Profiles of Academic Achievement and Cognitive Processing in College Students with Foreign Language Difficulties

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Abstract

This study evaluated the cognitive and achievement profiles of college students experiencing difficulties in foreign language (FLD group). Because past research appears to have generated different results based on the type of comparison groups utilized, we attempted to obtain a better representation of students with foreign language difficulties. A total of 77 students who had difficulty in foreign language were compared: (a) to a sample of 110 students with academic difficulties in nonforeign language areas, (b) to the standardized norms for the tests of cognitive and academic abilities, and (c) to their own group means (an ipsative analysis). Based on national norms and ipsative comparisons, primary areas of difficulty for FLD students appear to be in spelling and in long-term storage and retrieval. Difficulties were also noted in auditory processing and processing speed. Strengths were noted in quality of writing and verbal comprehension. As a general finding, it does not appear that FLD students have difficulties with native language abilities such as vocabulary knowledge or reading comprehension. Additional strengths exhibited by the FLD group were only in relation to the non-FLD group, who had academic difficulties in non-FLD areas. These strengths included quantitative knowledge, perceptual organization/visual processing, and practical mathematical ability. Many students in the non-FLD group were referred for difficulties in math coursework; therefore, the strengths exhibited by the FLD students should be considered in this context. Finally, significant gender differences were noted, with more males than females experiencing foreign language difficulties.

Some universities report that over 50% of students referred for suspected learning disabilities in college are primarily referred because of an inability to meet foreign language requirements (Ganschow, Sparks, Javorsky, Pohlman, & Bishop-Marbuty, 1991). The inability to meet a language requirement can have a number of causes (Demuth & Smith, 1987), including low IQ, poor motivation, or anxiety. Many investigators hypothesize that students' foreign language learning problems result from underlying native language learning problems (Au, 1988; Demuth & Smith, 1987; Ganschow & Sparks, 1987; Sparks & Ganschow, 1991; Sparks & Philips, 1999) occurring in a number of areas, including phonological processing and phonological awareness (Aidinis & Nunes, 2001; Barr, 1993; Downey & Snydor, 2000; Sparks & Ganschow, 1993, 1995; Sparks & Phillips, 1999); reading comprehension (Downey & Snydor, 2000; Hodge, 1998); writing skills (Downey & Snydor, 2000; Grigorenko, Sternberg, & Ehrman, 2000; Sparks & Ganschow, 1991); listening (Downey & Snydor, 2000; Grigorenko et al., 2000; Sparks & Ganschow, 1991); expressive skills (Demuth & Smith, 1987); vocabulary (Barr, 1993); spelling (Downey & Snydor, 2000; Hill, Downey,

Sheppard, & Williamson, 1995; Hodge, 1998; Sparks, Ganschow, Pohlman, Skinner, & Artzer, 1992); memory (Barr, 1993; Grigorenko et al., 2000); and auditory processing (Hodge, 1998).

Sparks and Ganschow and their colleagues have integrated much of this work in the Linguistic Coding Differences Hypothesis (LCDH; Ganschow, Sparks, & Javorsky, 1998; Sparks & Ganschow, 1995; Sparks & Ganschow, 1991), according to which foreign language learning is dependent on the following native language components: phonological-orthographic (sound and symbol), syntactic (grammar), and semantic (meaning). Evidence suggests that these linguistic coding deficits are characteristic of students with foreign language difficulties (Sparks & Ganschow, 1993).

The Ganschow and Sparks team have conducted numerous studies of both high school and college students to examine the relationship between foreign language ability and native language ability. For example, in a sample of 30 college students with average to above-average grades, Ganschow et al. (1991) found that poor foreign language students differed from good foreign language students on measures of spelling, writing, syntax, and phonological functioning, but not on vocabulary knowledge and reading comprehension. Differences were also found on math calculation problems but not on applied math problems. A major finding of the study was the large degree of subtest variability within many domain scores. Based on these results, Ganschow et al. (1991) emphasized the need to look at subtest scores in future studies. In a later study, Sparks, Philips, Ganschow, and Javorsky (1999) found very minimal correlations between foreign language performance and achievement scores in reading, math, arithmetic, spelling, and written language. In this sample of 67 students, they compared LD students who had foreign language difficulty to LD students who did not have foreign language difficulty. It is possible that the use of the different sample is the reason why they did not find the differences obtained by Ganschow et al. (1991), whose sample consisted of students with average to above average grades.

Different theorists make different predictions about the relationship between general intelligence and foreign language aptitude. Sparks and Ganschow cited several studies concurring that foreign language aptitude is different from general intelligence (Ganschow et al., 1991; Ganschow & Sparks, 1995; Sparks & Ganschow, 1991; Sparks, Ganschow, Artzer, & Patton, 1997). However, there may be several reasons why this relationship varies. First, Grigorenko et al. (2000) speculated that intelligence and aptitude may play differential roles in foreign language learning. Second, the difficulty level of the language being learned may affect the correlation between foreign language learning and general intelligence. Third, when discrepancy models (based on differences between IQ and achievement) are used in evaluating foreign language learning difficulties, the identification process may be flawed (Sternberg & Grigorenko, 2002). This relationship appears to be important in determining whether IQ needs to be controlled for statistically when evaluating patterns of foreign language performance.

Researchers have not yet found a clear pattern of relationships between foreign language achievement and cognitive variables (Ho, 1987). The work of the Sparks and Ganschow team has had mixed results depending on the type of sample being evaluated. Further research is important for developing a standardized criterion for documenting a foreign language difficulty and granting course waivers or substitutions as appropriate. In particular, information is needed that can help in determining reasonable academic accommodations for students exhibiting foreign language difficulties.

Scott and Manglitz (2000) outlined specific steps in determining accommodations for foreign language learners: (a) consider the unique aspects of the language that is being studied and the nature of the progression into higher level courses; (b) use an extensive and creative continuum of accommodations, with course substitutions or waivers considered only after in-class interventions; (c) make research on foreign language learning the cornerstone in determining appropriate, individualized accommodations, followed by an intensive review of the student's individualized needs. Other

researchers have described model programs that include academic advising leading to modified foreign language instruction utilizing best practices identified through efficacy research (Downey & Snyder, 2001). Still others argue that some students are unable, even with modified programs, to successfully complete several semesters of language study, and should therefore be allowed course substitutions (Shaw, 1999). Each of these researchers emphasizes the importance of research on students with foreign language difficulties to guide decision-making for accommodations.

The current study evaluated several areas of native language ability and cognitive processing implicated by past research, which are commonly evaluated by standardized tests of academic achievement and cognitive abilities. These include reading comprehension, writing, the ability to infer rules, general cognitive abilities, processing speed, visual and oral skills, quantitative knowledge, and immediate and delayed memory. Because of the difficulty in giving an extensive test battery to large samples of nonreferred college students, the study utilized a relatively large sample of students who were administered such a battery after being referred for academic difficulties. Students who had difficulty in foreign language were evaluated in three ways. They were compared: (a) to a sample of students with academic difficulties in nonforeign language areas, (b) to the standardized norms for the tests of cognitive and academic abilities, and (c) to their own group means (ipsative analysis).

The study attempted to answer the following research questions:

1. Which areas of academic achievement and cognitive processing differentiate between students with foreign language difficulties (FLD students) and students with difficulties in academic areas other than foreign language (non-FLD group)?
2. Do FLD students differ from the typical population on standardized tests of achievement and cognitive processing?
3. Do FLD students show a particular pattern of strengths and weaknesses compared to their own group performance?

Method

Participants

Participants were 187 college students who were referred to a university-based assessment clinic for academic difficulties. The participants were enrolled at one of two universities or one of three community colleges within a 100-mile radius of the assessment clinic. The foreign language difficulty group (FLD) (N=77) reported having difficulty in a foreign language and had received a grade of F, D, or W (withdrawal) in all college-level foreign language classes taken. The non-FLD group (N=110), who came from the same sample, had reported difficulty in a nonforeign language area, had completed but not reported any difficulty in foreign language classes, and had not received any grade lower than C in a foreign language class. Of the total sample, 70% took only Spanish courses, 8% took one Spanish course and one course in another language, 3% took French, 4% took German, 4% took Italian, and 10% took some combination of other languages.

Demographics of the total sample were as follows: Males = 49.8%; 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). Because of the large amount of missing data for ethnicity, general data for the two schools that made up the majority of participants (90%) are reported. The ethnicity data for those two institutions were as follows: Anglo - 67% and 64%, African American – 12% and 28%, Hispanic – 8% and 4%, Asian American - 3% and 1%, respectively. Additional demographics of the sample compare those students with foreign language difficulty to those without a foreign language difficulty, and can be seen in Table 1.

Measures of Academic Achievement and Cognitive Processing

Academic achievement and cognitive processing were assessed using subtests and cluster scores from the Woodcock Johnson-Revised Tests of Achievement (WJ-R-ACH; Woodcock & Johnson,

Table 1

A comparison of the FLD and non-FLD groups

	FLD group		Non-FLD group		
Characteristic	*M*	*SD*	*M*	*SD*	Test statistic
					ANOVA
Foreign language Grade (2=F, 3=D-, 4 =D, 5=D+,…13=A)	2.46	.91	9.98	2.43	$F(1,131) = 473$, $p=.00$
Overall GPA (0=F, 1=D, 2=C, 3=B, 4=A)	2.43	.46	2.38	.53	$F(1,20) = .05$, $p=.82$
Failed classes	10.68	8.39	7.05	5.27	$F(1,187) = 13.50$, $p=.00$
Age	23.55	3.18	23.28	6.16	$F(1,187)=.12$, $p=.72$
Semesters in college	11.94	4.7	9.58	5.7	$F(1,183)=8.5$, $p=.00$
SAT total	984	172	958	187	$F(1,85)=.34$, $p=.55$
Full scale IQ	103.90	11.92	101.51	10.22	$F(1,181)=2.1$, $p=.14$
	FLD %		Non-FLD	%	*CHI SQUARE*
Ethnicity					
Anglo	19.5%		14.9%		X^2 (187)=2.31,$p=.67$
African American	2.6%		.9%		
Asian American	0.0%		.9%		
Hispanic	1.3%		1.8%		
Unknown	77.0%		81.0%		

Table 1 - *continued*

	FLD %	Non-FLD	%	*CHI SQUARE*
Language taken				$X^2(187)=6.11$, $p=.41$
Spanish only	72.4%	72.4%		
Spanish plus another language	3.9%	2.7%		
French	7.9%	1.8%		
German	2.6%	3.6%		
Italian	7.9%	14.5%		
Other				
Gender				
Female	32.5%	63.2%		X^2 (191)=17.31,$p=.00$
Male	67.5%	36.8%		
Community college	11%	16%		X^2 (187)=1.06,$p=.30$
University	89%	84%		
Previous LD diagnosis	16.9%	6.2%		X^2 (187)=5.55,$p=.01$
Math LD	25%	15%		X^2 (187)=2.86,$p=.09$
Reading LD	13%	7%		X^2 (187)=1.91, $p=.16$
Writing LD	32%	18%		X^2 (187)=4.96,$p=.03$

1990), the Woodcock Johnson–Revised Tests of Cognitive Ability (WJ-R COG; Woodcock & Johnson, 1990), and the Wechsler Adult Intelligence Scale, Third Edition (WAIS-III; Wechsler, 1997).

Procedure

All participants first completed an intake form that asked for reason for referral, demographic information, and academic history. An appointment was then scheduled for either one whole day or two half days of testing with the academic and cognitive measures. Testers were employees of the assessment center who worked on a part- or full-time basis conducting psychoeducational evaluations. All testers had completed a minimum of two semesters of graduate coursework in psychoeducational testing, a practicum in assessment, and an eight-hour training session related to testing in the clinic. All protocols were checked for scoring accuracy by another tester, and for transcription errors by an employee of the clinic. If scoring questions arose, they were discussed with supervisors until consensus was reached. All tests

and reports were first supervised by a master's level clinical psychologist, followed by additional supervision by a licensed clinical psychologist. Regular required meetings were held in which testing issues were reviewed.

Eligibility for a diagnosis of a specific learning disability in math, reading, or writing was based on the following criteria: (a) a discrepancy of one standard deviation between their FSIQ score on the WAIS-III and an Achievement Cluster Score on the WJ-R Achievement Battery; (b) a history of learning difficulties in the area of underachievement, as documented by course failure at the high school or college level compared to adequate achievement in other subject areas; and (c) a processing deficit of at least one standard deviation between FSIQ and a Processing Cluster score on the WJ-R Cognitive Abilities Test.

Results

Initial analyses were conducted to characterize the two groups of students. As can be seen in Table 1, the two groups differed on grade point average in foreign language courses, number of failed classes, total semesters in college, and previous and current LD diagnoses. Specifically, the FLD group had a lower GPA in their foreign language classes (as expected, since they were selected based on this variable), had failed more courses overall (including their foreign language failures), had been in college an average of three extra semesters, were more likely to be male, were more likely to have a previous diagnosis of learning disability, and were more likely to receive a current diagnosis of learning disability in writing. There were no differences across group by language taken, overall GPA, age, SAT score, full scale IQ, ethnicity, or type of college (community college versus university).

Because there might be differences across subjects due to the language they had taken (Spanish, Italian, German, and French), a preliminary analysis compared students' cognitive and achievement subtest scores of students across language taken. An ANOVA, with a Bonferonni correction for familywise error, revealed no statistically significant differences on subtests across type of language. Therefore, all foreign languages were included in subsequent analyses.

To address the first research question, 27 subtests measuring academic achievement and cognitive abilities were analyzed for differences between the FLD and the non-FLD groups. The means and standard deviations for these are found in Table 2. A multivariate analysis of variance (MANOVA) was used to determine differences between the two groups. Missing data were not problematic, nor were there any outliers. The test of the assumption of homogeneity of covariance matrices in the two groups resulted in a fail-to-reject decision, Box's $M = 481.9$, F (378, 81735) $= 1.07$, $p > .05$, suggesting no violation of the assumption. The multivariate null hypothesis of equality of means across the two groups for all variables was rejected, Wilk's lambda = .756, F (27, 159) = 1.90, $p < .05$, indicating true mean differences between the groups on the variables of interest.

To identify the dependent variables that contributed to the rejection of the multivariate null, univariate ANOVAs were conducted for each of the dependent variables. Six dependent variables emerged as differentiating between the groups. That is, the FLD group scored higher than the non-FLD group on the following subtests: Arithmetic, $F(1,186) = 11.12$, $p = .001$; Comprehension, $F(1,186) = 5.57$, $p = .02$; Block Design, $F(1,186) = 6.45$, $p = .03$; and Applied Problems, $F(1,186) = 4.96$, $p = .02$. The non-FLD group scored better than the FLD group on Memory for Names, $F(1,186) = 5.83$, $p = .03$; and Visual Closure, $F(1,186) = 4.57$, $p = .02$.

To address the second question of how the FLD students differed from the normal population on the 18 subtests of achievement and cognitive abilities, a one-sample t-test was performed on each of the measures, comparing the FLD group means to the population means obtained from the WAIS-III, WJ-R ACH, and WJ-R COG standardization norms. In total, three series of t-tests were performed: one for the WAIS-III subtests, one for the WJ-R ACH subtests, and one for the WJ-R COG subtests. The population mean for all WAIS-III

Table 2

Means and Standard Deviations of Subtests Measuring Academic Achievement and Cognitive Abilities

	FLD			Non-FLD		
Subtest	*M*	*SD*	*n*	*M*	*SD*	*n*
WAIS-III						
Arithmetic	10.4	2.3	77	9.3	2.3	110
Digit span	10.0	2.5	77	9.7	2.5	110
Information	10.5	2.4	77	10.6	2.4	110
Comprehension	12.4	2.4	77	11.5	2.5	110
Picture completion	10.4	2.7	77	9.7	2.5	110
Digit-symbol coding	9.2	2.8	77	9.6	3.0	110
Block design	10.3	3.1	77	9.3	2.4	110
Picture arrangement	10.4	2.7	77	10.2	2.7	110
Similarities	11.4	2.5	77	10.7	2.5	110
WJ-R ACH						
Letter-word ID	103.2	14.1	77	104.6	13.0	110
Passage comprehension	101.1	15.1	77	103.3	11.1	110
Calculation	99.8	8.9	77	100.2	11.7	110
Applied problems	96.4	10.2	77	93.4	8.3	110

(table continues)

Table 2 - *continued*

subtests is 10; all WJ-R subtests have a mean of 100. A Bonferroni correction was utilized for each analysis to control for familywise error, and p was set at .006, .008, and .004, respectively, for the three sets of analyses. On the WAIS-III, the FLD students received higher scores than the population mean on the subtests of Comprehension, (M = 12.4), $t(76) = 8.71$, $p < .006$; and Similarities, (M = 11.4), $t(76) = 4.82$, $p < .006$. On the WJ-R ACH, the FLD students received higher scores than the population mean on the Writing Samples subtest, (M = 104.5), $t(76) = 2.72$, $p < .008$; and normative weaknesses on Applied Problems, (M = 96.4), $t(76) = -3.10$, $p < .008$; and Dictation, (M = 89.2), $t(76) = -8.21$, $p < .008$. On the WJ-R COG, the FLD group demonstrated normative weak-

Table 3

Summary of Strengths and Weaknesses of FLD Group Compared to: (a) Non-FLD Group, (b) Test Norms, and (c) Ipsative Performance

Measure	Description of abilities measured [a]	Strength (S) or weakness (W) compared to: Non-FLD, norms or ipsative
WAIS III Arithmetic	Verbal comprehension, working memory and quantitative knowledge	(S) Non-FLD
WAIS III Comprehension	Verbal comprehension and crystallized intelligence	(S) Non-FLD (S) Norms
WAIS III Similarities	Verbal comprehension and crystallized intelligence	(S) Norms (S) Ipsative
WAIS III Digit symbol coding	Processing Speed	(W) Ipsative
WAIS III Block design	Perceptual organization and visual processing	(S) Non-FLD
WJ-R ACH Applied problems	Practical mathematical ability	(S) Non-FLD (W) Norms
WJ-R ACH Dictation	Punctuation, spelling, and word usage	(W) Norms (W) Ipsative
WJ-R ACH Writing samples	Quality of written expression, exclusive of mechanics	(S) Norms (S) Ipsative
WJ-R COG Memory for names	Long term storage and retrieval	(W) Non-FLD (W) Norms (W) Ipsative

(table continues)

Table 3 - continued

Measure	Description of abilities measured [a]	Strength (S) or weakness (W) compared to: Non-FLD, Norms or Ipsative
WJ-R COG Incomplete words	Auditory processing	(W) Norms
WJ-R COG Visual closure	Visual processing	(W) Non-FLD

[a] according to test authors and McGrew & Flanagan (1998).

nesses on Memory for Names, (M = 92.7), $t(76)$ = -5.95, p < .004; and Incomplete Words, (M = 93.7), $t(76)$ = -4.20, p < .004, and had no normative strengths.

The third research question was whether the FLD group showed a particular pattern of strengths and weakness compared to their own group performance (i.e., what are their ipsative strengths and weaknesses). To answer this question, grand subtest means were first computed for the FLD group on the WAIS-III, the WJ-R ACH, and the WJ-R COG. The within-group grand mean for the WAIS-III subtests was 10.56, the within-group grand mean for the WJ-R ACH was 99.03, and the within-group grand mean for the WJ-R COG was 98.06. One-sample t-tests were used to compare the group means for each subtest against the grand mean for all subtests in each measure to determine significant deviations (i.e., ipsative strengths and weaknesses). A Bonferroni correction was again used to control for familywise error. Ipsative strengths were found on the subtests of Similarities, (M = 11.4), $t(76)$ = 2.89, p < .006; and Writing Samples, (M = 104.5), $t(76)$ = 5.45, p < .006. Ipsative weaknesses were found on Digit-Symbol Coding, (M = 9.2), $t(76)$ = -4.44, p < .006; Dictation, (M = 89.2), $t(76)$ = -9.81, p < .008; and Memory for Names, (M = 92.7), $t(76)$ = -4.37, p < .004.

Table 3 summarizes the results from the three research questions. Specifically, it shows strengths and weaknesses of the FLD group compared to: the non-FLD group, the standardized test norms, and their own ipsative performance.

As a final analysis, we reconsidered the finding that students with foreign language difficulties performed poorly on the Dictation subtest of the WJ-R ACH. This finding held when compared to the standardization norms and the ipsative comparisons. The Dictation subtest on the WJ-R ACH battery was developed to test three very specific types of writing knowledge - punctuation, spelling, and word usage - and raw scores and percentage correct can be computed for each of these areas. We further analyzed these data to see if punctuation, spelling, or word usage emerged as being particularly problematic for the FLD group. The mean percentage-correct scores for the FLD students were Punctuation-79%, Spelling-66%, and Word Usage-76%, suggesting that spelling ability was the primary area of deficit.

Discussion

The purpose of this study was to clarify the nature of foreign language difficulties among college level students in terms of the strengths and weaknesses they displayed on tests of achievement and cognitive processing. The decision to grant a course waiver or substitution based on lack of foreign language competence remains a difficult one. According to Sparks and Javorsky (2000), "there are no currently accepted, empirically valid procedures to develop eligibility criteria to determine which students should be permitted to apply for course substitutions" (p. 650). Because past research appears to have generated different results based on the type of comparison groups utilized, we attempted to obtain a better representation of students with foreign language difficulties by utilizing three different comparisons: to a group of students with academic difficulties in areas other than foreign language, to the population norms, and to FLD students' own within-group performance (e.g., ipsative strengths and weaknesses).

Compared to national norms and ipsative comparisons, primary areas of difficulty for FLD students appeared to be in spelling and in long-term storage and retrieval. Difficulties were also noted in auditory processing and processing speed. Strengths were noted in quality of writing and verbal comprehension. As a general finding, it does not appear that FLD students have broad difficulties with native language abilities such as vocabulary knowledge or reading comprehension.

The area of spelling was low for the FLD group compared to the standardized norms and was an ipsative deficit. Learning to spell involves knowledge of how sounds (phonemes) map onto letters (graphemes), as well as typical and atypical conventions to produce accurate spelling. Additionally, spelling requires knowledge of rules and use of memorization (Steffler, 2001). This is congruent with the deficit found in long-term storage and retrieval for the FLD group. This deficit may be affecting both spelling ability and the ability to retain new words and rules. Given the heavy reliance on memorization in foreign language coursework, students who are unable to remember newly acquired words will have difficulty when trying to speak, write, or read a new language that has not yet become cognitively engrained or automatized. Interestingly, the FLD students showed only long-term memory difficulties.

The difficulty with spelling may also be related to the weakness exhibited by the FLD group on Incomplete Words, a task of phonetic coding and auditory processing. The link between phonological awareness and spelling has been documented in numerous studies of learning to read in English and other languages. However, languages vary in their phonological characteristics, and the nature of phonological segmentation of the language being attempted may determine the impact of spelling and phonological difficulties (Aidinis & Nunes, 2001). The majority of students in the current sample were taking courses in Spanish; therefore, this finding could change if another language was evaluated. Demuth and Smith (1987) noted that students tend to have particular difficulty with Spanish due to its heavy emphasis on audio-lingual abilities. These results suggest that future research should focus on the type of language being learned, as well as the particular aspects of spelling and auditory processes involved (e.g., memorization of sight-words, phonetics).

The FLD group exhibited an ipsative weakness on a task of processing speed, which could underlie difficulties in all academic tasks. This weakness was a within-group weakness, but not a weakness compared to the group with academic difficulties in nonforeign language areas. This makes intuitive sense, as lower processing-speed ability is not specific to students with difficulties in foreign language, but it is a characteristic of students with difficulties in a wide variety of academic areas.

Three subtests appeared as strengths when compared to national norms or to the FLD ipsative performance: Similarities, Writing Samples, and Comprehension. Similarities and Comprehension are both measures of verbal ability, and more specifically, what is largely recognized in the literature as crystallized ability. Crystallized ability is essentially acculturated knowledge, and is measured by tasks indicating breadth and depth of

knowledge of the dominant culture (Horn & Noll, 1997). This suggests that students with foreign language difficulties perform as well as or better than the typical population on tasks requiring semantics and other types of acculturated knowledge. Writing Samples is a measure of the quality of one's content and writing style, not the mechanics of grammar, punctuation, and spelling. The FLD students appeared to have difficulty spelling (which often results in lowered grades on writing activities), but not in their ability to express themselves in writing.

Interestingly, a third of the FLD students received a diagnosis of learning disability in writing as a result of the current evaluation. On the surface, this is somewhat surprising, as the Writing Samples subtest was both an ipsative and a normative strength for them. However, it appears that this result is due to their very low performance on the Dictation subtest, which, together with Writing Samples, produces the Written Language Cluster score. Therefore, students obtained a significant IQ- achievement discrepancy in Writing primarily due to one of the two subtests in this cluster. The data for this study were collected prior to the publication of the WJ-III. The new version includes two written language cluster scores, one that includes spelling and one that does not. Additional research with the WJ-III will be able to better discriminate the writing abilities of these students.

Additional strengths exhibited by the FLD group were only in relation to the non-FLD group, who had academic difficulties in non-FLD areas. These strengths included Arithmetic, Applied Problems, and Block Design. Many students in the non-FLD group were referred for difficulties in math coursework; therefore, the strengths exhibited by the FLD students must be considered in this context. When compared to a group struggling in math, the FLD group showed strengths in quantitative knowledge and on one measure of visual processing. However, it would be misleading to say that these are true strengths for the FLD group, as none of these areas were strengths on an ipsative basis or when compared to national tests norms. In fact, the FLD students were significantly below the national test norms for Applied Problems. Therefore, it appears that these are strengths only when compared to a group of students having academic problems primarily in math-related areas. This confirms the need to clearly identify the comparison group. As mentioned, many conflicting findings in previous investigations appear to be due to the nature of the comparison group.

Some additional findings not included as apriori research questions involved the characteristics of the two groups of students. First, our sample of FLD students was significantly more likely to be male. It cannot be ascertained from the data set whether the base rate for males taking foreign language courses was higher than for females, whether more males sought help for their difficulties, or whether this represents a true gender difference in foreign language ability. Second, we found that the FLD students had been enrolled for an average of three semesters longer than the non-FLD students (12 semesters compared to 9). This may be related to their higher failure rate in courses, an average of 10 classes for the FLD group compared to 7 for the non-FLD group. That is, if both groups of students failed an average of one class per semester, the failure rates compared to time in school are consistent across groups.

Practical implications of our study include recommendations for specific interventions and accommodations for students with foreign language difficulties. Rather than give automatic course waivers, FLD students might first attempt language courses with accommodations. Based on our findings, we suggested that FLD students not be penalized for difficulties in spelling. In addition, their processing speed difficulties argue for extended time on tests and timed assignments. Further, FLD students may need tutoring specifically designed to increase their long-term memory skills. Numerous practical books on memory strategies may be recommended for these students. Finally, FLD students' strengths in reading comprehension and writing, compared to auditory processing, suggest that they may do better in courses that emphasize reading and writing the language, rather than conversational classes. Scientific work documenting specific accommodations developed for foreign

language learners (Scott & Manglitz, 2001), best practices for instruction in foreign language (Downey & Snydor, 2001), and procedures for granting waivers or substitutions (Philips, Ganshow, & Anderson, 1991) should also be consulted.

Limitations

This study was intended to evaluate a large sample of students with foreign language difficulty, necessitating the use of standard batteries of achievement and cognitive processing. A best practice approach might have been to select a comparison sample of non-FLD students without academic problems from the same institution and administer the assessment battery to them. The logistics and expense of administering an extensive test battery to a large sample of nonreferred students was prohibitive, and was rejected in favor of utilizing national norms for the tests batteries. An additional limitation involves the fact that a clinic-referred sample may not be generalizable to the population of students who fail foreign language. Future studies would benefit from evaluating subtypes of foreign language difficulties.

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