LOCAL NAVAJO NORMS FOR THE WECHSLER INTELLIGENCE SCALE FOR CHILDREN —THIRD EDITION

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This project was designed to develop Navajo Norms for the Wechsler Intelligence Scale for Children-Third Edition (WISC-III) in the Gallup McKinley County Schools (GMCS), New Mexico and to examine the differences of the Navajo students' WISC-III profiles (subtest scores) in regard to language proficiency and residency (urban or county). A stratified random sample of 334 Navajo students from 18 elementary schools in GMCS were tested with the WISC-III and The Gallup Language Proficiency Report, a language proficiency instrument designed by the GMCS Speech Therapists. Significance tests comparing means by location of the school and level of English proficiency were calculated using the t-test. Urban Navajo students have higher WISC-III Verbal scores than those Navajo students who live in the county. Navajo students who are proficient in English have higher WISC-III Verbal scores than those Navajo students who are functional in English. There are three Performance subtests (Coding, Block Design, and Mazes) that do not have a verbal overlay; the Navajo students who were proficient in English and the Navajo students who were functional in English scored equally well in these subtests. The Navajo norms for the WISC-III are an additional tool to help separate language and/or cultural differences from learning difficulties; the Navajo norms are used in conjunction with the Standard Norms. Navajo norms are a part of bicultural services.

Introduction

Then Navajo students are referred for testing because they are perceived to have learning problems, evaluators must be aware of Navajo language and cultural differences as they assess the Navajo students' educational strengths and weaknesses. This paper addresses the use of Navajo norms for the WISC-III as an additional tool to assess Navajo test scores. Navajo norms then are seen as a bicultural service allowing Navajo students' WISC-III scores to be compared to the WISC-III scores of their Navajo peers as well as the general population.

Language/cultural differences and learning problems are intertwined and they represent a combination of factors. Navajo students, as students in all cultures, vary in their educational strengths and weaknesses and in how they process information. Many Navajo students have a greater strength in processing information through their visual channel of learning than they have in language or in the processing of information through their auditory channel of learning (Cundick, 1970; Hynd, Quackenbush, Kramer, Conner, & Weed, 1979; Naglieri, 1984).

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The Navajo often use non-verbal or indirect communication (Manuel, 1991). Therefore, traditional Navajo education was done more by observation and actual experience and less by verbalization (George, 1979). Navajo children watch an adult and then do the same without asking questions.

There are differences between the Navajo and the dominant cultures, in how they process information. Yates (1987) discussed how the Indian child understands the environment through intuitive, visual and pictorial means, but success in school is largely dependent on auditory processing, abstract conceptualization and language skills. When Navajo kindergarten students with a mean chronological age of 5.5, in a reservation school, were tested by trained school personnel, they had a mean receptive language age of 3.1 as measured by the Peabody Picture Vocabulary Test-Revised, while their Visual Motor Integration test age was 5.7 (Tempest & Jordan, 1996). Navajo students come to school with visual motor skills but they may have needs in receptive language.

Minority groups who perform poorly in school have historically been discriminated against (Cummins, 1989). Ogbu (1995) helps us understand cultural diversity and learning. Historically he differentiated between voluntary and involuntary minorities. Voluntary minority are those who come to America willingly in hope of a better life. They desire the opportunity for further education. Involuntary minority are those whose ancestors were brought to America as slaves or who had their native language and culture taken from them. They may resist the values of the mainstream, one of which, may be the educational system. If the children go to school with the parental message that school is important and that educators can be trusted, they are more likely to benefit.

Finally, Dehyle (1992) related that minorities may perceive their future chances for jobs and other benefits of education as limited, resulting in reduced motivation to persevere in their school work. Educators must understand how the Navajo see the world around them as it relates to education.

A multi-disciplinary team (MDT) approach is used for assessment and placement of the minority student in special education. The team consists of all those involved with the student's education, including the parents. The MDT is an outgrowth of the Education of the Handicapped Act, Public Law 94-142 (1975) and its governing regulations. The Education of the Handicapped Act has been renamed the Individual with Disabilites Education Act (IDEA) after reauthorization in 1991, and it has reaffirmed the MDT process (Maroldo, 1993). In 1997 there was yet another reauthorization of IDEA. The new IDEA strongly promotes parental participation, accountability of educational personnel and responsiveness to the growing needs of an increasingly more diverse society (Mills, 1997). No one person or test score places the student in special education. The team of qualified individuals, including the parent, places the student based on multiple test scores, including the student's present level of performance and student portfolio information. Nevertheless, some Navajo students are placed in special education because of language and cultural issues. McShane and Plas (1982) suggested that given the substantial failure of public schools to educate Indian children there is a strong need for measures that allow adequate diagnosis and educational prescription. Many of these measures are available through standardized test scores that are interpreted judiciously.

Important data can be obtained from the WISC-III if all test results are addressed and used appropriately. Sattler (1992) stated that standardized intelligence tests provide good indices of future levels of academic success and performance as defined by the majority culture.

Local norms are an aid to understanding minority groups such as the Navajo who are (a) not adequately included in the normative sample of the WISC-III and (b) not similar in their average WISC-III Verbal profile to that of the standardized group. Wechsler (1991) shows that the WISC-III standard norms includes 2.5% of Native American (from southern New Mexico only), Eskimo, Aleut, Asian and Pacific Islanders. Local norms are supported by the following: (a) The American Psychological Association (1985) states that test publishers should encourage the development of local norms by test users when the published norms are insufficient; (b) Lisa Habedank (1995) in Best Practices in School Psychology states that local norms may decrease the likelihood of bias in decision making. Local norms promote the identification of educational needs; (c) Anastasi (1988), Dana (1991), Kamphaus (1996), and Oakland (1977), in their Psychological measurement texts suggest that local norms are appropriate norms for many testing purposes; (d) Shinn (1989) states that local norms provide a way to address the problems of traditional testing procedures for minority students; and (e) Kamphaus and Lozano (1984) believe that local norms may sometimes be more useful than national norms when a school district's population is linguistically and culturally different.

Language proficiency testing and intelligence testing normative data are tools to help separate language and cultural differences from learning difficulties. These tools help to determine appropriate educational program and placement. Appropriate educational programs lead to academic success, a powerful motivator, which is experienced by the Navajo student. Locally normed test data combined with portfolio support creates a dynamic holistic assessment package of the child's function where it counts most – in his cultural community. Teaching is geared to the students' present level of language functioning. The educator's goal for all Navajo students is to have adequate verbal skills so they can succeed in the mainstream of the dominant culture, if they desire. Therefore, the Navajo norms for the WISC-III are used in conjunction with the standard norms, so the student's mobility is in no way compromised.

This study was designed to develop Navajo norms for the WISC-III and to answer the following questions: What is the average Navajo WISC-III profile? When the Navajo' subtest scores are averaged how do they compare to the subtest scores of the standardized population? How does language proficiency influence the Navajo WISC-III profile? How does residence measured by those who attend urban schools (off reservation) versus those who attend county schools (on reservation) influence the Navajo WISC-III profile?

Method

Participants

The Gallup McKinley County School District is located in the northwest corner of New Mexico. Twenty-nine schools are located on and off the Navajo reservation extending over 5,000 square miles. Seventy-two percent (10,154) of the student population is Navajo.

Gallup McKinley County Elementary School principals were contacted (18 schools, 4,501 students). The project was designed in the Spring of 1993 and completed in the Spring of 1994. Class lists of the Navajo students in the elementary grades were obtained. Eight percent of the males and the females were selected in each grade via a stratified random sampling by age and gender. The students ranged in age from 6-0 to 11-11. Information as to language used in the home, high school graduation, parental employment and environmental issues was obtained.

Procedure

Ten Navajo liaisons employed by the school system were trained to interview the parents. At the interview, the parents had the option of signing a permission to test.

Eight school diagnosticians trained in the administration of the WISC-III tested the students. WISC norms were developed using the same model as that of Wechsler (1991). For each of the thirteen subtests the distribution of raw scores at each age level was converted to a scale having a mean of 10 and a standard deviation of 3. A cumulative frequency distribution of the raw scores was prepared for each age group. The distribution was normalized and the appropriate scaled score for each raw score was computed. The progression of scaled scores was examined for each test and minor irregularities were eliminated by interpolation. The SAS software package, Version 6.08, was used for all calculations. The Navajo norms for the WISC-III are used in the same way as the Wechsler norms are applied. WISC-III profiles were developed for language proficiency and city and county.

Navajo liaisons were trained to evaluate the child's language dominance and proficiency using a language assessment tool, The Gallup Language Proficiency Report, designed by the speech therapists of Gallup McKinley County Schools in 1988. This language assessment tool was devised by compiling portions of the Preschool Language Assessment Instrument and the Test of Problem Solving. Test results give an indication of the child's ability to use both receptive and expressive language. This language assessment is based on the four levels of language acquisition: (a) that of matching perception (what is this—find one); (b) selective analysis of perception (name something that); (c) reordering perception (evaluating as-comparison of same and different); and (d) reason about perception (what might happen) as set forth by Blank, Rose, and Berlin (1978). Blank et al. (1978) stated that mastery of skills at each level is necessary for success in an

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educational setting. The skills follow along a hierarchy of concrete and abstract tasks. When a child has difficulty mastering both his primary and secondary language, language processing must be addressed. The children were identified as follows: (a) Proficient in English—they had 37-46 correct responses, and scored 80-100%; (b) Proficient in Navajo—80-100%; (c) functional in English—they had 14-36 correct responses, and scored 31-79%; (d) functional in Navajo, 31-79%; (e) limited in English—they had 13 or less correct responses, 0-30%; (f) limited in Navajo—they scored 0-30%; and (g) non-speaking Navajo. Those who were limited in Navajo were able to understand some Navajo but they were unable to speak Navajo. Comparison between mean scores for city and county and language proficiency was done using \underline{t} tests.

School Location

Initially the students were to be divided according to their place of residence, reservation and non-reservation. However, some students lived both off (school time) and on (summer time) the reservation. The more definitive division was found to be students who attend county schools versus students who attend urban schools.

Results

WISC-III Profile

The average Verbal, Performance (Non-verbal), and Full Scale score for the general population is 100. The mean ($\underline{\mathbf{M}}$) of each subtest for the general population is 10.

The 334 students had the following WISC-III means: Verbal 82.1 (<u>SD</u> 13.1), Performance 100.4 (<u>SD</u> 14.0), Full Scale score 89.8 (<u>SD</u> 13.1). The students' WISC-III profile is seen in Table 1. These students have a significant difference (18.3) between their WISC-III Verbal and Performance scores. Their lowest subtest score is Vocabulary-6.2. The WISC-III factor scores are seen in Table 1.

Language Development

Twelve percent of the students spoke Navajo proficiently; 88% were not proficient in Navajo. Eighty percent of the students tested as proficient English speakers; 20% of the students were not proficient in English. Nineteen percent of the students were not proficient in either language. Eleven percent were proficient in both Navajo and English. See the language proficiency scores in Table 2. There was no significant difference in number between the females (126-82%) and the males (138-90%) that were proficient in English. The students who were proficient in English (264) were significantly higher in all WISC-III Verbal Scores and four Performance subtest scores (Picture Completion, Picture Arrangement Object Assembly, and Symbol Search), than those who were functional in English (62) as seen in Table 3. The students who were proficient in English were also significantly higher in all WISC-III factor scores.

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Table 1. Means and Standard Deviations For WISC-III Subtest and Factor Scores of 334 Navajo

D (*1	3.5	a.D	
Profile	<u>M</u>	S.D.	
Information	7.0	2.8	
Similarities	6.4	3.5	
Arithmetic	7.6	2.8	
Vocabulary	6.2	2.9	
Comprehension	6.9	3.5	
Digit Span	7.5	2.5	
Diatura Completion	9.8	2.7	
Picture Completion			
Coding	9.9	3.6	
Picture Arrangement	9.1	3.6	
Block Design	10.5	3.2	
Object Assembly	10.6	3.0	
Symbol Search	9.6	3.3	
Mazes	12.0	3.5	
Factor Scores			
Verbal Comprehension	82	10.8	
Perceptual Organization	100	9.2	
Processing Speed	101	6.0	
Freedom/Distractibility	87	4.4	

Table 2. Distributions of Language Combinations of 334 Navajo Students

Proficiency	Navajo	Frequency	Percent
Unknown	Unknown	3	0.9
Limited	Non-Speaking	3	0.9
Limited	Limited	2	0.6
Functional	Non-Speaking	33	9.9
Functional	Limited	16	4.8
Functional	Functional	9	2.7
Functional	Proficient	4	1.2
Proficient	Unknown	1	0.3
Proficient	Non-Speaking	143	42.8
Proficient	Limited	64	19.2
Proficient	Functional	19	5.7
Proficient	Proficient	37	11.1

Note. Those who were limited in Navajo could understand Navajo but could not speak it.

Table 3. Comparison of WISC-III Scores for Students Functional and Proficient in English

	<u>Functional</u>		Prof	icient		
	(<u>N</u> =	(<u>N=62</u>)		<u>=264</u>)		
	<u>M</u>	(<u>SD</u>)	<u>M</u>	(<u>SD</u>)	p-value a	t-test
Verbal	75.5	(12.5)	83.9	(14.1)	<.001	4.29
Perform.	95.1	(14.4)	101.7	(13.7)	<.001	3.39
Full	83.5	(12.1)	91.5	(12.9)	<.001	4.45
Inform.	6.0	(2.3)	7.2	(3.0)	<.001	2.91
Similari.	5.0	(3.3)	6.7	(3.5)	<.001	3.50
Arith.	6.1	(2.9)	8.0	(2.6)	<.001	4.90
Vocab.	5.2	(2.9)	6.5	(2.8)	<.01	3.17
Compre.	5.9	(2.9)	7.2	(3.5)	<.01	2.76
Digit Sp.	6.9	(2.8)	7.6	(2.4)	<.05	2.08
Pic.Comp	8.9	(3.1)	10.0	(2.6)	<.01	2.85
Coding	9.4	(3.8)	10.0	(3.5)	22(NS) ^b	1.22
Pic.Arr.	7.9	(3.4)	9.3	(3.6)	<.01	2.90
Blk.Des.	9.9	(3.4)	10.7	(3.2)	.09(NS)	1.70
Obj.Ass.	9.6	(3.3)	10.9	(2.9)	<.01	3.03
Sym.Sear	8.5	(3.2)	9.9	(3.3)	<.01	2.96
Mazes	11.6	(3.9)	12.1	(3.4)	.27(NS)	1.11

Note. 8 students were eliminated from the 334 (3 unknown; 3 non-speaking Navajo and limited in English; and 2 limited in both English and Navajo)

Urban Versus County

Urban students rated significantly higher than the county students in the WISC-III factor scores of Verbal Comprehension (p<.001) and Processing Speed (p<.01). When the urban students (131) are compared to the county students (203), the urban students' WISC-III scores are significantly higher in the Verbal and Full Scale, as well as in Information, Similarities, Vocabulary, Comprehension, Coding and Symbol Search (see Table 4).

^a p-value is for t-test comparing means for functional and proficient in English.

^bNS—Not significant at the 5% level of significance.

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Table 4. WISC-III Scores - 334 Navajo Students: Urban & County Areas

	Urban (N=131)		County			
	`	•	(N=203)		1	4 4 4
	<u>M</u>	(<u>SD</u>)	<u>M</u>	(<u>SD</u>)	<u>p-value</u>	<u>t-test</u>
Verbal	85.2	(15.4)	80.0	(13.3)	<.01	3.28
Perform.	102.1	(15.0)	99.2	(13.3)	.07(NS)a	1.83
Full	92.5	(14.0)	88.1	(12.3)	<.01	3.03
Inform.	7.3	(3.0)	6.7	(2.7)	<(.05)	1.98
Similar.	7.2	(3.8)	5.8	(3.2)	<.001	3.41
Arith.	7.6	(2.9)	7.6	(2.7)	.92(NS)a	0.10
Vocab.	6.9	(3.0)	5.8	(2.7)	<.001	3.42
Compre.	7.9	(3.6)	6.3	(3.2)	<.001	4.25
Digit Span	7.4	(2.6)	7.5	(2.4)	.68(NS) ^a	-0.41
Pic.Comp.	9.9	(2.9)	9.7	(2.6)	.95(NS)a	0.75
Coding	10.5	(3.5)	9.5	(3.6)	<.01	2.69
Pic.Arran.	9.1	(3.7)	9.1	(3.5)	.98(NS)a	0.03
Blk.Des.	10.7	(3.3)	10.4	(3.2)	.39(NS) ^a	0.86
Obj.Ass.	10.9	(3.5)	10.4	(2.7)	.11(NS) ^a	1.62
Symb.Sea.	10.2	(3.2)	9.2	(3.3)	<.01	2.63
Mazes	12.3	(3.7)	11.8	(3.5)	.14(NS)a	1.47

^a NS—Not Significant at the 5% level of significance.

Income and Education and Environment

Eighty seven percent of the students had a parent who graduated from high school and/or was employed. A comparison between the Verbal IQ score of students with or without such parents shows that the students with a parent who graduated from high school or was employed had a significantly higher Verbal IQ (82.9, SD14, p<.01) than those students with a parent who did not graduate from high school or was not employed (76.5, <u>SD</u>12.0). There was no significant difference between the Performance scores of these students.

These students had the following environmental findings: 94% had television (some were run by battery), 90% had transportation, 68% had running water, 88% had electricity, 75% had a parent who was employed, 59% had a parent who attended chapter meetings (local Tribal government meetings).

Application of the Norms

The utility of the Navajo norms is illustrated by the following WISC-III profiles. Subject A, age 7.7, is Intellectually Disabled (ID) according to the Standard Norms (S). ID is the new label given to the Mentally Handicapped in the State of New

Table 5. Comparison of WISC-III Scores Using Standard & Navajo Norms

	Student A		Student B		Student C	
WISC-III	<u>S*</u>	<u>N**</u>	<u>S</u>	N	<u>s</u>	<u>N</u>
Verbal	64	80	83	100	114	131
Perform	69	73	80	82	123	126
Full	64	75	80	91	121	131
T. C	_			0	1.4	1.7
Inform.	5	6	6	9	14	17
Similar.	4	8	7	10	14	16
Arith.	5	7	8	10	12	14
Vocab.	1	5	6	10	10	14
Compre.	3	6	8	11	12	15
Digit Span			8	10		
Pic.Comp.	8	8	7	8	18	19
Coding	9	10	14	14	13	13
Pic.Arran.	3	5	1	2	8	9
Blk.Des.	3	3	7	7	15	14
Obj.Ass.	1	2	5	5	13	14
Symb.Sea.			13	12		
Mazes			10	9	15	12

^a S=Standard norms

Mexico. The Navajo norms (N) place her in the slow learner range. Subject B, age 10.6, appears as a slow learner according to the Standard norms (S). The Navajo (N) norms portray him differently (see Table 5). He has visual processing problems that have deflated his overall score. Subject C (see Table 5), age 9.3, is gifted according to the Navajo norms.

Discussion

While there is debate about the treatment validity of the Wechsler Scales (Reschly, 1997) the Wechsler scores can be used as a guide for educators supporting them in discerning how to teach skills that need to be taught. It is important for teachers to understand that Navajo students have a history of having a strength in processing information visually, as seen in their WISC-III performance score and a weakness in their verbal score which is seen as an English Language Proficiency score. The Navajo in this study who are proficient in English have a vocabulary score of 6.5 as opposed to the general population of 10.

^b N=Navajo norms

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The subtests with the least verbal overlay are Coding, Block Design, and Mazes. There was no difference between those who were proficient in English and those who were functional in English in these three subtests. The scores of these three subtests could be viewed as a Navajo ability score, barring visual processing problems that tend to deflate some of the Performance subtest scores, resulting in an overall deflated Performance score.

In regard to the WISC-III factor scores, the Navajo students have strengths in Perceptual Organization and Processing Speed. These two factors are comprised of Performance subtests that measure spatial intellect and/or the processing of information with their visual channel of learning. These students have deficits in Verbal Comprehension and Freedom from Distractibility. These two factors are comprised of Verbal subtests that measure the Navajo students' English Language Proficiency and/or the processing of information by their auditory channel of learning. Since, Freedom from Distractibility includes two verbal subtests, this factor may not be measuring what it purports to measure for the Navajo student. The Primary Mental Ability System is organized in terms of nine dimensions that are seemingly as broad as the sets of abilities people equate with intelligence. One of these dimensions is Short Term Apprehension and Retention (SAR or Gsm) which includes memory for order or sequencing (Horn & Noll, 1997). Digit Span factors under Gsm (McGrew, 1997). Sequencing is the ability to order and recall discrete details. The ability to sequence influences a student's progress in reading and writing because symbols and sounds must be systematically recalled and sequenced for the development of these skills. Digit Span may be measuring an auditory sequencing or a short-term memory need.

Navajo students should be taught to focus on their individual strengths. They may need multi-modality teaching, visual stimuli and hands-on activities to accompany the teaching of concepts. Cantrall et al. (1990) suggest that some students are in need of bilingual and bicultural services. Many students would benefit from bicultural services wherein they are recognized for their uniqueness of being Indian while appreciating being an integral part of the global society. Local norms are a bicultural service. Teachers need to be mindful of their students' present verbal ability. Navajo students with WISC-III profiles that are similar to their Navajo peers need to have their educational needs met by the regular classroom teacher who uses a curriculum that is modified to capitalize on Navajo strengths of visual processing while remediating their language and their auditory channel of learning. Those students with WISC-III profiles that are dissimilar from their Navajo peers need further evaluation. They may have a learning disability that demands a more restrictive environment, such as support from special education. This is especially so if the Navajo student has some disparately low scores in the WISC-III Performance scale. Students with a second language often have a lower verbal score. If these same students have visual processing problems, they have a lower performance score and they may seem like slow learners who are not eligible for special education. If a student is mistakenly labeled as ID, in time the student becomes ID and the teacher treats her/him as though s/he was ID. Additionally, some gifted students are not identified. The Navajo norms aid the examiner in arriving at a strong clinical and professional judgment regarding the possibility of the presence or absence of a disability.

Proper educational placement and curriculum is important. This project developed Navajo norms for the WISC-III in Gallup McKinley County Schools as an additional tool to assist with educational diagnosis and placement of the Navajo student. In addition, we have a better understanding of how students differ between those who are functional and proficient in English as well as how students differ between the county and the urban area. Generally, those who are proficient in English and those who live in the urban area have higher Verbal scores. This sample size is small, therefore, there are some limitations to the norms set and results should be interpreted with care. The Gallup Language Proficiency Report is in the process of being normed. Furthermore, a sociocultural checklist is now being completed on every student that is tested. These new findings will provide more information in regard to how second language acquisition affects assessment.

Phyllis Tempest has earned a BS from the University of Pennsylvania and an MA from the University of New Mexico. She is a licensed Professional Clinical Counselor and a Licensed School Psychologist. Ms. Tempest has been employed by the Gallup McKinley County Schools since 1978.

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THE VOICE THAT BEAUTIFIES THE LAND

The voice that beautifies the land! The voice above,
The voice of the thunder,
Among the dark clouds
Again and again it sounds,
The voice that beautifies the land.

The voice that beautifies the land! The voice below,
The voice of the grasshopper,
Among the flowers and grasses
Again and again it sounds,
The voice that beautifes the land.

The voice that beautifies the land (Translated from Navajo by Washington Matthews). (1965). Reprinted from *Journal of American Indian Education*, 4(2), 31.

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