearing loss are often stressful. When under stress, one’s ability to hear and participate in interactions becomes compromised. Thus, avoidance of AT can have implications for social participation and both mental and physical health (Scherer, 2003):

It’s been very hard over the years...because I had gotten into so many situations where I didn’t fully understand what is being said. And I’d say maybe the wrong thing or respond to something I heard, but the subject had already changed. And when you feel off-the-track and lost so often, you begin to lose your sense of being okay (Scherer, 2003).

When working with individuals with developmental disabilities, it is important to explore their expectation of AT use and readiness for that use. Even when a person with a disability may be ready to, and even excited about, using AT, stigma has been suggested to be associated with choices made by families of school-age students with disabilities to not implement AT devices due to perceived increased visibility or attention received when children use devices in public settings (Brooks, 1998; Smith-Lewis, 1992). Stigma has also been reported to be associated with AT due to fears that the child will not attain important developmental skills if they rely on a device (Allaire, Gressard, Blackman, & Hostler, 1991; Berry, 1987). As noted by Brookes (1998): “Assistive devices become a signal because the sight of a person using assistive technology sends a message that this is not an ordinary person and that one needs to behave differently around this person” (p. 4). Given that a person’s self-esteem and self-image are developed across time through interactions with others (Crocker & Quinn, 2002), presence of AT may define those interactions and contribute substantially to a person’s self-image (Scherer, 2000).

While the literature has references to the stigmatization of individuals having developmental disabilities (see e.g., Barker, 1948; Fine & Asch, 1988; Goffman, 1963; and Gray & Hahn, 1997), little information exists that explains why these persons feel stigmatized, and what the potential impact of stigma is on professional recommendations regarding service delivery. This becomes problematic given the relative ‘youth’ of the field of AT (Edyburn, 2000). Numerous models have emerged to assist AT teams in decision-making about devices and services for persons with disabilities (Bowser & Reed, 1998; Chambers, 1997; Institute for Matching Person and Technology, 2000; Melichar & Blackhurst, 1993; Williams, Stemach, Wolf, & Stanger, 1995; Zabala, 1998). However, Watts, O’Brien, and Wojcik (2003) note that little reliability and validity data are currently available to support effectiveness of such approaches for AT decision-making. Adding to this problem are (a) the expectations of family (and user) input and active participation in decision-making processes that is deeply embedded in many decision-making models, and (b) lack of sensitivity on the part of teams to cultural and family issues during AT decision-making (Kemp & Parette, 2000; Parette, Brotherson, & Huer, 2000; Parette & Huer, 2002; Parette & McManus, 2002).

The remainder of this paper focuses on issue areas related to stigma and its impact on the AT decision-making process, with recommendations for future research for consideration by professionals. Specific areas addressed are (a) device aesthetics/cosmesis,
(b) gender and age appropriateness, (c) social acceptability, (d) sublimation and professional deference, (e) teachers and acceptance of disability, and (f) universal design principles.

Device Aesthetics/Cosmesis

Levels of comfort with use, even around family members, vary widely depending on how “unusual” an AT appears. Feelings of being conspicuous leave many users feeling deviant and stigmatized (Scherer, 2000). How any particular individual feels about him or herself when using AT is intimately tied to self-esteem, the degree to which the person will reach out to others and initiate relationships, and ultimately one’s social participation or withdrawal. When one isn’t involved in social relationships, it is difficult to form a sense of acceptable social behavior, thus leading in many cases to isolation (Scherer, 2003).

Gender and Age Appropriateness

While women with developmental disabilities are often very skilled in using technologies for communication, mobility, learning and the performance of daily tasks, the number of these women involved in the design and development of such products is very small. This is the proverbial Catch-22 situation: The undereducated or underemployed woman with a disability is unlikely to get the technology or training necessary to compete with her non-disabled counterparts educationally or vocationally. Without technologies, women with disabilities cannot perform tasks independently or without fatigue or enervating pain. To get the appropriate technology requires access to information about and the ability to pay for them—another Catch-22 (National Women’s Health Information Center, n.d.).

In the area of an AT’s appearance, preferences reign, and preferences of adolescents will be different from adults. Worldwide, adolescents with disabilities tend to be or are more concerned with their appearance and projected image than older adults (Scherer, 2005). Gender, age and ethnoracial differences in the use of AT have been studied to some extent (e.g., Gitlin, 2002; and Rintala, 2002) but researchers note the need for more focus in these areas.

Recent reports from the U.S. National Council on Disability (1996) and the European Commission’s Telematics Applications Program (Ballabio & Moran, 1998) acknowledge that older individuals and women with developmental disabilities often are poorly matched with a product they need to use regularly. As they age, consumers have a clear preference for products that they do not have to think about (are easy to care for and maintain and which accommodate to them, not vice versa). When presented with a choice, consumers will select assistive devices, as they do with any product, according to characteristics that satisfy their preferences.

Social Acceptability

Many psychosocial factors impact the use or nonuse of AT, including personality, response to disability and the environment or social milieu in which technology is used (Kretting & Kretting, 1991; Scherer, 2000). Social acceptability of AT has been identified as one of the critical elements impacting whether or not a particular device is used by a person with a developmental disability and family (Pippin & Fernie, 1997). As noted by Cioffi (2002), public behavior (such as AT usage) activates cognitive, social, and motivational forces that align a person’s self-views with those of others. Of particular importance for individuals with developmental disabilities and their families may be the heightened sense of attention and evaluation engendered by the AT act (Saenz, 1994). People who feel themselves to be under greater scrutiny in social settings may feel that their behavior is more public (Cioffi), which may be at considerable odds with strongly held collectivist cultural values that emphasize group membership versus individual recognition (Hyun & Fowler, 1995; Ramirez & Casteneda, 1974). Collectivism represents a central point of departure between Western society and most traditional minority cultures (Harrison, Wilson, Pine, Chan, & Buriel, 1990). Collectivism may be particularly problematic for Euro Americans who typically place high value on independence and individualism that is so often reflected in the AT
component of service plans developed for children with developmental disabilities (Harry, 1994).

At the same time families from culturally and linguistically diverse backgrounds may want immediacy of results when AT devices are prescribed for their children with developmental disabilities (Parette & Huer, 2002). Such expectations for AT benefits may be at odds with professional perceptions regarding the appropriateness of devices in a range of milieus.

On examination of these two very different perceptions of the value of AT in social settings, one sees a strongly held perception on the part of a Euro American professional that the AT device is desirable since it promotes independence, whereas the family member is concerned with the practicality of the device. When professionals are insensitive to the social expectations of a particular AT device being considered for a child with a developmental disability, dissonance between the family and other AT team members can occur. This may be especially true of persons from culturally and linguistically diverse backgrounds who perceive themselves as ‘tokens,’ that is, a member of a group who feels that his or her group membership is perceived negatively by others (Crocker et al., 1998). If a person feels that they are a member of a token group (e.g., African American) they may be far more sensitive to professionally prescribed AT if it singles them out and is perceived to reinforce stereotypes held by others (Biernat, Vescio, & Theno, 1996; Schuman, Steeh, BoBo, & Krysan, 1997).

Professionals involved in making decisions about AT devices must be sensitive to both child and family values and preferences regarding appropriateness of device usage in social purposes. Such sensitivity will contribute to more effective AT decision-making.

Sublimation and Professional Deference

An assumption sometimes made by many AT professionals is that certain devices prescribed for children with developmental disabilities satisfy multiple users needs and thus should be used across environmental settings (e.g., augmentative and alternative communication devices; mobility aids; amplification devices; Lindsey, 2000). Such flexible expectations of certain types of AT may reflect the long-standing professional perception of the importance of generalization of skills acquired in intervention settings (Matlock, Lynch, & Paeth, 1990; Meese, 1994). Of course, such multiple milieu usage presupposes that user needs and environmental demands in these settings justify use of the device (Institute for Matching Person and Technology, 2002).

Although some AT decision-making models give considerable credence to examining milieus in which devices will be used (e.g., Institute for Matching Person and Technology, 2002; Melichar & Blackhurst, 1993; and Zabala, 1998) and input from family members and users (e.g., Bowser & Reed, 1998; Chambers, 1997; Williams et al., 1995; and Zabala), the cultural values and preferences of family members may sometimes be at odds with those of professionals. Families may view judgments of professionals to be more important than their own (Fewell & Vadasy, 1986; McBride, Brotherson, Joanning, Whiddon, & Demmitt, 1993). This feeling of loss of power, or transfer of decision-making power to professionals who are viewed as knowing “what is best” for the family, may contribute to the loss of much valuable information during the assessment process (Parette & Brotherson, 1996).

If family members have strong culturally-based values regarding the importance of educators, that is, teachers and other professionals opinions are to be respected and not questioned, family opinions and preferences regarding AT being considered for the child with a developmental disability may not be expressed (Parette & Huer, 2002; Roseberry-McKibbin, 2002). This can result in devices being prescribed (and implemented in some settings) because families agree to professional recommendations, though it may also place families in the situation of dealing with stigma issues when devices are to be implemented in social settings. For example, Asian families typically show great respect for education professionals and may tend to be reticent in expressing their opinions if they differ from those articulated by the professionals. Rather than expressing their concerns about the stigmatizing effects of the recommended devices, family members may simply acquiesce
and publicly indicate acceptance through head nodding and agreement to implement devices, with subsequent abandonment of their use in public and social settings (Parette & Huer).

**Teachers and Acceptance of Disability**

General attitudes toward individuals with developmental disabilities are affected by two primary factors: (a) the amount and nature of direct contact with individuals with developmental disabilities (Gething, 1991; Nathanson, 1982; Strohmer, Grand, & Purcell, 1984; Yuker, Block, & Young, 1966), and (b) information about developmental disabilities and persons with such disabilities (Anthony, 1972; Haddle, 1974; Yuker & Hurley, 1987). Positive and negative attitudes are evidenced by the extent to which someone perceives persons with developmental disabilities as being similar rather than different from persons without disabilities. Biernat and Dovidio (2002) refer to this as the "groupiness factor," or the extent to which the stigma is based on membership in a specific group. Positive and negative attitudes are also affected by the extent to which someone believes persons with disabilities should be treated similarly to and not differently from persons without developmental disabilities. Scherer (1996) notes that persons who look beyond disability and espouse a philosophy that "it is ultimately more important and cost-effective to enhance a person's quality of life, not merely to restore capability, are being person-centered" (p. 85).

The growing research database on inclusion of students with developmental disabilities indicates the most critical factors for successful inclusion are attitude of the teacher, learning environment including resources, and peer acceptance (Kowalski & Rizzo, 1996; Rizzo & Kirkendall, 1995; Scruggs & Mastropieri, 1996). Bauer and Piazza (1998) noted that teachers trained both in AT and cultural diversity may be more inclined to invite a child with a developmental disability into his or her classroom environment. Teachers also have a responsibility to provide information to other students in the classroom regarding AT used by a particular child to facilitate acceptance (State of North Dakota Department of Public Instruction, 1999). When teachers assist students in understanding the AT used by a child with a developmental disability, the negative impact of stigma can be minimized (Stuart, 1998).

Teacher acceptance becomes particularly important given the importance of examining the milieu and the challenges/supports available in each setting where AT will be used. When teacher attitudes are negative due to the stigma of the child's developmental disability, or due to technophobia (i.e., persons having a fear of technology) on the part of the teacher (Scherer, 1996), challenges to effective implementation of AT may be substantive. Conversely, if teacher attitudes are positive toward the child and his or her AT due to little (or no) impact of perceived stigma, support from the teacher may be present for effective implementation of AT.

Interestingly, the extent to which some groups may stigmatize persons with developmental disabilities who use technology may be a function of the degree to which the latter group is deemed to be competing for important resources (Neuberg, Smith, & Asher, 2002). The teaching environment today is defined to a great extent by legislative and political mandates and economic assets and deficits. Teaching environments have attitudinal, cultural, and physical attributes that serve to determine composition of the student body and determine students they will teach as well as the manifest and "hidden curricula." When teachers hold negative attitudes toward persons with disabilities based on myths and flawed assumptions that these individuals are drawing resources away from typical peers, ability of the teacher to accept the child in a particular milieu may be minimized. In such instances, teacher support in the form of awareness training and other supports may be indicated. Students require skilled and caring teachers who view technology as a tool, not a replacement, for teaching. But teachers must receive training at both the preservice and inservice levels regarding the choices in AT available (Edyburn & Gardner, 1999), how to choose and use the right AT for a specific educational goal, and how to best incorporate AT into the curriculum so that stigma is avoided (Scherer, 2003).
Universal Design and Stigma

For several decades, professionals have been advocating universal design as a way to create products and environments that are usable for all persons in our society, regardless of age or disability (see e.g., Center for Inclusive Design and Environmental Access, 2001; and Universal Design Education Project, n.d.). Products and spaces are designed only for people with disabilities and older people will always be more expensive, appear different, and have stigma associated with their usage (Connell et al., 1997). Universal design is a concept intended to increase the market for and, thus, production of products and environments that are usable by everyone to the greatest extent possible (Mace, 1985). Mueller (1990) noted that an operational assumption of universal design is that by making more products and environments usable by a wide range of people, the need for and higher cost of specialized products and environments may be reduced—a highly desirable outcome for all consumers. Typically, accessible design tends to result in separate facilities for individuals with disabilities (e.g., ramps, toilet stalls) while universal design provides a single solution accommodating all people.

Ideally, application of universal design principles in design of AT would result in esthetically pleasing devices that are seamless in design (Covington, 1998). Products that are universally designed are also more attractive and may decrease abandonment as they are free from the stigma often associated with a developmental disability (Cowan & Turner-Smith, 1998; Fozard, Rietsema, Bourna, & Graafmans, 2000).

Unfortunately, as noted by Mace (1998), little or no attention is paid to the aesthetics of assistive technology and rarely is competitive marketing an issue. During the AT decision-making processes, children with developmental disabilities and their families may often be expected to use the devices selected by team members and be grateful for the improved function or support they receive despite any stigma, embarrassment, or negative image generated by the device.

Conclusions and Implications

Stigmas associated with disability and AT usage are integrally related and have the potential to substantively affect AT decision-making processes. Families from diverse cultural backgrounds who may be the focus of team decision-making bring a range of values, priorities, and preferences to these processes. Often, their perceptions of their children with developmental disabilities and AT solutions being considered will be affected to a large extent by the presence of stigma. Compounding the problem is that team members themselves, as well as others in various milieus where the AT being considered might potentially be used, may also perceive stigmas associated with children having developmental disabilities, AT, or both. In such instances, the potential of AT to reduce physical and social barriers can be minimized.

Research is needed to explore the current and ongoing effects of stigma on government policy related to AT service delivery, as well as the effects on team decision-making in schools. Each of the models for AT decision-making that have been proposed in literature must undergo reliability and validity studies of the processes associated with each model. Such data will enable refinement of assessment processes to ensure that a careful match between person and AT occurs, users’ preferences and needs are appropriately and adequately addressed, and stigmatizing effects of AT use are reduced.

References


of Special Education and Rehabilitation Counseling, University of Kentucky.


Scruggs, T., & Mastropieri, M. (1996). Teacher per-

Received: 30 April 2003
Initial Acceptance: 3 June 2003
Final Acceptance: 18 September 2003
Attitudes of Japanese Adults toward Persons with Intellectual Disability: Comparisons over Time and Across Countries

Toshiaki Tachibana and Kanji Watanabe
Aichi Human Service Center, Japan

Abstract: Eleven elementary schools were selected randomly from a typical medium sized city of Japan. Parents of pupils who were attending the schools were surveyed. A small proportion of agreement with, “The reality of lives of persons with intellectual disability (ID) should be told more widely to the public” was interpreted as a typical Japanese response. Agreement with accountability for care for persons with ID is on the side of the family was unexpectedly high. Persons with ID’s “having a normal life in a community” did not get much agreement. This indicates that the idea of normalization is not necessarily well rooted in Japan. Results were compared with results of two studies conducted about 40 and 20 years ago in Japan, indicating that attitude toward persons with ID has improved greatly over the years. Results were also compared with results of three studies performed in the US.

Studies may be grouped into two types concerning attitudes toward people with intellectual disability (ID). The first type (and most studies belong to this type) makes an attempt to uncover new findings using a technique that has not been employed in previous studies. The second type of study makes an attempt to describe present state of the situation using an existing technique, and gets results such as 33% of respondents agree to some question. In the latter type, data become a historical record of the population at the time surveyed. Appropriate sampling methodology and a large sample size is needed for this kind of survey. In this field, most studies have used children or college students as participants instead of the general public, probably because large numbers of students were readily available. (Students as participants are important in their own right—but they are not a representative sample of the public.) There have been relatively few of the latter type study. Zentokuren (1962) is such an example of this type in Japan. The study published in Japanese gave important data regarding the 1960s in Japan (see Tachibana and Watanabe [2002] for some details in English).

The first purpose of the present study was to set out standard data in present-day Japan similar to earlier studies such as Zentokuren (1962). We have previously carried out a study using a set of questions on a smaller sample (Tachibana & Watanabe, 2003). Results gave us a chance to improve some of the questions. Questions revised from the previous study were employed in the present study. We believed we could get representative data on the attitude of Japanese people toward persons with ID in the present study and produce a standard data set useful for international comparison.

As the second purpose, we examined whether attitudes of Japanese people toward people with ID have changed over 40 years, by comparison with results of Zentokuren (1962). In addition, we made comparisons with results of studies, which were made 25 years ago in the same city (Shirai, Shirai, Fujiki, & Tsukahara, 1979).

The third purpose was to compare our data with data obtained from studies in the U.S. (Antonak, Fielder, & Mulick, 1993; Antonak & Harth, 1994; Henry, Keys, Jopp, & Alcazar, 1996).

We wish to thank the Municipal Committee for Education in Kasugai and the 11 participant schools for giving us the opportunity for the present survey. Correspondence concerning this article should be addressed to Toshiaki Tachibana, Institute for Developmental Research, Aichi Human Service Center, Kasugai, Aichi 480-0392, JAPAN. E-mail: roku@inst-hsc.jp

© Division on Developmental Disabilities

Attitudes in Japan  /  227
Method

Participants

Participants were parents (or guardians) of children attending 11 elementary schools in Kasugai (a population of about 290,000), Aichi Prefecture, Japan. The 11 schools were selected randomly out of all the schools (n = 37) in Kasugai. A questionnaire was distributed to all families (n = 2758) whose children attend one of the 11 schools by teachers and collected in December 2000. We did not conduct random sampling from the population of Kasugai. This is because identification of participants associated with random sampling gives a bad feeling to participants in Japan. Instead, schools were selected randomly and we tried to get all targeted participants from selected schools. This procedure made it possible to collect responses without identification of participants.

Questionnaire

The questionnaire has a preface, which says that this is performed as a part of a study of Institute for Developmental Research on attitudes toward persons with ID. In addition to the preface, an assurance of strict confidentiality was added, “Although your response is expected never to be looked into by the teacher of your child, to make more sure of the confidentiality of your response, after completing the questionnaire, please paste down the flap of the envelope and hand to your child to return it to the teacher.” In addition to the preface, a sentence, “Please show your true feeling” was added at the end of the preface, for the purpose of encouraging true feelings.

The questionnaire had five main sections (see Tachibana & Watanabe, 2004, for details). In the first section (items 1-16), 16 items of Likert type questions were presented. A common format of questions was, “A person says, ‘. . .’ What do you think of the opinion?” The part ‘. . .’ indicates an attitude toward persons with ID. Respondents were required to rate their ideas toward individual items by making a mark on a line. The ends of the line, which was divided into 10 parts indicated “strongly agree” and “strongly disagree” and the middle part indicated “uncertain”. Items were chiefly employed from the study by Zentokuren (1962) (see Tachibana & Watanabe, 2002). Zentokuren is one of the most influential studies conducted in Japan. Many later Japanese studies employed the same questions used in this study. A few items were added to the present questionnaire for the purpose of an international comparison (Antonak et al., 1993; Antonak & Harth, 1994; Henry et al., 1996).

In the second section (items 17-19), three items were employed: 1) guessing the prevalence of persons with ID in general, 2) guessing the prevalence of persons with ID in the future of their own family, and 3) guessing the percentage of hereditary causes of ID.

In the third section (item 20), three questions regarding respondents’ schemata of persons with ID were asked. In the first question of this section (item 20A), respondents were required to describe the perceived age of persons with ID: preschool child; elementary school pupil; adolescent (junior high school or older); adult. In the second question (item 20B), respondents were asked “What dimensions of disability do you perceive when you are questioned. ‘A person with ID is. . .?’” Respondents were required to select from seven alternatives: a) fundamental daily habits, b) communication, c) using public facilities, d) understanding of Japanese characters and calculation, e) ability of working, f) challenging behavior, and g) others. In the third question (item 20C), respondents were required to mark the perceived degree of disability: mild, moderate, severe, or profound.

In the fourth section (items 21-28), background variables were probed: they were gender, age, occupation, job-related contact with persons with ID, and volunteer work with persons with a disability. Since some questions that are employed often, such as educational levels, self-designed socioeconomic status, religion, etc. give a bad feeling to respondents in Japan (even though there is no way of identifying respondents to questionnaires) such variables were excluded.

Questions in the last section (items 29-31) required participants to describe freely their experience with people with ID. In addition, respondents were asked whether they have a
feeling of having more interest in the matter of people with ID than average people.

Some items used in the previous study by Tachibana and Watanabe (2003) were deleted, some items were added, and some items were changed. Changes were made in an attempt to improve weaknesses identified in the previous study. The second and third section questions are related to respondents’ schema of people with ID. We present results of these sections and relationships between attitudes and background information variables in other studies (Tachibana & Watanabe, 2004).

Scoring of Response

Responses for items 1-16 (11 point-scale) were converted to scores according to position marked by respondents on the questionnaire. The mark, "strongly agree" was assigned a score of 5, and "strongly disagree" was assigned a score of −5. The “uncertain” response was assigned a score of 0. Others were assigned on the basis of an 11 point-scale. To facilitate interpretation, scores of negatively framed items (items asterisked in Table 4) were multiplied by −1. Thus, the higher plus score means more favorable attitude (a greater minus value means a less favorable attitude) for all items despite the different kinds of questioning.

As to whether they have a greater concern on ID (item 30B), the response of ‘yes’ and ‘no’, were assigned 2 and 1, respectively.

Statistical Analysis

Present data were not obtained by random sampling. The population defined in the present study was, “all parents whose children were attending the 11 schools in December 2000.” Contrary to selecting participants, the schools were selected via random sampling procedure. Thus, in this case we can infer the population from the results by statistical inference. Thus, we will infer the population (the mean of schools of Kasugai) in terms of the 95% confidence interval. The unit of sample is school means.

Results

For ease in understanding the questions, Table 1 has some short explanations and the abbreviations (see Tachibana & Watanabe, 2004, for details).

As background information, demographic data of respondents are presented in Table 2. Mean (SD) of respondents’ age was 38.2 (5.0) with the range of 23-65 years old. Despite our intention of getting a representative data set of Japanese adults, female data was predominant. As to the question on jobs in an organization designed to help people with disability (item 27), very few people were working in such organizations. Most of the respondents who responded “yes” were teachers of a general class, and nurses. Number of people who had a person with ID in the family was small (n = 73) but the number may be enough to examine the matter in detail. Number of respondents having a close friend with ID was very few (n = 18), thus they are included into the category of having a close friend with a family member with ID.

Overall return rate for questionnaires was 87.6%. Some respondents who did not respond to a large part of the questions were dropped from the analyses. Thus, number of respondents in the analysis became 2381. Return rate per school is presented in panel 5 of Figure 1. The school differences in the return rate were not so small except for school 4.

Correlations between mean values (items 1-16) for schools and the return rate were calculated and are presented in Table 3. Variability of mean item scores among schools is also presented in terms of coefficient of variation (C.V.) in Table 3. There was a clear relation between return rate and magnitude of mean scores of items. It should be noted that most correlations indicate minus values. Therefore, lower return rate is associated with larger scores of items (a more favorable attitude toward people with ID). Correlation between scores of ‘concern on ID (30B)’ and return rate was also considerable. This indicates that people with less concern on ID returned the questionnaire in at lower rate. Thus, correlation between mean score of items for schools and return rate were recalculated by partializing with the effect of ‘concern on ID (30B).’ Results of semi-partial correlation are presented in Table 3. The semi-partial correlation became very small in most items, indicating that variations of the
return rate are explained mostly by the difference in ‘concern on ID (30B).’

Variation of return rate among schools (especially the low rate for school 4) might suggest that we should have looked at each school’s data individually. In order to see how mean item scores varied across school, the mean (SE) of item scores for schools are presented in Figure 1. To save space, the largest two items in the correlation between item score and the return rate and the largest two items in C.V. of the correlation out of 16 items are illustrated in Figure 1 (panel 1-4). The figure indicates that the difference in magnitude for item score across schools is not so great. School 4 did not so greatly differ from

| TABLE 1 |
| Abbreviation and a Short Description for Questionnaire Items |

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>commu-liv</td>
<td>having normal life in a community</td>
</tr>
<tr>
<td>hered-threat</td>
<td>a hereditary threat to society</td>
</tr>
<tr>
<td>close-rela</td>
<td>having close personal relationships</td>
</tr>
<tr>
<td>marriage</td>
<td>marriage with a person who has a family member with ID</td>
</tr>
<tr>
<td>tell-life</td>
<td>real life of people with ID should be told more widely to the public</td>
</tr>
<tr>
<td>neigh-facil</td>
<td>a facility for people with ID in the neighborhood</td>
</tr>
<tr>
<td>spe-aid</td>
<td>need for any special aid or shelter for people with ID</td>
</tr>
<tr>
<td>next-door</td>
<td>living next door to people with ID in the same apartment building</td>
</tr>
<tr>
<td>fam-care</td>
<td>accountability for taking care of people with ID is with the family</td>
</tr>
<tr>
<td>work-togeth</td>
<td>working with people with ID</td>
</tr>
<tr>
<td>priority</td>
<td>the aid for people with ID should be given after aids for people in general</td>
</tr>
<tr>
<td>next-seat</td>
<td>making respondent’s child sit next to a child with ID in school</td>
</tr>
<tr>
<td>get-togeth</td>
<td>getting together more frequently with people with ID</td>
</tr>
<tr>
<td>involve</td>
<td>becoming involved with persons with ID</td>
</tr>
<tr>
<td>inde-mar</td>
<td>persons with ID are capable of maintaining an independent marriage</td>
</tr>
<tr>
<td>cred-card</td>
<td>persons with ID can use a credit card without complications</td>
</tr>
<tr>
<td>gender</td>
<td>gender of respondents</td>
</tr>
<tr>
<td>age</td>
<td>age of respondents</td>
</tr>
<tr>
<td>occupa-type</td>
<td>occupation types of respondents</td>
</tr>
<tr>
<td>school</td>
<td>types of schools attended at in young days of respondents</td>
</tr>
<tr>
<td>family</td>
<td>having people with ID in family (including relatives) members of respondents</td>
</tr>
<tr>
<td>friend</td>
<td>having a friend who has a person with ID in the family or having a friend with ID</td>
</tr>
<tr>
<td>job-contact</td>
<td>having job-related experience with people with ID (or having jobs for the disability) in the past or the present time</td>
</tr>
<tr>
<td>volunteer</td>
<td>experiences of volunteer work with the disability</td>
</tr>
<tr>
<td>concern</td>
<td>having a greater concern for problems which people with ID have than the average person has</td>
</tr>
</tbody>
</table>

Item number within () are attached to each item abbreviation for readers’ convenience. See Tachibana & Watanabe, 2004, for details. Brackets [ ] indicate the shortest terms used in figures and tables.
Results of each question (items 1-16) are presented in Figure 2 and Table 4. Figure 2 indicates results in terms of number of persons who responded to the items. Table 4 indicates results in terms of means and SDs and asterisks indicate that scores were converted to common sense by multiplying the score by −1. Presentation of both sets of results is not redundant but necessary. Presentation of mean and SD alone is unable to describe exactly the distribution. Presentation by a histogram does not give us means (SDs), which are easy to compare to other studies’ results. Although the number of 11 points of selection is not too much to show in terms of mean (SD), the number is too much to show in terms of number of persons per point. Thus, 11 points were reduced to 5 points, by changing point 5 and 4 to 2, and changing point 3, 2, and 1 to point 1. Point 0 is unaltered. Points in the minus zone are also changed in the same way as ones in the plus zone.

As can be seen in Figure 2, panels of items are grouped into 6 types, from A to F. Although we cannot show the mathematical criteria for the grouping, the rough grouping seems enough and useful to see that there are several types of response distribution. Type A is the item that showed the most negative score among items. In other words, type A is the least favorable attitude scores. ‘Having a credit card (16)’ is assigned to type A. Type B is items in which the largest number of person distributed at 0, which indicates “uncertain”. This corresponds to ‘independent marriage (15),’ ‘marriage problem (4),’ ‘living next door (8),’ and ‘neighborhood facility (6).’ Type C is items that have the peak of distribution at 0 or +1. They correspond to ‘tell real life (5),’ ‘hereditary threat (2),’ ‘care by the family (9),’ and ‘community living (1).’ Type D is items that have the peak at 2 but a relatively large portion distributed at 0. This corresponds to ‘working together (10),’ ‘special aid (7),’ ‘involvement (14),’ and ‘priority (11).’ Type E is items that have the peak of distribution at +2. This corresponds to ‘getting together more frequently (13)’ and ‘close relationship (3).’ Type F is items that have the predominant proportion at +2. This corresponds to ‘next seat in school (12).’

Discussion

Representativeness of the Present Data for Japanese Adults

We made an attempt to describe the state of attitudes in present day Japan. Is our data representative of Japan? The best way to get a
A representative sample is random sampling from all over Japan, something that is practically impossible. Even the best study conducted in Japan, Zentokuren (1962) did not employ random sampling. Another way is to select a few cities in Japan by random sampling and to do random sampling from the population of these cities. Our targeted city, Kasugai, is a typical medium size Japanese city, though it was not randomly selected. Zentokuren showed that there was little difference in areas across Japan 40 years ago. Years after Zentokuren’s study, the standardization of thinking on life style or other social problems are progressing in Japan because of the development of media. Nowadays, most Japanese will not oppose the idea that there is no substantial difference in opinions on intellectual disability in different areas of Japan, though no one can present direct evidence for this.

There is no objective criterion for selecting a representative city in Japan. So, it is not unreasonable to suppose that Kasugai is a representative city in Japan. Schools were selected randomly and we tried to get all of the targeted participants from the selected schools. Therefore, it is not unreasonable to suppose that our sample is a typical group of adult Japanese.

**Present State Of Attitudes in Japan**

We believe that the present data will be a useful record of opinions on intellectual disability in the 1990s in Japan. Furthermore, it may be useful as basic data for an international comparison. Although we insist that our data reflect typical Japanese attitudes, female data is predominant (90.3%). Thus, it is better...
scores. Low scores for these items are ex-
ered greatly unfavorable among the item
which belong to type A and B) were consid-
hood facility (6),
responses.
into 6 types on the basis of distribution of
questions
in the present surveys into two types: (1) ques-
school.
old who have a child attending an elementary
representative of Japanese women aged 23-65 years
sent for precisely that the data are repre-
seventy. We might be able to group questions used
in the present surveys into two types: (1) ques-
tions which ask about agreement or disagree-
ment on a less favorable attitude toward peo-
to say more precisely that the data are repre-
seventy. We might be able to group questions used
in the present surveys into two types: (1) ques-
tions which ask about agreement or disagree-
ment on a less favorable attitude toward peo-
to say more precisely that the data are repre-
seventy. We might be able to group questions used
in the present surveys into two types: (1) ques-
tions which ask about agreement or disagree-
ment on a less favorable attitude toward peo-
to say more precisely that the data are repre-
seventy. We might be able to group questions used
in the present surveys into two types: (1) ques-
tions which ask about agreement or disagree-
ment on a less favorable attitude toward peo-
represents, for instance, because they are ‘anti-social norm ques-
tions.’ ‘Close relationship (3)’ and ‘getting
of mild ID. This cultural
situation of hesitation of speaking openly of
people with disability in the family might put
tell real life (5)’ at the low score.
The item of having a ‘credit card (16)’ is
only just minus. The low score for the item
does not necessarily mean respondents have a
less favorable attitude. We addressed this mat-
ter by examining the variable of having a fam-
ily member with ID previously (Tachibana &
Watanabe, 2004). The score of ‘marriage
problem (4)’ was low. The item was found to
put a great hesitation of answering candidly
on respondents (Tachibana & Watanabe, 2003).

TABLE 3
Correlation between Mean Score of Items (item
1–16) for Schools and Return Rate, the Semi-
partial Correlations with ‘Concern on Intellectual
Disability’, and Coefficient of Variations (C.V.)
for Mean Item Scores across Schools

<table>
<thead>
<tr>
<th>Item</th>
<th>Correlation</th>
<th>Semi-partial</th>
<th>C.V.</th>
</tr>
</thead>
<tbody>
<tr>
<td>commu-liv</td>
<td>-0.45</td>
<td>0.11</td>
<td>0.06</td>
</tr>
<tr>
<td>hered-threat</td>
<td>-0.28</td>
<td>0.07</td>
<td>0.16</td>
</tr>
<tr>
<td>close-rela</td>
<td>-0.67 (1)</td>
<td>0.29</td>
<td>0.04</td>
</tr>
<tr>
<td>marriage</td>
<td>0.05</td>
<td>0.07</td>
<td>0.26 (3)</td>
</tr>
<tr>
<td>tell-life</td>
<td>-0.47</td>
<td>0.07</td>
<td>0.13</td>
</tr>
<tr>
<td>neigh-facil</td>
<td>-0.48</td>
<td>0.09</td>
<td>0.13</td>
</tr>
<tr>
<td>spe-aid</td>
<td>0.04</td>
<td>0.10</td>
<td>0.06</td>
</tr>
<tr>
<td>next-door</td>
<td>-0.69 (2)</td>
<td>0.30</td>
<td>0.14</td>
</tr>
<tr>
<td>fam-care</td>
<td>-0.61</td>
<td>0.20</td>
<td>0.11</td>
</tr>
<tr>
<td>work-togeth</td>
<td>-0.51</td>
<td>0.11</td>
<td>0.08</td>
</tr>
<tr>
<td>priority</td>
<td>-0.58</td>
<td>0.17</td>
<td>0.13</td>
</tr>
<tr>
<td>next-seat</td>
<td>-0.17</td>
<td>0.01</td>
<td>0.08</td>
</tr>
<tr>
<td>get-togeth</td>
<td>-0.35</td>
<td>0.02</td>
<td>0.08</td>
</tr>
<tr>
<td>involve</td>
<td>0.01</td>
<td>0.07</td>
<td>0.10</td>
</tr>
<tr>
<td>inde-mar</td>
<td>-0.15</td>
<td>0.02</td>
<td>0.89 (4)</td>
</tr>
<tr>
<td>cred-card</td>
<td>-0.21</td>
<td>0.02</td>
<td>0.19</td>
</tr>
<tr>
<td>concern</td>
<td>-0.42</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The number within () corresponds to the panel
number in Figure 1. See Table 1 for item abbrevia-
tions.
Figure 2. Six types of distribution of responses. The letter with an arrow indicates the type. Vertical axis indicates number of respondents. Horizontal axis indicates item scores converted into ones from $-2$ to $+2$. * indicates the inverted score. See Table 1 for item abbreviations.
ment to ‘care by the family (9).’ This was somewhat surprising because we anticipated that most respondents agree to care by a local government (or tax). This might indicate a specific thinking in Japanese people that accountability for care is on the side of the family, though some aids are needed for the family. Unfavorable responses, agree to no need for ‘special aid (7)’ and to ‘priority (11)’ was not necessarily small. These are also unexpected results. The data on ‘community living (1)’ indicates that the idea of normalization is not well accepted perfectly by the public, considering only 30% of respondents “strongly agree.” In other words, over 70% of respondents have some hesitation about the idea to some degree. In ‘hereditary threat (2),’ there were two peaks which indicate some portion of respondents have a hesitation to candidly agree with the item. Items of ‘working together (10),’ ‘involvement (14)’ and ‘next seat in school (12)’ which are considered as ‘anti-social questions’ were not so unfavorable. This shows that all ‘anti-social questions’ do not always induce less favorable attitudes, indicating that the situation in Japan is improving.

Comparison with Previous Japanese Data

To get a clearer idea of the present situation, a comparison with the past or with other countries is especially useful. Part of our items had been employed by two previous studies; Zentokuren (1962) and Shirai et al. (1979). Since they are written in Japanese without an English summary, it should be useful to describe the studies in some detail. The study of Zentokuren was conducted nationally with a very large number of respondents (n = 9600). The people surveyed in the study were parents of children who were attending an elementary or junior high school, and teachers of these schools. The demographic character was similar to the present study with some differences. In Zentokuren the male proportion was 66.3%. Further, teachers were a large proportion (12.9%). In Shirai et al., respondents were selected from the same city as the present study (Kasugai), further, their ages were almost the same as in the present study. The people surveyed by Shirai et al. were mothers of children with ID, mothers of children without ID, and pregnant women. The data of mothers of children without ID (n = 205) will be compared with the present data.

Zentokuren (1962) measured attitudes; “agree,” “uncertain” and “disagree.” In order to make a comparison with those of Zentokuren, our results were converted to a 3-point scale: scores from −5 to −1 are pooled into −1 (corresponding to ‘disagree’ of Zentokuren; scores from 1 to 5 are pooled into 1 (corresponding to ‘agree’); score 0 corresponds to ‘uncertain.’ The data of Shirai et al. (1979) were also converted into a 3-point scale. As our data were collected randomly in choice of school, we can infer confidence intervals (Kirk, 1978). Results in terms of the 95% confidence interval are presented in Figure 3 along with mean scores of Zentokuren and Shirai et al.

In the comparison between studies we must remember the unit is school means in the present study, while for Zentokuren (1962) and Shirai et al. (1979), it is the individual subject. As long as we compare the means among studies, the difference in the unit is not so problematic. Zentokuren gives us standard Japanese data of the 1960s. After the study by Zentokuren our society has been

---

**TABLE 4**

Means and SDs for Scores on the Items on the Basis of 11 Points

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>commu-liv</td>
<td>2.48</td>
<td>2.18</td>
</tr>
<tr>
<td>hered-threat*</td>
<td>2.19</td>
<td>2.49</td>
</tr>
<tr>
<td>close-rela</td>
<td>2.96</td>
<td>2.04</td>
</tr>
<tr>
<td>marriage*</td>
<td>0.57</td>
<td>2.66</td>
</tr>
<tr>
<td>tell-life</td>
<td>1.99</td>
<td>2.29</td>
</tr>
<tr>
<td>neigh-facil*</td>
<td>1.72</td>
<td>2.67</td>
</tr>
<tr>
<td>spe-aid*</td>
<td>2.81</td>
<td>2.16</td>
</tr>
<tr>
<td>next-door*</td>
<td>0.95</td>
<td>2.69</td>
</tr>
<tr>
<td>fam-care*</td>
<td>1.98</td>
<td>2.60</td>
</tr>
<tr>
<td>work-togeth*</td>
<td>2.59</td>
<td>2.33</td>
</tr>
<tr>
<td>priority*</td>
<td>2.52</td>
<td>2.58</td>
</tr>
<tr>
<td>next-seat*</td>
<td>3.20</td>
<td>2.33</td>
</tr>
<tr>
<td>get-togeth*</td>
<td>2.57</td>
<td>2.34</td>
</tr>
<tr>
<td>involve*</td>
<td>2.43</td>
<td>2.55</td>
</tr>
<tr>
<td>inde-mar</td>
<td>0.24</td>
<td>2.53</td>
</tr>
<tr>
<td>cred-card</td>
<td>−1.34</td>
<td>2.48</td>
</tr>
</tbody>
</table>

* indicates inverted score. See Table 1 for item abbreviations.
Figure 3. Comparison with two studies in terms of the 95% confidence interval of means for 16 items. A bar and an arrow indicate the results of Zentokuren (1962) and Shirai et al. (1979), respectively. See Table 1 for item abbreviations.
changing. The idea of normalization has become widely known. Interactive education programs and other educational programs to improve understanding of people with disability have been widely available in Japanese schools. Media campaigned for ‘International Years of Disabled Persons.’ Do attitudes towards persons with ID really shift over time in Japan? As can be seen in Figure 3, all items employed by Zentokuren about 40 years ago are greatly improving presently. The most improved attitude is ‘next seat in school (12).’ ‘Priority (11),’ ‘involvement (14),’ and ‘special aid (7)’ are also considerably improved. The item of ‘care by the family (9)’ was less well improved. As we discussed on ‘special aid’ in the previous section, this might be traditional thinking of Japanese people, though we have no direct evidence of the matter. Teachers were a large proportion (12.9%) of Zentokuren’s study, which should have inflated the favorable attitude of the results in the study. Thus it would be better to reduce the number of teachers to the level of the natural proportion of typical adult Japanese. However, we have no such results in Zentokuren. Despite the supposed influence of the greater proportion of teachers, our data indicate clearly that attitudes toward people with ID are improving from the time of Zentokuren’s study.

Our respondents have a greater portion of women (90.3%) in comparison with those of Zentokuren (36.6%). This reflects the difference in climate of the two times. About 40 years ago, many men (fathers) had the idea that they must answer the questionnaire brought from the child’s school as the representative of the family. Nowadays, men have no such idea and they place the task of answering the questionnaire on their wives. As women (mothers) usually have a stronger feeling of duty for their child’s schooling, they undertake the task. They seem to have responded to the questionnaire not as the family representative but as an individual. Since Zentokuren (1962) asserted that there was no difference in attitudes between gender, whether the difference in the proportion of gender should be taken into our interpretation of attitude improvement is not clear.

In comparing the present results with those of Shirai et al. (1979), the degree of improvement is not so large as that shown by the Zentokuren (1962) comparison. This may be due to the difference in length of time (about 40 and 20 years). ‘Marriage problem (4)’ and ‘involvement (14)’ have been greatly improved but are still at a lower level in comparison with the other items. ‘Priority (11)’ is not largely improved. ‘Neighborhood facility (6)’ has not changed from the time of Shirai’s study. Since less favorable ideas for ‘marriage problem (4),’ ‘involvement (14),’ and ‘neighborhood facility (6)’ are anticipated to be rooted deeply in respondents, we were less surprised by these results. On the other hand, we have no idea why the response to ‘priority (11),’ which is a pro-social norm question, has been greatly improved from the time of Shirai’s study.

Comparison with Results Obtained in the U.S.

Comparison of the common items between the present study and other studies in the U.S. should be interesting (Antonak et al., 1993; Antonak & Harth, 1994; Henry et al., 1996). In the U.S. data, the sample is small because the purpose of these studies was not to get representative data of all people from the U.S. Furthermore, most participants were students. In Antonak et al., the scores were assigned the range from −3 to +3, and in Antonak and Harth they were assigned from 1 to 4. Henry et al. used the range from 1 to 6 (strongly disagree 1 to strongly agree 6). On the other hand, our data were assigned the range from −5 to +5. Thus, using a linear method, we converted the U.S. means to the scale used in our study. The converted means are plotted in Figure 4, indicating Antonak et al. as black bars, Antonak and Harth as a wedge, and Henry et al. as arrows. Our data are presented in terms of the 95% confidence interval.

All mean scores in the present study were smaller than those in the U.S. studies. A direct comparison might not useful, as results of the U.S. studies do not necessarily represent the public of the U.S. Thus, it is difficult to assert that Japanese people have less favorable attitudes than Americans have. However, it gives us a possibly more adequate international standard for comparison in future studies.
Figure 4. Comparison with three studies conducted in the U.S. with the 95% confidence interval of mean for 16 items. A bar, a wedge, and an arrow indicate results of Antonak et al. (1993), Antonak and Harth (1994) and Henry et al. (1996), respectively. See Table 1 for item abbreviations.
References


Embedded Video and Computer Based Instruction to Improve Social Skills for Students with Autism

Amber Simpson
Athens Clarke County Public Schools

John Langone and Kevin M. Ayres
The University of Georgia

Abstract: Effects of combining video and computer based instruction to teach social skills to four students with autism were evaluated with a multiple probe design across behaviors. The teacher designed a computer based program with embedded video clips of peers without disabilities displaying examples and non-examples of the targeted social skills: sharing, following teacher directions, and social greetings. Students were required to discriminate the examples from non-examples displayed in the video clips. Following computer based training, students participated in group activities with peers without disabilities. This allowed for evaluation of social skill acquisition. All students showed rapid improvements in targeted social skills in the natural environment.

Students with autism have significant difficulty with pro-social behaviors (Brady, Shores, McEvoy, Ellis, & Fox, 1987; Goldstein, Kaczmarek, Pennington, & Shafer, 1992; Gonzalez-Lopez & Kamps, 1997; Krantz & McClannah, 1998; Pierce & Schreibman, 1995). By definition, children with autism exhibit deficits in age appropriate social skills (American Psychiatric Association, 1995). These social skill problems manifest concomitant with difficulties in communication; together they impact the degree to which a student with autism can independently navigate common social experiences. The result of these difficulties can be that formation of friendships for people with autism can be a difficult task (Wing, 1992). Consider for example, how trouble with social greetings may impact a student’s ability to make friends or engage in conversation. Difficulty with initiating or responding to social greetings may differentially impact social opportunities for students with autism. These social needs demand intense, systematic instruction to promote acquisition and generalization of social behaviors that may lead to more integration into the social community (Strain & Hoyson, 2000).

Children with autism have profound weaknesses in social behavior and (Pierce & Schreibman, 1995) some posit that these weaknesses stem from students with autism having a limited capacity to understand social conventions and comprehend the perspective of other people witnessing or experiencing the same situation (Harris, Hardleman, & Alessechrdi, 1990). For students with disabilities as well as for students without disabilities, part of learning social skills comes from watching skilled social models competently perform the target social behaviors. The literature has long suggested that observational learning from models can function as a powerful influence on student behavior (e.g., Bandura, Ross, & Ross, 1961).

Part of extant literature on social skills instruction examines use of peer models to teach social behaviors. For example, peers without disabilities interacting in real-life situations have been shown to be best models for teaching appropriate behavior and promoting generalization (Chandler, Lubeck, & Fowler, 1992; Elksnin & Elksnin, 1998; Hundert & Houghton, 1992; Morgan & Salzberg, 1992; Stokes & Baer, 1977). The majority of research in this area has focused on measuring effectiveness of a prescribed social skills curriculum. Structure of the curricula has varied; for example, curricula have been implemented with typical peer training strategies (Gonzalez-Lopez & Kamp, 1997), role-plays (Bain, Houghton, & Carroll, 1995), script-fading (Krantz & McClannah, 1998), adult role models on video (Sherer, Pierce, Paredes, Ki-
sacky, Ingersoll, & Schreibman, 2001), and pivotal response training (Pierce & Schreibman, 1995, 1997). These curricula generally consisted of defining the target skills, identifying the environments in which the behavior would occur, modeling the behavior for the student, and training the behavior through a series of simulated role plays (e.g., Elksnin & Elksnin, 1998). The research has spanned a wide range of social behaviors from conversation skills (Ogeltree & Fischer, 1995; Sherer et al.), greetings (Charlop-Christy, Le, & Freeman, 2000), eye gaze (Ogeltree & Fischer), and responding to peers interactions (Norris & Dattilo, 1999).

One difficulty encountered in developing social skills curricula is providing multiple and varying exemplars of situations where the target behavior should be used. Contrived role-plays do not always foster generalization of social skills to everyday situations (Elksnin & Elksnin, 1998). When using social role models to teach target behaviors, interactions of the models often transpire too quickly for the student with autism to notice the relevant characteristics of the behavior (Hundert & Houghton, 1992). A strategy that may assist in teaching social skills and addressing these instructional design weaknesses is anchored instruction (Cognition and Technology Group at Vanderbilt, CTGV, 1990).

Anchored instruction is based on Brown, Collins, and Duguid’s (1989) theory of situated cognition: the belief that knowledge is based in the context in which we learn and use knowledge. With anchored instruction, educators create contextual learning environments that are as similar as possible to the context in which the target behaviors or knowledge would be used. Often this includes the use of video based instruction that can provide multiple exemplars of the targeted learning environment, and will, by virtue of being filmed in the natural environment, depict many of the natural stimuli the student will see when he or she is in a similar real life situation. This concept echoes the literature base that suggests that the generalization of target behaviors is related to the similarities between the training stimuli and the stimuli (or stimulus conditions) targeted for generalization (Stokes & Baer, 1977); thus employing video based simulations will provide representations of the relevant stimuli from the natural environment that may promote generalization to those environments.

By using technology to provide realistic macro contexts and simulate the natural environment in which the knowledge or target social skills will be used, anchored instruction allows educators to provide and control multiple exemplars related to teaching a specific skill (CTGV, 1993). One application of anchored instruction that researchers and practitioners have used is to infuse computer-based instruction with naturally occurring situations and embedded video that students have to engage as part of the instructional sequence (CTGV, 1992). Researchers have evaluated effectiveness of computer based instruction to train a variety of skills: employment-related social skills to adults with severe intellectual disabilities (Morgan & Salzberg, 1992), reading grocery store aisles to persons with moderate intellectual disabilities (Mechling, Gast, & Langone, 2002). Several studies have specifically used video models to teach social skills to students with autism (e.g., Ogeltree & Fischer, 1995; Sherer et al., 2001; Charlop & Milstein, 1989; and Charlop-Christy et al., 2000). To date, a single study has examined combining video and computer technology as a multimedia as a tool for delivering social skills instruction (Hagiwara & Myles, 1999). Hagiwara and Myles’ however, did not demonstrate a very strong relationship between the multimedia based intervention and social skill acquisition. The researchers cited difficulties with the educational personnel serving their participants not fully supporting the program’s implementation in addition to problems with student schedules as possibly interfering with the success of the program.

In the current study, students with autism watched video of appropriate models of the social behaviors embedded in an interactive computer based program. Sherer et al. (2001) have suggested that because viewing video requires the student to focus attention on a monitor, control over a narrow range of stimuli is enhanced and presumably the most relevant stimuli become more salient. Further, vivid video representations may capitalize on visual strengths that students with autism are reported to exhibit (Pierce & Schreibman, 1994).

The purpose of this study was to evaluate effectiveness of computer-based instruction
(CBI) that included video models to teach four students with autism three social behaviors: sharing with others, complying with teacher directions, and social greetings. The CBI program included definition of the target behaviors, video models of these behaviors provided by typical peers in real situations, and opportunity for students with autism to answer questions about the social behaviors. Effectiveness of the intervention was evaluated based on student engagement in the target behaviors during typical small group classroom activities. If effective, pairing CBI with video models will offer customizable, recyclable (teacher can use the same program repeatedly for students with the same needs), engaging, and efficient strategy for teachers of students with autism to use to deliver social skill instruction.

Method

Participants

Four students enrolled in an urban elementary school program for learners with autism participated. Students spent part of their day engaging in curricular activities housed within the special education classroom and part of their day participating in general education classes with peers of the same age. Curriculum emphasized pre-academic, functional and social skills. The teacher presented most activities and instruction in small group formats, occasionally using a one-on-one instructional arrangement to meet diverse needs of her students. In addition to the participants, two general education peers acted as models for the video used in the computer-based instructional program. These peers who served as video models were enrolled in first and second grade general education classes.

Isaiah was 5-years-old and was diagnosed with moderate autism and severe speech and language delay. He had little spoken language except for echolalia. Isaiah’s primary placement was in a class for students with autism and he participated in inclusion activities with a general education kindergarten class. While he usually followed simple verbal directions, he required frequent prompting to complete a task. Typically Isaiah did not initiate the greeting of others or share items. During large and small group instruction he needed adult assistance to follow instructions. He often required hand-over-hand instruction to complete tasks such as writing and basic arithmetic using a calculator. Because he often engaged in self-stimulatory behavior such as spinning, pencil tapping, and hand-flapping, Isaiah required frequent attentional cues to engage in activities. While he could use a mouse to independently manipulate computer programs, adult attention was essential to keep him on task.

Hannah was a 5-year-old student diagnosed with mild autism and a speech delay. Her primary placement was a self-contained classroom for students with autism; however, she was mainstreamed for all special activities with her same-age peers in a general education kindergarten class. Hannah followed directions and participated in activities with few adult prompts. In one-on-one situations she demonstrated some of the social skills targeted in this study, yet she still exhibited deficits in larger group settings (e.g., sharing). Hannah spoke to herself aloud and to other students during teacher directions and subsequently disrupted instructional activities. She engaged in distracting behaviors such as playing with her fingers and making faces during large group instruction. In smaller groups her attention was more focused, especially if she was involved in hands-on activities (e.g., counting objects). Hannah worked at a very slow pace and resisted attempts to increase her rate of work. She was able to independently used computer programs manipulating both the keyboard and mouse.

Marcus was a 6-year-old student diagnosed with mild autism with an accompanying mild speech delay. He was served in a self-contained classroom for students with autism and participated in inclusion activities with his same-age peers in a first grade classroom for music, P.E., art, media and computer activities. Marcus complied with teacher instructions and he participated in all activities that he considered part of his routine. When he was asked to do an activity or follow a direction that was not part of his usual routine he sometimes shouted “No” and “Never.” Teaching staff had to occasionally provide physical guidance for him to complete work or comply with a request. Marcus demonstrated the social skills targeted in this study at low levels prior to the intervention.
cus learned new material well with multiple presentations. He was able to independently use computer programs by manipulating the keyboard and mouse.

Kia was a 6-year-old student primarily served in a self-contained classroom for students with autism. As with the other participants, she partook in special activities with her peer group in a first grade class. Kia was diagnosed with moderate autism, which manifest in a severe speech and language delay. While she made attempts to speak, her speech was often unintelligible. Kia demonstrated two of the social skills targeted in this study (e.g., sharing and following directions), however her performance of these behaviors was not independent, as she required verbal prompts to complete these tasks. Generally she worked well in classroom activities, however, she would tantrum (crying and screaming for more than 30 s) if her routine was disrupted or if she was asked to engage in an activity with which she was not accustomed. Kia would also cry when she did not earn a privilege that other students had earned. She was able to use keyboard and mouse to control computer programs.

Settings

Baseline and treatment sessions were conducted in the special education classroom where each participant was enrolled for the majority of the day. Each student interacted independently each day for 30 min with the computer-based program that presented the video models. They worked with the program while the computer was situated in a study carrel to reduce distraction. This situation also kept the other participants from previewing the software prior to their treatment phase. The teacher sat next to each participant when they were engaging the computer-based program and used only minimal verbal directions necessary to keep them on task or to provide them with help navigating the program if needed.

Data gathered to determine effectiveness of the treatment occurred during three small-group activities that included only the four target students. Activities presented to the students during these segments were reading, math, and arts/crafts respectively. All activities took place at a kidney shaped table with students sitting around one side of the table and the teacher sitting directly across from them. During the three small group activities each target student had four opportunities to engage in sharing, greeting others and following teacher directions. The primary and reliability observers were situated at opposite ends of the classroom with a clear view of each student to enhance data collection.

Materials and Models

Computer and software. A PowerMac 5300 was used to present the computer-based instruction with embedded video models. HyperStudio 3.2 (Robert Wagner Publishing, Inc, 1993-98), a presentation software program, was used to develop the instructional program. HyperStudio was chosen because it is commonly found in both special education and general education settings and for its relative ease of use. In addition, it allows teachers to embed video and other multimedia that can be used as models for teaching important skills and concepts. HyperStudio uses the metaphor of stacks (i.e., of note cards) to describe the instructional programs designed by the users.

The stack that was developed for this study consisted of 22 cards. The first card in the stack was a title card that introduced the instruction (e.g., “How to Get Along in School”). The second card in the sequence presented a simple declarative statement about the target behavior in relation to its function (e.g., “One way to get along in school is to share.”). The third card in the sequence presented a short definition in simple language of the target behavior (e.g., “Sharing means to let others use your things.”). Figure 1 is representative of the next four cards in the sequence which each contained video clips of the desired behaviors being demonstrated by the models in structured school activities (e.g., sharing a pencil during a math lesson). The seventh card in the sequence was a summary card that presented the students with still pictures of each of the previously presented video clips. They were then asked to click on each still and watch the embedded movie as an additional chance to view the models.

This same sequence of seven cards was repeated for the other two target behaviors.
(e.g., following directions and greetings). All printed messages for each of the target social skills could also be read to the students using the synthesized speech feature of HyperStudio (i.e., student clicks on the printed message using the mouse and the program phonetically reads the message).

Data collection forms. Data collection forms were designed for two purposes. First, the forms allowed the observers to record whether or not the participants appropriately demonstrated the target behaviors when they were given the opportunity during three daily sessions. For example, during the first session (i.e., a small group arithmetic activity) each participant was given four opportunities each to demonstrate the three target behaviors.

Second, data collection forms also served as the tool for collecting procedural reliability data. During procedural reliability sessions, observers recorded whether the teacher presented each student the opportunity to demonstrate each of the three target behaviors. Essentially, the data collection form served as an opportunity matrix to ensure each student had equal opportunity for responding to each of the three target behaviors.

Peer models and video clips. Two peers of similar age to the participants and without disabilities were used to film the video models depicting appropriate use of the class of social skills (e.g., sharing, greetings, and following directions). The two peers were filmed at the same kidney shaped table located in the classroom where the study was scheduled to take place. The original film of the models engaging in the target behaviors was shot in VHS format. From that original footage, six video models of each of the three target behaviors (18 computer-based movies) were edited and compressed for storage on the computer hard drive. The 18 compressed movies were approximately 4 to 6 s in length and depicted the two peers engaging in appropriate examples of the target behaviors (e.g., sharing a pencil during an academic activity).

Design
A multiple probe design across students was used to assess effects of the computer-based

Figure 1. Screen capture of computer based instructional program.
video models on the target social skills (Cooper, Heron, & Heward, 1987). Baseline data were collected for each participant over a minimum of three days dependent upon the length of time needed to develop a trend in the data. The treatment was conducted daily and applied sequentially across participants once students were exposed to the computer-based intervention for a minimum of one week. In addition, treatment was introduced to each student subsequent on the previous student demonstrating a significant change in trend and or level of their performance of the target behavior.

Procedure

Students participated in one session for each day during baseline and treatment phases. These daily sessions consisted of 36 trials distributed over the course of the day, with 12 trials occurring in a 45-min morning activity, followed by 12 trials in an activity occurring after lunch, and the final 12 trials occurring in an activity prior to the end of the school day. All baseline and treatment sessions were video taped for analysis.

Collection of video. Two children without disabilities acted as models and were video taped performing the desired behaviors in structured activities that were similar to the activities that the participants engaged in during the baseline and treatment phases. Social scripts were written for each of the three behaviors and these behaviors were demonstrated by the models as part of the each of the three activities that were targeted for the study (e.g., arithmetic, reading and arts/crafts).

Baseline and probe data. Baseline data were gathered daily for each student. Prior to each of the participants (two through four) beginning the treatment phase, probe data were gathered for a minimum of three days to determine the stability of their baseline. The baseline for each participant consisted of data gathered during all three daily activities.

Intervention. The computer-based intervention provided the participants video examples of the three social skills as demonstrated in context (e.g., reading activities) by the models. For each target skill participants had access to four video examples and one additional opportunity to review all the examples at one time (see Materials section for a complete description of the computer-based program). During intervention the participant sat in a study carrel that included the computer and, if needed, the teacher provided verbal directions for navigating through the program. No other instructional procedures were applied outside of the computer-based intervention.

During each activity students were given four opportunities to do each social behavior. Since a behavior by one student inadvertently provided a prompt for the same behavior in other students the teacher used an opportunity matrix to ensure that each session the teacher randomly began the opportunities for each behavior with a different student. The classroom co-teachers checked video taped segments of opportunities to ensure that the matrix was followed and each student was given an equal opportunity for unprompted responses, as a component of procedural reliability.

Dependent Measures and Data Collection

The social skills that were measured were complying with teacher direction, sharing, and use of appropriate social vocabulary. Operational definitions were developed by video taping the interactions of the class. Co-teachers in the class watched the video and documented examples and non-examples of the behaviors to develop the definitions. These were definitions that the observers and data collectors used to record the occurrence or nonoccurrence of the behaviors.

Complying with Teacher Directions: The student will do what the teacher asks the student to do within 15 s of the request. The most frequent requests were to check your schedule, get your materials, begin your work, and return your materials and work.

Greeting Others: The student will initiate a greeting to other students and teachers they encounter in the session. At the beginning of each session the students are expected to greet each member of the group. A wide variety of greetings will be accepted, for example, a wave or saying “Good Morning” will be considered a greeting. However, it is necessary that the student acknowledges
and greets each member of the group individually.

Sharing Materials: The student will allow other students to use the one set of materials allotted for the activity. Each student will need to share one set of materials including a pencil, scissors, glue, and a worksheet with each of the other students in order to complete their work. The student who is in possession of the materials will be asked to share by the other students, as all the students can verbalize the word share and are accustomed to this procedure.

Students had the four structured opportunities to engage in these behaviors three times a day. These times were reading class, math class, and arts and crafts. This allowed for 12 opportunities for each behavior and 36 total opportunities for any desired behavior to take place during the day.

The independent variable was the computer based instructional program to which each student received access. The instructional program allowed each student exposure to the definition of the desired behaviors and access to video clips demonstrating the behavior. It also allowed students to identify examples of the desired behavior. Data were taken each day a week on each student involved with the computer based instructional program using the data collection sheets. The classroom co-teachers took data from video taped segments of the structured activities.

Interobserver Agreement

Several reliability measures were taken in the project. Point by point interobserver reliability was calculated to determine if the students actually performed the behaviors (Cooper et al., 1987). The classroom co-teachers watched video segments of the activities and recorded occurrences of the behaviors with a check in the appropriate box and non-occurrences of the behavior with an X in the appropriate box. The number of agreements between the co-teachers was divided by the total number of opportunities for the behavior to occur (36) and multiplied by 100. Procedural reliability was also checked to ensure that the opportunity matrix was followed and each student had an equal opportunity for unprompted response. The co-teacher viewed the video taped segments to ensure that the matrix was followed.

Results

Reliability

Interobserver reliability was collected in 30% of the probe sessions (once per week) and in 40% of treatment sessions (twice per week). During probe sessions, interobserver agreement for occurrence of the target behaviors was 97.2%. During treatment sessions, interobserver agreement was 100%. Procedural reliability was calculated to ensure that the opportunity matrix was followed. This matrix made sure that each student had equal opportunities to respond during the first trial for each behavior. Procedural reliability as judged by adherence to the matrix was 100%.

Computer Based Instructional Program

All students showed increases from baseline to treatment in their unprompted engagement in the social skills. Figure 2 shows aggregated data of all target behaviors and Figure 3 separates the behaviors to illustrate the individual patterns of performance. The study lasted a total of 24 consecutive school days.

Isaiah showed the lowest frequency of the target behaviors during baseline conditions. When the instructional program was introduced the overall frequency of unprompted social behaviors made a dramatic increase (see Figure 2). The frequency of behaviors continued to rise steadily over the weeks he participated in the program. Overall frequency of the behaviors increased to 35 times during the last day of the treatment condition from an average of 8.6 times during baseline conditions. The largest gains from baseline to completion of intervention were in greetings; this was the area in which Isaiah performed the lowest (see Figure 3). Engagement in sharing made an immediate increase in level from a high during baseline of four opportunities out of 12 to 7 opportunities out of 12.

Hannah’s frequency of engagement in the target behaviors during baseline conditions accelerated from 15 to 22 occurrences with a mean of 18.8 occurrences before the introduction of the intervention. The frequency
with which Hannah performed the behaviors during interaction with the computer based instructional program increased from baseline levels. However, the data does not show a sudden increase with the introduction of the program. Upon introduction of intervention, her levels of following directions increased from 6 opportunities out of 12 to 8, sharing

Figure 2. Aggregated data of performance on the target behaviors.
increased from 8 to 10 and greetings decreased from 8 to 7. Overall, at the conclusion of 15 intervention sessions, Hannah was performing each of the targeted behaviors for 100% of the available opportunities. Marcus showed stable data during baseline...
conditions with high levels of social skill performance in greetings and to a lesser extent sharing. With the introduction of the computer based instructional program his frequency of engagement in the target behaviors increased suddenly with his engagement in sharing representing the largest increase. The increasing trend continued while he interacted with the instructional program but he only achieved maximal performance on greeting and sharing. On the final day of the study, Marcus performed 35 of the target behaviors out of the 36 preset opportunities.

Kia exhibited a similar trend in frequency of target behaviors. Here data show a stable baseline and then, upon introduction of the computer based instructional program, her frequency of engagement in the target behaviors significantly increased and continued to rise throughout treatment. Like Marcus she exhibited high levels of unprompted greeting prior to the intervention. During the last two days of treatment Kia performed 34 target behaviors out of 36 opportunities. Her largest gains were with sharing, from highs of 4 out of 12 opportunities during baseline to highs of 10 during intervention, and following directions, with highs of 5 of 12 opportunities during baseline to 10 of 12 during intervention.

Discussion

Design and data of this study suggest several implications for future research and evaluation of computer based software programs with embedded video. Though each student increased number of desired behaviors they performed in the contrived settings a few factors should be considered when interpreting these results. Data for some students accelerated through baseline. Some students already had some of the behaviors in their behavioral repertoire. Additionally, the study did not control for observational learning that could have occurred during the table-top activities.

When interpreting results of the present study, consideration must be given to Hannah’s increasing trend in baseline data. The other three students showed stable baseline patterns. However, Hannah’s baseline data began to rise in baseline and continued to increase during the intervention stage of the study. The increasing trend signals possible threats to internal validity and the increase in Hannah’s performance might be attributable to maturation, intervention or some other unidentified variable. This data does not imply a functional relationship between the dependent and independent variables for Hannah. However, each of the other participants had stable baseline data and showed sudden and significant increases in the target behavior after introduction of the intervention thus demonstrating experimental control.

Looking at all participants, baseline data indicated that each student could perform the desired behaviors, though not at frequency levels commensurate with criterion of the study. This fact decreased the potential of this study to demonstrate large changes in student behavior. Kia, for example, was already performing the greeting skill on 10 out of 12 occasions. The artificial ceiling imposed by the number of opportunities to perform the target skill reduced the likelihood that this intervention would be capable of demonstrating a powerful relationship between the computer based video instruction and Kia’s greeting behavior.

While replicating earlier research demonstrating video is effective instructional supplement for increasing student competence with particular social conventions (Charlop-Christy et al., 2000; Charlop & Milstein, 1989; Ogletree & Fischer, 1995; Sherer et al., 2001; Taylor, Levin, & Jasper, 1999; Thiemann & Goldstein, 2001), future research should examine use of video to teach new social behaviors that students do not have in their repertoire at the beginning of the study. Additionally, researchers should evaluate the potency of video paired with computer based anchored instruction to strengthen existing behaviors and teach novel social responses. Related to these concerns, comparing the frequency levels of the student engagement in the target social skills to normative samples of the behavior of students without disabilities would extend social validity of the effects of treatment.

Considering the issue of social validity and nearing the social skill levels of peers without disabilities, one should consider the efficacy of expecting students with disabilities to learn social skills in self-contained or segregated settings. This study demonstrated that these students with autism could learn social skills from video of their peers. While Charlop-Christy et al. (2000) attempted to compare the effective-
ness of video to in vivo instruction of social skills, future implementations may combine targeted video training with increased time surrounded in situ by appropriate role models. Thiemann and Goldstein (2001) evaluated effectiveness of peer social skill tutors and the use of video as a self-monitoring component but to date, no research has evaluated the combination of video training (via computer or television) combined with extended time surrounded by peer role models.

Discussion of peer role models and potential learning opportunities that may arise from that experience underscores another potential threat to the internal validity of this study. With a multiple probe design across participants, some participants receive intervention before others. In this study, those students receiving intervention and improving their social skills proficiency participated along side those students not receiving intervention. With this arrangement, the possibility exists that the students not receiving intervention had the opportunity for observational learning by watching those students receiving intervention. Baseline probes for Marcus and Kia just prior to introduction of the intervention, do not support this possibility since for both students their baseline data were stable across the entire condition; however Hannah’s slight increase suggests that she may have been learning the behaviors observationally or from some other source. Researchers should consider using multiple probes across behaviors replicated across students (or settings depending on the target skills), in an effort to begin intervention with all students as soon as possible and guard against threats to internal validity resulting from observational learning for student’s not engaged in intervention.

Two final considerations for this study include examination of maintenance and generalization of social skills. Because of time restrictions, data were not collected to evaluate the durability of treatment effects over time. This data would be important to determine if the frequency of desired behaviors remained at high levels after discontinuation of interaction with the computer based instructional program. Additionally, this data would reveal whether the natural environmental events would take over stimulus control for the target behaviors. This is an important avenue for future research on computer based anchored instruction as these are critical components of an effective social skills program.

In 1969, Baer, Wolfe, and Risley suggested that one of the desired out comes for applied research is for the result to have generality. In the case of this study and research in this area, the generalization of the targeted behaviors across activities, people and environments beyond those used for training purposes would enhance value of the results. The research base on autism and instruction with video does not offer much insight into generality of social skills learned via video based instruction. Similar to this study, measures are frequently taken in contrived situations that attempt to mirror real life events. Though this was not the purpose of the study, a measure of generalization to different environments would strengthen argument for the effectiveness and efficiency of computer based anchored instruction as a means to teaching social skills.

Overall, data demonstrated that computer based anchored instruction was effective in increasing this frequency for at least three out of the four participants. Behavioral processes through which the students acquired the target behavior are difficult to pinpoint; however, as the video may serve as an establishing operation for the target behaviors. These findings confirm previous research that instruction anchored in a real life context creates significant behavior changes and that peers without disabilities can serve as appropriate models for students with disabilities.

References


Received: 23 April 2003  
Initial Acceptance: 1 June 2003  
Final Acceptance: 6 August 2003
Comparison of Two Approaches for Identifying Reinforcers in Teaching Figure Coloring to Students with Down Syndrome

Dilek Erbas, Arzu Ozen, and Cimen Acar
Anadolu University

Abstract: The purpose of the present study was to extend previous research on reinforcer assessment by comparing effectiveness of stimuli identified by two preference procedures on teaching figure coloring to three children with disabilities in Turkey; and to find out what special education teachers think about social validation of the two preference assessment procedures. In Phase 1, preferences of three students with Down syndrome were identified by using two assessment procedures. In Phase 2, reinforcing effects of the most often selected stimuli both from the stimulus preference and paired-stimulus preference assessments were evaluated. In Phase 3, special education teachers’ opinions about the two preference assessment procedures were determined. Results reveal that both preference assessment procedures were effective in identifying reinforcing stimuli for all three students with Down syndrome. Moreover, both procedures were found to be acceptable to some extent; however, results showed that the paired stimulus was more acceptable than the stimulus preference procedure.

Several studies that aimed to identify the reinforcing stimuli to be used in the education of individuals with disabilities have been conducted over the last two decades (e.g., DeLeon & Iwata, 1996; Fisher, Piazza, Bowman, Hagopian, Owens, & Slevin, 1992; and Pace, Ivancic, Edwards, Iwata, & Page, 1985). A review of literature yields that various procedures have been utilized to determine the stimuli. Stimulus preference (Pace et al.) and paired stimulus preference assessments (Fisher et al.) are the most frequently used stimuli identifying procedures.

Literature indicates that techniques that are going to be used to identify the preferred reinforcers should consist of two steps (e.g., Fisher et al., 1992; and Pace et al., 1985). The first step is to try to determine if a variety of stimuli are preferred by the student or not; in the second step, the goal is to figure out if the identified stimuli serve as reinforcers or not. Pace et al. developed a procedure to test if the stimuli functioned as reinforcers. In the first phase of this study, preference assessment was conducted by providing each of 16 stimuli ten times. All approach responses of subjects to each stimulus were recorded. If the subject displayed approach response to the stimulus within 5 s, s/he was allowed to enjoy the stimulus for 5 s. On the contrary, if the subject did not show an approach response for the given stimulus, then s/he was verbally prompted to touch the stimulus. At the end of assessment procedure, stimuli were recorded as preferred or non-preferred if the given stimuli were attractive to the subjects among 80% and 50% or less of all the presentations respectively. Results of this procedure revealed that preference assessment was efficient in determining the preferred stimuli for all subjects. In the second phase of this study, preferred stimuli were assessed for their efficacy as reinforcers. Outcomes of this phase indicated that contingent presentation of the preferred stimuli increased subjects’ responses compared to baseline and non-preferred conditions. Conducting this study, Pace et al. developed a simple but effective method to identify reinforcers for individuals with profound developmental delays. Also, this procedure was easy, time effi-
cient (2 hrs per subject), and economical (Pace et al.).

Fisher et al. (1992) extended the findings of Pace et al. (1985) by comparing results of a single stimulus and a choice presentation format. In this study, 16 stimuli were paired and then presented during assessment. Subject’s approach response to either stimulus was recorded. The subject was allowed to engage with the stimulus to which they displayed an approach response for five seconds. The subject was stopped if they approached the two stimuli simultaneously or was verbally prompted upon displaying no approach response for any of the stimuli for five seconds. If the subject did not show any interest in any of the stimuli, then the stimulus pair was removed and the next pair was presented. A concurrent operant paradigm was used to compare the reinforcing effectiveness of the stimuli in the second phase of the study. Outcomes stated that all subjects spent more time in the square or the chair when the trial consisted of the high-high stimuli. Therefore, paired evaluation of the stimuli revealed greater differentiation among the stimuli and foreshaw which stimulus would work as a reinforcer more accurately when assessed in a concurrent operant arrangement.

Different variations of the procedure developed by Pace et al. (1985) and Fisher et al. (1992) have been developed and tested for their efficacy in several studies (e.g., DeLeon & Iwata, 1996; Roane, Vollmer, Ringdahl, & Marcus, 1998; and Windsor, Piche, & Locke, 1994). Furthermore, effectiveness of identified reinforcers was determined by using simple operant free behavior (e.g., in square or in seat behavior, switch pressing, key pecking) in most of the studies (e.g., Fisher et al.; and Pace et al.). Of course, this does not necessarily mean that the stimulus determined as preferred by making use of the concurrent operant paradigm with a simple free operant response will have the same function as a reinforcer in more complicated and clinically pertinent responses. Conversely, the stimulus found to be non-or-less preferred will be no good as a reinforcer when evaluated on a single operant paradigm (Piazza, Fisher, Hagopian, Bowman, & Toole, 1996). Therefore, the aim of this study is to judge which stimuli, identified by using two different reinforcer assessment methods, are more effective in teaching consecutive behaviors by extending the studies utilizing the concurrent operant paradigm. Furthermore, acceptability of assessments and interventions has become a topic of interest to applied behavior analysts under the term of social validation. However, no single study was found on the opinions and ideas of practitioners about the social validation of reinforcer assessment procedures. Yet, reinforcers are the most frequently used procedures in the training of individuals with disabilities. Thus, it is extremely valuable to know the opinions of the practitioners about such a frequently utilized procedure. In addition, it is hoped that striving to identify reinforcers in Turkey will be a way of evaluating efficacy of reinforcer identifying procedures under Turkey’s conditions. Therefore, the purpose of this study was twofold: first, to extend previous research on reinforcer assessment by comparing effectiveness of stimuli identified by two methods on teaching figure coloring to three children with disabilities in Turkey; and second, to determine opinions of special education teachers about two preference assessment procedures.

**Phase 1: Preference Assessments**

**Method**

The purpose of Phase 1 was to identify participants’ preferences by using two assessment procedures (paired-stimulus and stimulus preference assessment procedures).

**Participants**

Participants were three preschool children in a self-contained classroom at a school for students with disabilities. Their diagnoses were Down syndrome. Participants demonstrated at least one voluntary measurable behavior such as touching, looking at, and holding—used to indicate approach to various stimuli. All participants had the necessary gross and fine skills for coloring. Physical examinations demonstrated that both auditory and visual skills of participants were within normal limits. Before starting the study, parents of participants were informed about the study and written
permission was obtained for their child’s participation. Real names of the participants were replaced with pseudonyms during reporting.

Murat was a 5-year-old boy who was ambulatory and nonverbal, but he was learning several basic signs, such as “go,” and “up.” He responded to one step simple commands (e.g., “look”, “write”, “come”). He showed excitement by laughing and clapping. He could turn his head toward the sound when his name was called. He could not take care of daily living skills such as toileting, dressing, or taking a shower independently. He was working on feeding himself with finger foods. He had a few leisure skills, such as watching TV and listening to music.

Can was a 6-year-old boy. He was ambulatory, and had well-developed receptive and expressive language skills.

Mert was a 5-year-old boy. He understood two-step commands that occurred frequently in his daily routine. He was ambulatory, able to follow simple commands, and communicated through gestures and some functional words (i.e., water, food, come, go). Mert and Can could meet their daily needs independently.

Setting

Sessions were conducted in the subjects’ self-contained classroom measuring 3 m by 3 m, with an observation mirror on one of the walls. The room contained six tables and ten chairs facing each other and a variety of toys and educational materials. Individually identified stimuli were in plastic containers that could not be seen by participants.

All sessions were videotaped. A certified special education teacher conducted all sessions with the participants. Independent data collectors, working as teaching assistants at Anadolu University, collected inter-observer agreement and procedural reliability data.

All assessment sessions lasted between 10 and 15 min depending on responsiveness of participants. Sessions were conducted two times a day, two to four days a week, as individual schedules permitted.

Stimuli

Ten of the same edible and leisure (i.e., toys) stimuli were selected for each participant. Criteria for the selection of stimuli were availability within their environment, age-appropriateness, and ease of presentation. Stimuli selected according to results of the interviews with and observations of each participant were a ball, child’s telephone, car, baby doll, child’s iron, pretend/role play, biscuit, chocolate, legos, and a truck. Stimuli used during the assessments were not delivered to participants in other training programs in the participants’ school.

Data Collection and Reliability

The recording system selected for this phase was discrete categorization (Kazdin, 1982). It was used because selection behaviors had discrete beginnings and endings, and could be classified as either performed or not performed. The experimenter recorded whether a selection or non-selection response to the stimulus occurred in each trial. Selection was defined as the participant moving toward the stimulus with hand or arm, touching it, or holding it with both hands or one hand within 10 s. Non-selection was defined as the absence of holding, touching within 10 seconds, pushing the stimuli away, and turning his/her head away from the stimulus. Data were collected on selection responses for each stimulus in each trial during paired-stimulus preference and stimulus preference assessments. Percentages of selection response trials were calculated for each stimulus by dividing the number of selected stimuli trials by number of trials in which that stimulus was presented and multiplying by 100 (Hagopian, Rush, Lewin, & Long, 2001).

Reliability was conducted across paired stimulus preference and stimulus preference assessments by using the point-by-point method. A second observer collected data independently during an average of 40% of the trials. If both observers recorded a behavior as nonselection or as a selection during the same trial, an agreement was recorded. On the other hand, if one observer recorded a behavior as selection and the other did not, a disagreement was recorded, and vice versa. Inter-observer agreement was calculated by dividing agreements by agreement plus disagreements and multiplying by 100 (Kazdin, 1982). Mean percentage of agreement across subjects was
99.8% (range 97.8%-100%) during stimulus preference assessment, and 97.4% (range 96.9%-100%) during paired stimulus preference method.

Procedural reliability data were also collected to make sure that the two procedures—used to identify the preferred stimuli of the participants—were administered by the experimenter equally and reliably. To collect procedural reliability data, 40% of the videos used to record both assessment procedures were selected randomly. Procedural reliability data were collected by using a Procedural Reliability Data Record Sheet that contained all steps of both procedures. Watching the videos, observers recorded which steps the experimenter fulfilled and which one(s) the experimenter missed. Then, procedural reliability was calculated by dividing the number of occurrences for each step across all sessions by the number of occurrences plus non-occurrences, and multiplying by 100 (Billingsley, White, & Munson, 1980). Mean percent agreement on interobserver reliability was 98% (range 97.60%-100%) across all subjects during paired-stimulus preference assessment, and 96% (range 95.54%-99.75%) across all subjects during stimulus preference assessment. Mean percent agreement on procedural reliability was 100% across all subjects during both preference assessments.

**Procedure**

Prior to Phase 1, interviews and direct observations were conducted with each participant to identify potential stimuli. Using an interview form, the participants’ teacher and parents were queried about what he liked, what objects he preferred, and what activities he enjoyed getting involved in. The form consisted of four domains: edibles, tactiles, socials, and activities. Each domain had at least 10 items. Following the interview, parents were asked to rank the stimuli generated from the interview form according to their predictions regarding child preference. Based on responses from the interview, 10-15 potentially preferred stimuli were identified for each subject (see Table 1).

Following the interviews, direct observations of participants were conducted while participants were in the classroom. Participants were observed during 10 min sessions at various times for two days. During the observation time, he was engaged with different items. Results of observations showed that 10 potentially-preferred stimuli could be used. Eight of the stimuli were the same items identified by the parents during interviews (see Table 2).

In the first phase of the study, paired-stimulus preference and stimulus preference assessments were held. In the paired-stimulus method, preference for 10 stimuli was assessed using procedures described by Fisher et al. (1992). During the paired-stimulus method, each item was paired with all other items at least once. Afterwards, the participant was presented with randomized pairs of items 5 cm apart from each other and on a table approximately 0.5 m in front of the participant. After the participant’s attention was secured, he was asked to select the one he wanted. When the participant touched or consumed one of the two items within 10 s every time it was presented, the response was recorded as a selection and the other stimulus was removed. Then, the participant was allowed to access the stimulus for 30 s. Attempts to approach, touch or hold both stimuli were immediately stopped. If the participant did not approach either stimulus within 10 s, the experimenter removed both stimuli, recorded it as a non-selection, and initiated a new trial. The experimenter waited 15 s between presentations of different stimuli.

### Table 1

<table>
<thead>
<tr>
<th>Participants</th>
<th>Preferred Stimuli</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murat</td>
<td>Bubbles, singing, pencil, music, star, fruit, juice, popcorn, puzzle, pizza, candy, chocolate, wagon, mirror, baby doll.</td>
</tr>
<tr>
<td>Can</td>
<td>Kosh ball, bingo, crayons, banana, play dough, magazine, soda, doritos, musical toy, ball, turtle, chocolate.</td>
</tr>
<tr>
<td>Mert</td>
<td>Book, bingo, puzzle, plastic turtle, X-men, pizza, soda, chocolate, play dough, pencil, computer, baby doll.</td>
</tr>
</tbody>
</table>
In the stimulus preference assessment, the same 10 stimuli presented during paired stimulus method were also assessed using stimulus preference assessment based on procedures described by Pace et al. (1985). During the study, the same 10 stimuli were individually presented ten times each in counterbalanced order. In each session, one stimulus was placed on a table approximately 0.5 meters in front of the participant. If the participant approached the item, this resulted in access to the stimulus for 5 s. If the participant did not approach a stimulus after 5 s, the experimenter removed the stimuli. For example, a session would begin by placing a child’s phone in front of the participant. If the participant approached, touched or held the child’s phone, the child’s phone was activated for 5 s. If there was no approach, touch or holding, the experimenter removed the stimuli and initiated a new session. The experimenter waited 15 s between presentations of different stimuli.

The preference hierarchy from both paired-stimulus preference and stimulus preference assessments was developed by ranking stimuli based on average percentage of trials during which selection response occurred across the trials. Stimuli selected in 85% or more of the trials were used in Phase 2.

Results and Discussion

Figure 1 shows results obtained from the two preference assessment procedures as percentage of trials on which selection responses were observed for each participant. All participants were very responsive for 60% or more of the stimuli under paired-stimulus preference assessment, except for Murat. However, they were generally unresponsive, selecting only half of the assessment stimuli in 50% or less of the trials during stimulus preference assessment. But, Murat’s selection responses were higher during stimulus preference assessment than paired stimulus preference. In other words, Mert, Can, and Murat, displayed a high level of selection for six, five, and four of ten stimuli respectively during paired stimulus preference assessment. Edible stimulus was found to be the most often selected preference for all three subjects during both of the preference assessment procedures.

Based on results of Phase 1, it is possible to conclude that both assessment procedures were able to identify preferred stimuli for all participants. As demonstrated in Phase 1, all participants differentially selected the stimuli. Data also support previous research that suggested that patterns of responding were idiosyncratic across the participants (e.g., Fisher et al., 1992; and Pace et al. 1985). For example, a baby doll could serve as a reinforcer for participant one, but not for the other participants. Furthermore, participants preferred the same stimuli equally in both assessment procedures. Paired stimulus preference assessment also identified several stimuli as preferred that were not identified through stimulus preference. These results show that preference responses of the participants increased if they were given choices, except for Murat. In other words, paired stimulus preference expanded the selection behaviors of the participants compared to stimulus preference. Furthermore, personal control and dignity were developed by the participants because they were given opportunity to make decisions with the paired stimulus preference assessment (Dunlap, DePerczel, Clarke, Wilson, White, & Gomez, 1994).

Hagopian et al. (2001) stated that the main disadvantage of the stimulus preference procedure is that some individuals may approach all of the stimuli presented, which restricts the range of relative preference identified via the assessment. Results of the current study are consistent with this study, and reveal that Murat displayed the same pattern of responding.

### Table 2

List of Potential Reinforcers for Participants Based on Direct Observations Results

<table>
<thead>
<tr>
<th>Participants</th>
<th>Preferred Stimuli</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murat</td>
<td>Singing, fruit, juice, popcorn, puzzle, pizza, candy, chocolate, baby doll, child’s phone, ball, truck.</td>
</tr>
<tr>
<td>Can</td>
<td>Bingo, crayons, banana, soda, doritos, ball, turtle, chocolate, car, truck, legos, biscuit, baby doll.</td>
</tr>
<tr>
<td>Mert</td>
<td>Book, bingo, puzzle, X-men, soda, chocolate, play dough, computer, legos, pretend play.</td>
</tr>
</tbody>
</table>

In the stimulus preference assessment, the same 10 stimuli presented during paired stimulus method were also assessed using stimulus preference assessment based on procedures described by Pace et al. (1985). During the study, the same 10 stimuli were individually presented ten times each in counterbalanced order. In each session, one stimulus was placed on a table approximately 0.5 meters in front of the participant. If the participant approached the item, this resulted in access to the stimulus for 5 s. If the participant did not approach a stimulus after 5 s, the experimenter removed the stimuli. For example, a session would begin by placing a child’s phone in front of the participant. If the participant approached, touched or held the child’s phone, the child’s phone was activated for 5 s. If there was no approach, touch or holding, the experimenter removed the stimuli and initiated a new session. The experimenter waited 15 s between presentations of different stimuli.

The preference hierarchy from both paired-stimulus preference and stimulus preference assessments was developed by ranking stimuli based on average percentage of trials during which selection response occurred across the trials. Stimuli selected in 85% or more of the trials were used in Phase 2.
Figure 1. Percentage of selection responses during paired stimulus and stimulus preference assessments for Murat, Can, and Mert.
when being administered the stimulus preference method.

The most suitable stimuli for participants were identified by interviewing parents and teachers in the first phase of the first step of this study. When the stimuli determined according to the observation and interview results were compared with the ones identified by using both preference assessment procedures, no relation could be found between them. Similar to the results obtained by Green, Reid, Canipe, and Gardner (1991) and Green, Reid, White, Halford, Brittain, and Gardner (1988), results of the current study show that the stimuli ranking determined according to the outcomes of interviews with parents and direct observations of participants are not the same as the ranking obtained after conducting any of the stimuli identifying methods. Therefore, caregivers nominated items have been shown not to correlate with empirically identified preferred items (Green et al., 1988, 1991).

Preference assessment is a critical step although the data reported by Fisher et al. (1992), Green et al. (1988), and Pace et al. (1985) do indicate that preference does not equate with reinforcer function. Therefore, reinforcing effects of the stimuli must be evaluated in the second step of preference assessment.

**Phase 2: Reinforcer Assessment**

The purpose of this phase was to evaluate reinforcing effects of the most often selected stimuli both from the stimulus preference and paired-stimulus assessment procedures.

**Method**

*Participants and Setting*

Participants, setting, and session schedules were the same as in Phase 1.

*Task*

Target response for each participant was to color a simple figure (e.g., a picture of a rabbit). A coloring task was selected for several reasons. First, a coloring task was functional and age-appropriate for the participants. Second, it was suitable for their motor abilities. Third, it was derived from participant-instructional objectives. Fourth, participants already had some steps of coloring task in their repertoire; therefore, it was easy to differentiate reinforcer effects. If a more complex skill that they did not have in their repertoires had been chosen, it would have been difficult to differentiate between skill deficits and reinforcers ineffectiveness (Piazza et al., 1996). The task of picture coloring was broken down into smaller components (see Table 3).

**Experimental Design**

Adapted alternating treatments design was used to evaluate effectiveness of both reinforcer assessment procedures to teach figure coloring task. During baseline sessions, data were collected at least three times from all participants regarding their figure coloring skills. After baseline was over, two different tests conditions were conducted. In one test condition, the most highly preferred stimuli from paired-stimulus assessment were presented in response to participant’s correct response. In the other test condition, the most highly preferred stimuli from stimulus preference assessment were presented. Participants were exposed to these conditions randomly and order of presentation of these conditions was alternated from one session to another. Thirty minute breaks were given between each condition to help participants discriminate conditions.

Each condition was implemented once a day with each participant, in the morning and

**Table 3**

<table>
<thead>
<tr>
<th>Task Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Figure Coloring</strong></td>
</tr>
<tr>
<td>1. Picking up markers or paint brush from the table.</td>
</tr>
<tr>
<td>2. Holding the markers or paint brush with hand.</td>
</tr>
<tr>
<td>3. Moving hand and arm with backward and forward movements until all area is colored while keeping marker in contact with the paper.</td>
</tr>
<tr>
<td>4. Staying in the line of the figure.</td>
</tr>
<tr>
<td>5. Putting the markers or paint brush back on the table.</td>
</tr>
</tbody>
</table>
Sessions for each condition were conducted in the same manner with the teacher, materials, pictures, and time constant throughout the study. The only difference between the two sessions involved the stimuli throughout the study. The only difference between the two sessions involved the stimuli throughout the study. The only difference between the two sessions involved the stimuli throughout the study. The only difference between the two sessions involved the stimuli throughout the study. The only difference between the two sessions involved the stimuli through the study. The only difference between the two sessions involved the stimuli through the study. The only difference between the two sessions involved the stimuli through the study. The only difference between the two sessions involved the stimuli through the study. The only difference between the two sessions involved the stimuli through the study. The only difference between the two sessions involved the stimuli through the study. The only difference between the two sessions involved the stimuli through the study. The only difference between the two sessions involved the stimuli through the study. The only difference between the two sessions involved the stimuli through the study. The only difference between the two sessions involved the stimuli through the study. The only difference between the two sessions involved the stimuli through the study. The only difference between the two sessions involved the stimuli through the study. The only difference between the two sessions involved the stimuli through the study. The only difference between the two sessions involved the stimuli through the study. The only difference between the two sessions involved the stimuli through the study. The only difference between the two sessions involved the stimuli through the study. The only difference between the two sessions involved the stimuli through the study. The only difference between the two sessions involved the stimuli through the study. The only difference between the two sessions involved the stimuli through the study. The only difference between the two sessions involved the stimuli through the study. The only difference between the two sessions involved the stimuli through the study.

Data Collection and Reliability

Video recording was used to gather data. Videotapes were then analyzed. During this phase, plus (+) and minus (−) signs were used respectively for correct and incorrect responses. Correct response was defined as independent completion of each step of the task analysis. Incorrect response was defined as the participant completing the step with a prompt or the participant not showing any response. Percentage of correct steps was computed by dividing the number of correct responses by the total number of responses. The result was multiplied by 100 and graphed.

Reliability was conducted across baseline and both test conditions by using the point-by-point method. Two observers collected the data simultaneously but independently. Interobserver agreement was calculated by dividing agreements by agreement plus disagreements and multiplying by 100 (Kazdin, 1982). Mean percent agreement across participants for correct responses was 94.87% (range, 92.30%-96.45%) during baseline, 96.5% for correct responses, 97.8% (range 91.6%-to 100) during stimulus preference condition (the first test condition), and 98.2% (range 93.6%-100%) during paired-stimulus preference condition (the second test condition). Then, procedural reliability was calculated by dividing number of occurrences for each step across all sessions by number of occurrences plus non-occurrences, and multiplying by 100 (Billingsley, et al., 1980). Mean percent agreement on procedural reliability was 100% for baseline and both test conditions across all participants.

Baseline sessions. The task of coloring a simple figure was broken down into smaller components of each skill (see Table 3). Baseline data were collected on all three participants by using each step of the task analysis. During baseline sessions, (a) materials (paper, and painting materials) were placed in front of the participant on a table and verbal cue was given (e.g., “color the picture”), (b) 5 s were allowed for the participant to perform the first step of the task analysis, (c) if the participant responded correctly a “+” was recorded, and the next step of the task analysis was assessed, (d) if the participant responded incorrectly, a “−” was recorded and the step was completed for the participant, and assessment continued with the next step. The same procedures were followed through the task analysis steps. No reinforcement or prompting was given during baseline sessions.

Test conditions. Prior to each condition, the participant was given verbal instructions about contingencies (e.g., “If you color the picture, you’ll get a candy”). In the first condition, the experimenter gave the paper and painting materials to the participant and gave the verbal cue “color the picture.” The experimenter allowed 3 s to complete the first step of the task analysis. If the participant performed the first step correctly, a plus (+) was recorded in the data sheet, and the stimuli identified from paired-stimulus preference assessment were given to the participant. If the participant did not complete the first step of the task analysis within 10 s, physical and verbal prompts were provided (i.e., hand over assistance to the participant by coloring the picture while saying “pick up markers from the table”) to complete the required step of the task analysis. Then, the most preferred stimuli identified from paired-stimulus preference assessment with a verbal reinforcer were given to the participant. The same procedures were used through the task analysis steps.

In the second condition, procedures were the same as in the first condition, except that the most highly preferred stimuli identified from stimulus preference assessment were provided in response to the participant’s correct response.
Results and Discussion

Effects of preferred stimuli from both preference assessment procedures on each participant’s performance of figure coloring are shown in Figure 2. Results show that both preference assessment procedures were effective in identifying reinforcing stimuli for three students with Down syndrome since their performance increased during test conditions relative to baseline condition. However, baseline performances of the subjects were generally high ($M = 52.55$; range of individual means 50% to 54.33%) since participants had the coloring skills in their repertoires. All participants’ correct responses increased following the administration of preferred stimulus identified from both preference assessment procedures ($M = 89.39$, range of individual means 82% to 93.57%). During the first test condition in which the most preferred stimuli identified from paired stimulus preference assessment were delivered, the participants’ performances were high ($M = 92.79$, range of individual means 89% to 93.57%). During the second test condition in which the most preferred stimuli identified from stimulus preference assessment were delivered, the participants’ performances were high as well ($M = 86$, range of individual means 82% to 89%). A comparison of individual performances across test conditions showed that all of their performances exceeded 92.79% under the first condition in which the stimuli identified from paired stimulus assessment were used.

The purpose of this phase was to evaluate the reinforcing effects of the most highly selected stimuli identified from both the stimulus preference assessment and paired-stimulus assessment. Since correct responses were high during first test condition compared to second test condition, it could be concluded that the stimuli identified from paired stimulus assessment were more effective in teaching figure coloring to three participants with Down syndrome compared to the stimuli identified from stimulus preference assessment. Since sessions were conducted before lunch for Murat and Can, it may be logical to state that deprivation increased the effectiveness of edible stimuli (candy and chocolate).

Several limitations need to be acknowledged in the current study. That the participants displayed more correct responses in the first test condition can be attributed to the stimuli they had been given to fulfill the related steps of figure coloring in the second test condition. In other words, the stimuli given in the second test condition to make the participants display correct responses related to coloring skills might have run the risk of affecting the responses the participants produced in the first condition; and this may be the most significant limitation of the present study. Although we tried to counter balance test conditions for this study, it may be concluded that carry over effect (one of the limitations of alternative treatments design) was effect in the second phase of the current study.

The current study also has a potential limitation regarding use of edible stimuli in the preference assessment techniques. The study was conducted in a short time, and edible stimuli were given as small pieces to impede the occurrence of satiation. Therefore, no satiation or eating routine was observed. If it had taken a long time to complete the study, the behavior changes participants displayed in Phase 1 would not have been this high. Thus, prolongation of the study would require a constant evaluation to determine whether the identified stimuli were still preferred or not.

Use of verbal reinforcers together with the preferred stimuli in both test conditions might be another reason that data gathered in test conditions of the second phase were high. Since the preferred stimuli were not the sole cause of participants showing correct responses during teaching of coloring skills, the verbal reinforcers’ potential influence must be taken into consideration when evaluating the current study.

In spite of these limitations, results of the study have some implications for practice and future research. Based on findings of the study, it may be suggested that teachers and practitioners should stop depending on their subjective opinion and start holding systematic preference assessments to determine individual preferences of their students in Turkey. Furthermore, they should also test if the students’ preferences would serve as reinforcers or not.

A second contribution of the current study is application of preference identification pro-
cedures to children with Down syndrome in a natural context (i.e., in their school and during the instructional routines). Considering the criticisms claiming that the target skills were simple and arbitrary in the previous studies (Hagopian et al., 2001; Piazza et al., 1996), the experimenter selected a skill (dependent variable) that typically developing preschool children could produce, and that was in the daily instructional lives of the participants in the current study.

Finally, it is concluded that both of the preference assessment procedures were effective to determine reinforcers that are used to improve the quality of education provided in institutions serving children with disabilities in Turkey.

The target task of this study was already present in the subjects’ repertoire, and this suggests that it is possible to conduct future research assessing effectiveness of the preferred stimuli as reinforcers by choosing a new and functional skill that is not in the participants’ repertoires.

Evaluating whether participants display any problem behavior during preference identification procedures, and which procedures cause more problem behaviors, are other topics of interest for future studies.

Phase Three: Social Validation of Preference Assessment Procedures

The purpose of this phase was to find out what special education teachers participating in the study think and feel about the two preference identification procedures.

Participants

Four special education teachers participated in Phase 3, one conducted the current study and the other three worked in the same school where the current study was conducted. They have been working with students with developmental disabilities for 10 to 14 years. None of them has attended any theoretical or applied workshops about preference assessment procedures, nor have they any knowledge concerning the procedures in question.

Data Collection

A social validation form was used to find out the opinions of the special education teachers who conducted research in this present study. The social validation form consisted of 18 questions. The first nine and the following nine questions of the scale aim to find out how the special education teachers perceive paired stimulus preference assessment and stimulus preference assessment, respectively. The fifth and eighth items of the scale were adapted from another scale developed by Witt and Elliot (1985) to judge acceptability of the behavior changing techniques applied to problem behaviors.

The teacher administering this study was asked to fill out the social validation form at the end of the study. The other three special education teachers watched 20% of the videos of Phase 1 and 2 and filled out the social validation form. Then, answers they gave were analyzed by calculating frequency of the participants’ responses for each item on the form.

Results and Discussion

Findings of the social validity analyses revealed that all four special education teachers stated that they could make use of both the stimulus preference and paired stimulus preference procedures in their classrooms. Moreover, they also added that they might advise other teachers to use one of these techniques. However, teachers said that characteristics of the students and the time limitations of the person who would to administer the preference assessment procedure would dictate which method would be used. Therefore, the availability of more procedures to be used to assess preferences and reinforcers is important.

There is enough evidence providing empirical support for the efficacy of both procedures in the literature about preference as-

---

Figure 2. Percentage of correct responses during baseline, the first test and the second test conditions for Murat, Can, and Mert.
essment, and teachers working in Turkey should be informed about these procedures. Nevertheless, results of the current study present the ideas of four special education teachers. Other special education teachers should be encouraged to contribute their opinions about the procedures to confirm these results. Despite the fact that both procedures were found to be acceptable to some extent, results showed that paired stimulus was more acceptable than stimulus preference. Further research could be done to shed light on factors affecting the teachers’ preferences. These studies might help researchers to make necessary and effective modifications on the procedures to expand their acceptability. Such research can foster the development of procedures that are not only effective but also likely to be applied by the relevant people.

References


Received: 30 April 2003
Initial Acceptance: 6 June 2003
Final Acceptance: 10 September 2003
Abstract: Two persons with severe intellectual disabilities and two persons with profound intellectual disabilities were repeatedly presented with five different pairs of food items. The five pairs of items represented different degrees of preference, from highest to lowest. Happiness indices were monitored from the time that a pair of items was presented until a choice was made. Surprisingly, participants showed very few happiness indices throughout the study, and degree of preference had very little effect on frequency of happiness indices. Questions are raised regarding choice opportunities and indices of happiness as indicators of quality of life.

The degree to which individuals experience happiness is considered an important indicator of their quality of life (Felce & Perry, 1995). In an attempt to develop a valid measure of happiness for individuals with profound mental retardation, Green and Reid (1996) defined happiness as “any facial expression or vocalization typically considered to be an indicator of happiness among people without disabilities, including smiling, laughing, and yelling while smiling.” In a subsequent study Green, Gardner, and Reid (1997) demonstrated that presentation of preferred stimuli (based on prior preference assessments) were consistently accompanied by increased happiness indicators in three persons with profound mental retardation. Choice-making opportunities are also considered an important dimension of quality of life for persons with intellectual disabilities (Lindsey, 1996; Wehmeyer & Schwartz, 1998). Based on the findings of Green et al., we predicted that the provision of highly preferred food items would result in increased happiness in a choice situation with persons with severe and profound intellectual disabilities. We also explored the relationship between frequency of happiness indicators and the degree of preference for one alternative over a second alternative in a two-choice situation.

First, a preference assessment was conducted to rank order each participant’s preference for 12 food items. Next, five pairs of items, representing different degrees of preference, were selected for each participant and presented in a multi-element design. On each trial, happiness indicators were measured from the time that a pair of items was presented until a choice was made.

Method

Participants and Setting

Participants were individuals from the St. Amant Centre, a residential and community training facility for persons with intellectual disabilities. Participant 1 was a 34-year-old female diagnosed with profound intellectual disabilities. Participant 2 was a 31-year-old male diagnosed with severe intellectual disabilities. Participant 3 was a 45-year-old male diagnosed with severe intellectual disabilities. Participant 4 was a 37-year-old male diagnosed with profound intellectual disabilities. All par-
Participants had extremely limited communication ability. Participants were tested in an assessment room at the St. Amant Centre. During testing a participant sat across a table from the experimenter. An additional observer was present during most sessions to conduct reliability assessments.

Preference Assessment

Prior to choice-making assessments, a preference assessment was conducted with each participant using a protocol adapted from research by Mithaug and Hanawalt (1978). Edibles selected for inclusion in the preference assessment were based on: (a) recommendations from caregivers, (b) availability and ease of presentation, and (c) an attempt to include stimuli representing most and least preferred food items. The preference assessment contained 12 different edibles and consisted of 660 trials, which were presented within 20 sessions. Each edible was paired with every other edible 10 times, and participants were given the opportunity to choose one item from every pair. This assessment enabled us to rank order the edibles in terms of their preference level. This information was used to select six food items, namely, the items chosen approximately 95%, 90%, 65%, 35%, 10%, and 5% of the time. These items will be referred to as the highest, high, moderate 1, moderate 2, low, and lowest items respectively. These items were used to form five pairs that would represent five different degrees of preference of one item over another item for a participant. The highest-lowest pair included the food item chosen 95% of the time and the item chosen 5% of the time on the preference assessment. The highest-moderate 1 pair consisted of the item chosen 95% of the time and the item chosen 65% of the time. The highest-high pair consisted of the item chosen 95% of the time and the item chosen 90% of the time. The low-lowest pair consisted of the item chosen 10% of the time and the item chosen 5% of the time. The moderate 2-lowest pair consisted of the item chosen 35% of the time and the item chosen 5% of the time. These five pairs of food items were then presented in subsequent sessions, as described below.

Design

A multi-element design was used. The five pairs of items were presented in counterbalanced order within each session and happiness indicators were measured on each trial. Each session consisted of 20 trials (four trials for each pair of edibles) and 30 sessions were conducted.

Assessment of Choice and Happiness

A session began with the participant seated across a table from the experimenter. A session consisted of 20 trials and required approximately 25 min to complete. The participant was first prompted to sample each member of all five pairs in order to re-familiarize him or her with the food items. All five pairs of edibles were tested within a session, so that each pair of edibles was presented 4 times in one session. During each trial, the tester placed two edibles from one pair in front of a participant and said, “pick one.” The participant then had 10 s to make a choice. If no choice was made within the 10 s, the participant was verbally prompted again to, “pick one.” When an item was chosen, the participant was given praise (e.g., “thanks for picking,” or “good work”). The participant was allowed to consume the chosen item and the non-chosen item was removed.

During the first session, the order of presentation of the pairs was randomly determined with the provision that no pair be presented for more than two consecutive trials. That order was repeated in subsequent sessions. The right-left position of each pair of edibles was counterbalanced across trials.

Happiness was defined as any facial expres-

Figure 1. Total number of happiness indices across preference conditions. The highest-lowest condition consisted of food items chosen 95% and 5% on the preference assessment; the highest-moderate 1 condition, 95% and 65%; the highest-high condition, 95% and 90%; the low-lowest condition, 10% and 5%; and the moderate 2-lowest condition, 35% and 5%.
sion or vocalization that is typically considered an indication of happiness (i.e., smiling, laughing, clapping, Green & Reid, 1996). On every trial in a session, recording of happiness indicators began when the edibles were placed in front of the participant and continued until a choice was made or until 10 s elapsed. During an interval, the occurrence or non-occurrence of a happiness indicator was recorded regardless of the duration or frequency of happiness indicators.

**Reliability**

Percentage of sessions with reliability checks ranged from 40% to 63% across participants. Reliability observations were conducted by the experimenter and an observer who independently recorded choices made by a participant, and happiness indicators that occurred. Regarding happiness indicators, an agreement was recorded if the tester and the observer both recorded an instance of the same happiness indicator (e.g., both the tester and the observer recorded an instance of smiling) during a trial. Conversely, a disagreement was scored if either the experimenter or the observer recorded a happiness indicator as being exhibited and the other recorded that a different or no happiness indicator was exhibited. An interobserver agreement score was calculated by dividing the number of agreements by the number of agreements plus disagreements during that session, and multiplying by 100% (Martin & Pear, 2003). Agreement was 100% across participants for happiness indicators and ranged from 95% to 100% for choices.

In addition, procedural reliability was assessed using a procedural checklist (e.g., presentation of the correct stimulus pair at eye level, edibles in the correct position, examiner said, “pick one,” participant was given 10 s to respond, selected item was given, and the non-chosen item was removed). The experimenter and the observer independently recorded whether each trial was carried out correctly. A trial was defined as an agreement if the tester and the observer both recorded that all the procedural components were delivered correctly; otherwise, it was a disagreement. Procedural reliability agreement was calculated by dividing the number of agreements by the total number of trials (agreements plus disagreements) during that session and multiplying by 100% (Martin & Pear, 2003). Agreements ranged from 95% to 100%.

**Results**

Participant 3 failed to show any happiness indicators throughout the study. Three participants occasionally showed some happiness indicators such as smiling, laughing and clapping (see Figure 1). Participant 1 exhibited happiness in 22 of the 600 (3.7%) opportunities. Participant 2 exhibited happiness in 8 of the 600 (1.3%) opportunities. Participant 4 exhibited happiness in 25 of the 600 (4.2%) opportunities. Happiness indicators were low, even with items with the highest degree of preference (see highest-lowest pairs in Figure 1), during which the most preferred item was chosen an average of 89% of the trials by participants (range of 82% to 96%). Moreover, stimulus pairs that included the most preferred item (i.e., highest-lowest, highest-moderate 1, and highest-high) did not consistently engender the most happiness indices relative to the stimulus pairs with the least preferred item (i.e., low-lowest and moderate 2-lowest pairs). Therefore, happiness indicators did not appear to be related to choice-making consistency nor with any specific stimulus pair.

**Discussion**

We had anticipated that the provision of a choice between a high-preferred food item and a low preferred food item would be correlated with observable happiness indicators. Surprisingly, that occurred neither in an absolute sense nor in comparison to the findings of Green et al. (1997). When the three participants in the study by Green et al. were presented with preferred items based on a preference test, observed happiness indices to the preferred stimuli averaged 79%, 57%, and 56% of the trials respectively. In the present study, on all trials involving the highest preferred food item, Participants 1 through 4 showed happiness indicators on 4%, 2%, 0%, and 4% of the trials respectively. The second finding was that degree of preference between the items on a trial had only a small effect on
frequency of happiness indicators. Participants averaged .03 happiness indicators per trial when presented with a choice between the highest and lowest preferred food items, and .02 happiness indicators per trial when presented with a choice between the low and the lowest preferred food items.

Another finding was that the participants showed slightly more happiness in a previous study (Yu et al., 2002) when presented with a leisure activity (i.e., watching television, listening to music, etc.) chosen by staff with no regard to the preference of the clients, than to the highly preferred food items in the present study. In the previous study, the same participants showed happiness indicators during the leisure activities during 5.1%, 5.2%, 5.3%, and 4.8% of the observed intervals respectively (compared to 4%, 2%, 0%, and 4% in the current study).

Why did the participants in the Green et al. (1997) study show much more happiness than participants in this study? One reason may be that the Green et al. study involved mostly leisure activities and sensory stimulation whereas this study involved edibles. A second possibility is that Green et al. measured happiness when participants were given preferred stimuli whereas this study measured happiness when choices of stimuli were presented. Finally, it is possible that the observation interval in the present study was too brief. Green et al. used 10 s observation intervals, while observation intervals in the current study averaged approximately 5 s because participants generally made a choice quickly following presentation of the stimuli.

The present study suggests that additional research is needed to determine how happiness indices are related to the provision of choices. For example, under what conditions is the provision of choice opportunities reliably correlated with occurrence of happiness indicators? Is the occurrence of happiness indicators at the time that a choice is presented correlated with the occurrence of happiness indicators at a later time when only the preferred item is presented? Are some types of preferred stimuli (e.g., leisure activities) more highly correlated with happiness indicators than other types of preferred stimuli (e.g., food items)?

References

Received: 12 March 2003
Initial Acceptance: 20 April 2003
Final Acceptance: 10 August 2003
Specific Patterns of Cognitive Abilities in Young Children with Mild Mental Retardation

Kathryn L. Fletcher
Ball State University

Marcia S. Scott
University of Miami

Clancy Blair
Pennsylvania State University

Kerry E. Bolger
University of Wisconsin-Madison

Abstract: Whereas a wealth of research has examined cognitive abilities of groups of individuals with mild mental retardation (MMR), less research has investigated potential differences in cognitive performance among individuals with mental retardation (Baumeister, 1997). The present study was an exploratory analysis of variability in performance of children with MMR on a wide range of cognitive tasks. Four-, 5, and 6-year-old children were presented with 10 cognitive tasks designed to tap different underlying processes. Children’s performance on each of these tasks was only moderately correlated with IQ scores. Cluster analysis revealed four clusters of young children with MMR that were differentiated by their patterns of cognitive performance across the 10 tasks. Patterns of cognitive performance are described for each cluster and implications of this research are discussed.

Over the past several decades, researchers have attempted to determine which specific cognitive processing ability is deficient in individuals with mild mental retardation (MMR). Specific areas of cognitive deficits in individuals with MMR that have been proposed include an attention deficit (Zeaman & House, 1963), a short-term memory deficit (Ellis, 1963), and a memory strategy deficit (Belmont & Butterfield, 1971) to name a few. Unfortunately, when compared to individuals without MMR, individuals with MMR demonstrate deficits in almost every type of cognitive task (Dettterman, 1987).

As further evidence for this general cognitive deficit in individuals with MMR, Dettterman et al. (1992) compared individuals with MMR and college students on a battery of nine tasks examining various components of information processing. Of the 31 measures examined, individuals with MMR performed significantly lower than the college students on 24 measures. As well, in a series of studies, Fletcher, Scott, Deuel, and Jean-Francois (1999) found that on 20 different cognitive tasks which required processing abilities such as memory, perception, and conceptual knowledge, 4-, 5- and 6-year-old children with MMR performed more poorly than children without MMR of the same age on every task. These studies, as well as previous decades of research on mental retardation, indicate that there is, thus far, no evidence of a specific deficit associated with mild mental retardation.

Rather than researchers identifying a specific cognitive deficit in individuals with MMR, instead, it is more likely that there are complex interrelations between different components of processing in all individuals, including individuals with MMR (Dettterman et al., 1992). And in fact, the interrelations and/or performance profiles for various cognitive abilities may differ across individuals. There is some evidence that individuals with MMR might also demonstrate different strengthens and weaknesses depending on the cognitive task. Dettterman et al. found that there was greater variability in the performance of indi-
viduals with MMR compared to the college students, with the standard deviations within the group of individuals with MMR sometimes 4 to 5 times larger than for the college students. Fletcher, Huffman, Bray, and Grupe (1998) also found variability in the rate, frequency, and the generalization of strategy use among children with MMR, with a subset of children with MMR exhibiting the same sequence of strategy discovery and use as their same age peers without MMR. Other research has also reported variability in the cognitive performance of individuals with MMR (Baroody, 1986, 1996; Carlin, Soraci, Goldman, & McIlvane, 1995; Naglieri, 1982). Baumeister (1997) has further suggested “...we have repeatedly shown that a group of people with mental retardation exhibit much more inter- and intraindividual variability on dependent measures than so-called ‘normals’” (p. 10). Yet this variability is rarely the focus of specific research questions with comments on the variability observed included merely explaining overall results.

Investigation of individual differences of cognitive performance among individuals with MMR has been largely ignored. In reviewing research on mental retardation, Baumeister (1997) argued that the tendency to consider individuals with MMR as a heterogeneous group has limited the ability to discover individual differences within MMR groups. Methodologies that focus on group means and the comparison of individuals with and without MMR have led to an assumption that individuals with MMR have similar processing deficits (Baumeister, 1997). In a call to broaden research on individuals with MMR, Baumeister states “...emphasis should shift away from nonproductive efforts to decompose and predict IQ, and more toward how individuals process information in different contexts...” (p. 12). Recently, within the discipline of developmental psychology, researchers have begun to emphasize individual differences in the cognitive performance of children of the same age (e.g., Siegler, 1996). Understanding an individual’s unique cognitive strengths and weaknesses is an important endeavor given that education plans must be individualized for each exceptional student (Detterman & Thompson, 1997). Reaching this goal, however, requires a much greater knowledge base on potential individual differences in cognitive abilities of exceptional students. Researchers that have investigated behavioral and cognitive profiles of individuals with different genetic syndromes related to mental retardation have made progress toward this goal (Dyken & Hodapp, 2001). Thus, a greater research focus on individual differences within groups of exceptional students, such as individuals with MMR, is necessary in order to examine potential differences in the patterns of abilities exhibited on different cognitive tasks.

The purpose of the present study was to explore patterns of performance of 4-, 5-, and 6-year-old children with MMR on a variety of cognitive tasks. Cognitive tasks included oddity, relative size, sequencing, oppositional concepts (i.e., in and out), phonological awareness, and conceptual knowledge. These tasks have been used previously to differentiate children with MMR from children without MMR (Deuel, 1997; Scott, Fletcher, & Deuel, 1998). This study represents an exploratory analysis of specific patterns of cognitive performance among children with MMR. Given the exploratory nature of our analysis, our interest is not in establishing “subgroups” of children with MMR per se, but rather to demonstrate that children with MMR within a narrow range of IQ scores (IQ score range = 42 – 73) display different cognitive profiles. Through this analysis, we emphasize the need to examine variability within groups of individuals with developmental disabilities in future research.

The following questions were addressed: a) Do the cognitive tasks examined relate to IQ scores? b) Are there intercorrelations among the cognitive tasks examined? and c) Are there clusters of individuals with MMR that display different patterns of performance over the cognitive tasks examined?

**Method**

**Participants**

The sample described was part of a larger study that included children with MMR, children with learning disabilities (LD), and children without disabilities (Deuel, 1997). For the purposes of this study, we will report information only for the children with MMR and children with LD. The sample was 88, 82
of whom had available IQ scores (Mean ($M$) = 90, Standard Deviation ($SD$) = 22).

There were 27 children classified as MMR. Children were recruited from the same school district and were enrolled in classes for the educable mentally handicapped. The procedure for identifying and classifying children as educable mentally handicapped and learning disabled is described in detail in Scott et al. (1998). IQ data for students with MMR were obtained from computerized school records. IQ scores were available for 23 of the 27 children with MMR and the group had a mean IQ of 63 ($SD = 7.2$; range = 42-73). Only one child had an IQ score below 50. There were 12 females and 15 males and the mean chronological age was 65 months ($SD = 8.4$; range = 49-79). The race/ethnicity distribution was 11 Black/non-Hispanics, 11 White/Hispanic, one White/non-Hispanic and four children included in the “Other” category.

There were 61 children with LD in this sample. IQ data were available for 59 of the 27 children with LD. The mean IQ score was 101 ($SD = 16.3$; range = 80–146). There were 14 females and 47 males and the mean age of the children was 65 months ($SD = 6.6$; range = 52–78 months). The race/ethnicity of this group was six Black/non-Hispanics, 51 White/Hispanics, and three White/non-Hispanics, and one child classified as “Other.”

**Materials and Procedure**

Children were seen individually by one of several testers for a single session. For all but the word meaning task, colored pictures or dots were photocopied onto 35.6 (wide) × 21.6 (high) white paper and a complete set of stimuli was placed into a black legal size binder. Seven tasks required children to simply identify the correct answer (i.e., identification tasks) and three tasks required children to generate the correct response on their own (i.e., generating tasks). All tasks are described below in the order in which they appeared in the screening test.

**Relative size task.** This task consisted of six pages, on each of which appeared a small, medium and large object or picture (e.g., dinosaur). The medium size picture was 1.5 times the size of the small picture and the large picture was 1.5 times the size of the medium size picture. The children were asked to point to the biggest or the littlest picture. The dependent measure was the percentage correct out of six.

**Pointing task.** Children were asked to point to each of six pictures on each of four cards. The children’s pointing sequences were scored 3 (reading order), 2 (systematic), 1 (non-systematic) or 0 (errors committed) and the dependent measure, quality score, was the sum of scores over the four arrays. The dependent measure was total number of points awarded divided by 12, which was the highest score possible.

**Phonological awareness task.** This task consisted of six pages. On each were two items whose labels began with a different sound (e.g., door and book). The testers named each of the pictures and then asked the children, for example, to point to the one that begins with “duh, that starts with duh.” The children were pretrained with a single example. The dependent measure was percent correct out of six.

**Oddity task.** This task consisted of six, three-picture arrays, on each of which were displayed two identical and one different picture. The children were asked to point to the different picture, the one that didn’t belong, that didn’t have a buddy. Incorrect responses were corrected on no more than three arrays but only the first response was scored. The dependent measure was the percentage correct out of six.

**Rhyming task.** There were six pages of stimuli for this task. On each were two pairs of pictures; one picture pair whose names rhymed and the other whose names did not rhyme. One pair appeared on the top of the page over a thick black line that bisected the page horizontally, and the other pair was below that black line. One set of pictures rhymed in English (e.g., man/fan) and another set rhymed in Spanish [e.g., peso (dollar) versus queso (cheese)]. The English labels were one syllable in length and the Spanish names were two syllables. The children were asked to point to the pair whose names sounded the same. There was a single pretraining example for this task. The dependent measure was the percentage correct out of six.

**Sequencing task.** For this task, a horizontal array of colored dots (3 pages) or animals (3 pages) appeared on the top of the page with the last position in the array represented by an
unfilled circle (i.e., dot sequence) or an underlined space (i.e., animal sequence) to indicate a missing item, for example, frog, frog, cow, frog, frog, cow, frog, frog, _______. Three choices were presented at the bottom of the page within a black box. One of the choices was the missing last item from the array (e.g., cow). The children were asked to point to the missing picture, the one that comes next. The testers named all the items in each array, sometimes with the children spontaneously naming them along with the tester, and at the last one, the missing one, the tester gasped and said, “Something is missing. Which comes next (while pointing to the choice array)? Point to the one that is missing.” The dependent measure was the percentage correct out of six.

Oppositional concepts task. For this task, one component of three oppositional concepts (i.e., empty/full, top/bottom, inside/outside) was represented in each of six pictures. Each of the six was shown to the child who was asked, for example, “Is the wagon empty or full?” The same probe was given once to the picture of an empty wagon and again later to the picture of a full wagon. Conceptually appropriate probes were presented for the other two concepts. The dependent measure was the percentage correct out of six.

Taxonomic generation task. There were two categories: body parts and clothing. The testers named the exemplars and asked the children to name more. A maximum of two responses for each of the two categories was imposed and the maximum score attainable was four. If the children merely pointed to a body part or piece of clothing, only 1/2 point was awarded rather than a full point. The dependent measure was the total number of correct category exemplars generated divided by four.

Semantic information task. This was another task that only used two pages. On one was an array of 12 cats and on the other, an array of fruit (e.g., pineapple, watermelon, orange). There were two probes for each set of items. For the cat page, the children were first asked to name the items (cats) and then were asked, “What do they look like?” The testers gave one example (i.e., “They sometimes chase mice.”) Up to two responses were recorded and scored. The maximum number of points for the cat page was four. For the fruit page, probes were, “What can you do with fruit?” and “Where does fruit come from? Where do you get fruit?” No examples were provided for this second array. As before, two responses were scored. The maximum score for the fruit page was also four. The dependent measure was the total number of correct descriptions generated divided by eight.

Word meaning task. Children were asked to tell the tester about an airplane. There were two specific probes (i.e., “What does an airplane do?” and “What does an airplane look like?”). Only the first two responses to each probe were scored. The dependent measure was the total number of descriptions generated divided by four.

All of the children were tested in English except for four White/Hispanic children who were tested in Spanish based on teacher nomination, tester/child discourse, and performance on six simple questions to determine children’s understanding of a specific language. Responses in either English or Spanish were accepted. A tester who was fluent in both English and Spanish administered the battery in Spanish. Greater details for this study regarding sample, procedures and tasks can be found in Deuel (1997).

Results

Correlation of Tasks with IQ

For this analysis, both children with MMR and children with LD were included. Using this total sample of LD and MMR children with IQ scores (N = 82), the range of IQ scores was 42-146 with a mean of 90 (SD = 22). Correlations between IQ and the tasks for this sample were as follows: size (r = .52), oddity (r = .29), sequencing (r = .29), oppositional concepts (r = .47), rhyme (r = .23), phonological awareness (r = .26), pointing (r = .36), taxonomic generation (r = .45), semantic information (r = .44), and word meaning (r = .47). All correlations were significant at p < .05. Interestingly, those tasks requiring either conceptual knowledge (taxonomic generation, semantic information and word meaning) or knowledge of specific concepts such as size
and oppositional concepts (e.g., big vs. little, in vs. out) had the highest correlations with IQ, potentially reflecting underlying verbal skills. Overall, however, these correlations were relatively low, with an average correlation of .38, suggesting that these tasks are measuring cognitive processes that do not greatly overlap with IQ.

Cluster Analysis

To examine the potential clusters of cognitive performance in children with MMR, we employed a hierarchical cluster analysis procedure. Hierarchical methods initially assume that each entity is a cluster, and using some algorithm, combine clusters until all entities have been combined into one cluster. To conduct this analysis, standardized scores were computed for each dependent measure.

To measure dissimilarity among cases, the squared Euclidean distance was used. This distance measure derives values reflecting the sums of squared differences between variables for each pair for all pairwise comparisons. For combining clusters, Ward’s method was employed which combines clusters that will result in the smallest increase in the sums of squares at each step.

Unfortunately, there is no agreement among statisticians and researchers on the best way to determine the number of clusters to interpret (Gore, 2000). Stopping rules are statistically complicated and are not readily available in commonly used statistical software. Because of this, many researchers rely on their inspection of coefficients values (e.g., squared Euclidean distance between the two entities being joined) in the agglomeration schedule. Researchers consider the points at which a “jump” is present in the coefficient values as a signal that heterogeneous clusters are being combined. For the present cluster analysis, examination of the coefficients revealed that a five-cluster solution was appropriate (see Table 1). A five-cluster solution resulted in a cluster containing only one case, therefore, it was decided that a four-cluster solution would be more appropriate than the five-cluster solution.

Patterns of performance on the 10 tasks are displayed for four clusters in Figure 1. In addition, Table 2 presents the mean percent correct scores and SDs for each task for each of the four clusters. With these data, we can begin to discuss the cognitive profiles of the children within the four clusters.

Cluster 1. This group contained six children. In general, the performance of these children was good across all tasks compared to their peers with MMR. In particular, these children performed well on those tasks that made up the verbal factor; relative size, taxonomic generation, semantic information, and word meaning. Data presented in Table 2 indicate that the children in Cluster 1 performed better than their peers with MMR on the relative size task, taxonomic generation task, semantic information task and the word meaning task. For the tasks that required a verbal response, children in Cluster 1 were able to generate correct verbal information whereas children in the other three clusters rarely responded correctly.

Cluster 2. This cluster contained six children. In contrast to the children in Cluster 1, children in Cluster 2 performed poorly on the verbal tasks. However, children in this cluster demonstrated similar performance to the children in Cluster 1 on the perceptual and phonemic awareness tasks such as oddity, oppositional concepts, sequence, pointing, phonological awareness and rhyme. Performance of the children in Cluster 2 indicated a weakness in those tasks related to verbal ability.

Cluster 3. This cluster contained six children. Children in Cluster 3 also performed poorly on the verbal tasks similar to the children in Cluster 2. In addition, their performance levels on the perceptual tasks were somewhat lower than the performance of children in Clusters 1 and 2.

### Table 1
Summary of Agglomeration Coefficients for Hierarchical Cluster Analysis (Ward’s Method)

<table>
<thead>
<tr>
<th>Number of Clusters</th>
<th>Coefficient</th>
<th>Percent change in coefficient to next level</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>66.469</td>
<td>14.10%</td>
</tr>
<tr>
<td>6</td>
<td>75.838</td>
<td>13.81%</td>
</tr>
<tr>
<td>5</td>
<td>86.308</td>
<td>19.38%</td>
</tr>
<tr>
<td>4</td>
<td>103.031</td>
<td>21.78%</td>
</tr>
<tr>
<td>3</td>
<td>125.469</td>
<td>24.58%</td>
</tr>
<tr>
<td>2</td>
<td>156.308</td>
<td>66.34%</td>
</tr>
<tr>
<td>1</td>
<td>260.000</td>
<td></td>
</tr>
</tbody>
</table>

Gore, C. (2000). Stopping rules are statistically complicated and are not readily available in commonly used statistical software. Because of this, many researchers rely on their inspection of coefficients values (e.g., squared Euclidean distance between the two entities being joined) in the agglomeration schedule. Researchers consider the points at which a “jump” is present in the coefficient values as a signal that heterogeneous clusters are being combined. For the present cluster analysis, examination of the coefficients revealed that a five-cluster solution was appropriate (see Table 1). A five-cluster solution resulted in a cluster containing only one case, therefore, it was decided that a four-cluster solution would be more appropriate than the five-cluster solution.

Patterns of performance on the 10 tasks are displayed for four clusters in Figure 1. In addition, Table 2 presents the mean percent correct scores and SDs for each task for each of the four clusters. With these data, we can begin to discuss the cognitive profiles of the children within the four clusters.

Cluster 1. This group contained six children. In general, the performance of these children was good across all tasks compared to their peers with MMR. In particular, these children performed well on those tasks that made up the verbal factor; relative size, taxonomic generation, semantic information, and word meaning. Data presented in Table 2 indicate that the children in Cluster 1 performed better than their peers with MMR on the relative size task, taxonomic generation task, semantic information task and the word meaning task. For the tasks that required a verbal response, children in Cluster 1 were able to generate correct verbal information whereas children in the other three clusters rarely responded correctly.

Cluster 2. This cluster contained six children. In contrast to the children in Cluster 1, children in Cluster 2 performed poorly on the verbal tasks. However, children in this cluster demonstrated similar performance to the children in Cluster 1 on the perceptual and phonemic awareness tasks such as oddity, oppositional concepts, sequence, pointing, phonological awareness and rhyme. Performance of the children in Cluster 2 indicated a weakness in those tasks related to verbal ability.

Cluster 3. This cluster contained six children. Children in Cluster 3 also performed poorly on the verbal tasks similar to the children in Cluster 2. In addition, their performance levels on the perceptual tasks were somewhat lower than the performance of children in Clusters 1 and 2. The most striking
Figure 1. Mean z score on each of the 10 tasks for Clusters 1 through 4.
part of their profile however was the poor level of performance on the phonological awareness tasks; phonological awareness and rhyme.

Cluster 4. There were nine children in Cluster 4. These children performed poorly on the verbal tasks like the children in Clusters 2 and 3, and poorly on the perceptual tasks like the children in Cluster 3. However, children in Cluster 4 performed more like the children in Clusters 1 and 2 on the phonological awareness tasks.

Cognitive Profiles, IQ scores and Age

Mean IQ scores and SDs for each cluster are presented in Table 3. To determine if there were differences in the IQ scores for the groups formed for each cluster, one-way analysis of variance (ANOVA) was conducted with IQ scores as the dependent variable and cluster as the independent variable. This analysis revealed that there were no significant differences between the IQ scores among the four clusters, $F(3,19) = .67, p = .58$.

Mean ages in months and SDs for each cluster are presented in Table 4. Again, an ANOVA was conducted with age in months as the dependent variable and cluster as the independent variable. This analysis revealed that there were significant differences between the mean age in months among the four clusters, $F(3,23) = 3.94, p < .05$. Post hoc comparisons using the Bonferonni method revealed a significant difference between the mean age of children in Cluster 1 ($M = 73.3$) and the children in Cluster 3 ($M = 60.2$).

To examine these variables further, a mean total score was calculated for each child by obtaining the mean of the percent correct score across the 10 tasks. Correlations were computed between this measure of mean total score and IQ scores and age in months. Age in

<table>
<thead>
<tr>
<th>TABLE 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Correct Scores for Each Task for Each of the Four Clusters</td>
</tr>
<tr>
<td><strong>Clusters</strong></td>
</tr>
<tr>
<td>Cognitive tasks</td>
</tr>
<tr>
<td>Relative Size</td>
</tr>
<tr>
<td>Taxonomic Gen.</td>
</tr>
<tr>
<td>Semantic Info.</td>
</tr>
<tr>
<td>Word Meaning</td>
</tr>
<tr>
<td>Oddity</td>
</tr>
<tr>
<td>Sequence</td>
</tr>
<tr>
<td>Oppositional Task</td>
</tr>
<tr>
<td>Pointing</td>
</tr>
<tr>
<td>Rhyme</td>
</tr>
<tr>
<td>Phonological Task</td>
</tr>
</tbody>
</table>

**Note.** SDs in parentheses.

<table>
<thead>
<tr>
<th>TABLE 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean IQs and SD for Each of the Four Clusters</td>
</tr>
<tr>
<td><strong>Cluster</strong></td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TABLE 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age and Range for Each of the Four Clusters</td>
</tr>
<tr>
<td><strong>Cluster</strong></td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
</tbody>
</table>
months had a significant correlation with mean total score ($r = .70, p < .001$) whereas IQ score did not ($r = .22, p = .31$). Thus, age in months, and not IQ score, was associated with higher performance levels on the cognitive tasks.

Discussion

The present study represents an exploratory analysis of individual differences in the cognitive performance of children with MMR. Our aim was to provide preliminary data that focused on individual differences in the cognitive profiles of children with MMR and to emphasize the need for such analyses in future research. Tasks were developed specifically to have high face validity as indicators of subsequent cognitive performance. Scott and Delgado (2002) reported that, in a large sample, preschool children’s performance on cognitive tasks similar to those used in the current study were predictive of their later educational status and academic difficulties (e.g., low achievement test scores) in third grade. Cognitive tasks used in the present study had moderate to low correlations with IQ scores. Thus, the cognitive tasks used in the present study were appropriate for examining cognitive abilities within a heterogeneous IQ group (Detterman et al., 1992).

Using this variety of cognitive tasks, specific patterns of performance were observed for each cluster, suggesting differences in strengths and weaknesses in the cognition of differential groups of children with MMR. Children in Cluster 1 appeared to perform at higher levels on the verbal tasks compared to the children in the other clusters. Children in Cluster 3 appeared to perform more poorly on the tasks requiring phonological awareness than the children in Clusters 1, 2 and 4. It is important to emphasize, however, the exploratory and very preliminary nature of our findings. The small sample size precludes the use of inferential statistics. We cannot be certain the observed profiles represent distinct distributions of cognitive abilities among the population of children with MMR. Along with many in the behavioral sciences, however, we caution against an over reliance on statistical significance as the yardstick by which empirical contributions are judged (Cohen, 1990).

The value of our analysis resides in its conceptualization and approach to a very important area of work in the field of mental retardation research. Our data suggest but do not confirm the presence of distinct patterns of cognitive abilities in young children with MMR. Due to the small sample size, we can make no claims as to the reliability of our cluster solution or to the differentiation of the specific cognitive abilities examined. It is possible that we have captured normally occurring variation in our analysis but the systematic pattern of our data suggests to us that we would obtain a similar result with a larger sample.

Although we can make no practical recommendations based on these findings, we strongly urge further work on this important topic. Researchers have begun to call for the examination of cognitive differences between and within individuals with different genetic syndromes associated with MMR (Dykens, 2001). Unfortunately, one limitation of the current study is the lack of information about our participant’s etiology, although the majority of our sample had mental retardation related to cultural/familial causes. Ongoing investigation of the cognitive ability profiles of individuals with MMR can enhance educational practice and the individualization of educational plans for young children with MMR. Our data indicate no relation between performance on the cognitive tasks and children’s IQ scores. That is, children with higher IQ scores were not the same children that scored at high levels on the cognitive tasks. According to Detterman et al. (1992), a single IQ score provides little information about the cognitive abilities of individuals with MMR, but rather more specific information about the basic cognitive processing associated with low IQ is needed. Our results specifically illustrate this point. In special education, instruction must be individualized for each child. The specific patterns of cognitive performance demonstrated by different groups of children with MMR indicate that while these children are similar in their IQ scores, they have different strengths and weaknesses that may inform instructional practice. To reach this goal, much more information is needed describing the cognitive capabilities of individuals with MMR with respect to each other, as opposed to individuals without MMR.
An additional important goal for future work in this area will be to examine cognitive ability profiles of children with LD and the extent to which young children with LD are distinct from or similar to individuals with MMR as assessed by the type of practical cognitive tasks employed in our battery. Although we did not examine these questions within this analysis, this is clearly an important area for future work and one that we hope will be stimulated by and benefit from the type of analysis presented here.

References


Received: 7 April 2003
Initial Acceptance: 10 May 2003
Final Acceptance: 15 September 2003