5-1991

Speech and language screening of kindergarten children in American Samoa

Deborah Rochelle Meltzer

To the Graduate Council:

I am submitting herewith a thesis written by Deborah Rochelle Meltzer entitled "Speech and language screening of kindergarten children in American Samoa." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts, with a major in Speech Pathology.

Gloriajean Wallace, Major Professor

We have read this thesis and recommend its acceptance:

Sol Adler, Harold Peterson

Accepted for the Council:
Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

To the Graduate Council:

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Dr. Gloriajean Wallace, Major Professor

We have read this thesis
and recommend its acceptance:

Sol Adler

Accepted for the Council:

Carl Minkel

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Date 4-26-91

SPEECH AND LANGUAGE SCREENING OF KINDERGARTEN CHILDREN IN AMERICAN SAMOA

A Thesis

Presented for the

Master of Arts

Degree

The University of Tennessee, Knoxville

Deborah Rochelle Meltzer

May 1991

DEDICATION

I would like to dedicate this thesis to my parents, Don and Rivi Meltzer, the two people who have inspired me the most throughout my life. Without their love, support and constant encouragement I could not have accomplished all that I have. Also to Alan, my brother and friend.

ACKNOWLEDGEMENTS

I would like to express my gratitude to the members of my committee, Dr. Sol Adler and Dr. Harold Peterson. Extra special appreciation is extended to my director and friend, Dr. Gloriajean Wallace, for her unwavering enthusiasm and tremendous support for this study.

Sincere thanks goes to the other members of the "Samoa Research Team": Jeanette Tilo, Cindy Wallace and Maggie Fain. To Cindy especially, my fiddling travel companion, words cannot express my appreciation for your friendship, support and unmatched sense of humor throughout the past two years.

"Tele fa'afetai" is extended to Sister Teresa, Loretta and Bishop Quinn at the Sisters of Nazareth Convent in Fatuoaiga, American Samoa for their warm hospitality, friendship.

Additionally, for their time and encouragement, the following persons deserve much thanks: Dr. Jerry Carney, Dr. Pearl Gordon, Dr. Sam Burchfield, Betty Coleman, Steve Cloud, Max Dawson, Ron Holder, Charlotte Hubbard, Mary Jones, Louise Calloway and especially Lynn Adams for her interest, support and friendship.

Finally, I would like to extend my gratitude to the people of the beautiful and friendly island of American Samoa. Without the aid of the many people in the Department

of Education and the Special Education Department, this study would not have been possible. Thank you to Maile Wilson, Akenese Iosefa, Dr. Uilangaletei Leolofi, the classroom teachers, and, most importantly, the children.

ABSTRACT

The purpose of this study was to obtain pilot data regarding administration of a speech and language inventory to American Samoan kindergartners. Currently there are no formal instruments available to assess American Samoan children in their native language. This study was conducted using O le STS, an inventory developed by Wallace and Tilo (1990). This tool includes the areas of articulation, vocabulary, auditory comprehension, and sentence repetition. 43 subjects were rated by their teachers and given audiological screening prior to administration of O le STS. The teacher ratings were used as an attempt to validate the obtained scores on the inventory. Teachers rated their students using a 5 point scale in each area assessed by O le STS. Subjects were considered "normally developing" or "impaired" on each subtest based on the teacher rating. Analysis of the results revealed a weak relationship between the teacher ratings and obtained scores; as well as a weak correlation between subtests. High performance and low variability of scores was found for the sample tested. There are several possible factors which may have influenced these results. These include cultural differences, lack of background information regarding development of the Samoan language, and a difference in the definition of "impairment" between the Samoan teachers and the researchers.

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CHAPTER I

INTRODUCTION

Public Law 99-457, the 1986 amendments to the Individuals with Disabilities Education Act (P.L. 94-142), mandates that special education programs be available to children beginning at birth. This law was enacted to serve all American citizens. However, many remote and rural areas of the United States are unable to identify and serve those children in need of special services. Remote/rural areas are defined by the American Speech and Hearing Association's Ad Hoc Committee on Services to Remote/Rural Populations (1989) as sparse communities of less than 50,000 people, distant, and lacking in resources. In the continental United States, areas considered to be rural are West Virginia, Kentucky, Tennessee (Appalachia), Alaska, Hawaii and the U.S. territories.

Areas that are remote/rural tend to have limited services in general. This holds true as well for special services such as speech/language and hearing intervention. The Ad Hoc Committee listed several nontraditional barriers to service delivery such as "large distributions of small populations over vast land areas, poor or limited access to services due to a lack of roads or poor road conditions with no public or private transportation, limited economic development, inadequate resources, restricted climate

control, very low levels of public awareness, and linguistic and cultural differences". Lack of properly trained professionals, appropriate facilities, and adequate funding are a few of the reasons for remote and rural areas not meeting the requirement to provide services (Chezik, 1989).

Incidence and prevalence figures for communication disorders are unavailable for most remote/rural areas. Chezik et al (undated) reported that inferences made by professionals working in these areas suggest that a higher incidence of communication disorders exists in this population. American Samoa, one of the United States territories in the South Pacific, is an area in need of research and development of assessment instruments to identify children who are in need of special services.

CHAPTER II

REVIEW OF LITERATURE

The Country

There are actually two Samoas: American and Western. American Samoa is comprised of six islands located approximately 2,200 miles southwest of Hawaii. Its capital is Pago Pago which is on the main island of Tutuila. American Samoa has a total of 76 square miles which are mostly mountainous and a population of approximately 35,000. The majority of this population is young as compared to the continental U.S. which has a greater percentage of aging individuals. The indigenous people are United States nationals and their government and educational systems are patterned after those of the continental U.S. (Booth, 1985).

The United States' interest in the small islands of American Samoa began in 1900 when the U.S. Navy established a coaling depot station in Pago Pago. This harbor is one of the deepest and best protected in the Pacific. In 1951, the Navy turned the territory over to the Department of the Interior. Today the harbor remains central to the economy. The North shore is dominated by two tuna canneries, Starkist and Chicken of the Sea, which are the mainstays of the private sector. In addition, nearly one half of American Samoans are employed by the local government (Brigham Young University, 1980).

Western Samoa, an independent nation since 1962, is comprised of eight islands. It is much larger than American Samoa in land area and in population (1,100 square miles and 162,000 people). Apia, its capital, is located 77 miles from Pago Pago, American Samoa (Reid, undated).

"Social classes", as such, are nonexistent to the people of American Samoa. The islands are divided into many villages; and in some cases it is not obvious where one village ends and the next begins. Families tend to be fairly large; and include the extended family members. Because of such a large family unit, older siblings typically care for and raise the younger siblings.

Language and Education

The Samoan language and the English language are both spoken in American Samoa; however, Samoan is typically the first language learned by the children. During the preschool years, the children are taught using the Samoan language. Formal English instruction begins in second grade. However, both English and Samoan are used prior to this in most classrooms (Tilo, 1991). Exposure to and use of English outside of the school setting depends largely on the language used by each child's immediate and extended family.

American Samoan children go to preschool in a "fale". A fale is a traditional Samoan structure which is oblong in

shape, has a thatched roof supported by poles and no walls. The children sit on the floor which is usually covered with hand woven mats. The older children go to schools which are composed of many separate fales, one for each class. These are constructed with less traditional materials and are basically the same except that each fale has screened in walls.

Availability of Services

Currently in American Samoa, there is one professional who deals with speech and language disorders. She is a native Samoan who has an undergraduate degree in Speech Pathology and a masters degree in Special Education. She is employed by the Special Education Department in American Samoa. Due to the large population that she is faced with, only those individuals who are severely impaired are typically provided with services and those individuals with mild to moderate speech and language delays and disorders do not receive services.

In approximately two years, there will be an ASHA certified speech-language pathologist returning home to American Samoan to work. This will mean that a greater percentage of those requiring services will potentially receive therapy. However, there are no instruments currently available to screen school-age children to determine their possible need for speech and language

intervention.

Speech, language and hearing impairments are problems that can be treated most effectively when diagnosis and intervention are started as early as possible (Menyuk, 1971; Brown and Fraser, 1964; Templin, 1957). This is especially important for populations at high risk; and the children of American Samoa have a high prevalence of otitis media (Stewart, 1985), a medical problem which has been linked to language and learning difficulties (Friel-Patti, Finitzo-Heiber, Conti and Brown, 1982; Klein, Teele, Mannos, Menyuk and Rosner, 1984; Teele, Klein and Rosner, 1984). Given this information, it is extremely important that children living in American Samoa receive early identification services.

Challenges may also arise when attempting to evaluate individuals in nontraditional settings. In areas such as American Samoa, cultural and linguistic differences can play a major role when testing children outside of the region in which the test was standardized. The simple fact that their first language is typically not English leads to the need for an adequate testing instrument. Individuals are put at an unfair disadvantage when tested in a language which is not their native one. The need for appropriate tests has become evident in recent years for the Spanish-speaking population in areas such as California and Florida. Because of the rapid increase in the number of hispanic individuals

in these and other areas of the United States, most efforts to develop translations have been in Spanish, not other languages. For example, the Test of Auditory Comprehension of Language, Peabody Picture Vocabulary Test, and Preschool Language Scale have all been translated and standardized in Spanish. Currently, however, there are no instruments available to assess American Samoan children in their native language. Assessment efforts are, at present, limited to very informal and subjective estimates of communication proficiency. Recently Wallace and Tilo (1990) developed an inventory of speech and language for Samoan speaking children which was designed to screen in four major areas: articulation, vocabulary, auditory comprehension, and sentence repetition.

Development of the Inventory

The inventory developed by Wallace and Tilo (1990), O le Suega Tofotofo Samoa a le Tautala ma Gagana (O le STS), the Samoan Screening Test of Speech and Language was based on the Fluharty Preschool Speech and Language Screening Test (Fluharty, 1978) (Appendix A). Some subtests of O le STS are close translations (with permission from the author of the Fluharty) but others were adapted to Samoan due to differences in phonology and syntax between the two languages. O le STS was designed to be culturally and linguistically appropriate for native American Samoan

children who speak the Samoan language. This was determined after additional consultation with other specialists in the Special Education Department of American Samoa. Although O le STS appeared to have potential for use in screening American Samoan children, there was no normative data prior to this study.

The four subtests are as follows:

Articulation

The Samoan alphabet consists of 14 letters, nine consonants and five vowels. The consonants are "f, g, l, m, n, p, s, t, v" and the vowels are "a, e, i, o, u". In the Samoan language, there are a number of phonological rules which differ from those in English. The rules include:

1. Vowels are always long.

   "a" is pronounced "ah"
   "e" is pronounced "eh"
   "i" is pronounced "ee"
   "o" is pronounced "oh"
   "u" is pronounced "oo"

2. In cases of multiple vowel combinations, every vowel is pronounced.

3. Primary stress is typically placed on the second-to-last syllable.

4. The consonant "g" occurring after a vowel is pronounced "ng".

Samoan words always end in a vowel and multiple vowel combinations are very common (Shearer, 1975). Based on these rules, the repertoire of phonemes and the vowel-oriented nature of the Samoan language, difficulty would be

expected for the native Samoan speaker attempting to use English.

The Articulation subtest of O le STS requires naming of various pictures and objects common in the Samoan culture. The stimulus "What is this?" is given in Samoan as each item is presented. If production does not occur after one repetition of the stimulus, a model is given for the child to imitate. There are 20 items with 33 phonemes (initial, medial and final positions) tested. Responses are scored for articulatory accuracy. One point is given for correct production of each phoneme. No credit is given for substitutions, distortions, omissions or additions of phonemes. This subtest has a maximum score of 33 points.

Vocabulary

The Vocabulary subtest is scored simultaneously with the Articulation subtest. Unaided naming of each picture or object following the stimulus is scored as correct (one point per item). No credit is given for imitative productions on this subtest. This subtest has a maximum score of 20 points.

Auditory Comprehension

The Auditory Comprehension subtest requires the manipulation of objects to demonstrate receptive understanding of simple sentences and vocabulary. Various

commands, such as "Take the cup and the comb", are given. If no response is elicited, one repetition of the stimulus is given. Credit is given (one point per item) for appropriate performance following each sentence. This subtest has a maximum score of 10 points.

Specific syntactic structures tested in the Auditory Comprehension subtest are the same as those in the Sentence Repetition subtest. Please refer to the next section for details.

Sentence Repetition

Large samples of the language of "normal" children have been collected over the years in the continental United States as well as in other countries. These data have been used to develop a set of standard acquisition "landmarks" and an order in which these stages typically develop. Children can then be tested to determine whether or not their language is developing appropriately according to this set of "norms". Currently there is no data on the "normal" development of the Samoan language.

According to Streng (1972), there are five basic kernel sentence patterns which serve as the foundation for all sentences produced in American English. Additionally, there is a set of transformations which can be applied to the kernels to increase the number of sentence production options available to the speaker (Fluharty, 1974). The ten sentences which are presented in the Auditory Comprehension

and Sentence Repetition subtests of the Fluharty and O le STS employ these basic kernels and transformations. These structures are found in both English and Samoan, and because there is no information on the development of the Samoan language, Wallace and Tilo (1990) incorporated the same basic kernels and transformations that were used by Fluharty. Specifically, these were: NP(noun phrase) + V(t)(transitive verb) + NP; NP + V(to be) + NP; NP + V(to be) + Adj (adjective); NP + V(i)(intransitive verb); NP + V(to be) + Adv (adverb); and the transformations of possession, negation, contraction, wh-question and imperative (Table 1).

The Sentence Repetition subtest requires imitation of ten sentences. Each sentence is presented with a corresponding picture preceded only by the direction "Say" (in Samoan). One repetition of each sentence is given upon request. One point is given for each correct response and no credit is given for incorrect responses. This subtest has a maximum score of 10 points.

Statement of Purpose

The purpose of this study was to obtain pilot data regarding Samoan kindergarten children's articulation and language performance on O le STS. These data will provide pilot descriptive information about the performance of kindergartners in American Samoa on this instrument and

Table 1. Kernel sentences and transformations assessed by the Fluharty Preschool Speech and Language Screening Test (1978).

Target Sentence	Components
1. The girls have the presents.	[NP + V(t) + NP]
2. The man is a football player.	[NP + V(to be) + NP] [T/embedded]
3. The baby is little.	[NP + V(to be) +Adj]
4. They are walking.	[NP + V(i)] [T/pronoun]
5. The bus is here.	[NP + V(to be) +Adv]
6. That is her cat.	[NP + V(to be) + NP] [T/pronoun]
7. The man can't reach.	[T/negation] [Contraction]
8. The girl said, "Who is it?"	[Wh-question]
9. The boy said, "Blow hard!"	[Imperative]
10. The ice cream fell.	[NP + V(i)]

NP = noun phrase
VP = verb phrase
V(t) = transitive verb
V(i) = intransitive verb
T/ = transformation

serve as a preliminary step in developing an appropriate screening tool for use with young children in American Samoa. It should be noted that this study was part of a larger scale study of the performance of Samoan children across groups of preschool, kindergarten and first grade children on O le STS.

Research Question

Does O le STS discriminate between children rated by their teachers as "normally developing" and those rated as "impaired" on its four subtests (articulation, vocabulary, auditory comprehension, and sentence repetition)?

CHAPTER III

METHODOLOGY

Subjects

The subjects for this study were 43 native speaking kindergarten children in American Samoa ages four and five years. The children were from three preschools in Pago Pago, American Samoa. Each child was rated as "normally developing" or "impaired" in speech, language, motor and social skills through the use of a teacher questionnaire (Wallace, Meltzer, Wallace, and Tilo, 1990) (Appendix B). A questionnaire was filled out for each subject by the classroom teacher. The questionnaire contained questions pertaining to the child's articulation skills, as well as expressive and receptive language, gross and fine motor skills, and social skills. These areas were assessed using a rating scale format (1=severely impaired 2=moderately impaired 3=average, 4=good performance 5=superior performance, as compared to same age classmates). Children who received a rating of "1" or "2" in any area were considered "impaired" on the corresponding subtest. Children rated "3, 4 or 5" in any area were considered "normally developing" on the corresponding subtest. Teachers rated all children in this manner. When reviewing these initial ratings, it was noted that one of the children who had unusual cranio-facial structure had been rated as

normally developing in all areas. This child's unusual appearance prompted the supervising speech-language pathologist to inquire as to whether the child had any problems in the classroom. During this discussion with the teacher it became apparent that the child did indeed have below normal performance in the area of articulation. Because of the discrepancy in written rating and rating during this discussion, it was decided that teachers would receive instructions a second time and be asked to rerate all children initially rated. This was done in an effort to insure maximal accuracy of rating by the teachers. Reliability for teacher rate-rerate was 100%. That is to say, all other children were rated in a similar fashion during time two as time one.

All children used in this study were given a pure tone audiometric screening, impedance testing, and otoscopic examination to insure adequate hearing at the time of speech and language assessment. The instrument used was an American Electromedics screening tympanometer Model 95-95A. Screening was done by the researchers: two advanced speech-language pathology graduate students supervised by a certified speech-language pathologist who also participated in the screening.

All potential subjects for this study were subjected to the above screening with the following criterion for passing: perception of pure tone stimuli presented at 20 dB

HL (re ANSI-1969) with frequencies of 1000, 2000 and 4000 Hz (ASHA, 1985), middle ear pressure no greater than -200 mm H_2O bilaterally, and normal tympanic membrane appearance according to the speech-language pathologist.

These criterion resulted in an 87 percent failure rate for the entire group of preschoolers, kindergartners and first graders. Due to the reported high incidence of otitis media in this population (Stewart, 1985) coupled with the unavoidable environmental noises (traffic, roosters and other children), these criterion were judged to be inappropriate for the population. In order to obtain an adequate sample size for this study and a group more representative of the "average" American Samoan kindergartner, criterion were revised as follows: perception of pure tone stimuli at 25 dB HL unilaterally and exclusion of impedance results. Additionally, subjects who perceived tones at 30 and 35 dB HL during the first screening were rescreened. Those who subsequently passed given the revised criterion were also included in this study.

Procedure

Test Environment

The testing was done in the traditional "open fale"

style classroom setting. Background noises were unavoidable due to the design of this structure. Hearing screening and speech and language testing were both done in as quiet an area as was possible.

Test Administration and Scoring

Testers were two native Samoan speakers who had experience assessing kindergarten children in the American Samoa school system. They were both employees of the Special Education Department in American Samoa. Each test item and administration and scoring procedures were reviewed by those involved in the development and administration of O le STS during a two hour session.

Each tester was paired with an advanced speech pathology graduate student researcher who was responsible for audio recording each child. Each researcher was also responsible for distributing and collecting teacher questionnaires, organizing and sequencing the children through both hearing and speech-language screening stations, running the tape recorder for each child, and labeling and marking the counter position for each child's tape.

Each subject's test was scored as the test was administered (Vocabulary and Auditory Comprehension). This was done by the tester's assistant enabling the tester to focus solely on administration of O le STS. The Articulation and Sentence Repetition subtests were scored

later while listening to the audio tapes. Each subject's Sentence Repetition subtest was transcribed directly from the audio tape onto the test protocol. Items were scored as correct or incorrect, on the sentence repetition subtest, if production was 1) an accurate repetition of standard Samoan form as modeled by the examiner, or 2) an accurate form of Samoan day-to-day dialect. All test forms were ultimately scored in full by the two graduate student researchers. This method allowed a close check to insure that scores were assigned and recorded as accurately as possible.

Intratester Reliability

Retesting was done for this study to determine the reliability of the testing administration. Seven percent of the group of 43 subjects were retested by the same examiner to measure intratester reliability. The same two examiners who administered O le STS originally did so for all subjects who were retested. Administration was done using the same procedure as was used for the original testing. Intratester reliability was calculated using the following formula:

$$\frac{\text{AGREEMENT}}{\text{NUMBER OF ITEMS X NUMBER OF SUBJECTS}} \text{ X } 100\%$$

This resulted in 94.52 percent intratester reliability.

Intertester Reliability

Retesting was also done to determine the reliability between the two individuals who administered O le STS. Seven percent of the group of 43 subjects were retested by a different examiner to measure intertester reliability. The same formula was used to calculate intertester reliability as that used for intratester reliability. Results revealed 97.72 percent intertester reliability.

Intrascorer Reliability

As mentioned earlier, all test protocols were ultimately scored by the two graduate student researchers who conducted this study. Therefore, scoring reliability measures were done comparing the original score determined by this team to their rescoring of ten percent of the test forms of the kindergarten sample. Rescoring was done for the Articulation, Vocabulary and Sentence Repetition subtest only using the audio recordings of each subject. Analysis resulted in 98.02 percent intrascorer reliability.

CHAPTER IV

RESULTS

The purpose of this study was to obtain information regarding performance of American Samoan kindergartners on a speech and language inventory (O le STS). The main question of interest was whether or not O le STS discriminates between teacher ratings and obtained scores on each of its subtests (articulation, vocabulary, auditory comprehension, and sentence repetition). Data was analyzed to determine the correlation between these two factors.

Correlation Between Teacher Rating and Obtained Score

The Pearson product-moment correlation coefficient (r) was calculated to determine the strength of the relationship between teacher rating and obtained score for each subtest of O le STS (articulation, vocabulary, auditory comprehension, and sentence repetition). Analysis revealed a correlation of 0.073 for the Articulation subtest; a correlation of 0.386 for the Vocabulary subtest; a correlation of 0.477 for the Auditory Comprehension subtest; and a correlation of 0.304 for the Sentence Repetition subtest. None of these correlations were significant at level 0.05. A summary of these correlations is listed in Table 2.

Table 2. Correlation between teacher rating and obtained score for each of four areas: articulation, vocabulary, auditory comprehension, and expressive language (sentence repetition).

Subtest	Correlation (r)
Articulation	0.073
Vocabulary	0.386
Auditory Comprehension	0.477
Sentence Repetition	0.304

Pearson product-moment correlation coefficients were also calculated to determine the strength of the relationship between subtests of O le STS. Correlation values were 0.004 for Vocabulary and Articulation, 0.270 for Vocabulary and Auditory Comprehension, 0.184 for Vocabulary and Sentence Repetition, -0.140 for Articulation and Auditory Comprehension, 0.248 for Articulation and Sentence Repetition, 0.433 for Auditory Comprehension and Sentence Repetition. None of these correlations were statistically significant at the 0.05 level. These data are summarized in Table 3.

Post Hoc Analysis

Additional data analysis was done to further examine the performance of the sample of kindergartners on O le STS. Teacher ratings and obtained scores for all subjects (n = 43) on each subtest of the inventory are reported in Appendix C. In addition to the correlation analysis described above, data on the group of kindergartners rated by their teachers as "normally developing" were reported as a means to compare performance of those few subjects whom the teachers rated as "impaired" (n = 40 "normally developing"; n = 3 "impaired").

A univariate procedure was used to obtain a frequency distribution for obtained scores on each subtest. On the Articulation subtest, which had a maximum score of 33, 10

Table 3. Correlation between pairs of O le STS subtests.

Paired Subtests	Correlation (r)	R-squared
VOC-ART	0.004	0.000
VOC-COMP	0.270	0.073
VOC-REP	0.184	0.034
ART-COMP	-0.140	0.020
ART-REP	0.248	0.061
COMP-REP	0.433	0.188

VOC = VOCABULARY
ART = ARTICULATION
COMP = AUDITORY COMPREHENSION
REP = SENTENCE REPETITION

subjects received a 32 and 33 subjects received a 33. On the Vocabulary subtest, which had a maximum score of 20, 1 subject received a 15, 1 subject received a 16, 2 subjects received a 17, 4 subjects received an 18, 11 subjects received a 19, and 24 subjects received a 20. On the Auditory Comprehension subtest, which had a maximum score of 10, 2 subjects received a score of 8, 6 subjects received a score of 9, and 35 subjects received a score of 10. On the Sentence Repetition subtest, which had a maximum score of 10, 3 subjects received a score of 7, 7 subjects received a score of 8, 10 subjects received a score of 9, and 23 subjects received a score of 10. These data are presented as bargraphs in Figures 1, 2, 3, and 4 which show where each child rated "impaired" fell in comparison to those rated "normally developing".

The mean score and standard deviation for each subtest for the group of kindergartners rated by their teachers as "normally developing" (n = 40) are presented in Table 4. The mean score was 32.775 (s.d. = 0.423) for the Articulation subtest, 19.225 (s.d. = 1.209) for the Vocabulary subtest, 9.800 (s.d. = 0.464) for the Auditory Comprehension subtest, and 9.225 (s.d. = 0.974) for the Sentence Repetition subtest. In addition, the scores of each of the individual subjects rated as "impaired" by their teacher on one or more subtests is given in Table 5. In

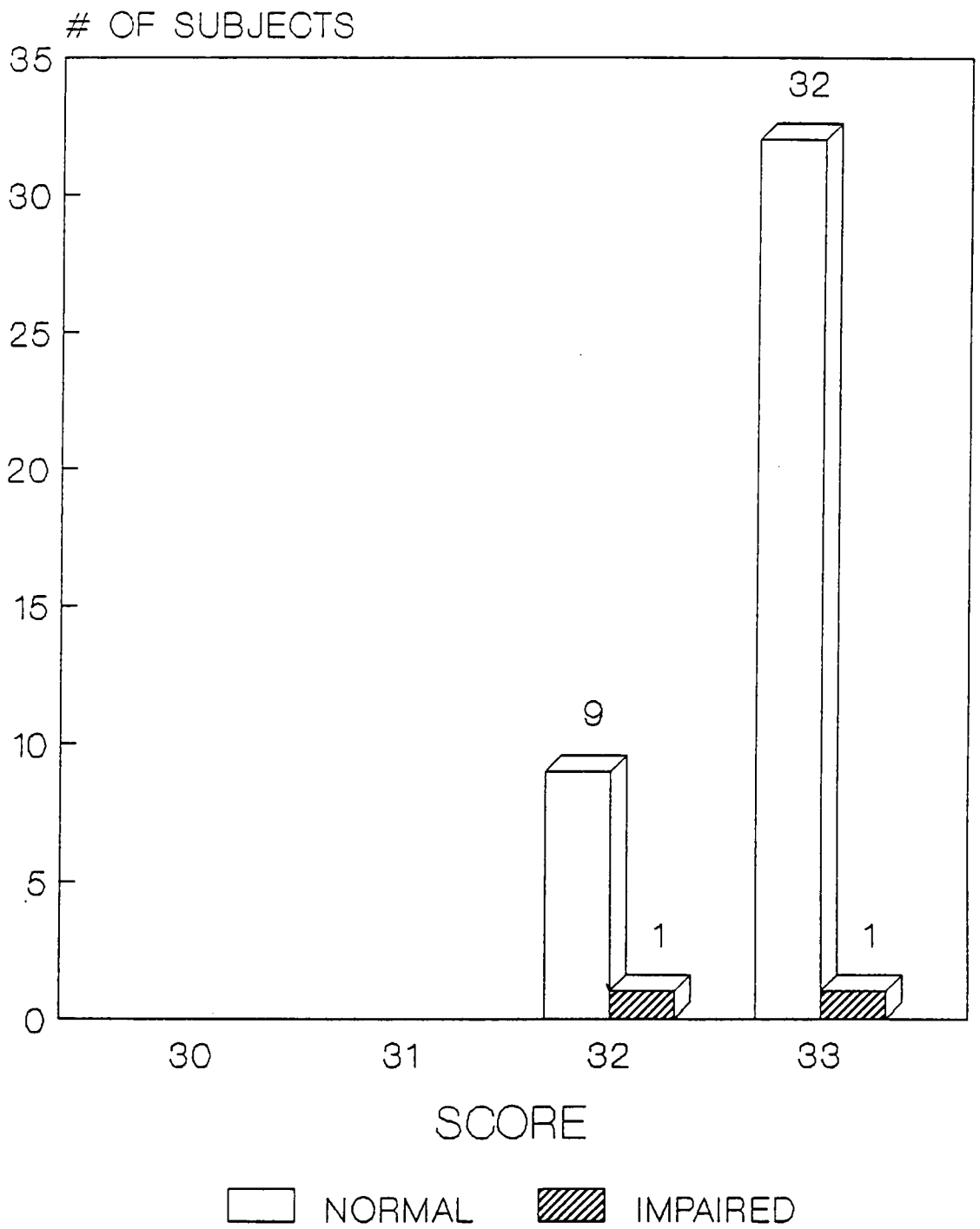

Figure 1. Frequency distribution of obtained score for "normally developing" and "impaired" kindergartners on the Articulation subtest of <u>O le STS</u>.

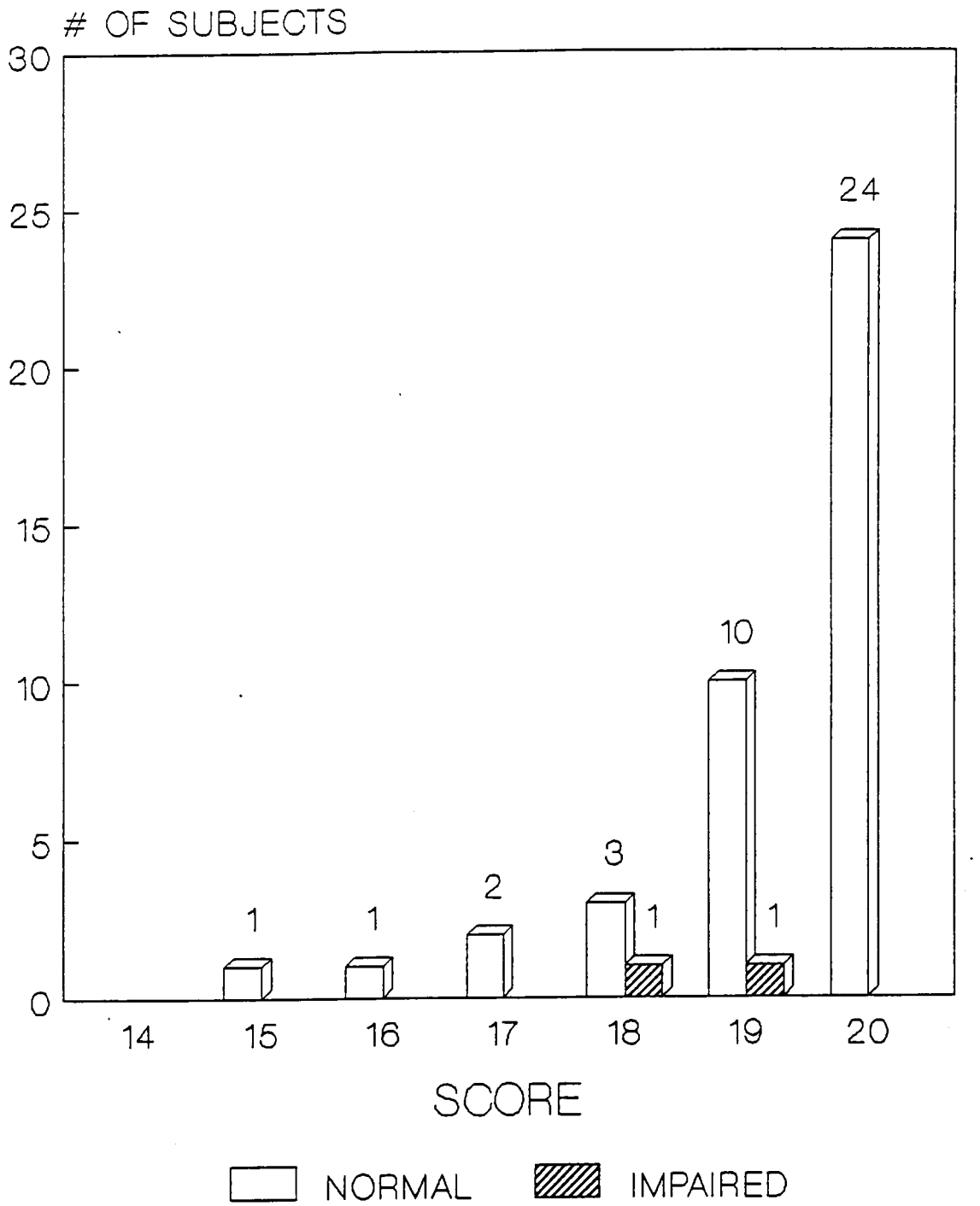

Figure 2. Frequency distribution of obtained score for "normally developing" and "impaired" kindergartners on the Vocabulary subtest of O le STS.

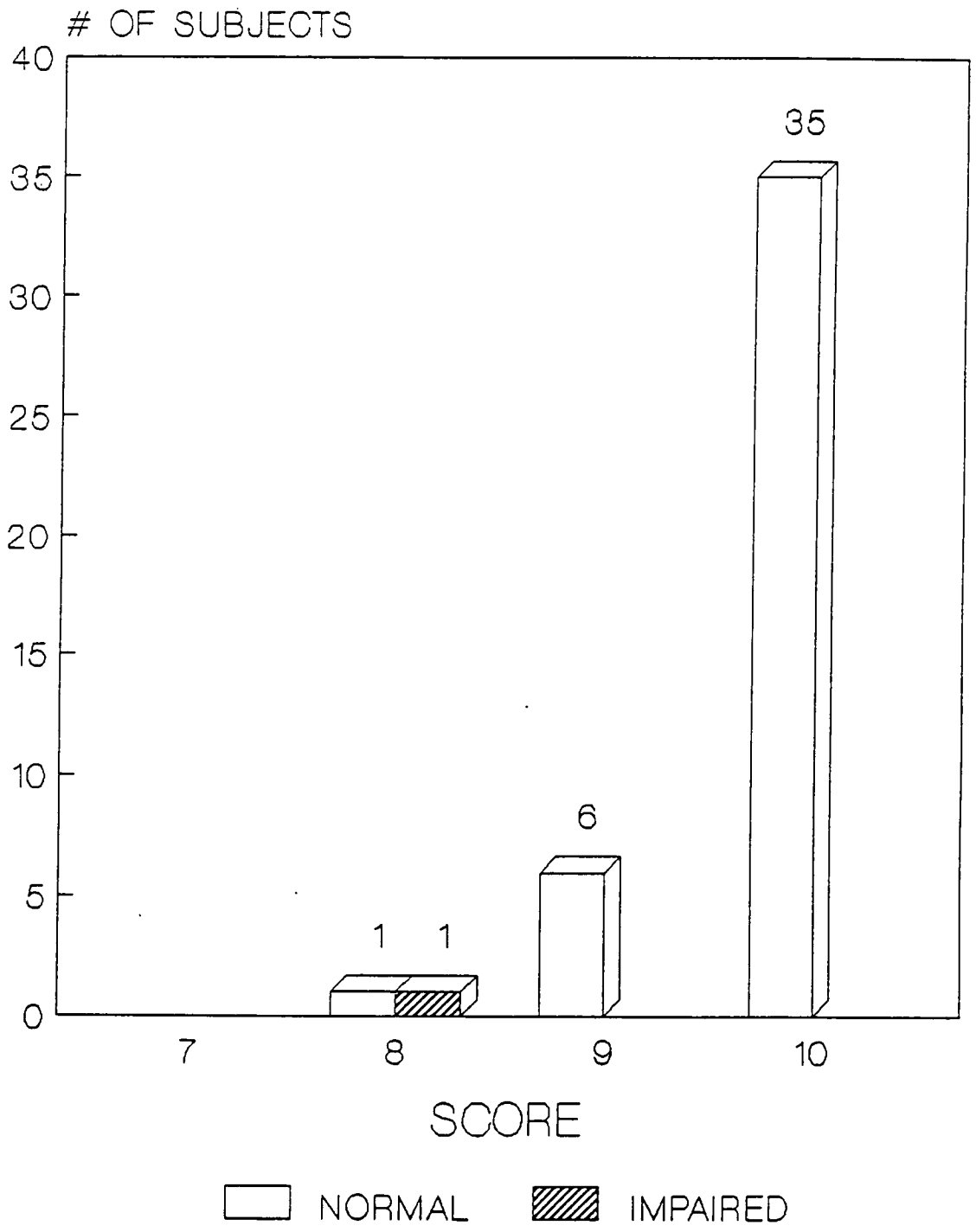

Figure 3. Frequency distribution of obtained score for "normally developing" and "impaired" kindergartners on the Auditory Comprehension subtest of O le STS.

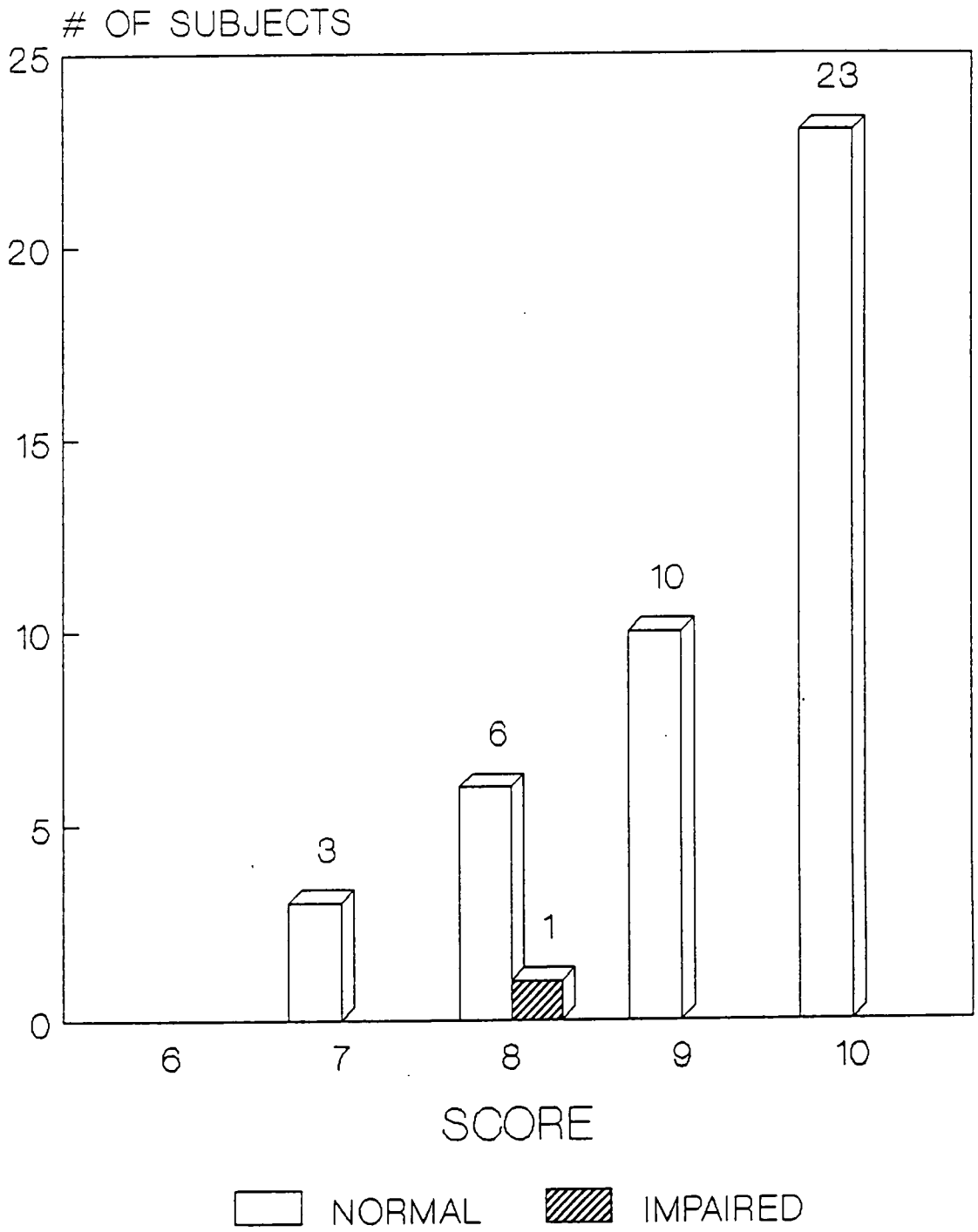

Figure 4. Frequency distribution of obtained scores for "normally developing" and "impaired" kindergartners on the Sentence Repetition subtest of O le STS.

Table 4. Means and standard deviations by subtest for scores obtained on O le STS for a sample of forty American Samoan kindergartners rated "normally developing" by their teacher.

Subtest	Mean Score	Standard Deviation
Articulation	32.775	0.423
Vocabulary	19.225	1.209
Auditory Comprehension	9.800	0.464
Sentence Repetition	9.225	0.974

Table 5. Profile of the performance of the three American Samoan kindergartners on O le STS rated "impaired" (on at least one subtest) by their teacher.

Sx	Artic Score	Vocab Score	Comp Score	Rep Score
I_1	32*	20	10	10
I_2	33	19*	10	10
I_3	33*	18*	8*	8*

* subject was rated "impaired" on this subtest

that table distinction is made as to which subtest the subject was given a rating of "impaired". This was done because of an interest in determining if comparison of each individual "impaired" subject to the overall group of "normally developing" subjects revealed a notable difference in scores upon visual inspection. Therefore, those subjects rated "impaired" by their teacher on a given subtest were compared to the mean score of the "normally developing" group on that subtest. The mean score for the "normally developing" group of 40 subjects was 32.775 (s.d.=0.423) on the Articulation subtest. The two subjects rated "impaired" in articulation by their teachers received scores of 32 and 33. The mean score for the Vocabulary subtest was 19.225 (s.d.=1.209). The two subjects rated as "impaired" in vocabulary by their teachers received scores of 18 and 19. The mean score for the Auditory Comprehension subtest was 9.800 (s.d.=0.464). The one subject rated "impaired" received a score of 8. The mean score for the Sentence Repetition subtest was 9.225 (s.d.=0.974). The one subject rated "impaired" received a score of 8. These data are illustrated in Figures 5, 6, 7 and 8.

As an additional point of interest, an item analysis was done to determine the number of subjects who missed each item on O le STS. Appendix A displays, by item, the number of "normally developing" (X) and the number of "impaired" (O) subjects who missed each item. Errors appeared to be

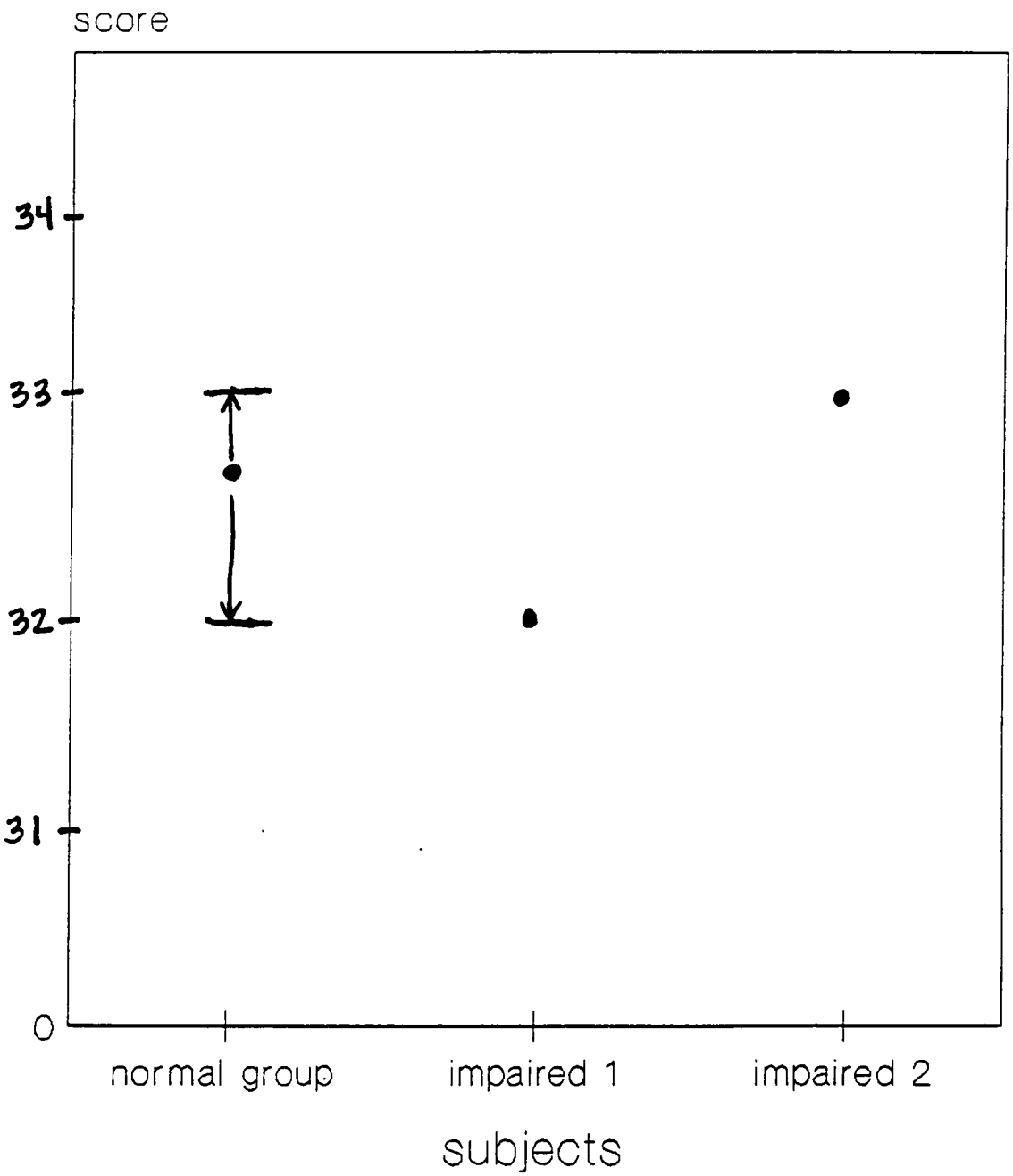

Figure 5. Comparison of mean score and range of "normally developing" subjects to scores of the two subjects rated as "impaired" on the Articulation subtest.

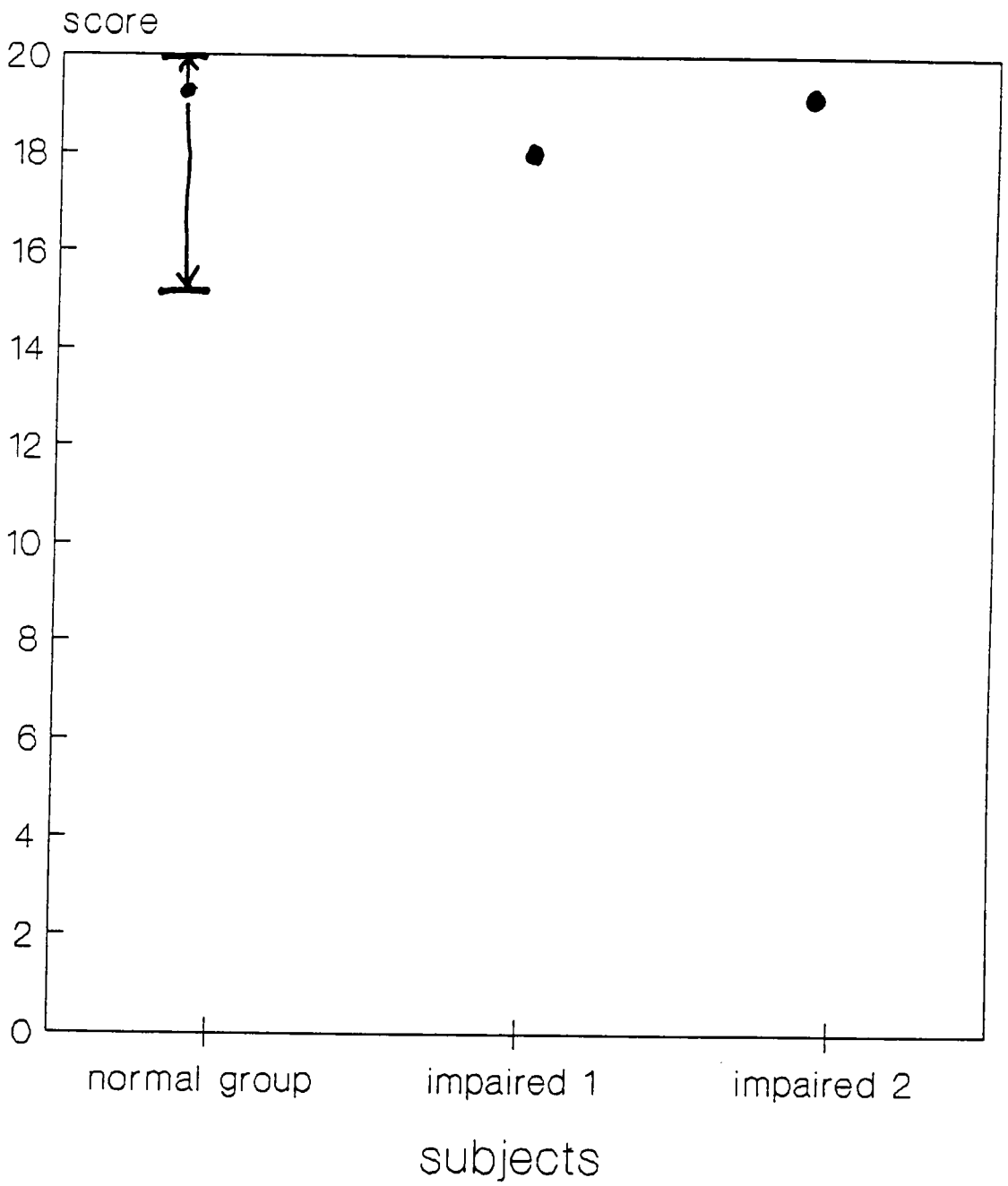

Figure 6. Comparison of the mean score and range of "normally developing" subjects to the two subjects rated as "impaired" on the Vocabulary subtest.

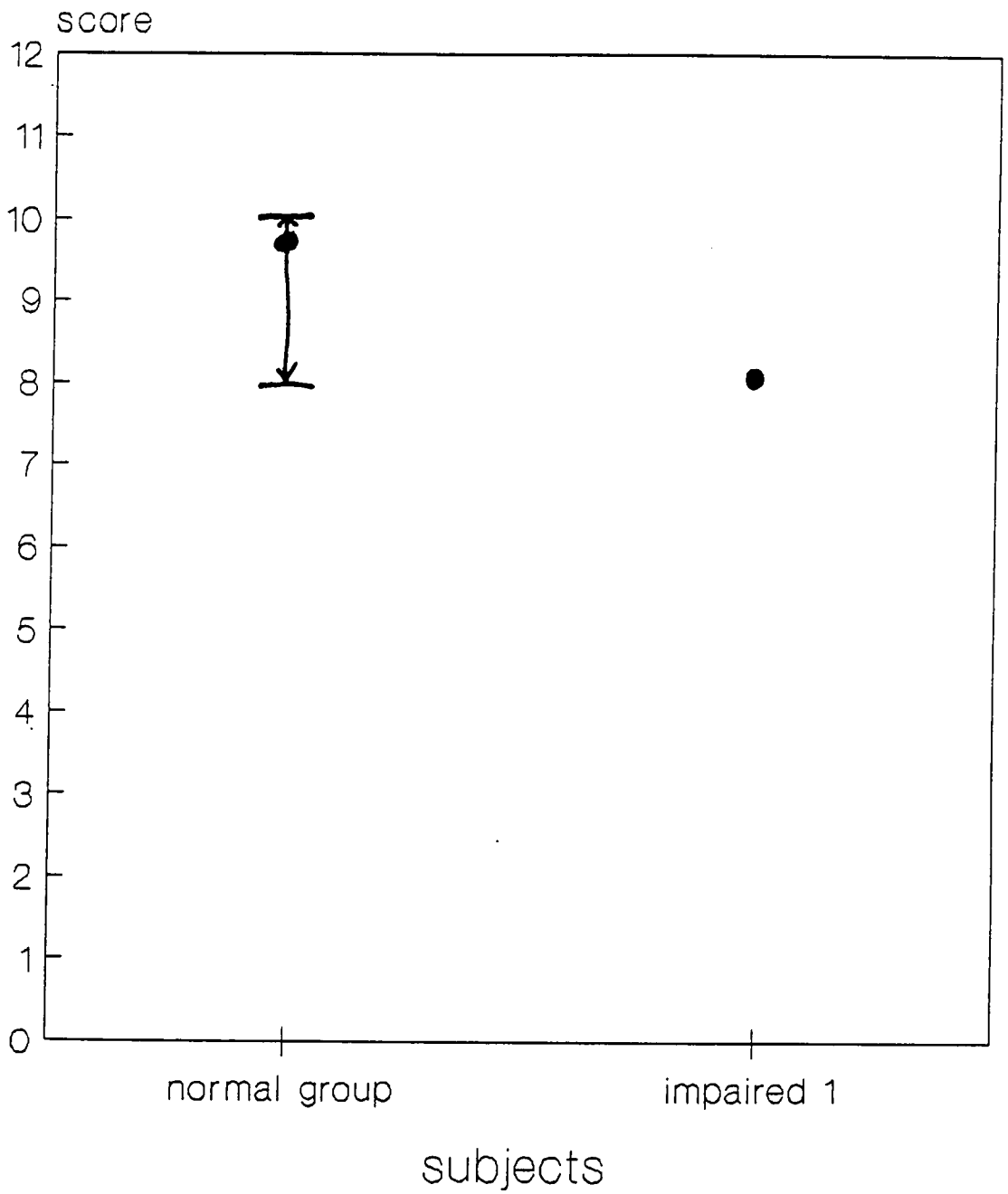

Figure 7. Comparison of the mean score and range of "normally developing" subjects to the one subject rated as "impaired" on the Auditory Comprehension subtest.

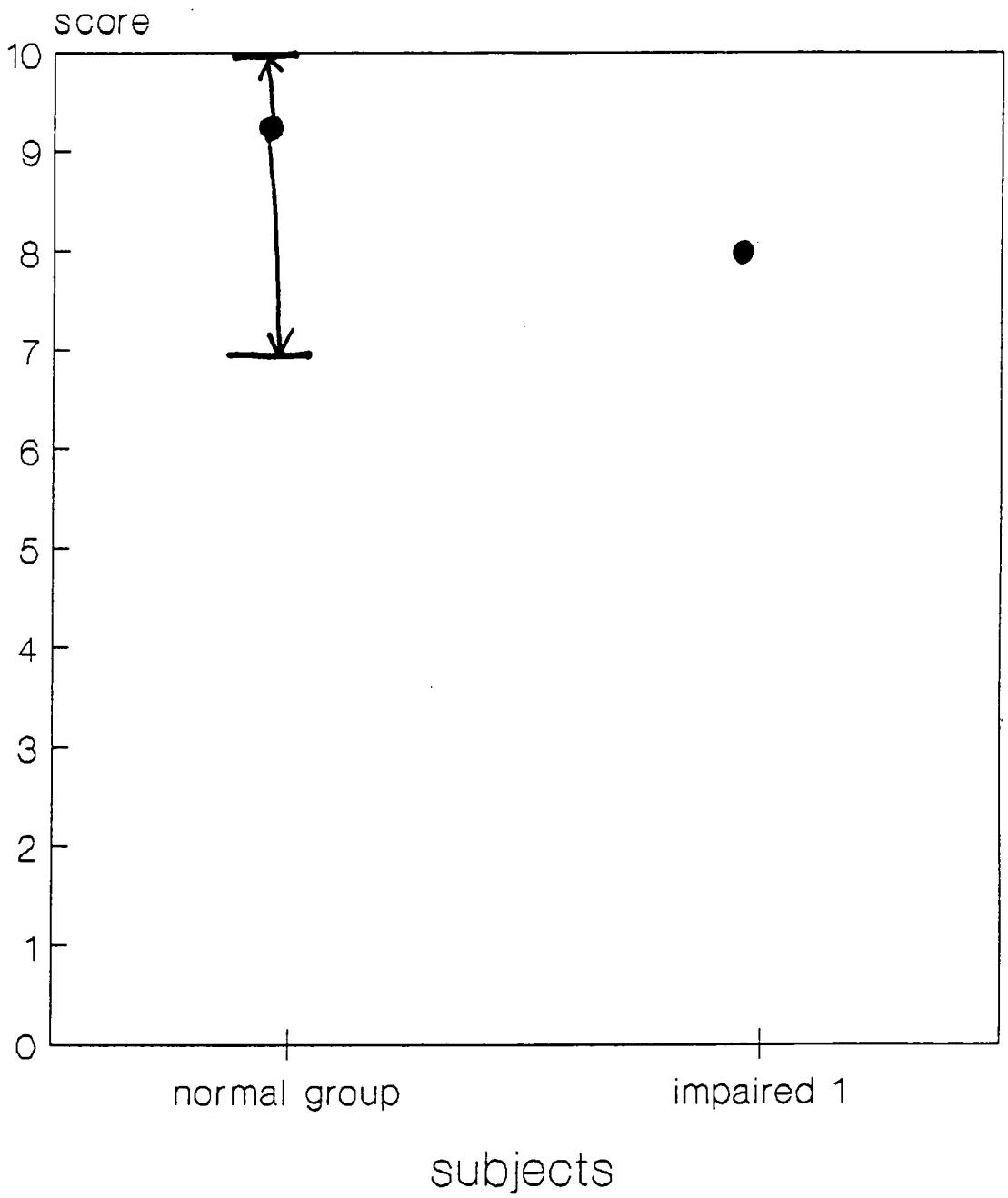

Figure 8. Comparison of the mean score and range of "normally developing" subjects to the score of the one subject rated as "impaired" on the Sentence Repetition subtest.

distributed equally throughout O le STS with no tendency for specific items to be in error.

CHAPTER V

DISCUSSION AND CONCLUSIONS

The purpose of this study was to obtain pilot data regarding the performance of American Samoan kindergartners on O le STS. Specifically, strength of the relationship between subjects' teacher rating and obtained score on each subtest was determined.

Statistical analysis revealed weak positive correlations between teacher rating and obtained score for each area tested on O le STS (articulation, vocabulary, auditory comprehension, and sentence repetition). Weak correlations were also found between pairs of subtests of O le STS. Clearly, after examining the correlation figures, no statistically significant relationship exists between teacher ratings and scores for this particular sample of children.

In comparing those subjects who were rated by their teacher as "impaired" on one or more subtests to the mean of the larger group rated as "normally developing", the "impaired" subjects appeared to perform in a similar manner as the "normally developing" group. Likewise, upon inspection of the item analysis; there appeared to be no items which the "impaired" subjects missed more frequently than those rated "normally developing".

These results may be interpreted in a number of different ways. First, we must keep in mind that this study was conducted in an area much different from that of the continental United States. This difference is apparent in two very important aspects: the culture and the language. These two factors are virtually impossible to overcome using methods and procedures that are considered appropriate for the continental United States. This is especially true in the area of communication disorders.

As mentioned earlier, it is typical in the Samoan culture for older siblings to care for and raise younger siblings. This arrangement allows for exposure to language which may be more advanced than a child of the same age in a different culture may experience. This results in a more homogeneous group of children in the Samoan culture. For this reason, the high performance and low variability of scores of the group of kindergartners as a whole may be due to these culture-influenced factors.

Due to the nature of this study and the fact that it was the first of its type in American Samoa; there were no means against which to validate the findings. As mentioned earlier, a teacher rating was created for this purpose. Classroom teachers, who were familiar with each of "their" child's performance in the areas tested were used as raters. However, as mentioned earlier, discrepancy was noted on one particular subject which resulted in the teacher changing

the rating from "normally developing" to "impaired". Perhaps the culture and language gap between the Samoan classroom teachers and the researchers resulted in a protective-type reaction when rating their children. Another possibility is the lack of exposure to individuals with mild types of disorders. In the United States, since the enactment of PL 94-142, mainstreaming has resulted in children with disorders being placed in the "regular" classroom. These children range from having mild to severe impairment. Therefore, the presence and identification of communication deficits are more readily observable. Classroom teachers are more familiar with different types of disorders due to this exposure. In American Samoa, however, children in the regular classroom are assumed to be "normally developing" and may only have some mild types of disorders; and those with moderate and severe impairment are treated in special classrooms. Therefore, the American Samoan teacher may have nothing to compare a child to in order to determine if they may be impaired. In fact, they may have an entirely different concept of "impairment" than that of the continental United States. If this is the case, we cannot expect a valid rating of impairment by the Samoan teachers based on our system. Without an appropriate "yardstick", the teacher may not be able to discriminate between a child who is developing normally and one with a mild impairment. An inability to tap into this culture's

definition of "impaired" may have affected the results of this study. This suggests a need for an indepth study of "impairment" as it is viewed in American Samoa.

The small number of subjects who were rated "impaired" by their teacher in this study made comparison of performance between "normally developing" and "impaired" difficult. Although this small percentage (7%) may have been representative of a typical distribution of impaired individuals in the United States; this is not necessarily true in other cultures, American Samoa included.

The results of this study suggest that the teacher ratings were not good predictors of the obtained scores on each subtest of O le STS for this sample of kindergartners. An ethnographic study should be conducted to examine the perceptions of impairment in the American Samoan culture. In addition, a detailed study of the development and usage of the Samoan language should be conducted. This would provide invaluable information necessary for future efforts to develop a speech and language screening instrument.

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APPENDICES

APPENDIX A

I TAMAIIIIII IAIIIIII I SAMOA*

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Igoa _____ Aso fanau _____/_____/_____ O le matua _____/_____
masina aso tausaga Tausaga Masina

_____/_____ Atunu'u _____/_____
Tama Teine Samoa le isi

Le gagana i le aiga _____/_____ A 'oga _____
Samoa le isi

Faia'oga _____ Aso _____/_____/_____
Masina Aso Tausaga

TAIA 'OTO 'OTO

	Aofa'iga	Manatu
A. Fa 'aleoga	/33	
O lisi o 'upu	/20	
B. Malamalama**	/10	
C. Fa'ata'ita'iga	/10	
D. O le gagana tofotofo	-	
Leo	-	
Alu lelei lana tautala	-	
	/73	
Fa'alogo		
Le isi		

Fautua:

**With permission from the author and publisher, these subtests are based on items from the Fluharty Preschool Language Screening Test, 1978.

A. O IE FAAIEOGA MA LISI O 'UPU

	LISI O 'UPU (VOCABULARY) = sa'o x = sese		IE FA 'AIEOGA (ARTICULATION) leo muamua (po'o x)	leo ogatotonu (po'o x)	leo mulimuli (po'o x)
1. ato (basket)			/a/		/o/
2. ma'a (rock)			/m/	/a/	/a/
3. esi (papaya)	xxxx		/ɛ/ x		
4. pepe (baby)	xxxo			/ɛ/	
5. fale (house)			/f/		/ɛ/
6. ipu (cup)	xx		/i/	/p/ x	
7. lima (hand)			/l/ x	/i/ x	
8. ofu (shirt)			/o/		
9. ula (necklace)	xxxxx		/u/		
0. pusi (cat)				/u/	/i/
11. gutu (mouth)	xxx		/g/	/t/ x	/u/
12. fagu (bottle)	xxxxx			/g/	
13. tama (boy)	xo		/t/ xx	/m/	
14. tusi (book)	xxxxx			/s/ x	
15. naifi (knife)			/n/	/f/ x	
16. teine (girl)	o			/n/	
17. polo (ball)	x		/p/	/o/	
18. selu (comb)			/s/ o		
19. va'a (boat)			/v/		
20. iva (nine)	xx			/v/	
Aofa'iga	/20		/14	/14	/5 = /33

KEY
X = ITEM MISSED BY ONE SUBJECT ("NORMALLY DEVELOPING")
O = ITEM MISSED BY ONE SUBJECT ("IMPAIRED")

B. MAIAMAIAMA (AUDITORY COMPREHENSION)

(= sa'o, x = sese)

(Fa'ali i luga le laulau: tasi ma'a'; lua vali - tasi lanu samasama, tasi lanu mumu; lua ipu - tasi pepa, tasi plastic; lua polo; lua selu; tasi poloka)

(Objects: 1 rock; 2 crayons (yellow & red); 2 cups (paper & plastic); 2 balls; 2 combs; 1 block)

			ITEM ANALYSIS
	1. E iai se ma'a i luga le laulau?	Is the rock on the table?	X
"Fa'asino 'ia a'u"	2. O lo'o matala lou gutu.	Show me you are opening your mouth.	
"Fa'asino 'ia a'u"	3. O le vali e lanu samasama.	Show me the yellow crayon.	XO
"Fa'asino 'ia a'u"	4. O le ipu pepa.	Show me the paper cup.	
"Fa'asino 'ia a'u"	5. O le polo ua luga le ipu.	Show me the ball is on the cup.	XX
	6. Fa'ali mai lou lima.	Raise your hand.	
"Fa'asino 'ia a'u"	7. O _____ ua tale.	Show me (child's name) is coughing.	XXXO
"Fa'asino 'ia a'u"	8. E leai se selu i luga le laulau.	Show me the comb isn't on the table.	X
	9. O fea le poloka?	Where is the block?	
	10. Ave le ipu ma le selu.	Take the cup and the comb.	
		Aofa'iga =	/10

KEY

X = ITEM MISSED BY ONE SUBJECT ("NORMALLY DEVELOPING")

O = ITEM MISSED BY ONE SUBJECT ("IMPAIRED")

C. FA'ATA'ITA'IGA (SENTENCE REPETITION)

(= sa'o, x = sese)

(Fa'ata'ita'i mai le faiupu pe a uma ona ou faiatu.)
(Say the sentence after me.)

		ITEM ANALYSIS
1. Ua iai meaalofa a teine.	The girls have the presents.	XX
2. O le tamaloa e ta'alo lakapi.	The man is a football player.	XXX
3. O le pepe e laiititi.	The baby is little.	XX
4. O latou ua savavali.	They are walking.	XX
5. Ua taunu'u le pasi.	The bus is here.	
6. O le pusi lena le teine.	That is her cat.	XX
7. O le tamaloa ua tau a'apa iai.	The man can't reach.	XXXXX XXXXX
8. Faimai le teine, "O ai lena?"	The girl said, "Who is it?"	XXXX XXXO
9. Faimai le tama, "Feula tele!"	The boy said, "Blow hard!"	XXXO
10. Ua pa'u le aisakulimi.	The ice cream fell.	X
	Aofa'iga =	/10

KEY
X = ITEM MISSED BY ONE SUBJECT ("NORMALLY DEVELOPING")
O = ITEM MISSED BY ONE SUBJECT ("IMPAIRED")

APPENDIX B

PRESCHOOL TEACHER QUESTIONNAIRE*
SU'EGA FAIA'OGA MO TAMAITTI

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IGOA: _____ FAIA'OGA: _____

TAMA: _____ TEINE: _____

ASO FANAU: _____ TAUSAGA:_____ ASO: _____

ATUNU'U: SAMOA (FA'ALAPOTOPOTO) IOE LEAI

A LEAI, TA'U MAI LE ATUNU'U _____

GAGANA FA'ALEATUNU'U: SAMOA (FA'ALAPOTOPOTO) IOE LEAI

A LEAI, TA'U MAI LE GAGANA FA'ALEATUNU'U _____

E TOE FO'I MAI LE TAMA/TEINE I LE AOGA LENEI LE TAUSAGA FOU?

(FA'ALAPOTOPOTO) IOE LEAI

A LEAI, O LEA LE A'OGA E AUAI LE TAMA/TEINE LE TAUSAGA FOU? _____

Please compare this child's communication, social and motor skills to those of other children the same age. Then rate this child's performance (items A-G, next page) using a 5 point scale.

1 = moderate-severly impaired, serious problem in this area

2 = mild-moderately impaired, although not severely impaired, performance in this area is not as good as for other children in the same age group

3 = average, as good as other children the same age

4 = good performance, better than other children of the same age

5 = superior performance, much better than other children of the same age

COMMUNICATION, SOCIAL AND MOTOR SKILL AREAS
(Circle the Appropriate Number)

A. Clearness of speech sounds.

1	2	3	4	5
(moderate-severely impaired)	(mild-moderately impaired)	(average)	(good performance)	(superior performance)

B. Vocabulary (for example: understanding and use of words to label colors, animals, etc.).

1	2	3	4	5
(moderate-severely impaired)	(mild-moderately impaired)	(average)	(good performance)	(superior performance)

C. Understanding sentences and following directions.

1	2	3	4	5
(moderate-severely impaired)	(mild-moderately impaired)	(average)	(good performance)	(superior performance)

D. Grammar (for example: correct use of word combinations to make sentences).

1	2	3	4	5
(moderate-severely impaired)	(mild-moderately impaired)	(average)	(good performance)	(superior performance)

E. Social interaction with teachers and children in the classroom and during playtime.

1	2	3	4	5
(moderate-severely impaired)	(mild-moderately impaired)	(average)	(good performance)	(superior performance)

F. Motor skills and coordination (for example: when walking, running and throwing a ball).

1	2	3	4	5
(moderate-severely impaired)	(mild-moderately impaired)	(average)	(good performance)	(superior performance)

G. Overall performance for speech, vocabulary, understanding and following directions, making sentences, social interaction and motor skills.

1	2	3	4	5
(moderate-severely impaired)	(mild-moderately impaired)	(average)	(good performance)	(superior performance)

APPENDIX C

TEACHER RATING (TR) AND CORRESPONDING O LE STS SCORE BY SUBTEST FOR EACH SUBJECT

	ARTIC		VOCAB		COMP		REP	
Sx	TR	SCORE	TR	SCORE	TR	SCORE	TR	SCORE
1	5	33	5	20	5	10	5	10
2	5	33	5	19	5	10	5	8
3	4	33	4	18	4	10	4	9
4	5	33	5	20	5	10	5	10
5	5	32	5	20	5	10	5	10
6	5	33	5	20	5	10	5	10
7	3	32	4	16	4	10	4	10
8	4	33	5	20	5	10	5	10
9	3	33	3	20	4	10	3	10
10	5	32	5	20	4	10	4	9
11	5	9	5	20	5	9	5	10
12	3	33	3	20	3	10	3	10
13	4	33	4	20	4	10	4	10
14	3	33	4	19	3	9	3	9
15	4	33	4	20	4	10	4	9
16	3	33	3	19	4	9	4	7
17	3	33	3	20	3	9	3	9
18	3	33	3	17	3	8	3	7
19	3	32	3	18	3	10	3	8
20	4	33	4	20	4	10	4	10
21	5	32	5	20	5	10	5	8

22	3	32	3	19	3	9	3	8

	ARTIC		VOCAB		COMP		REP	
Sx	TR	SCORE	TR	SCORE	TR	SCORE	TR	SCORE
23	3	33	3	19	3	10	3	10
24	5	33	5	20	5	10	5	9
25	5	33	5	19	5	10	5	10
26	4	33	4	19	4	10	4	9
27	4	33	4	20	4	10	4	10
28	5	33	5	20	5	10	5	10
29	4	32	4	20	4	10	4	8
30	4	33	4	17	4	10	4	9
31	5	33	5	18	5	9	5	10
32	5	33	5	20	5	10	5	10
33	4	33	5	20	5	10	4	8
34	4	33	5	19	5	10	4	9
35	5	33	5	20	5	10	4	10
36	4	32	5	19	5	10	4	7
37	5	33	5	20	5	10	5	9
38	5	33	5	20	5	10	5	10
39	5	33	5	19	4	10	4	10
40	3	33	3	15	3	10	3	10
41	2	32	5	20	5	10	5	10
42	3	33	1	19	3	10	3	10
43	2	33	1	18	2	8	1	8

VITA

Deborah Rochelle Meltzer was born in St. Louis, Missouri on August 3, 1967. She grew up and attended elementary and middle school in Carbondale, Illinois, graduating from Carbondale Community High School in June 1985. In the fall of that same year, she entered the University of Illinois at Urbana-Champaign. During her four years at the university, she became a member of the National Student Speech-Language-Hearing Association and worked with various programs of the Volunteer Illini Projects. She graduated with a Bachelor of Science degree in Speech and Hearing Science in May 1989. The following August she entered the master's program in the department of Audiology and Speech Pathology at the University of Tennessee in Knoxville. She became a member of the University of Tennessee's Phi Kappa Phi Honor Society as well as the Tennessee Speech and Hearing Association. In May 1991 she received the Outstanding Academic Achievement Award from her department and graduated with a Master of Arts degree in Speech Pathology.