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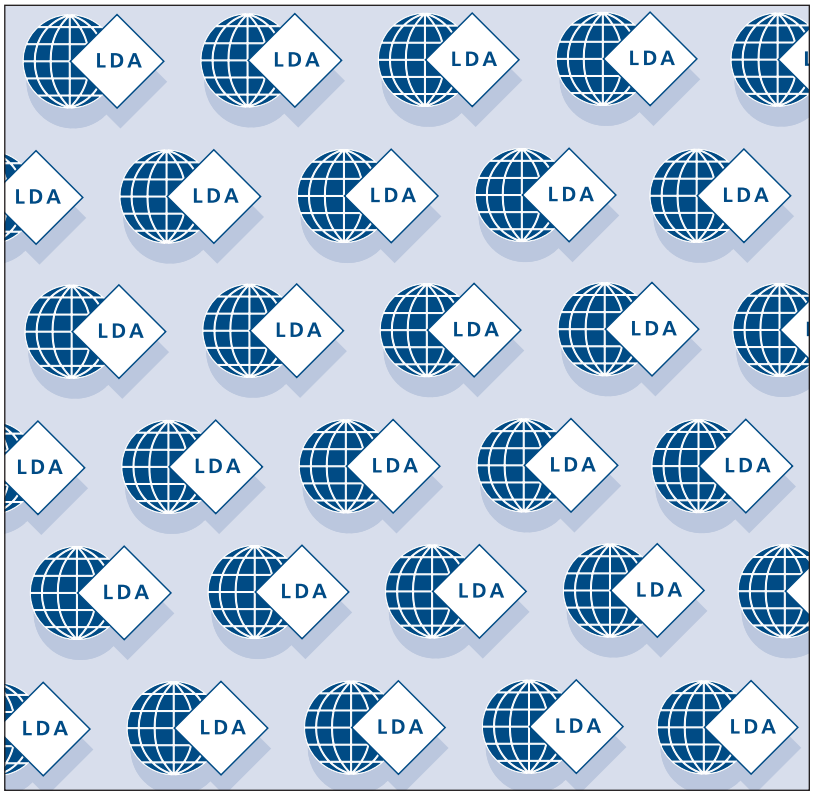
A Multidisciplinary Journal



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Editor's Note

Readers should be alerted to what is happening to the eligibility process for children with learning disabilities. Drastic changes were recommended in the Senate Bill 1248 and the House Bill 1350. These Bills are the proposals that will be brought to the full Congress concerning the reauthorization of the Individual with Disabilities Education Act (IDEA).

Senate Bill 1248 recommended that in determining eligibility for children with learning disabilities

- schools are not required to take into consideration whether the child has a discrepancy between achievement and intellectual ability, and
- schools may use a process that determines if a child responds to scientific, research-based reading interventions,

The Learning Disabilities Association of America, along with some other learning disability organizations worked extremely hard to recommend substitute language in the Senate Bill, but the results were disappointing. The Senate Committee voted on the bill in 11 minutes by a unanimous 22-0 vote on June 25, 2003 without any of changes recommended by the Learning Disabilities Association and other disabilities organizations.

Among the concerns for S.1248 for children with learning disabilities are:

- There is no scientific research to validate responsiveness to intervention as a criterion to identify a learning disability
- Individualized instruction cannot occur with measures of cognitive ability and academic achievement to determine the child's strengths and weakness and guide individualized instruction.
- Responsiveness to intervention models are directed at early basic reading skills but children with learning disabilities have difficulties in upper grades and in other areas – such as mathematics, speaking, thinking, listening, and writing.
- Responsiveness to intervention models cannot distinguish between learning disabilities and mental retardation. Cognitive ability and achievement measures can.

It is hoped that those of us concerned about the future of children with learning disabilities will meet with other concerned parents and educators and contact their Congressional Representatives before the Bill is brought to the full Congress for a vote. The lives of children with learning disabilities are at stake.

The Articles in This Issue

The Relationship Between Learning Difficulties in Foreign Language and Math in a Sample of College Students by Frances Prevatt and Briley Proctor. This study investigated 204 college students who had difficulties in both foreign language and math (FLD/MD), only math difficulties (MD), and only foreign language difficulties (FLD). Analysis showed that the mixed group (FLD/MD) was qualitatively different from the FLD group.

Reasoning and Self Advocacy for Postsecondary Students with Learning Disabilities by Carol A. Layton and Robin H. Lock. This study examined three groups of postsecondary students using the LDDI Reasoning Scale to determine if there were significant differences in their self-reported reasoning behaviors. Significant differences were found between the populations with disabilities and the non-disabled populations, suggesting that postsecondary students with learning disabilities may have increased intrinsic processing weaknesses in reasoning in comparison to their non-disabled peers.

School Psychologists' Perceptions of Instructional Adaptations in Inclusive Settings by William G. Masten, Lindy Henry, Harvetta M. Robertson, Billie R. Priest, Barbara Scott, James Stacks, Christine Massey, Daniel C. Miller, and Sander Martin. This study assessed the perceptions of school psychologists toward effectiveness and use of instructional adaptations in inclu-

continued on next page

sive classrooms using the Adaptation Evaluation Instrument. The sample included 59 regular members of the Texas Association of School Psychologists.

The Use of Theatre as an Instructional Strategy in the Content Areas for Students with Reading and Learning Disabilities by Sandra D. Beyda. Theatre is a powerful tool for organizing one's experiences. It is an instructional technique that motivates students as they seek to understand and communicate their learning. This article provides a foundation for using theatre as a learning strategy in the content areas for students with reading-learning disabilities, using metacognition as an important factor.

New Era: The Sacrifice of Individual Differences to the False Claim of "Scientifically-Based Instruction" by Miriam Cherkes-Julkowski. This article addresses a controversial issue, the report of the President's Commission on Excellence for Special Education. The article questions the Commission's Report for not considering individual differences.

We hope you enjoy these timely articles.

Janet Lerner
Editor-in-Chief

The Relationship Between Learning Difficulties in Foreign Language and Math in a Sample of College Students

Frances Prevatt and Briley Proctor

Two hundred four (204) college students who had difficulties in both foreign language and math (FLD/MD), only math difficulties (MD), or only foreign language difficulties (FLD) were studied. Analysis of prevalence of presenting problems indicated that FLD and FLD/MD are relatively uncommon, compared to MD. Comparisons among the three groups revealed that the present sample of FLD students showed a pattern of performance on achievement and processing tests that is consistent with past research, displaying relative deficits (compared to their own performance) on subtests measuring grammar and spelling, long term memory, and visual phonology. However, the mixed group (FLD/MD) was qualitatively different from the FLD group, and was virtually indistinguishable from the MD group. The FLD/MD and MD groups showed verbal IQ greater than performance IQ scores, long-term memory deficits, and difficulties with applied math problems. Between group analyses also showed significant gender differences, with more males being referred for FLD and more females being referred for MD.

Many investigators have evaluated high school and college students who have difficulty passing foreign language courses. A number of variables associated with language and cognitive skills have been correlated with foreign language difficulty (FLD); these include deficits in reading comprehension, writing, listening, expressive skills, vocabulary, spelling, auditory processing, phonological processing, and phonological awareness (Aidinis & Nunes, 2001; Barr, 1993; Demuth & Smith, 1987; Downey & Snydor, 2000; Grigorenko, Sternberg, & Ehrman, 2000; Hill, Downey, Sheppard, & Williamson, 1995; Hodge, 1998; Sparks & Ganshow, 1991, 1993, 1995; Sparks, Ganshow, Pohlman, Skinner, & Artzer, 1992) In addition, some research has implicated variables such as anxiety, self-perceptions, personality traits, study habits, and demographic variables (Ehrman & Oxford, 1995; Gardner, Tremblay, & Masgoret, 1997; Onwuegbuzie, Bailey, & Daley, 2000).

One area that has been missing from the study of foreign language difficulties has been the relationship with math difficulties. Most studies of FLD focus on aspects of native language learning, and either exclude or do not report measures related to analytical skills (e.g., Ayers, Bustamante, & Campana, 1973; Ganshow & Sparks, 1995; Ho, 1987; Onwuegbuzie, et al., 2000; Sparks, Ganshow, Javorsky, Pohlman, & Patton, 1992). Studies of college students with FLD that have included measures of mathematical skills have been inconclusive, possibly due to small sample sizes. Ganschow, Sparks, Javorsky, Pohlman, and Bishop-Marbury (1991) compared 15 FLD students (those who had petitioned for a foreign language course substitution) to 15 non-FLD students (those who had received grades of A or B in foreign language classes). As measured by the *Woodcock Johnson Psycho-Educational Battery-Revised* (WJ-R), FLD students had poorer math calculation scores than the non-FLD students, but showed no differences on applied math word problems. Interestingly, the FLD group scored in the average range on calculation, whereas the non-FLD group scored in the superior range, indicating that, although there were differences between the two groups, neither manifested a normative deficit in math. Subsequent studies by the Sparks and Ganshow team evaluated college students who had received foreign language course substitutions. None of these studies showed deficits on mathematics or arithmetic subscales, as measured by the WJ-R and the *Wide Range Achievement Test-Revised* (WRAT-R) (Sparks & Javorsky, 1999; Sparks, Philips, Ganschow, & Javorsky, 1999a & b). Alternately, Downey and Snyder (2000) interviewed 200 students with foreign language difficulties, and found that difficulty in math courses was a common complaint. Discrepancies across these studies may be due to the fact that self-reporting of difficulties in math would not necessarily correlate with achievement test scores. Additionally, when college students' scores on achievement tests are compared to same-age peers (e.g., other 19-year-olds), rather than same-grade peers (e.g., other college freshman), deficits may not be apparent.

A separate body of research on math disabilities may shed some light on the relationship between math and foreign language difficulties. Investigators describe two types of math underachievement associated with learning disabilities (Fleischner & Manheimer, 1997; Silver, Pennett, Black, Fair, & Balise, 1999; Strawser & Miller, 2001). The first is a primary math disability, also called non-verbal learning disability, right-hemisphere disability, or dyscalculia. This is described as a primary impairment that specifically affects math (Del Dotto, Fisk, McFadden & Rourke, 1991; Matte & Bolaski, 1998; Rourke & Conway, 1997). These students acquire reading, writing, and spelling skills at a rate expect-

ed for their ability and grade, but have considerably more difficulty in understanding the concepts and procedural operations associated with arithmetic and higher-level mathematics. Their deficits appear to be related to right hemisphere brain dysfunction. A second dysfunction is described as a math achievement deficit related to verbal learning disabilities (Fleischner & Manheimer, 1997) and is associated more with reading difficulties that consequently impede one's ability to complete math word problems.

The literature regarding math disabilities does not generally include foreign language per se; however, reading and spelling skills are frequently evaluated. The math/reading relationship has primarily been studied in younger populations. Geary, Hoard, and Hamson (1999) evaluated first-grade children with math disabilities, reading disabilities, or disabilities in both math and reading. They found very different between-group patterns of numerical and arithmetical deficits on measures of math ability, above and beyond IQ differences. The students with math and reading difficulties showed deficits on number production, counting, and backward digit span, yet no consistent patterns could be related to subsequent math achievement. Rourke (1993) has completed numerous evaluations of children with math difficulties versus reading and spelling difficulties. He concluded that children with deficits primarily in math had poor visual perceptual and visual spatial abilities, and right-hemisphere related psychomotor and tactile difficulties that led to problems with concept formation and problem solving. Additionally, on IQ tests, they demonstrated verbal IQ (VIQ) scores greater than performance IQ (PIQ) scores. Compared to children with difficulties only in math, children with only reading or both reading and math difficulties had poorer verbal and auditory perceptual abilities, and tended to have PIQ greater than VIQ scores.

In one of the few studies involving adults, Shafir and Siegel (1994) evaluated individuals with reading disability (RD), arithmetic disability (AD), and both RD and AD. The RD group and the mixed RD/AD group showed a pattern of deficits in phonological processing, reading, spelling, and short-term memory. In addition, the RD/AD group evidenced a visual-spatial reading deficit. Alternately, the AD group had deficits on non-reading tasks of visual-spatial functioning (e.g., block design). They also found that there was a greater distinction between the RD and the mixed RD/AD group at the post-secondary level than that found at the non-postsecondary level.

Although not an empirical study, Padget (1998) has synthesized the literature on disability subtypes and hypothesizes a model proposing diagnostic profiles for three distinct types of learning disability: specific language impairment, specific reading disability, and specific math disability. In this model, it is hypothesized that students with language impairments would have average PIQ, and strengths in math computation, word identification, and spelling. They would show core deficits in vocabulary and syntax in listening and speaking, with secondary difficulties in reading comprehension, written expression, and math reasoning on story problems. Alternately, students with math disabilities would have average VIQ, listening comprehension, oral expression, word identification, and reading comprehension. They would show core deficits in math problems and writing legibly, and would show processing deficits in visual-spatial analysis and reasoning. Padget's classification scheme, although untested, would have wide implications for the identification of diagnostic profiles and subsequent interventions.

In summary, there is a great deal of literature linking foreign language difficulties to deficits in native language acquisition. There has been a parallel set of literature that focuses on math disabilities. The math disability literature is more likely to evaluate subtypes of learning difficulties, with an emphasis on the relationship between math and reading, but does not focus on foreign language per se, and rarely evaluates a college student population. It is important to evaluate the cognitive and achievement patterns of students with difficulties in both math and foreign language, analyzing both actual achievement in college level coursework as well as the specific constructs that underlie academic achievement. Subtyping of FLD students may help to clarify patterns of performance, and lead to better academic interventions. There is a controversy over which students should receive academic accommodations or course substitutions; perhaps a better understanding of patterns of foreign language performance will help guide this decision making.

The present investigation evaluates the following groups of college students: (a) those with difficulties in foreign language acquisition who have adequate achievement in math, (b) those with difficulties in math who have adequate achievement in foreign language and, (c) those who have both math and foreign language achievement difficulties. There is little research evaluating this overlap. The present study will attempt to answer the following research questions: 1) What is the prevalence of foreign language difficulties vis-à-vis math difficulties? 2) What are between-group and within-group strengths and weaknesses of students with learning difficulties in only math, only foreign language, and both math and foreign language? 3) Do the three sub-types show different VIQ/PIQ discrepancies?

Method

Participants

Participants were 204 college students who were referred to a university-based assessment clinic for academic difficulties. Referrals were made by academic advisors, parents, personnel from the campus office of student disability support services, faculty, academic deans, or by the

students themselves. The students were drawn from a 4-year university and a 2-year community college within the same city. The group with difficulties in both foreign language and math (FLD/MD) reported having difficulties in both math and foreign language as their referral issue. They had completed at least one class in both areas with a grade of D or F in both areas. The math difficulty group (MD) reported having difficulties in math, but not foreign language, as their referral issue. They had completed at least one math course with a grade of D or F and at least one foreign language course with a grade of A or B. The foreign language difficulty group (FLD) reported having difficulties in foreign language, but not math, as their referral issue. They had completed at least one course in foreign language with a grade of D or F and at least one math course with a grade of A or B.

In order to select the FLD, MD, and MD/FLD groups, all students who had foreign language as a referral issue (regardless of additional referral issues) were selected until an *n* of 102 was attained. Next, all students who had a referral issue of math (but not foreign language) were selected until an *n* of 102 was attained. Later, it was decided to split the FLD group into those with and without an accompanying math difficulty. This resulted in a FLD *n* of 36 and a FLD/MD *n* of 66. The original MD group was retained, with an *n* of 102. Alternately, for the purpose of determining the frequency of presenting problems, a set of 127 randomly selected students was selected. This sub sample of students was utilized only for the analysis of frequency of the presenting problem.

A foreign language was required for all students at the university who intended to complete a B.A. degree and all students at the community college who intended to advance to a B.A. program. The majority of students had taken an introductory level course in Spanish. Due to the common course system in the state, the same course was taught at both the university and the community college, and focused on oral communication and grammatical expertise, listening comprehension, reading and writing. All students were required to complete two courses in mathematics. The majority of students who were referred to the clinic for math difficulties reported difficulty with algebra.

Demographics of the total sample (N=204) were as follows: Males = 49.8%; Females 50.7%; age range = 17-48, *(M = 23.6, SD = 5.4); GPA,* M=2.45; ethnicity = 15.2 % Caucasian, 1.8% African-American, .9% Asian American, 1.8% Hispanic, and 80.3% unknown (we were not allowed to require the students to give information regarding ethnicity).

Measures

As part of their evaluation for academic difficulties, all subjects were administered a standard battery of tests. These included the *Woodcock Johnson - Revised Tests of Achievement* (WJ-R-ACH; Woodcock & Johnson, 1990), the *Woodcock Johnson – Revised Tests of Cognitive Ability* (WJ-R COG; Woodcock & Johnson, 1990), and the *Weschsler Adult Intelligence Scale, 3rd Edition* (WAIS-III; Weschsler, 1997). The following WJ-ACH subtests were utilized: letter word *identification*, passage comprehension, word attack, calculation, applied problems, dictation, and writing samples. The following WJ-R COG subtests were utilized: memory for names, visual auditory learning, memory for sentences, memory for words, visual matching, cross out, incomplete words, sound blending, visual closure, picture recognition, analysis synthesis, and concept formation.

Procedure

All participants completed an intake form that included reason for referral (self-report), demographic information, and academic history. An appointment was scheduled for either one whole day or two half days of assessment with the academic and cognitive measures. Prior to assessment, the tester conducted a brief interview that further probed for referral issues and academic history. Specifically, transcripts were reviewed and information obtained regarding grades and performance in math and foreign language classes. Testers were employees of the assessment center who worked on a part- or full-time basis conducting psycho-educational evaluations. All testers had completed a minimum of two semesters of graduate coursework in psycho-educational assessment. Both a master's level clinical psychologist and licensed doctoral level clinical psychologist supervised all testing. Students paid a fee for the assessment, although some scholarships were available for students on financial aide. Test results were used primarily to determine eligibility for services based on a diagnosis of specific learning disability. Students gave informed consent to participate in the study, but were not compensated for participation.

Results

Initial analyses were conducted to determine group differences by gender, age, ethnicity, or GPA. Only the chi square for gender was significant $X^2(6, N=204)=12.13$, p=.002, (effect size = .24, using Cramer's V) and showed that there were significantly fewer males in the MD group (37%) than in either the FLD/MD group (61%) or the FLD group (62%).

Frequency analyses showed that, for a group of 127 randomly selected students, 54% reported problems with math but not foreign language, 6% reported problems with foreign language but not math, 7% reported problems with math and foreign language, and 33% did not report problems in either foreign language or math (e.g., they had referral issues of only reading or writing). Non-overlapping categories were utilized; that is, if a student's presenting problem was math

and foreign language, they were not counted again for math or for foreign language. If a student had math/reading/writing or foreign language/reading/writing, they were included in the math or foreign language frequency counts.

Next, an analysis was completed to look at within-group strengths and weaknesses of students with the three different presenting problems (MD/FLD, MD, and FLD). Table 1 presents subtest scores for all three groups. For this analysis, ipsative patterns were examined within each of the three groups on cognitive and achievement subtests. A separate within-group grand mean was created for each of the subtests, excluding that subtest from the grand mean. This was done because it is inappropriate to evaluate strengths and weaknesses when the subtest being considered is allowed to affect the comparison score. For example, a grand mean was computed for the six achievement subtests, excluding Applied Problems. Then, the group score on Applied Problems was compared via *t*-test to the grand mean for the five other Achievement subtest to determine if Applied Problems was a relative strength or weakness. This procedure was replicated for each of the subtests, utilizing a Bonferroni correction (Tabachnick & Fidell, 1996) to control for family-wise error.

The MD/FLD students were analyzed first. Compared to their own group means, students who presented with problems in math and foreign language showed relative strengths on Letter-Word Identification, Passage Comprehension, Writing Samples, and Visual Closure. They showed relative weaknesses on Applied Problems, Dictation, and Memory for Names. The MD students were analyzed next. They showed a pattern identical to that of the MD/FLD group. That is, compared to their own group means, students who presented with problems only in math showed relative strengths on Letter-Word Identification, Passage Comprehension, Writing Samples, and Visual Closure. They showed relative weaknesses on Applied Problems, Dictation, and Memory for Names. Lastly, the FLD students were analyzed. Compared to their own group means, students who presented with problems only in foreign language showed relative strengths on Writing Samples, Visual Matching, Analysis-Synthesis, and Concept Formation. They showed relative weaknesses on Dictation, Memory for Names, and Incomplete Words.

To evaluate group differences by subtype (MD/FLD, MD, FLD), two multivariate analyses of variance (MANOVA) were conducted, one for the cognitive subtests and one for the achievement subtests. This procedure controls for the family-wise error inherent in analyzing large numbers of dependent variables. For the 12 cognitive subtests, the multivariate test was significant, Wilks' Lambda = .813, $F(24,378)$, p=.02, Eta squared = .098, indicating differences between the three groups. Univariate ANOVA's utilizing Tukey's post-hoc tests indicated that three dependent variables significantly differentiated the groups. The FLD group

Table 1

Comparisons of Students on Measures of Achievement and Cognition

	FLD/MD (n=66)		MD (n=102)		FLD (n=36)	
Subtest	*M*	*SD*	*M*	*SD*	*M*	*SD*
Dictation	87.22	(10.54)	91.48	(9.40)	89.75	(12.22)
Writing Samples	102.31	(13.78)	106.41	(12.83)	106.08	(14.35)
Calculation	96.74	(7.41)	99.00	(10.82)	104.05	(10.93
Applied Problems	92.52	(6.24)	92.46	(6.87)	101.00	(13.12)
Passage Comprehension	100.72	(15.04)	102.83	(13.11)	102.47	(17.27)
Letter Word Id	101.96	(14.24)	104.92	(15.36)	103.11	(13.99)
Memory for Names	92.68	(13.24)	96.33	(11.74)	93.16	(11.09)
Visual Auditory Learning	97.28	(10.64)	98.53	(12.02)	97.58	(11.75)
Memory for Sentences	98.33	(14.06)	100.16	(12.50)	103.16	(15.13)
Memory for Words	93.84	(11.76)	97.57	(12.13)	97.72	(14.08)
Visual Matching	95.66	(15.54)	100.22	(15.02)	103.94	(14.74)
Crossout	95.42	(16.51)	98.88	(19.68)	100.05	(15.14)
Incomplete Words	93.50	(13.01)	97.14	(12.92)	95.97	(13.76)
Sound Blending	95.60	(13.18)	98.04	(15.07)	97.08	(16.57)
Visual Closure	99.59	(13.59)	103.52	(12.87)	101.44	(14.94)
Picture Recognition	97.68	(14.99)	100.76	(15.87)	100.25	(13.86)
Concept Formation	96.17	(10.25)	99.11	(12.68)	106.88	(14.88)
Analysis Synthesis	96.75	(13.59)	97.53	(11.10)	103.91	(11.33)

showed higher scores than both the MD group and the FLD/MD group on Analysis/Synthesis, $F(2, 201)=4.67$, $p=.01$, and Concept Formation $F(2, 201)=8.98$, $p=.000$. The FLD group scored higher than the FLD/MD group (but not higher than the MD group) on Visual Matching, $F(2, 201)=3.85$, $p=.02$.

For the six achievement subtests, the multivariate test was also significant, Wilks' Lambda = .79, $F(12,392)$, $p=.000$, Eta squared = .11, indicating differences between the three groups. Univariate ANOVA's utilizing Tukey's post-hoc tests indicated that three dependent variables significantly differentiated the groups. The FLD group showed higher scores than both the MD group and the FLD/MD group on Calculation, $F(2, 202)=6.42$, $p=.002$ and Applied Problems $F(2, 202)=16.17$, $p=.000$. The MD group scored higher than the FLD/MD group (but not higher than the FL group) on Dictation, $F(2, 202)=3.40$, $p=.03$.

Finally, Verbal/Performance IQ differences (on the WAIS-R) across groups (MD/FLD, MD, and FLD) were analyzed. For each group, a paired comparison t-test was conducted. For the MD/FLD group, the mean VIQ was 103.86 and the mean PIQ was 100.21. This difference was significant, $t(203)=2.2$, $p=.03$. For the MD group, the mean VIQ was 103.33 and the mean PIQ was 97.90. This difference was significant, $t(203)=5.26$, $p=.000$. For the FLD group, the mean VIQ was 108.10 and the mean PIQ was 106.13. This difference was non-significant. In summary, both the MD and the MD/FLD groups displayed VIQ's that were significantly higher than PIQ, while the FLD group showed no VIQ/PIQ discrepancy.

Discussion

Math difficulties were a common cause of referral for academic testing in the present sample (61%). Of those, a very small percentage (7%) reported concomitant difficulties in foreign language. A relatively small percentage (6%) reported difficulties in only foreign language. Although FLD appears to be an infrequent cause of academic difficulty compared to mathematics, it is nonetheless an important area of study.

The present study is one of the few that evaluates foreign language difficulties in college students by subdividing them into those with and without accompanying difficulties in math. This sub-typing appears to be an important distinction. The present study reveals that students with learning difficulties in both math and foreign language show a very similar profile of strengths and weaknesses to those students with difficulties only in math. Alternately, students who present with difficulties only in foreign language show a qualitatively different pattern of cognitive and academic skills. In order to evaluate these patterns, two analyses were done. The first looked at each group to see what within-group differences they exhibited. That is, compared to their own group performance, what were the relative strengths and weaknesses of each group? The second analysis looked at differences across the three groups. Both types of group comparisons demonstrated support for the notion that *pure* FLD learners are different from FLD learners with accompanying math problems, and that the dual difficulty group is almost identical to the group of students with only math difficulties.

Table 2 summarizes the patterns found within and

Table 2

Summary Of Within- And Between-Group Comparisons Of FLD, FLD/MD, And MD Learners

	Group		
	FLD	**FLD/MD**	**MD**
Within-Group Strengths	Writing Samples Visual Matching Analysis Synthesis Concept Formation	Writing Samples Passage Comprehension Letter Word Id Visual Closure	Writing Samples Passage Comprehension Letter Word Id Visual Closure
Within-Group Weaknesses	Dictation Memory for Names Incomplete Words	Dictation Memory for Names Applied Problems	Dictation Memory for Names Applied Problems
Significantly Lower Between Group Scores [a]		Calculation Applied Problems Analysis Synthesis Concept Formation Visual Matching Dictation lower only than MD	Calculation Applied Problems Analysis Synthesis Concept Formation

[a] Indicates a significantly lower score compared to FLD group unless noted otherwise

between the groups. Three questions can be addressed from these findings. First, are there consistencies across the sample, all of whom are evidencing some type of learning difficulties? Second, what differentiates the *pure* FLD learners from the FLD students who have accompanying math difficulties? Third, the FLD/MD and the MD groups are very similar. Can they be distinguished at all? All of these students have failed in math, yet only a very small subset is also failing foreign language. What is unique about this small subset of students who have dual difficulties?

In answer to the first question, all three groups showed relative strengths on the Writing Samples and relative weaknesses on the Dictation subtests. On the *WJ-R,* the Writing Samples test is a measure of the complexity and quality of ones writing; examinees are not penalized for errors in spelling or grammar. Alternately, Dictation is a combination of spelling, punctuation, and usage, i.e., the mechanics of writing. Thus, all three groups showed an interesting pattern whereby they were able to write well qualitatively, with poor mechanical writing skills. In addition, all three groups showed a relative weakness on Memory for Names, which is a test of long-term storage and retrieval. It is not surprising that all three groups displayed this memory difficulty, as this could underlie academic difficulties in a wide variety of course contents.

The second question involves differentiation of the foreign language subtypes (FLD versus FLD/MD). Several areas appear to hinder the dual FLD/MD students. This group showed poorer performance than the FLD group on tasks of fluid reasoning, and processing speed. In addition, they evidenced a significant PIQ < VIQ discrepancy, indicating that they are less adept at tasks requiring non-verbal reasoning and visual-spatial abilities. This pattern of deficits is consistent with difficulties with inductive and deductive reasoning, particularity regarding nonverbal stimuli. These difficulties may be exacerbated under timed conditions. This subgroup of foreign language/math difficulty learners is consistent with the foreign language learning theory advanced by Grigorenko and co-workers (2000), proposing that foreign language knowledge acquisition is heavily dependent on the ability to cope with novelty and ambiguity. In the past, all FLD students have been evaluated as a group; therefore, these particular patterns of deficits have not been identified. It appears from the current research that these important areas of dysfunction only occur in the subset of FLD learners who also have difficulties in math. These areas of dysfunction (fluid reasoning, processing speed) were actually relative *strengths* for the FLD group; therefore, if all students with foreign language difficulties had been analyzed together, these patterns would not have been evident.

A third query involves the two groups of students who were failing college math classes. Although all had taken foreign language classes, only a small subset was also having difficulty in foreign language. Distinguishing these two groups appears more difficult, as they appear to have many more commonalities than differences. Only one subtest, Dictation, discriminated between these two groups. Although Dictation was a relative weakness for both groups, it was significantly worse in the FLD/MD group. In all other respects, these two groups appear to have very similar learning styles and cognitive processing patterns.

With regard to gender differences, the present study confirmed work of Onwuegbuzie and co-workers (2000) who found that men had poorer foreign language acquisition than did women. They speculated that this might be due to the fact that women tend to use more conscious learning strategies (e.g., metacognitive planning) than do men (Oxford & Ehrman, 1993). Other researchers have speculated that this difference may have more to do with positive foreign language attitudes (Marsh, 1995); however, this could be neither confirmed nor disconfirmed in the present study.

The present study provides evidence concerning Padget's (1998) proposed diagnostic profiles for specific language impairment and specific math disability. The students referred for FLD and MD showed patterns of performance consistent with Padget's categorization, with minor exceptions. The present FLD group did not show a strength in spelling and did not show impairment in reading comprehension or written expression. However, spelling is only one subsection of the Dictation subtest and is not a comprehensive measure of this skill. In addition, the MD group did not show the written expression difficulties proposed by Padgett; however, Padgett appeared to be referring to legible writing as opposed to the mechanics of writing that is measured by Writing Samples. Other than these minor discrepancies, the present study supports Padgett's disability subtypes.

First Clinical Implications

Past research on FLD students has been quite inconsistent with regard to the existence of accompanying math difficulties. The present study suggests that this is due to the existence of two qualitatively different types of FLD learners, those with and without math difficulties. FLD students with co-morbid math difficulties appear much more similar to the students with math disabilities described by Rourke (1993) who have right-hemisphere weakness consistent with VIQ greater than PIQ. These FLD/MD students will need additional remediation not required by the *pure* FLD students. Compared to the pure FLD students, the FLD/MD students will have concomitantly more difficulties with analyzing, conceptualizing and synthesizing information, and with processing speed.

Many universities require a documented learning disability as a criterion for granting accommodations or course

substitutions in foreign language. Because there is no Specific Learning Disability (e.g. DSM-IV-R) in foreign language, it has been unclear whether students struggling in foreign language, and who have a learning disability in math, should qualify for course substitutions or accommodations. The present study suggests that students with a history of failure in foreign language and a diagnosis of learning disabilities in math have even more pervasive problems than those FLD students who do not qualify for math learning disabilities. As such, a finding of academic difficulty in foreign language and math learning disabilities should be considered when granting accommodations or substitutions in foreign language. Future research should investigate the relationships among specific languages (e.g., French, Spanish, Latin), specific course curriculum (e.g. reading comprehension versus conversation versus writing) and cognitive processing abilities. Likewise, a more fine-grained approach to the study of mathematics difficulties will need to examine different areas of difficulty, such as algebra, geometry, math fluency, or basic math skills.

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Reasoning and Self-Advocacy for Postsecondary Students with Learning Disabilities

Carol A. Layton and Robin H. Lock

This study examined three groups of postsecondary students using the *Learning Disabilities Diagnostic Inventory* (LDDI). Reasoning scale to determine if there were significant differences in their self-reported reasoning behaviors. The results indicated that none of the students self-reported a *Likely* intrinsic processing deficit. However, some of the students with documented learning disabilities self-reported a *Possible* deficit. Significant differences were found between populations with and without disabilities suggesting that postsecondary students with learning disabilities may have increased intrinsic processing weaknesses in reasoning in comparison to their non-disabled peers. By analyzing specific self-advocacy skills by groups (communication, self-awareness, and goal identification) significant differences were also found between the groups with and without disabilities. The results reveal that postsecondary students with learning disabilities may require direct instruction in self-advocacy skills to be successful in the collegiate setting. Specific suggestions for intervention are reviewed to provide academic advisors with methods to increase independence in postsecondary students with learning disabilities.

Student success in postsecondary education is affected by a variety of factors. For students with learning disabilities, the ability to self-advocate for accommodation needs and academic support is paramount. According to Bassett and Lehmann (2002), self-advocacy skills impact a student's ability to both plan their academic career as well as execute those plans. They indicate three areas, which are critical for student success. The three factors include communication skills, self-awareness, and goal identification. This study examines the use of the *Learning Disabilities Diagnostic Inventory* (LDDI) (Hammill & Bryant, 1998) as a discovery tool for enhancing self-advocacy awareness in postsecondary students with learning disabilities. Initially, the study compared the LDDI results of three populations of incoming freshmen: Freshmen seminar students without documented learning disabilities, student athletes without documented learning disabilities, and students with documented learning disabilities. Next, the results were examined to determine if the scores on particular LDDI items, indicative of self-advocacy success, were different between the three groups of students. Finally, methods for enhancing reasoning weaknesses as identified by the LDDI which impact communication, self-awareness, and goal identification are discussed.

Self-Advocacy in Practice

The need for self-advocacy for postsecondary students with learning disabilities has been documented by numerous researchers (Field, 1996; Lehmann, Davies, & Lauren, 2000; Lock & Layton, 2001; Martin, Marshal, & De Pry, 2001). Self-advocacy is part of a larger picture of student success beginning with self-determination and ending in student empowerment (Field, 1996). According to Salend (2001), there are a variety of strategies to increase student ability to move towards empowerment. These include activities that offer the student choices and require the student to express preferences rather than simply to act as a passive recipient of services. This requirement may improve both self-advocacy and ultimately lead to empowerment. Secondly, increasing the students' self-awareness of strengths and needs encourages participation in the achievement of their goals rather than obedient acceptance. Finally, Salend recommends the development of the following self-advocacy skills: (a) soliciting help when needed rather than on a schedule, (b) expressing appropriate appreciation for assistance rather than expecting intervention, and (c) explaining accommodation needs rather than simply accepting them.

Postsecondary students with learning disabilities must be able to respond with purposeful action for personal benefit (Field, 1996). Self-awareness of their disability and subsequent action to explain their needs are also key components in the self-advocacy process. Knowledge about their strengths and needs encourages postsecondary students to be actively engaged in making decisions about their academic performance. Miller and Keys (1996) stated that students with disabilities must become proactive in the educational process instead of remaining passive and dependent upon others for educational guidance.

According to Field (1996), the skills of self-determination and self-advocacy couple to produce the desired goal of empowerment for persons with disabilities. An increase in their control over the environment such as preparing to make choices, refining those choices, explaining needs, and expressing possible solutions, results in student empower-

ment. Empowerment can be defined by four principles: (a) understanding the system, (b) being aware of personal strengths and weaknesses, (c) knowing what is needed to maximize one's potential, and (d) being allowed to fully participate (Miller & Keys, 1996).

Self-Advocacy and Learning Disabilities

Unfortunately, for many students with learning disabilities, the skills needed for self-advocacy and self-determination may be directly affected by their disability. Self-advocacy and self-determination are impacted by a student's reasoning abilities (Field, 1996). In the LDDI (Hammill & Bryant, 1998), 15 items are identified as being indicative of behaviors that demonstrate reasoning intrinsic processing deficits. These deficits result in poor self-regulating cognitive behaviors. Behaviors such as deficient problem-solving strategies and an inability to stay on task have a profound impact on the student and are not automatically mastered by students with learning disabilities (Kirk, Gallagher, & Anastasiow, 2000). Consequently, postsecondary students with these types of reasoning intrinsic processing deficits may have a difficult time in achieving self-empowerment without direct instruction in self-advocacy and self-determination.

The Components of Self-Advocacy

According to the LDDI, students with learning disabilities who have intrinsic processing disorders in the area of reasoning demonstrate specific and identifiable behaviors. Bassett and Lehmann (2002) proposed a method for self-empowerment through student-led conferencing and planning as a key component for developing self-advocacy. They identified three student skills that must be mastered in order to improve the student's ability to self-advocate. The three include (a) communication, (b) self-awareness, and (c) goal identification.

Communication as defined by Bassett and Lehmann (2002) is the ability to listen and express ideas. Additionally, the student must be able to ask questions and seek clarification regarding their academic performance. Some examples of items on the LDDI Reasoning Scale that are directly affected by inefficient communication skills are summarized as: nconsistent thinking, engaging in illogical arguments, continually changing the subject, and an inability to follow a shift in thinking during a conversation. The impact of intrinsic processing deficits in reasoning and problems in communication produces difficulty in speaking with professors, engaging in discussions with tutors about academic needs, and forming social relationships.

Self-awareness is the second area identified by Bassett and Lehmann (2002) as a critical skill in the development of empowerment. They define self-awareness as the ability to talk and think about ones self in terms of strengths and weaknesses. LDDI Reasoning items that are directly impacted by ineffective self-awareness skills include: a lack of knowledge about one's deficits, an inability to generalize and see cause and effect relationships, and an absence in the ability to analyze situations to an appropriate depth. A lack of self-awareness about reasoning intrinsic processing deficits may cause the postsecondary student to underestimate the gravity of situations, fail to realize the implications of absences, and forget to plan ahead for major assignments through out the semester.

Goal identification is the final area in the Bassett and Lehmann (2002) plan for increasing student empowerment. Goal identification is the ability to dream about the future and transfer the dreams into attainable short and long-term goals. Again, LDDI Reasoning items directly associated with goal identification include: the inability to plan sequentially to reach a goal, taking too long to make a decision and missing the opportunity to reach a short term goal, and jumping to premature conclusions concerning the attainment of a goal. Implications for postsecondary students may include: choosing courses that are not included on their degree plan, missing study sessions that result in an inability to meet the short term goal of passing an exam, and failure to identify a major that compliments their strengths.

Direct Intervention for Self-Advocacy Skills

According to Hammill and Bryant (1998), the items identified on the Reasoning scale of the LDDI are intrinsic processing deficits that are *flawed* in nature and cause problems for the student across the lifespan. They further indicate that these deficits are inherent within the individual and are not going to change. This lack of self-regulating cognitive behavior may seem to indicate a poor prognosis for postsecondary success. However, Bassett and Lehmann (2002) propose that direct intervention with communication, self-awareness, and goal identification can have positive impact on a student's ability to move from learned helplessness toward self-empowerment.

What will direct intervention with communication, self-awareness, and goal identification provide for the postsecondary student with learning disabilities? First, students with learning disabilities benefit from rehearsal and the use of strategic instruction to circumvent their intrinsic processing deficits (Polloway, Patton, & Serna, 2001). Secondly, direct intervention in these skills promotes self-determination, inclusion, leadership, independence, and self-reliance (Martin, Marshal, & De Pry, 2001). Without direct intervention, students with learning disabilities tend to rely on persons in authority, who may not be available in the postsecondary setting (Bassett & Lehmann, 2002). According to Reiff, Gerber, and Ginsberg (1997), successful adults with learning disabilities exercise control over their lives by making their own decisions. A lack of opportunity to practice decision making results in avoidance (Wehmeyer, 1993). Intervention appears to empower postsecondary students

with learning disabilities by teaching compensatory skills that mediate the effects of the reasoning intrinsic processing deficits.

This study attempted to analyze the incidence of reasoning intrinsic processing deficits in postsecondary students with learning disabilities as identified by the LDDI. It will examine three groups of postsecondary students with and without learning disabilities in order to answer the following research questions: 1) Is there a significant difference between the number of students with documented learning disabilities and those in the athletic or freshmen seminar student population who self-reported an intrinsic processing deficit in the area of reasoning as identified by the LDDI? 2) Is there a significant difference between the number of students with documented learning disabilities and those in the athletic or freshmen seminar student population who self-reported problems with communication, self-awareness, and goal identification as categorized by items reflected in the Reasoning scale on the LDDI? 3) Is there a trend in the ratings of the participants with possible intrinsic processing deficits in the area of reasoning that would indicate weaknesses that impact communication, self-awareness, and goal identification skills as identified by the LDDI Reasoning scale?

Methodology

Participants

The 94 participants in this study represented three different groups of college freshman. The first group consisted of 32 eighteen-year-old students who were participants in a required freshman seminar class. Fifteen of the students (47%) were male and 17 were female (53%). Eighty-nine percent (28) of the students were of Anglo descent, 9 % of Hispanic descent (3), 3 % of African American descent (1), and zero of other descent. There were no reported disabling conditions in this group of students.

The second group of students consisted of 32 students participating in the university athletic program. In this group of eighteen-year-old students, 16 (50%) were male and 16 were female (50%). Sixty-six percent (21) of the students were of Anglo descent, 9% of Hispanic descent (3), 25% of African American descent (8), and 0% of other descent. These students did not report any documented disabilities.

The third group consisted of 30 students who were participating in a fee-for-service support program for students with identified and documented learning disabilities. Each of these students was also an incoming eighteen-year-old freshman. There were 28 males (93%) in the group and 2 females (7%). Ninety-three percent (28) of the students were of Anglo descent, 7% of Hispanic descent, no students of African American descent, and no students of other descent.

Instruments

The LDDI consists of six scales including Listening, Speaking, Reading, Writing, Mathematics, and Reasoning. Each scale presents 15 items specifically observed in the classroom and identified by experts as *typical* of students with learning disabilities. The LDDI indicates potential learning disabilities in an individual by examining the profile of stanine scores. Raw scores, converted to stanines and percentiles, allow an examiner to identify intrinsic processing deficits indicative of a learning disability. LDDI stanines are standard scores with a mean of 5 and a standard deviation of 1.96. Percentiles in the LDDI represent the distribution of scores within the representative norming sample.

The documentation of the LDDI's reliability and validity are discussed in the examiner's manual. Reliability was established for LDDI in the following areas: content sampling, time sampling, and inter-rater reliability. The manual reports reliability coefficients that meet or exceed .80 in magnitude with many of the coefficients at the .90 level. Validity is established through content, criterion-related, and construct methods. In each case, analyses indicated that the LDDI is a valid, *promising new alternative way of approaching the identification of people with LD* (Hammill & Bryant, 1998, p.75).

According to Hammill and Bryant (1998 p. 60), the opinions of the expert raters used to validate the LDDI items produced an average rating of individual item's appropriateness. These ratings indicated that 71% of items in the reasoning scale were considered highly indicative of a learning disability. The professionals rated 24% of the items as somewhat indicative of a learning disability. This indicates that 95% of the items on the reasoning scale were rated by the expert panel as behaviors typical of a learning disability.

The LDDI's normative data indicated that the standardization sample consisted of 2,152 students. The sample represented a fairly characteristic sampling of the United States population with respect to gender, race, ethnicity, special education placement, geographic region, and family income. Individuals in the sample included students from ages 8 years, 0 months through 18 years, and 11 months.

Procedures

The 94 participants voluntarily completed the LDDI in a twenty-minute administration. Group One completed the LDDI during a freshmen seminar class. Group Two filled out the LDDI during a study session in the athletic academic center. Group Three was administered the LDDI during a student orientation session for the fee-for-service program. All students were instructed to complete the survey by rating their behaviors on each scale. They circled numerical indicators from 1-9 on a Likert-like scale rating their typical performance on the behaviors.

The examiners numerically coded the protocols indicat-

ing each of the three groups. The LDDI protocols were scored by two examiners with a 100% inter-rater reliability. Stanines and percentile ranks were calculated for the reasoning scale for each participant.

Data Analysis

Initially, every student's rating scale was evaluated according to the LDDI directions to determine the not likely presence, possible presence, or the likely presence of a learning disability/intrinsic processing deficit in the area of reasoning. Next, each of the student's responses on the Reasoning scale was charted to identify patterns of similarity between the groups. The responses were identified by an *N* for not likely to exhibit this behavior, *P* for possibly exhibiting this behavior, and *L* for likely to present this behavior in a typical academic setting. The frequency for each response was calculated, as were the percentages for each item.

The means for the items on the Reasoning scale were calculated for each group: athletes, freshmen seminar students, and students with learning disabilities. The means were determined by assigning a numerical value to each of the three categories. Responses identified as *N* or not likely to exhibit intrinsic processing problems were assigned a value of 3. Those identified as *P* or possibly exhibiting an intrinsic processing problem were represented by the value of 2. Responses that were representative of likely as having intrinsic processing problems, and identified as *L*, were assigned the numerical value of 1. t tests were calculated to determine if significant differences existed between the athletes, freshmen seminar students, and students with learning disabilities.

t tests were also calculated for the three groups with respect to the self-advocacy skills identified by Bassett and Lehmann (2002) including communication, self-awareness, and goal identification. The Reasoning scale items were analyzed to determine which behaviors would have the greatest impact on each of these three skills. For example, a student who self-identifies *I veer off the subject at hand* (Hammill & Bryant, 1998), will have difficulty communicating effectively. The researchers analyzed the items separately and obtained an inter-rater reliability of 98% for the 15 LDDI Reasoning scale items. After the items were categorized, the responses for each participant were averaged for individual scale items. The means of the three groups, athletes, freshmen seminar students, and students with learning disabilities, were used to determine if there were significant differences between the three groups.

Finally, the patterns of the students with possible intrinsic processing in the area of reasoning as identified by LDDI were evaluated to determine if more students with documented learning disabilities demonstrated intrinsic processing weaknesses which would impact their communication, self-awareness, and goal identification skills. The percentages of categorical responses for each of the groups were calculated for the three variables. The group results were examined by looking at the ratings to determine if the responses were likely, possible, or not likely to indicate a possible intrinsic processing deficit.

Results

The results of the frequency distribution indicated that 100% of the freshmen athletes (32/32) and students from the freshmen seminar (32/32) were *Not Likely* to have an intrinsic processing disorder in the area of Reasoning according to the self-reported LDDI. For the students with documented learning disabilities, 10% (3/30) of the scores on the LDDI Reasoning scale indicated that there were *Possible* intrinsic processing deficits. None of these students self-reported behaviors that indicated intrinsic processing deficits in the *Likely* range on the LDDI Reasoning scale. The average stanine for the freshmen athlete group was 8.84. For the freshmen seminar group, the average stanine was 8.75. The average stanine for the students with documented learning disabilities was 8.1. Clearly, most of the students, regardless of their group, did not self-report intrinsic processing deficits in the area of Reasoning as measured by the LDDI. However, more students with documented learning disabilities indicated a *Possible* intrinsic processing deficit in the area of Reasoning and responses to individual items by the group with documented learning disabilities displayed widespread intrinsic processing weaknesses.

Table 1

Comparison of Means Between the Freshmen Non-disabled Groups and the Freshmen Group with Learning Disabilities

	All Freshmen Groups			
	Athletes (N=32)	Seminar (N=32)	*t*	Effect Size
LD (N=30)	.4133 (.038)		10.801*	1.851
		.3153 (.045)	7.026*	1.412

Note. Standard deviation appears in parentheses.
*p<.000

In order to examine the first hypothesis: Is there a significant difference between the number of students with documented learning disabilities and those in the athletic or freshmen seminar student population who self-reported an intrinsic processing deficit in the area of reasoning as identified by the LDDI? t tests were performed between the means for each of the three groups: athletes, freshmen seminar students, and students with learning disabilities. The

results of the t tests indicated a significant difference between the scores of the populations without learning disabilities and those with documented learning disabilities. Table 1 presents the results of the t tests for these groups.

t tests were also performed to examine the second hypothesis: Is there a significant difference between the number of students with documented learning disabilities and those in the athletic or freshmen seminar student population who self-reported problems with communication, self-awareness, and goal identification as categorized by items reflected in the Reasoning scale on the LDDI? In this second analysis, the items on the LDDI Reasoning scale were grouped into these three categories by determining which variable would be most negatively impacted by the deficit (e.g. a student who *takes too long to solve problems* will experience difficulty in goal identification and attainment) (Hammill & Bryant, 1998). The means for each of the three variables were calculated and t tests were used to determine if there were significant differences between the performances of the populations with and without documented learning disabilities. The results indicated that for each variable (communication, self-awareness, and goal identification) there were statistically significant differences. Tables 2, 3, and 4 present the results.

Table 2

Comparison of Means Between the Freshmen Non-disabled Groups and the Freshmen Group with Learning Disabilities for the Communication Variable

	All Freshmen Groups			
	Athletes (N=32)	Seminar (N=32)	*t*	Effect Size
LD (N=30)	.4620 (.181)		5.694*	1.419
		.3440 (.235)	3.273*	1.051

Note. Standard deviation appears in parentheses.
*p<.05

Table 3

Comparison of Means Between the Freshmen Non-disabled Groups and the Freshmen Group with Learning Disabilities for the Self-awareness Variable

	All Freshmen Groups			
	Athletes (N=32)	Seminar (N=32)	*t*	Effect Size
LD (N=30)	.3380 (.130)		5.819*	2.670
		.2560 (.153)	3.732*	2.023

Note. Standard deviation appears in parentheses.
*p<.05

Table 4

Comparison of Means Between the Freshmen Non-disabled Groups and the Freshmen Group with Learning Disabilities for the Goal-Identification Variable

	All Freshmen Groups			
	Athletes (N=32)	Seminar (N=32)	*t*	Effect Size
LD (N=30)	.4400 (.127)		7.742*	2.865
		.3480 (.141)	5.513**	2.266

Note. Standard deviation appears in parentheses.
*p<.05 **p<.001

When analyzing the responses of each of the three groups several trends were evident. The percentages of categorical responses for each of the groups were calculated for the three variables: communication, self-awareness, and goal identification. Within the communication area, 83% of the freshmen athletes described themselves as *Not Likely* to experience intrinsic processing difficulties that highly impact the area of communication. Seventy percent of the freshmen seminar students were *Not Likely* to have self-reported the deficit behaviors in the communication area. Only 41% of the students with documented learning disabilities reported that they were *Not Likely* to demonstrate intrinsic processing deficits in the self-advocacy area of communication.

In looking at the self-advocacy variable self-awareness, similar trends were noted among the three groups. Freshmen athletes reported that an intrinsic processing deficit in the area of Reasoning was *Not Likely* some 89% of the time. For freshmen seminar students the percentage was 80%. For students with documented learning disabilities, their LDDI responses indicated that a Reasoning intrinsic processing deficit was *Not Likely* only 62% of the time.

Finally, the percentages indicating a *Not Likely* intrinsic processing deficit in the area of reasoning directly impacting goal identification skills were 88% for athletes and 77% for students in the freshmen seminar. For students with documented learning disabilities, only 52% of the students self-reported that it was *Not Likely* that they had an intrinsic processing deficit that would directly impact goal identification skills.

Discussion

The results of the study illustrate that while none of the postsecondary students indicated a specific intrinsic processing deficit in Reasoning as measured by the LDDI, several of

the students with documented learning disabilities reported *Possible* intrinsic processing weaknesses. More importantly, when comparing the means of the responses between the two groups of non-disabled postsecondary students and those with documented learning disabilities, significant differences were noted. Additionally, while analyzing the individual responses to the LDDI items, it appears that the students with documented learning disabilities self-reported difficulties on LDDI items that would impact their ability to engage in self-advocacy through communication, self-awareness, and goal identification skills.

Implications for Postsecondary Students with Learning Disabilities

While the results of this study demonstrate that postsecondary students may not self-report intrinsic processing deficits in the area of reasoning that lead to an impairment, this population reported enough weaknesses to create an impact on their ability to self-advocate. The LDDI appears to a viable tool to determine these weaknesses. Looking at the responses according to the three variables needed for positive self-advocacy, it would appear that these students would have difficulty in each area. A lack of recognition of intrinsic processing weakness in the reasoning area, even without a documented impairment may, in fact, lead to limited self-advocacy skills. Students with learning disabilities, who demonstrate weaknesses in the area of reasoning, but not necessarily impairment, will need instruction in self-advocacy skills to learn compensatory behaviors to appropriately represent themselves.

Implications for postsecondary academic advisors

The first implication is to avoid automatically assuming that all postsecondary students with learning disabilities can and will develop self-advocacy skills without direct instruction. Bassett and Lehmann (2002) indicate that many high school students with learning disabilities have come from a deficit-driven perspective in which the teacher does what is best for the student while the student remains a passive recipient. The research further indicates that students with learning disabilities need direct instruction in order to learn the obvious (Polloway, Patton, & Serna, 2001). This study suggests that while many postsecondary students with learning disabilities do not have documented impairments in reasoning, their weaknesses require direct self-advocacy instruction.

Bassett and Lehmann (2002) describe a method for increasing a student's involvement in their own special education planning process in secondary education. They report several activities that could be utilized in the postsecondary setting to mediate the effects of intrinsic processing weaknesses in reasoning. These activities include 1) role playing for communicating needs, 2) practice asking for help, 3) engaging in self-expression of individual strengths, 4) small group practice for improving listening skills and engaging in goal setting, and 5) question and answer sessions where students evaluate the reasonableness of goals and goal attainment. They further encourage advisors to evaluate their own tendency to take charge of the student's journey to enable students to become independent self-advocates.

Limitations

The most obvious limitation of this study is the number of participants in the group of students with learning disabilities. Secondly, there was no measure of the participants' existing self-advocacy skills. Finally, the study does not explore whether intervention will have a significant impact on these students' ability to self-advocate.

Further Research

Further research is needed to develop and evaluate methods for measuring postsecondary students' ability to self-advocate in the areas of communication, self-awareness, and goal identification. Studies that examine the success of direct intervention in the areas of communication, self-awareness, and goal identification to improve self-advocacy should be undertaken. The identification of additional variables that impact self-advocacy is another important concern.

Summary

This study examined the responses of three groups of students on the LDDI Reasoning scale to determine if there were significant differences in their self-reported behaviors. The results indicated that there were no students who self-reported a *Likely* intrinsic processing deficit according to the LDDI. However, some students with documented learning disabilities self-reported a *Possible* deficit. In comparing the means of the samples, significant differences were found between the students with and without disabilities which illustrates that postsecondary students with learning disabilities may have increased intrinsic processing weaknesses in reasoning as compared to their non-disabled peers. Additional analyses of the results with respect to specific self-advocacy skills (communication, self-awareness, and goal identification) attest to the pronounced differences between the groups with and without disabilities. These results suggest that postsecondary students with learning disabilities may require direct instruction in self-advocacy skills such as communication, self-awareness, and goal identification in order to be successful in the collegiate setting. Specific suggestions for intervention are described to aid academic advisors in enabling independence in postsecondary students with learning disabilities.

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School Psychologists' Perceptions of Instructional Adaptations in Inclusive Settings

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This study assessed the perceptions of school psychologists toward effectiveness and use of instructional adaptations in inclusive classrooms with the Adaptation Evaluation Instrument (AEI; Schumm & Vaughn, 1991). The sample included 59 regular members of the Texas Association of School Psychologists (TASP). Items receiving the highest and lowest effectiveness ratings are discussed as well as items with highest and lowest use ratings. Results also showed 28 of 30 items had significant differences between use and effectiveness ratings. Factor analyses indicated a number of factors for use and effectiveness; however, there were no similarities in these factors. Possible reasons for these findings are discussed.

The Education for all Handicapped Children's Act passed in 1975 (currently referred to as IDEA 1997), assured children with disabilities the right to a free and appropriate public education provided in the least restrictive environment (LRE). Determining the most appropriate LRE for a student often proves to be difficult for those involved in the development of individualized education plans (IEPs). The LRE can be defined as the setting where students can experience success that allows them the greatest amount of interaction with their peers without identified disabilities in general education or community settings. Critical in the success of these efforts are considerations of individual student needs, both academically and socially.

The movement toward including students with disabilities in general education or community settings has received much of its impetus from the Regular Education Initiative (REI; Kavale & Forness, 2000). REI tries to place the majority of students with disabilities in a unified, comprehensive general education system (Hammill, 1993). However, REI is not a well defined plan, and a specific blueprint must be articulated before this initiative includes most students with disabilities (Roberts, & Mather, 1995).

Plans have been formulated in many states to help school districts educate all students in the general education classroom. One plan proposed changes in the delivery of special education services to fully include all students (Texas Education Agency, 1992). Proposed changes to implement inclusion involve: (a) students with disabilities receiving most or all of their services in general education classrooms; (b) general, compensatory, and special education teachers and school psychologists working collaboratively to provide instruction in integrated settings; (c) all resources from general and special education merging into one, unified system; (d) implementing a system with less labeling and segregation of students with disabilities; and (e) more cooperation between general and special educators (Lilly, 1986; Reynolds, Wang, & Walberg, 1987; Stainback & Stainback, 1987; Will, 1986). Implementing these changes will create many new challenges and roles for school psychologists.

Consulting with classroom teachers in the area of instructional adaptations is one of the important new roles of school psychologists. This consultation serves to better ensure that students with disabilities are participating, contributing members of the classroom learning community. Ad hoc instructional and problem-solving teams work to accomplish this goal—teams that recognize that the success of inclusion relies on the willingness of school personnel to accept and make adaptations for students in special education (Baker, & Zigmond, 1990).

Research on attitudes of school psychologists toward inclusion has not been widely studied. One limited survey of school psychologists to ascertain their attitudes toward placing children with a wide range of disabilities in the general classroom seems to indicate they have a fairly optimistic view when compared with classroom teachers (Center & Ward, 1989).

The literature has shifted from attempting to explain attitudes toward inclusive practices to teaching educators specific instructional adaptations (Masten, Stacks, Priest, Vitale, & Scott, 1999). A great deal of discussion has been devoted to identifying procedures that facilitate inclusive practices (Brucker, 1994; Cannon, Idol, & West, 1992; McDonnell, 1997; Thousand, Rosenberg, Bishop & Villa, 1997). Research has also included: agreement on the importance and use of instructional adaptations (Cole & Leyser, 1999); suggestions that instructional adaptations be employed (Munk, Bruckert, Call, Stoehrmann, & Radandt, 1998); instructional adaptations used by general educators (Fuchs & Fuchs, 1998); and advice on creating a system to support students with disabilities (Roach, 1995). However, little is known about the types of instructional or behavioral adaptations psychologists might suggest to classroom teachers. Therefore, if school psychologists are going to expand

their roles, information is needed to determine the kinds of instructional modifications they might suggest to classroom teachers when full inclusion is implemented.

Evaluating Intervention Strategies

Evaluation of intervention strategies is best accomplished on an ongoing basis (Maheady, Harper, Malette, & Sacca, 1989), by evaluating actual implementation, effectiveness, efficiency, and social acceptability. A similar viewpoint for evaluating instructional adaptations is to assess familiarity with the activity, effectiveness of the strategy with students, difficulty of implementing the activity, and willingness to implement the intervention (Whinnery, Fuchs, & Fuchs, 1991).

Information in this area may be helpful in aiding school psychologists to implement inclusion policies and procedures in the public schools. If inclusion is to be successful and if school psychologists are going to assume a consulting role, then information about which instructional adaptations they might suggest is necessary.

Various instructional adaptations have been suggested for use to accommodate students with special needs in general education classrooms. This exploratory study assessed the perceptions of school psychologists toward these suggested adaptations. Specifically, what are the perceptions of school psychologists in the areas of instructional adaptations that make an educationally important difference in students' performance (effectiveness) and actual implementation of various instructional adaptations (use)?

Method

Participants

The Adaptation Evaluation Instrument (AEI) (Schumm & Vaughn, 1991) was mailed to the 150 regular members of the Texas Association of School Psychologists (TASP). Fifty-nine (39%) of the regular members returned a completed survey. Of those who responded, 48 (81.4%) were female, 9 (15.3%) were male and 2 (3.4%) did not report gender. The sample ranged in age from 25 to 59 years (M = 42, SD = 7.8). Regarding formal education, 18 (30.5%) reported the highest degree obtained as doctorate, 25 (42.4%) reported master's, 12 (20.3%) reported specialist, and 4 (6.8%) did not provide education level data. For ethnic status, 6 (10%) reported ethnicity as Hispanic, 44 (75%) reported Caucasian and 9 (15%) reported *other.*

Procedure

Requests were made to all regular members of the previously mentioned state organization inviting them to participate in the study by completing and returning the selected survey. A follow-up mailing with a stamped, self-addressed envelope was mailed to each individual who had not returned the form on the 15th day after the initial mailing. A third attempt to gain participants was made at the registration desk at the annual conference. Subjects were asked to give background information concerning their age, gender, ethnic background, years of working experience, inclusion philosophy of district, and highest degree obtained.

Instrument

The Adaptation Evaluation Instrument (AEI) (Schumm & Vaughn, 1991) was used in this study. Internal consistency reliability (Cronbach alpha) indicated reliability coefficients of .97 and .95 (Schumm & Vaughn, 1991). Content validity was derived through a literature review and interviews with teachers. Respondents were asked to rate 30 instructional adaptations in the areas of effectiveness and use in inclusive settings. The rating system for effectiveness was a Likert-type scale (1 = ineffective; 5 = highly effective), and use was rated as how often they would use the adaptation (1 = never; 5 = always).

Results

The mean and standard deviation of effectiveness and use for each instructional adaptation was computed (see Table 1). The global mean rating for effectiveness was 4.0 (SD = .21) and the global mean rating for use was 3.4 (SD = .37). Items receiving the highest and lowest ratings (one standard deviation above or below the mean) are discussed below.

The two items receiving the highest ratings for effectiveness were: (1) providing reinforcement and encouragement, and (2) monitoring students' understanding of directions and assigned tasks. These school psychologists gave the following four items the lowest ratings: (1) helping students deal with feelings, (2) communicating with students, (3) using small group activities, and (4) adapting scoring/grading criteria. Even the item with the lowest rating, (3.46) was rated positive (somewhat effective) by some respondents (see Table 1).

Two of the highest rated strategies for use were also those identified for effectiveness. They were (1) *providing reinforcement and encouragement*, and (2) *monitoring students' understanding of directions and assigned tasks.* The other items with high use ratings were (1) *adapting classroom management strategies that are effective with mainstreamed students,* and (2) *communicating with special education teachers.* Five items received the lowest use ratings: (1) *helping mainstreamed students find appropriate ways to deal with feelings,* (2) *adapting scoring/grading criteria for mainstreamed students,* (3) *using alternative materials for mainstreamed students,* (4) *communicating with mainstreamed students and providing individual instruction for mainstreamed students.* Again, even the item with the lowest rating (2.71) is used often (see Table 1).

The Wilcoxon Signed Ranks Test was used to assess significant differences between ratings for effectiveness and

use (see Table 1). All items except *Respecting mainstreamed students as individuals with differences* and *Providing reinforcement and encouragement* had significant differences. Effectiveness data were factor analyzed using the SPSS principal components method with varimax rotation. Six factors with eigen values greater than 1.0 accounted for 70.4% of the variance (see Table 2). In the same manner, the use data produced 9 factors and accounted for 75.6% of the variance (see Table 3).

Discussion

Overall, the results indicate that most of the instructional adaptations are seen as effective by school psychologists and are used, some more extensively than others. School psychologists' view the use of reinforcement and encouragement, and monitoring mainstreamed students' understanding of directions and tasks as making a significant difference in mainstreamed students' performance. These modifications relate to motivating students and monitoring them and do not appear to take much time, if some system has been developed to address these areas. That school psychologists gave low ratings to adapting grades or scoring criterion is encouraging. There seems to be an emphasis on adapting the strategies and approaches used in assisting students to achieve learning outcomes rather than changing the intended outcomes themselves. This supports the basic assumption that adapting teaching to fit individual differences among students is necessary (Corno & Snow, 1986).

The remaining items that received the lowest effectiveness ratings involve some direct contact with the student. It may be school psychologists, like 93% of ancillary staff members (Simpson & Myles, 1991), believe consultation to be more important to help students included in general education classrooms. Another possible explanation is that using alternative materials, adapting grading criteria and providing individual instruction require a great deal of time and may involve instructional consultation. This is an area, which may be new to many school psychologists even though it is seen as a way to improve instructional quality and may be critical to facilitating mainstreaming of students

Table 1

Mean Item Ratings for Effectiveness and Use of Instructional Adaptations and results of the Wilcoxon Matched Pairs Signed Test

	Effective *M* (*SD*)	Use *M* (*SD*)	Significance Levels*
1 Respect mainstreamed students	4.03 (1.10)	3.76 (0.97)	.07
2 Establish routine appropriate	3.97 (1.00)	3.63 (1.00)	.014
3 Adapt classroom management strategies	4.15 (0.98)	3.7 (0.91)	.003
4 Provide reinforcement & encouragement	4.42 (0.97)	4.44 (0.84)	.933
5 Establish personal relationships	4.15 (1.05)	3.51 (1.14)	.001
6 Help students deal with feelings	3.53 (1.04)	2.95 (1.09)	.001
7 Communicate with students	3.56 (1.12)	2.78 (1.13)	.001
8 Communicate with special education teacher	4.15 (1.05)	3.83 (1.07)	.011
9 Communicate with parents of students	4.08 (1.07)	3.41 (1.10)	.001
10 Establish expectations for students	4.02 (0.97)	.63 (0.91)	.001
11 Adaptations when developing long-range plans	3.92 (1.04)	3.29 (1.33)	.001
12 Make adaptations for when developing daily plans	3.92 (1.21)	3.41 (1.21)	.001
13 Plan assignments & activities students to be successful	4.15 (1.05)	3.66 (1.20)	.004
14 Allot time for teaching strategies and content	4.00 (1.14)	3.20 (1.10)	.001
15 Adjust physical arrangement of room	3.95 (0.95)	3.64 (1.03)	.039
16 Adapt general classroom materials	4.17 (1.0)	3.40 (1.25)	.001
17 Use alternative materials	3.80 (1.23)	2.85 (1.27)	.001
18 Use computers to enhance learning	3.95 (1.11)	3.19 (0.97)	.001
19 Monitor students' understanding of directions and tasks	4.22 (1.08)	3.85 (1.06)	.004
20 Monitor students' understanding of concepts	4.07 (1.01)	3.58 (1.22)	.001
21 Provide individual instruction	3.85 (1.10)	2.71 (1.08)	.001
22 Pair students with a classmate	3.93 (0.94)	3.27 (0.85)	.001
23 Involve students in small group activities	3.76 (1.06)	3.21 (0.93)	.001
24 Involve students in whole class activities	3.95 (1.12)	3.42 (1.07)	.001
25 Provide extra time for students	4.05 (0.88)	3.31 (0.99)	.001
26 Adapt pacing of instruction	4.05 (1.09)	3.53 (1.02)	.001
27 Keep records to monitor progress	3.85 (0.98)	3.22 (1.19)	.001
28 Provide ongoing feedback	4.00 (0.93)	3.20 (1.08)	.001
29 Adapt evaluations	4.14 (1.11)	3.69 (1.05)	.001
30 Adapt scoring/grading criteria	3.46 (1.10)	2.88 (1.10)	.001

*Significance levels of Wilcoxon Matched Pairs Test of comparisons between effective and use ratings.

Table 2

Factor Descriptions, Factor Analysis, Eigenvalues and Percentage of Variance Accounted for by Factors for Effectiveness Ratings

Instructional Adaptations and Factors			Loading
	Eigenvalues	Percentage of Variance	
Factor 1: Instructional aid	12.7	42.3	
19 Monitor students' understanding of directions and tasks			.74
20 Monitor students' understanding of concepts			.78
21 Provide individual instruction			.61
23 Involve students in small group activities			.76
26 Adapt pacing of instruction			.64
29 Adapt evaluations			.64
	Eigenvalues	Percentage of Variance	
Factor 2: Interpersonal contact	2.5	8.4	
1 Respect mainstreamed students			.71
2 Establish routine appropriate			.61
4 Provide reinforcement & encouragement			.64
5 Establish personal relationships			.75
22 Pair students with a classmate			.74
24 Involve students in whole class activities			.56
	Eigenvalues	Percentage of Variance	
Factor 3: Administrative Tasks	1.8	5.9	
15 Adjust physical arrangement of room			.68
25 Provide extra time for students			.78
27 Keep records to monitor progress			.75
28 Provide ongoing feedback			.70
30 Adapt scoring/grading criteria			.61
	Eigenvalues	Percentage of Variance	
Factor 4: Classroom Adaptation and Communication	1.6	5.5	
16 Adapt general classroom materials			.63
17 Use alternative materials			.57
18 Use computers to enhance learning			.52
3 Adapt classroom management strategies			.61
6 Help students deal with feelings			.46
7 Communicate with students			.60
9 Communicate with parents of students			.63
	Eigenvalues	Percentage of Variance	
Factor 5: Teach Strategies and Content, Establish Expectations for Students and Communicate with Special Education Teacher	1.3	4.5	
10 Establish expectations for students			.77
14 Allot time for teaching strategies and content			.70
8 Communicate with special education teacher			.57
	Eigenvalues	Percentage of Variance	
Factor 6: Planning	1.1	3.8	
11 Make adaptations when developing long-range plans			.58
12 Make adaptations for when developing daily plans			.70
13 Plan assignments & activities students to be successful			.71

with disabilities (Rosenfield, 1995).

Most of the school psychologists polled believed that appropriate supports can be provided for students with special needs in general settings. Apparently, it is their belief that high standards for students should be maintained in inclusive settings. This is evident in the low use ratings given using alternative materials and evaluation procedures with students with special needs in general settings. This may indicate that identifying ways to improve the learning environment to ensure student success is more important than identifying the student as the source of the problem. Past research (Simpson & Myles, 1991) indicates the special education label assigned a student did not appear to influence mainstreaming suggestions. More responsibility for

Table 3

Factor Descriptions, Factor Analysis, Eigenvalues and Percentage of Variance Accounted for by Factors for Use Ratings

Instructional Adaptations and Factors			Loading
	Eigenvalues	Percentage of Variance	
Factor 1: Classroom Learning Activities	9.9	32.8	
14. Allot time for teaching learning strategies			.47
15. Adjust physical arrangement of room			.53
16. Adapt general classroom materials			.80
17. Use alternative materials			.68
18. Use computers to enhance learning			.71
20. Monitor students' understanding of concepts			.52
	Eigenvalues	Percentage of Variance	
Factor 2: Communicating and planning	2.7	8.9	
10.Establish expectations for students			.73
13. Plan assignments & activities for student success			.61
8. Communicate with the special education teacher			.76
9. Communicate with the parents of students			.63
	Eigenvalues	Percentage of Variance	
Factor 3: Involving and Monitoring Students	2.1	6.8	
19. Monitor students' understanding			.59
22. Pair students with a classmate			.49
23. Involve students in small group activities			.77
24. Involve students in whole class activities			.76
	Eigenvalues	Percentage of Variance	
Factor 4: Management	1.8	6.1	
21. Provide individual instruction			.60
25. Provide extra time for students			.77
27 Keep records to monitor progress			.73
28 Provide ongoing feedback			65
	Eigenvalues	Percentage of Variance	
Factor 5: Adaptation	1.6	5.2	
11. Make adaptations when developing long-range plans			.51
12. Make adaptations for when developing daily plans			.74
26. Adapt pacing of instruction			.43
	Eigenvalues	Percentage of Variance	
Factor 6: Adapting, Establishing Routines and Providing Reinforcement	1.3	4.5	
2. Establish routine appropriate			.74
26. Adapt pacing of instruction			.43
3. Adapt classroom management strategies			.59
4. Provide reinforcement & encouragement			.80
	Eigenvalues	Percentage of Variance	
Factor 7: Communication	1.3	4.4	
6. Help mainstreamed students deal with feelings			.47
7. Communicate with students			.86
	Eigenvalues	Percentage of Variance	
Factor 8: Adapting evaluations and grades	1.1	3.5	
29. Adapting evaluations			.47
30. Adapt scoring/grading criteria			.86
	Eigenvalues	Percentage of Variance	
Factor 9: Interpersonal skills	1.1	3.4	
1. Respect mainstreamed students as individuals			.79
5. Establish personal relationships			.44

student success is placed on educators and other service providers and their ability to create a learning environment in which all children can learn. In fact, adaptations made for students with disabilities potentially benefit other learners in the classroom.

Respondents indicated a need for increased emphasis on normalization for students with special needs served in general education settings, which is congruent with recent research with teachers that favored the education of children with disabilities in general education through collaborative relationships among all educators (Villa, Thousand, Meyers, & Nevin, 1996). This is evidenced in the low ratings given

adapting existing scoring or grading criteria, and not using alternative materials. Perhaps having the students use materials that others in the class are not using was considered stigmatizing for the student with a disability.

It is worth noting that school psychologists did not place a priority on helping students deal with feelings. A possible reason to explain this may be that providing enriching classroom learning environments will consequently result in appropriate expression of feelings.

The significant differences between ratings may indicate that the school psychologists perceive most items as effective, but they use them less often. Of course, there were exceptions to this such as Respecting mainstreamed students as individuals with differences and Providing reinforcement and encouragement. These modifications may be more easily accomplished for psychologists than the other items. Nonetheless, it is necessary to determine why most (28 of 30) of the modifications received lower use ratings.

There was no resulting pattern of similar responses when considering the factor analyses of the use and effectiveness ratings. Perhaps, this is because of the differences between the perception of effectiveness and actual use of the various adaptations. There are considerable data indicating that many general educators are not accepting of students with disabilities in their classrooms (Soodak, Podell, & Lehman, 1998). For this reason school psychologists may not use instructional adaptations because they may not be well received.

A limitation of this study is the small return rate of the survey from one state and the fact that all respondents were volunteers. There is no claim that this sample is representative of all Texas school psychologists. Therefore, generalizations must be made with regard to this factor. Another caution is that school psychologists may not actually use the modifications as rated.

This exploratory study makes a modest contribution to the literature by exploring perceptions of school psychologists regarding instructional adaptations. Little, if any, research deals with perceptions of instructional adaptations. This study provides an elementary understanding of which adaptations school psychologists might use or believe are effective. Armed with this knowledge, progress can be made towards defining a more expanded role for the school psychologist.

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The Use of Theatre as an Instructional Strategy in the Content Areas for Students with Reading and Learning Disabilities

Sandra D. Beyda

Theatre is a powerful tool for organizing one's experience. It is an instructional technique that motivates students as they seek to understand and communicate their learning. This article provides a foundation for using theatre as a learning strategy in the content areas for students with reading and learning disabilities, using metacognition as an important factor. Theatre addresses three prerequisite conditions for metacognition: information processing capacity, domain-specific knowledge, and motivation. This article describes research that supports the use of theatre-based learning as a way to strengthen perceptual skills, improve retention of new information, and to promote positive affective states, active student engagement, and reading comprehension. An example of implementing theatre-based activities in social studies instruction is described.

Theatre helps students *make sense of the world and of the messages coming in through the senses* (Smith, 2001, p.12). As an instructional technique theatre can provide an engaging way for students with learning disabilities to interact with new concepts, while concurrently aiding in retention of this information. However, in many content area classes students are required to learn by reading. This can be problematic because eighty percent of students with learning disabilities have specific deficits in reading (Lerner, 2003; Lyon, 1995; Lyon & Moats, 1997).

In this article, theatre is offered as an alternative instructional strategy for teaching in the content areas. The theory behind using theatre as a learning strategy derives from research that indicates students with learning disabilities show a variety of metacognitive deficits in reading (Brown, Bransford, Ferrara, & Campione, 1982; Dufresne & Kobasigawa, 1989; Paris, 1987), which interfere with the ability to acquire new information from the textbook. However, theatre can be used to address the prerequisite conditions necessary for metacognition in ways that promote greater understanding of content area concepts. The following section provides a rationale for using theatre to address these metacognitive preconditions.

Metacognition and Reading

Metacognition *has been used to refer to an executive function that selects, controls, and monitors the use of cognitive strategies* (Kuhn, 1992, p. 248). Students with learning disabilities have been found to exhibit metacognitive differences (Torgesen & Licht, 1983). Research suggests that the ability to engage in metacognition is what distinguishes good readers from poor readers (Deshler, Ellis, & Lenz, 1996). That is, good readers (a) actively check their comprehension throughout the reading process, (b) reread or slow down as needed, and (c) can hold inconsistencies in short term memory for longer periods than can poor readers. In contrast, students with learning disabilities and reading problems have been found to (a) have less prior knowledge to bring to new information (Stanovich, 1986), (b) be less aware of variables that interact with reading (e.g., new vocabulary, poor attitude; Deshler, et al., 1996), (c) be less sensitive to text features (e.g., headings, organizational layout; Deshler, et al., 1996) (Wong & Wilson, 1984) (d) not monitor their own comprehension (Billingsley & Wildman, 1990; Bos & Filip, 1984; Palinscar & Brown, 1987), and (e) have minimal reading strategies and not sufficiently use the strategies they have (e.g., summarizing, scanning; Deshler, et al., 1996).

To successfully engage in metacognitive behaviors, students must be able to meet three prerequisite conditions. That is, students must have (a) adequate information-processing capacity (Denckla, 1994), (b) domain-specific knowledge (Denckla, 1994; Siegler, 1991), and (c) sufficient motivation (Kistner & Torgesen, 1987; Licht, 1993; Schunk, 1989). Each of these is reviewed in the next section, followed by an explanation of how theatre strategies address each area.

Information Processing Capacity

The Information-processing Model refers to one's ability to take in and store information, as well as how one uses this information to create new knowledge. According to Bryant and Bryant (1998), *stuff goes in, stuff goes round and round, and stuff comes out again.* Adequate information-processing capacity depends, in part, on the speed of one's processing which, in turn, depends on the (a) number of operations involved in a task and (b) the basic processes required for a task (Hale, 1990).

For example, suppose a student is asked: How did resources play a part in the outcome of the Civil War? This question requires the student to answer several sub-questions (operations), such as: *What is a resource? What was the out-*

come of the Civil War? and *What were some resources people had back then?* That is, the rate of processing speed diminishes with the complexity of the question. However, students with learning disabilities show limited vocabulary development (Gerber, 1993; Wiig & Secord, 1994), and deficits in automatic memory (Lyon, 1994). Therefore, it is not surprising that these students have been found to exhibit slower processing speed than their peers without such disabilities (Felton & Wood, 1989; Torgesen, Kistner, & Morgan, 1987; Wolf, 1991).

Perception

Adequate information processing capacity also depends upon the basic processes required for a task. Perception can be considered a basic process and refers to one's ability to recognize and interpret new information. Perception includes elements that underlie reading problems, such as discrimination. For example, children with auditory perception difficulties are likely to have difficulty decoding words (Lerner, 2000). Slower processing speed for verbal information (e.g., auditory discrimination during teacher lecture) (Felton & Wood, 1989; Torgesen, et al., 1987; Wolf, 1991) has also been documented in students with learning disabilities. In other words, higher-level metacognitive behaviors (e.g., comprehension monitoring) are contingent upon lower level processes (i.e., perception). If content area tasks are presented via reading or lecture, many students with learning disabilities will be unable to acquire new information.

For students with learning disabilities who have trouble recognizing and making sense of new information, theatre can help. As Sally Smith (2001) says, *the arts help organize experience. They help make sense of the world and of the messages coming in through the senses* (p. 12). Theatre can be used to strengthen perceptual skills because to watch or participate in theatre involves learning to look, to listen, and to remember images.

Memory

Adequate information processing also depends on memory functions. Specifically, working memory is crucial for metacognition. Working memory is the ability to hold information in mind while processing new knowledge and also involves retrieving information already stored in long-term memory. Retrieval depends on how well a student learned something to begin with and is also referred to as automaticity. Students with learning disabilities have been distinguished on tasks that measure working memory and automaticity (Lyon, 1994). Automatic memory for sight vocabulary (speed of processing) has been found to be the most important predictor of reading comprehension in students with learning disabilities (Meltzer, 1991, 1993; Meltzer, Fenton, Ogonowski, & Malkus, 1988). In our earlier example, if the definition of the word *resource* is not automatic for a student, then that student 's processing time would be spent figuring out what *resource* means instead of allocating sufficient energy and time to the higher level question being asked.

In addition, students with learning disabilities have problems remembering verbal information (Mastropieri & Scruggs, 1998), unless they are provided strategies that allow new information to remain in working memory for longer periods of time. Unless information is placed into long-term storage, it will decay or become lost (Swanson, 1987; 1996). That is, students with learning disabilities require learning activities that necessitate their active versus passive engagement.

Using creative drama to teach reading has been found to increase recall (memory). Students who physically acted out sentences using real or imaginary objects recalled sentences better than those who just verbalized the sentences (Ranger, 1995). Similarly, students who acted out action words (e.g., swing, stretch, push, pull) were able to recall the words more quickly and more consistently than students who simply read the words aloud (Moffet & Wagner, 1976). For young children (K-2), students who enacted a story following a teacher's reading of the selection had greater recall of both story events and sequence than students who participated in a story discussion or drawing condition (Pellegrini & Galda, 1982).

The reason for findings of improved reading retention under theatre-enactment conditions may be attributed to the multi-sensory input drama affords. Theatre allows students to take in new information through many sensory channels, such as auditory, kinesthetic, and visual, increasing the likelihood that information will be remembered and stored in long-term memory.

Findings from research on induced positive affect also support the value of using drama to improve recall. Induced affective states have been shown to influence cognitive processes such as memory (Laird, Wagener, Halah, & Szegda, 1982; Nasby & Yando, 1982; Natale & Hantas, 1982). Fifth-grade children induced in positive mood learned more reading vocabulary words than their neutral counterparts (Bryan & Bryan, 1991). That dramatic learning strategies do elicit positive affect is supported by research showing students' enhanced literature enjoyment (Bidwell, 1990; Cox 1988), increased motivation (DeRita & Weaver, 1991) and preferences for interpretative dramatics versus traditional approaches to teaching reading (Henderson & Shanker, 1978). In sum, theatre appears to enhance memory because it is multi-sensory, and it contributes to positive affective states.

Attention

Two other influences on information processing ability include (a) the ability to attend, and (b) instructional approach. The ability to attend to new information is contingent upon both selective attention and sustained attention. Selective attention (focus-execute) *is the ability to select tar-*

get information from an array for enhanced processing (Mirsky, 1987) or to narrow the field of stimuli to which one is attending or reacting to those that are deemed important or relevant to the task while ignoring those that are not (Barkley, 1994). Between 20-40% of students with learning disabilities have Attention Deficit-Hyperactivity Disorder (AD/HD) (Goldstein, 1995). Students with AD/HD have been found to selectively attend to novelty in color, and changes in size and movement (Copeland & Wisniewski, 1981; Radosh & Gittelman, 1981). A student with AD/HD who is seeking out novel stimulation from the environment may miss out on important auditory information provided through the teacher's lecture.

Sustained attention refers to the *capacity to maintain focus and alertness over time* (Mirsky et al., 1991, p. 112). Sustained attention may depend, in part, on the number and quality of competing interests present in the learning environment. It is the *stick-withitness* of attention. Zentall (1993) suggests that because students with AD/HD have trouble remaining attentive under conditions of decreasing novelty (e.g., boring or repetitive tasks), difficulty in sustained attention is a secondary problem resulting from an attentional bias favoring novelty. Applying what we know about attention to the content area, many students with learning disabilities may have difficulty attending to new information primarily because of the way it is presented, that is, through lecture or textbook reading. Introducing novel learning tasks should produce positive effects on both selective and sustained attention.

The argument that theatre-based strategies improve attention is derived from the fact that theatre is active, or *experiential*, according to Viola Spolin, pioneer in creative dramatics (Spolin, 1985). Active learning promotes attention, increases on-task behavior and decreases incidents of negative behavior (Borich, 1992). Experiential or hands-on learning has been an effective instructional strategy in the science content area (Saunders & Shepardson, 1987) and has been recommended as a fundamental instructional strategy for inclusive education (Johnson, 1999). Strategies that engage students actively in their learning also promote academic achievement (Algozzine, Ysseldyke, & Campbell, 1994).

Merely being an observer of drama may not be sufficient for maximum learning, however. For instance, children playing roles from stories that had been read to them and which required more active involvement had better total recall scores than those who had less active role assignments (Pellegrini & Galda, 1982). In other words, theatre offers an opportunity for full engagement and may help students who have a high need for activity channel their energy productively.

Instructional Approach

An educator's instructional approach influences whether students with learning disabilities allocate their attention passively or actively. For example, teachers who use strategies such as active response formats (choral reading, dramatic enactment) facilitate active attention from their students. Increased engagement and decreased off-task behavior has been documented when active student response has been integrated during whole class instruction (Narayan, Heward, Gardner, & Courson, 1990; McKenzie & Henry, 1979). The success of active student response may be attributed to the fact that students receive (and interact with) new information through the kinesthetic channel, in addition to visual and auditory channels, which may help students maximize their attentional capabilities.

Domain-specific Knowledge

The second prerequisite condition for metacognition is having and accessing domain-specific knowledge. In fact, developmental research indicates that one's level of knowledge within a given domain influences the quality of one's metacognitive functioning on tasks within that domain (Lyon, 1994; Schneider, Korkel, & Weinert, 1989). Using our earlier example, students who already know something about the Civil War would have an advantage when it came to learning new information about this topic.

Unfortunately, students with learning disabilities may have less domain-specific knowledge for many reasons. First, the repeated failure of many students with learning disabilities makes them less apt to apply themselves to academic tasks in which domain-specific knowledge can be acquired, such as reading. Secondly, many parents and teachers over help these students, leading to learned helplessness (Stone & Conca, 1993). Deficits in attention, as discussed earlier, also prevent students from accessing domain-specific information. Finally, students may experience problems at the working memory stage. That is, they may not have sufficient opportunities to interact with new information so that it can be stored well into long-term memory. Learning activities in the content areas must be useful in activating students' prior knowledge to assess what they already know about the lesson. Also, these activities must enable students with learning disabilities to build up domain-specific knowledge.

Theatre does this. Because students get the chance to interact more fully with new concepts and to use what they already know in the process of role-playing, there is a greater likelihood that domain-specific knowledge will be activated or formed. *Acting out* has been recommended as a method of teaching students, not only to retrieve information, but also to understand and to transfer it in order to find possible relationships and to create new generalizations and analogies (Perkins, 1991). In addition, teachers can use theatre activities to assess what students already understand about a concept. For instance, drama has been found to be a dynamic diagnostic tool for identifying students' incomplete

conceptions about science content as well as a means of enabling students to revise these misconceptions to fit with currently accepted scientific knowledge (Kase-Polisini & Spector, 1992). Furthermore, because students learn concepts or review concepts through their role-play, they have a stake in their learning so they are more likely to be attentive to the learning process.

Motivation

The third prerequisite condition for metacognition is motivation. Students who do not realize their failures are a result of insufficient effort are not persistent (Diener & Dweck, 1978). Therefore they are less likely to discover strategies that are effective on learning tasks. Relatedly, students with learning disabilities, compared to their nondisabled peers, have been found to more frequently attribute failures to low ability versus insufficient effort (Butkowsky & Willows, 1980; Licht, Kistner, Ozkaragoz, Shapiro, & Clausen, 1985; Pearl, 1982). They are also less likely to take credit for successes and more likely to attribute successes to luck or an easy task (Pearl, 1982; Pearl, Bryan, & Herzog, 1983).

General motivational problems due to repetitive learning tasks (Zentall, 1985; 1986) and repeated school failure (Blackorby & Wagner, 1997; Wagner, 1990) also impact degree of motivation. Motivating students to learn remains an important consideration in content area instruction.

Fortunately, creative dramatics turn students on because they do not resemble paper and pencil tasks. Also, students who have difficulty learning to read may never associate reading with pleasure and, therefore, do not want to read (O'Shea & O'Shea, 1994). By making reading fun, theatre motivates students to learn. In a report examining data from the National Educational Longitudinal Survey (Catterall, Chapleau, & Iwanaga, 1999), motivation was one of several areas in which low SES youths involved in theatre demonstrated gains when compared to students who were not involved in the theatre arts.

Research on Drama and Reading Comprehension

Good readers and poor readers have been distinguished on their ability to use mental images (Jacob, 1976). Fourth and fifth-grade readers who scored 1-2 years below grade level on the California Achievement Test and were taught to use mental imagery were more successful at monitoring their comprehension (better able to identify both explicit and inferred inconsistencies in text) than poor readers who were exposed to traditional comprehension instruction (Gambrell & Bales, 1986).

Other studies that involve the use of theatre activities also support the use of imagery-based learning for reading comprehension over traditional reading approaches. For instance, using creative drama versus traditional instruction (vocabulary and story discussion) with fifth grade remedial readers was found to increase story comprehension scores on the Metropolitan Reading Comprehension Test (MRCT) (DuPont, 1992). These readers also demonstrated consistent improvement over the six-week intervention as measured by criterion-referenced test items and these gains were significantly higher than the control group's scores. The gains on the MRCT were demonstrated even though content during instruction differed from the content included on the test. Researchers' theorized that students in the drama group gained practice in creating clearer mental images of written material when asked to act out what they had read.

Similar results were demonstrated for inner city fourth graders who were taught to dramatize a story versus students exposed to the standard school reading curriculum (Rose, Parks, Androes, & McMahon, 2000). Each intervention consisted of hourly sessions twice a week for 10 weeks. Students in the drama intervention improved an average of three months more than controls in overall reading scores on the Iowa Test of Basic Skills (ITBS), and their scores were significantly higher than controls on the factual comprehension subscale of the ITBS. Scores on a performance-based measure of ability to dramatize the actions of the main character in the story were also found superior for students exposed to drama versus the control group from pre-to posttest.

Using a wider age span of students (grades 2 through 8), from 12 elementary schools, positive outcomes were again demonstrated on a standardized test of achievement (Gates MacGinite Test of Reading) for students who received 3 months of drama story application (Whirlwind, 2000). In fact, students improved their reading skills by an average of 4.6 months within 3 months of instruction, even though national norms predicted just 2.6 months' improvement.

Theatre strategies may be beneficial for improving reading comprehension because the skills needed to enact a story are those needed for reading. A student involved in a drama activity will be *"called upon to practice several thinking skills such as: inventing, generating, speculating, assimilating, clarifying, inducing, deducing, analyzing, accommodating, selecting, refining, sequencing and judging"* (McMaster, 1998). These are fundamentally the same skills required for reading comprehension. In attempts to enact a story, students need to internalize character motives, understand the setting and be aware of the problem or conflict, the same skills involved in making sense of historical events in social studies reading materials. Strategically, reading has a purpose because students need to gather information about characters and famous persons from other sources, and they will skim material to find out this needed information. *"When children dramatize a story, they make inferences about reasons for the actions of the characters, they understand characters' emotions, and can identify the incidents which lead to the main events of the story"* (Ross & Roe,

1977). That is, students are asked to bring more of themselves to their reading comprehension, thus increasing their involvement with the text (Bidwell, 1990).

In sum, theatre as an instructional strategy assists in the processing of new information by enhancing information processing capacity, building domain-specific knowledge and increasing motivation. Furthermore, it does this by activating mental images necessary for more complete comprehension of new material.

Implementing Theatre Arts in Instruction: An Example

There are a variety of ways to use theatre as a learning strategy. One particular method as applied to social studies instruction will be described next.

Pre-instructional Activity

A simple way to create a state of readiness to learn is by identifying the focus of learning through a question posted on the board or overhead (e.g., *"What was a reason Europeans set sail on voyages of discovery?"*). Next, form students into groups of 3 or 4. Then have them prepare a *"still photograph"* that represents a possible response to the initial question. For the example provided, students might depict an incident of bartering or religious persecution. Whether or not students come up with the correct answer is unimportant. During the pre-instructional phase the goal of the educator is to assess students' prior knowledge about the new concept to be introduced (e.g., voyages of discovery during the 1400s) and to involve students in their learning. Because students are grouped together for this photograph, they will naturally incorporate peers' ideas. Because inventing dialogue is not a requirement, students with learning disabilities who have expressive language deficits will not be at a disadvantage. Furthermore, putting that student in a group with more able peers will ensure a successful presentation.

Structuring the pre-instructional activity. The first time this strategy is used, the teacher should model it for the class as a whole. For younger students, showing them a photograph of people and discussing poses may be helpful. As the groups go off to different corners of the room to plan their photograph, the teacher will need to monitor students' collaborative process. The teacher need not give groups correct solutions at this point, but merely make sure groups understand what they are to do and that all group members need to be involved. Productive collaboration can be facilitated informally. For instance, the teacher might prompt students to be sure all students know what their pose will look like. A more formal approach to ensuring collaboration might be to distribute group-monitoring sheets. This method involves handing a designated group member a list of particular skills or behaviors the teacher wants to see from every member (e.g., offers a suggestion, encourages other members, cooperates with members). The student designee would then be responsible for recording instances of each skill or behavior for each member in the group. This task could be rotated so that over time every student has the opportunity to observe these behaviors in their peers.

Presenting groups with a time limit is often helpful. Ten minutes planning time is more than sufficient for groups to come up with a potential solution to the initial question and to create a photograph. Giving students a 2-minute advanced warning signal is also recommended.

Preparing the audience. When groups are ready, the

Table 1

Questions to Facilitate Higher Order Thinking Based on Bloom's Taxonomy

Knowledge
What do you notice about this enactment? What's going on? Is this situation portrayed accurately? How can you tell? How are the players showing their character's feelings?

Comprehension
How do you know this enactment is accurate? Is anything missing in this enactment? What title would you give this enactment?

Application
Can you relate this enactment to something going on today? How can we apply this enactment to a current situation?

Analysis
From whose perspective is this enactment understood? What are the characters' motives according to this enactment? How is the background or the history of the person in fluencing the enactment?

Synthesis
What if we changed some feature about this enactment? Would another person view this situation the same way? Why or why not? What if this person never existed or this event had never happened? What might happen after this enactment?

Evaluation
Why does the situation portrayed in the enactment matter to us? What one thing would you change about this person/event if you could and why? Do you agree with how the characters/persons behaved? Why or why not? What action could the person/character take that would most change the out come?

teacher will need to review appropriate audience behavior, which is (a) to listen quietly until called upon to contribute, and (b) to focus on how each group solved the problem (e.g., notice what reason the group came up with for Europeans setting sail on voyages of discovery). Group members should be asked not to present until they have the attention of all audience members.

As each group demonstrates their photograph, the teacher plays a crucial role by questioning the audience while group members remain posed. The best questions always proceed from what is most concrete (e.g., *What do you see here? What are the people doing? From their posture and facial expression, how do they feel?*) to questions which are more abstract (e.g., *What does each person seem to want? What would this person say if he/she could speak? Give this photo a title*). The teacher may want to use Bloom's Taxonomy as a guideline for developing questions

The teacher is always on the lookout for questions that encourage students to make predictions about what they will be learning. For instance, in the present example, students may identify that some form of bartering is taking place. The teacher may facilitate a higher level of understanding by asking students what goods they think the Europeans might be trading, and why these goods might have been desirable. The educator lists group responses on the board or overhead so that the class as a whole can refer to them during the post-instruction stage later on.

Special techniques that can be used at this stage include asking one posed member to say something in character or to move in character for ten seconds. It is recommended that this learning strategy not deteriorate into a guessing game. The educator must structure the questioning phase by posing specific questions to audience members and insisting that students raise their hands to be recognized rather than have students call out guesses about what they think the photograph is showing.

Setting the purpose for learning. Finally, the teacher sets the purpose for learning by providing no more than three questions for students to contemplate during the actual instruction phase. In our present example, the teacher would develop a list of three simple questions: (a) What reasons did we generate? (b) What might these reasons tell us about the people of that time? (c) What else do we want to find out? The teacher can add students' responses to the list that was developed earlier.

During Instruction

Once the pre-instructional activity is over, the educator must decide on a way to expose students to the actual content. It is at this stage that students may read the information from the textbook, preferably with accommodations for students with reading disabilities (e.g., paired reading, audiotapes). However, students may also interact with the content via filmstrips, videotape, a story told by the teacher or a computer-generated activity. That is, theatre games are not used to replace new content, but to enable students to bring their own experience to bear on content (pre-instructional activity), provide them with a reason for wanting to learn more (instructional activity) and to revise their misconceptions (post-instructional activity).

Some teachers might want to expose students to new concepts by taking on a role themselves. For instance, Dorothy Heathcoate has developed a technique in which the teacher role-plays with the students and in this way is able to teach new material (Johnson & O'Neill, 1989). In this method the teacher may assign students in the class to several different roles. Some might be crew members on sailing ships of the time, others a small group of merchants back home, while the remaining students might be Europeans who were looking for a place to live free of religious persecution. The teacher using this technique explains important details while in character. In this particular instance, the educator might play Kind Ferdinand of Spain and try to talk the merchants into subsidizing voyages of discovery, telling them that the subjects would pay high prices for a spice called salt that makes spoiled food taste better. The teacher using this technique will need to figure out a way to involve different students-in-role by asking them questions to elicit their involvement (e.g., *"You know we have no way to freeze our food here in the summer, don't you? How does our food taste when it spoils? What could we use to make it taste better? Salt? Yes, I heard of an explorer who discovered this spice in the far away lands of the East Indies. Can you find that place on a map for me?"*). For further information on the teacher-in-role technique, see Johnson and O'Neill (1989).

Another method of supporting students with reading disabilities in the instruction phase is to form cooperative learning groups to read the textbook. Vaughn, Klinger and Schumm (1996) developed a structured cooperative learning method called Collaborative Strategic Reading to help students comprehend their reading material.

Post-instructional Activity

For our present example, after instruction students would be asked to "revisit" their initial photograph. This time, though, the teacher would ask students to modify their photograph based on what they had learned. It is not necessary that all photographs be revisited. The educator should select only one or two photographs that lend themselves easily to alteration in a way that focuses on the teacher's learning goals.

The teacher may facilitate this process for less-able students by having groups re-enact their initial photograph, but allow the audience to assist verbally with the revisions. For instance, audience members may suggest ways for players to repose themselves or to change facial expressions, or they

may suggest persons or objects that are missing from the initial enactment. Sample questions may include, *"Describe the place in which these historical persons find themselves." "What is each person's station in life?" "Why is the good being bartered here so important?"*

An alternative way to structure the revisited photograph is to ask the selected group members to re-enact their original poses. (The teacher will want to keep brief written or videotaped notes of original poses in the event that students cannot recall them.) Next, the teacher could elicit class reflection by having all students write down what was wrong or missing from the original photograph and how the photograph might be altered or improved to be historically accurate. In this way, the educator has assessment information to document student learning. After collecting students' written responses, the teacher can proceed with the physical re-enactment and audience suggestions for improvement of the original photograph.

Conclusion

This article offers a rationale for using theatre as a learning strategy in the content areas for students with reading-learning disabilities. Students with reading-learning disabilities have problems with metacognition that impede learning exclusively from the textbook. In contrast, research has documented that key elements associated with dramatic enactment (i.e., multi-sensory input, inducement of positive affective states, active engagement, imagery-based learning, and activation of prior knowledge) directly address most of these metacognitive deficits. Furthermore, reading comprehension can be improved when dramatic enactments are integrated with textbook reading. Therefore, theatrical pre-instructional and post-instructional activities have been recommended as an alternative to more traditional learning strategies. Although theatre-based activities may not be the answer for all students, there is ample reason to give this instructional strategy a chance in content area instruction. An application of the theatre-based approach was explained in hopes that educators might find this method useful and easy to implement.

For educators wishing to learn more about how to integrate theatre into instruction, the following resources will be helpful:

Theater Games for the Classroom (Spolin, 1986)
Dorothy Heathcote: Collected writings on education and drama (Johnson & O'Neill, 1989)
The Power of the Arts (Smith, 2001)
Wings to Fly (Bailey, 1993)
Chicago Arts Partnership in Education (Catterall & Waldorf, 1999)

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New Era: The Sacrifice of Individual Differences to the False Claim of *Scientifically Based Instruction*

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By making the general curriculum the reference point for all considerations, The New Era proposals set forth by the President's Commission are devoid of all considerations of individual differences. Rather than tailoring IEP's to the particular learning characteristics of individual children, it is suggested that one kind of good, scientifically and research-based instruction fits all. In fact, IEP's are reduced to being guides that have no contractual value. The individual is of so little relevance that assessment is hardly needed except for that assessment which measures success and failure in the general curriculum. Ability-achievement discrepancies are abandoned and with them the last vestige of individual differences.

The report issued by President Bush's Commission on Excellence in Special Education is *The New Era: Revitalizing Special Education for Children and Their Families* (2002). The recommendations in this document go a long way to remove individual rights, devalue individual differences, and place children with learning disabilities and other *high-incidence disabilities* in the most restrictive environment. (For an example, see the General Curriculum, Cherkes-Julkowski, 2002; http://educational-advisor.com/articlegencurric.html). It attacks individual differences and individual rights systematically, from a number of directions. It makes the general curriculum the reference point for all identification under IDEA, rather than the current self-reference inherent in the discrepancy model. This gives great weight to the general curriculum and assumes that not only is it a right and good curriculum but it is right and good for every child. It is from the general curriculum that no child should be left behind. It is into the specifications (restrictions) of the general curriculum that every child should be squeezed. This contrasts with the original idea of an IEP, which carried with it the very important realization that the curriculum itself was often the problem for children with individual differences.

Solutions before Problems/Performance without Understanding

Since the sole reference point is the general curriculum, there is no need for assessments that define the idiosyncrasies of the individual, i.e., *services first, assessment later* (Commissioner Steve Bartlett, p.20, as cited in New Era, 2002). On its face, this makes absolutely no sense as a formulation, suggesting that a solution can be found without an awareness of the problem. However, as a semantic slight of hand, Bartlett's formulation forces out the very existence of the problem, i.e., there are no noteworthy individual differences, learning disability among them. Not coincidentally, it is exactly this formulation that underlies a good deal of the general curriculum. Assume individual experience and abilities don't influence learning. Just have the child execute the response, i.e., *focus on results not process* (New Era, 2002, p. 10) and worry about what it means later if at all (more about this below). In this formulation, the only problem of concern at all is conformity to the general curriculum. This position removes individuality from the picture altogether and unleashes the dominance of the general curriculum, with no need of safeguards for the now irrelevant individual.

Double Speak

Along with the dismissal of assessment, out goes the IQ and ability-achievement discrepancy as a reference point for learning disability. There is no need to reference the individual against him or herself since the individual has been rendered irrelevant except to the degree that s/he has found a way to conform to the general curriculum.

New Era then goes on to attack individual interests at the level of due process. It threatens to *focus on results instead of process* (New Era, 2002, p.10), i.e. due process. Schools would be relieved of the burden of procedural safeguards and the contractual obligations of the IEP. IEP's would be a *guide*. The delivery of specific services would not be obligatory. Instead, services would be provided as needed (decided by whom?) to meet desired outcomes (desired by whom?). Without due process rights and without a clear IEP to which to refer, who would decide what the outcomes would be, if they should be changed and if there were a need for those unsecured services? The answer is clear.

All of this is set out, like the emperor's new clothes, as a promise of something better. There will be better instruction for everyone, making the false assumption that there is one form of instruction that is better for everyone. We will be rid of the ills of IQ. There will be a *focus on substantive*

educational and developmental outcomes and results (New Era, 2002, p.24). Of course, what is precisely eliminated is the substance from the IEP, including a sound assessment upon which to base informed and individually tailored instruction in the skill and content areas, as promised under the law. Unlike the emperor's new clothes, this pretense is not a mere embarrassment. It has the potential to do great harm to the individual and to the culture at large (see below).

Baby:Bath Water::Intelligence:IQ

The offer to eliminate IQ is tempting. IQ tests are an abomination for many reasons, primarily because they have very little to do with thinking (what is the capital of Greece, what is a thief, what is missing, memorize the numbers). They are an especial abomination when applied to learning disabilities since the specificity of any learning disability will inevitably distort aggregate IQ scores by washing away at one and the same time high and low points. For example, children with a visual-spatial processing problem, do poorly on the block design portion of the performance scale but very well with the more sequential demands of picture arrangement on the same scale. The discrepancy between these two portions of the same scale would be disguised by a performance IQ that lies at the midpoint of the two extremes. The effect is to wash out the extremes, which are the very essence of the learning disability. This would be like saying that a person with only one leg, which had twice the average strength of an average single leg could be validly described as having average, two-leg strength.

Although it is tempting to snatch any opportunity to rid the field of IQ testing, the offer made to do just that by the President's Commission in their New Era document ought to be resisted at all costs. Despite its inadequacies as a reflection of intelligence, IQ measurement does maintain the centrality of the individual in the identification process.

Just because IQ has become a corruption of the idea of intelligence does not mean that the idea of intelligence itself has lost its value. When taken to mean the ability to think, to figure things out without specific instruction, intelligence becomes a meaningful standard against which to judge the progress of learning. I would offer the Raven Standard Progressive Matrices (Raven, 1976) as a reasonable instrument to measure actual intelligence and as a replacement for IQ as the standard to use in ability-achievement comparisons.

Presumably there are individual differences in intelligence and those differences ought to say something about an individual's rate, quality, and limits to learning. Singular, so-called good instruction would not be able to level effects due to variance in intelligence.

This fact seems lost to the President's commission, which effectively has thrown out the idea of intelligence along with IQ. Having thrown them both out, the only reference point is the general curriculum. Children are to be measured against only it, in the form of their response to instruction or adaptation to the general education classroom. Discrepancies or deficits are now defined solely in the light of an unassailable entity called instruction or general education. Is there any reason to believe that there is any more objectivity or worth to these idealizations than there is to IQ? Why must a child learn the algorithm for long division or for division by a fraction? Why learn the names of cloud formations?

The President's Commission objects vehemently to IQ-achievement discrepancy but offers no clear reason why. What we are told is:

• *IQ achievement discrepancies are not necessary for the identification of children as having a learning disability.* (New Era, 2002, p.24)

• *There is no compelling reason to continue to use IQ tests in the identification of learning disabilities. And that if we eliminated IQ tests from the identification of individuals with learning disabilities we could shift our focus to making sure that individuals are getting the services they need and away from the energy that is going into eligibility determination - Sharon Vaughn* (New Era, 2002, p.24)

• There is little justification for IQ tests

• Children don't need them.

For a document that touts *scientifically based instruction*, the lack of science to say nothing of reason in these pseudo-arguments raises more than one eyebrow.

In fact, the worst of the IQ test is that part that is most closely aligned with the general curriculum. There are formal, dictionary definitions, encyclopedic facts (How far is it from New York to Los Angeles?), speed delivery of memorized arithmetic facts, memorization of completely disconnected bits of information (digit span), manipulation of symbols with no semantic base (coding, symbol search) and opinion surreptitiously presented as fact (comprehension test items such as, tell me some advantages of getting the news from a newspaper rather than from a television news program).

A Learning Disability IS an *Instructional Casualty*

The New Era commission would have it that *instructional casualties* are categorically different than learning disabilities. A learning disability is in fact defined by a mismatch between instruction and the child's preferred way of thinking/processing. The federal definition (Federal Register. (1999). Vol.64, No. 48/ Friday March 12, Section 300.7) tells us that a learning disability is a *disorder in one or more of the basic psychological processes...that may manifest itself in an imperfect ability* to function in the context of typical classroom demands to *listen, think, speak, read, write, spell or to do mathematical calculations*. By definition, all students with learning disabilities have at least normal intelligence who, by reason of their neurological/psychological condition, are not able to access

instruction. Different students with different kinds of learning disabilities will fail to access different parts and kinds of instruction due to the differences in how their basic psychological processes are affected.

A learning disability is both an instructional and curriculum casualty that requires personalized adjustments to both instruction and curriculum in order for the individual to learn.

The Myth of Good Instruction

The idea put forth by the New Era commission that there is *scientifically based instruction* is a representation that defies both fact and reason. The debate rages on about back to basics versus constructivism. Back to basics claims practice as the scientific basis for instruction. Constructivism claims discovery and self-made interpretations. Of particular importance to learning disabilities, scientifically based effective instruction would vary based on the processing difficulty at issue. Would you teach reading the same way to a child who is severely phonologically impaired as to a child who is phonologically competent but cannot intuit orthographic patterns?

The hard sell of semantically loaded, *hot* but empty phrases like *good teaching, research-based instruction*, and *scientifically based instruction* is more than a little disconcerting. It sets up a tyranny of a falsely validated general curriculum from which people with individual differences will be hard put to escape.

Good Instruction Can Be Bad for Everyone

The current curriculum is highly fragmented, valuing memorization of dictionary definitions, encyclopedic facts, formal rules, and empty symbol manipulation over meaning itself. It is painfully evident in math where students with better than average intelligence can earn perfectly adequate grades without knowing anything. Take the example of one student, R, a sixth grade middle school student with no disability, who has tried to memorize the algorithm for multiplying with decimals without having any idea of what it means or yields (Woodcock & Johnson, 2001):

```
 1.05        1.05
 x.2         x.20
              000
             2100
            21.00
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Follow-up questions indicated that R could not round off 1.05, could not estimate about how much 1.05 x .2 would be, and given the problem of 1 x 1/2 thought the answer would be 1 1/2. R was receiving an A in math.

L is an example of another student, one with a learning disability in reading and language, who has progressed into high school with strong grades in math, needing no support, or so it is said. This student is happy to tell you that 22 x 2 = 44 is the answer to the problem that tells her a woman's car gets 22 miles to a gallon, she drives 2 weeks without getting gas, how far can she drive on 4 gallons of gas (Woodcock & Johnson, 1989). She consistently applied strategies that don't work without ever noticing the impossibility of the answers: to solve 8-5m = 3, by what number can you multiply each side, L's answer 8; or a + b + a + b = a2 x b2. At a meeting to develop the student's IEP, L's math teacher said that despite continuation of this kind of error, she was receiving C's and B's in Algebra I and therefore was functioning, in the math teacher's judgment, well. The advice offered to the student by the special education director at the meeting was a shameless promotion of *good* instruction, that the student should memorize strategies for Algebra I. This would raise the student's grade while bypassing learning.

Math does not have the monopoly on *good* instruction that fragments, formalizes, and disconnects from meaning. The standard (scientifically based??) instruction in writing (Hillocks, 2002) provides students with the following *formula you're going to follow* (words of a third grade teacher):

Introduction
- a sentence that grabs with a lead
- a thesis statement

Body
- 3 paragraphs, each with a topic sentence and at least 4 supporting sentences

Conclusion
- restatement of thesis and 3 main ideas

This *good* instruction leaves out all the important and difficult issues of writing, i.e., what is the substance of what you want to say, what is the structure of the information field itself, and therefore how should it be unraveled so that it can be presented in an accessible way to the reader.

Good instruction's fragmentation and disconnection from substance truly promotes encyclopedic knowledge, i.e., strings of information bytes devoid of the connections among them, making it possible for a nondisabled student to think a causal explanation has been provided by the following:

> *We even saw President Clinton make a speech about Memorial Day. That's why it is important that we honor the people that died in a war.* (actual grade 5 student writing sample collected during an educational evaluation performed by the author)

It also makes it possible for a high school student with a learning disability to come forward with the following tautology with the confidence that it means something:

> *Because publicly he was held in high esteem, people started to like him.* (actual student summary collected during educational evaluation performed by the author)

The idea that one, *scientifically based* curriculum suits

all has already failed (Lemke et al., 2001). As of the year 2000, the National Center for Education Statistics, Program for International Student Assessment (PISA) reported that, the general curriculum failed to bring its students to the top half of the 27 ranked countries in math, science, or literacy (Lemke, et al., 2001). Our general curriculum is 15th for reading literacy below Iceland, Ireland, and Korea. It is ranked 18th in math, adding this time the Czech Republic whose students perform better than ours. In science our ranking is 14th, still below the Czech Republic, Ireland, and Korea.

When and How Much Phoneme Awareness

Perhaps the best candidate for actually effective, scientifically based instruction would be phoneme awareness as the basis for learning how to read and spell. However, science has very little to tell us about instruction. Research does tell us repeatedly and with impressive clarity that there is a strong correlation between phoneme awareness and reading ability (Adams, 1998; Blachman, 2000). This suggests that information about the phonological structure of speech should be available in the curriculum. However, it does not tell us how, how much or when to teach it or in what way to which children.

In my reading of the literature, there is no consistent scientific evidence for how best to teach phoneme awareness. There are a number of phoneme awareness instructional studies that yield few benefits to reading skill (Troia, 1999). It seems that phoneme awareness might help in the early stages of alphabet learning but depends upon later reading instruction for its own development (Blachman, 2000).

Further, children with phonologically based learning disabilities will need special instruction, i.e., special education, in order to access the phoneme awareness curriculum. This is the point at which assessment is of critical importance. Different methods will have to be used, for example, with:

- children who have been assessed to have a structural speech impairment and cannot produce the sounds they are trying to learn
- children who have been assessed to have ADHD
- children who have been assessed to guess counterproductively at words rather than analyze their phonological and orthographic structures.

Conclusion

Until now IDEA held out the promise to children with learning disabilities, that if they could not find a way to fit into the general curriculum, they would be entitled to an IEP that adjusted the curriculum to their needs. This has been, of course, a great benefit to individuals with learning disabilities. It has been an even greater benefit to the general curriculum since it ensures its openness to change, adaptation and advancement. This, in turn, benefits the culture at large, providing the diversity necessary for creative growth. Were the New Era to be set in motion, it would not be too long before the suppression of individual differences would be reflected in a stagnant culture with no potential for growth, innovation, or adaptation (Swenson, 2000).

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