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**JOURNAL  
2014  
CONTENTS**

**PSHA INFORMATION**

2

**JOURNAL EDITOR AND REVIEW CONSULTANTS**

3

**JOURNAL CONTENTS**

4

**ARTICLES**

**SELECTING APPLICATIONS FOR MASTER'S DEGREE SLP PROGRAMS:  
WHAT PREDICTS SUCCESS?**

Sojung Kim and Mareile Koenig

5

**GRAMMATICAL MORPHEME DEVELOPMENT  
IN AN INTERNATIONALLY ADOPTED ENGLISH LANGUAGE LEARNER**

Aliza Lamdan, Susanna E. Meyer, and Linda S. Larrivee

11

**CALL FOR PAPERS**

**INFORMATION FOR ADVERTISERS**



**SELECTING APPLICANTS FOR  
 MASTER'S DEGREE SLP PROGRAMS:  
 WHAT PREDICTS SUCCESS?**

**Sojung Kim  
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**ABSTRACT**

The current study sought to examine the predictive validity of pre-admission criteria based on the records obtained from five cohorts of alumnae from a master's level SLP program at a comprehensive state university in the northeastern United States. We analyzed the validity of 6 variables (i.e., UCGPA, MGPA, V-GRE, Q-GRE, W-GRE, and T-GRE) for predicting success in an SLP graduate program. Results indicated that the six independent variables were significantly associated with GGPA. Also, the five independent scores (i.e., MGPA, V-GRE, Q-GRE, W-GRE, and total GRE), but not MGPA, were significantly associated with SLP Praxis score. It was also found that T-GRE accounted for a significant proportion of the variability of GGPA after controlling for the effects of MGPA. Finally, T-GRE accounted for a significant proportion of the variability of SLP Praxis score after controlling for the effects of the MGPA.

**KEY WORDS**

GPA, GRE, SLP Praxis Score

Each year, graduate programs in Speech-Language Pathology (SLP) spend considerable effort processing hundreds of applications for a small number of seats. The goal of application reviews is to select a group of students who will successfully complete their academic and clinical education and eventually serve as competent speech-language pathologists. Another goal of reviews is to minimize the admission of any students who will fail in their graduate programs. Three variables often considered in the process include the undergraduate cumulative grade point average (UCGPA), undergraduate major GPA (MGPA), and Graduate Record Exam (GRE) scores. The focus of the current study was to examine the predictive validity of the three scores used to select candidates for a master's degree SLP program.

Although the predictive validity of pre-admission scores has been examined in other graduate fields, few studies pertain to graduate SLP programs. Forrest and Naremore (1998) conducted one such study in the Department of Speech and Hearing Sciences at Indiana University. They assessed the relationship of four variables (i.e., UCGPA, GRE scores, quality of the undergraduate institution, and undergraduate major) to two outcome measures (i.e., graduate GPA and SLP Praxis scores). The data represented 30 graduates of the master's program classified as high or low performers. Also analyzed were the records of 15 randomly selected students from a then-current master's degree cohort. Results indicated that "...aptitude for master's studies in [SLP] at Indiana University is better predicted by undergraduate GPA than by GRE scores" (p. 60). However, only high and low-performing student records were examined, and SLP Praxis scores were not included for the 15 then-current graduate students.

Ryan, Morgan, and Wacker-Mundy (1998) assessed the potential of admission variables to predict performance on the National Examination in Speech Pathology and Audiology (NESPA). The variables included UCGPA, graduate GPA (GGPA), GRE scores, and presence/absence of an admission interview. The data represented 96 students from Texas Christian University and State University in New York, Plattsburgh. Findings indicated that GRE scores were not compelling indicators of graduate school success, particularly when paired with UCGPA.

A smaller-scale study was reported by Garrity, Clark, and Brooks (2008) from Armstrong Atlantic State University. Participants included 28 student volunteers drawn from both undergraduate and graduate levels. In a questionnaire, the students were asked to provide UCGPA, GGPA, GRE scores, and SLP Praxis scores. The statistical analyses indicated (1) strong correlation between GGPA and SLP Praxis scores, (2) unexpected negative relationship between undergraduate GPA and GGPA, and (3) moderate correlation between verbal GRE (V-GRE) scores and GGPA. Purdy (2009) conducted a similar study with a larger sample size (N=119) at Southern Connecticut State University. This study examined UCGPA and V-GRE scores as possible predictors of GGPA. Neither variable was found to have predictive validity.

Kjelgaard and Guarino (2012) conducted a retrospective record review of 122 students who completed the graduate program in SLP at Massachusetts General Hospital Institute of Health Professionals. It was found that (1) UCGPA, Quantitative GRE (Q-GRE), and V-GRE strongly predicted GGPA and (2) GGPA strongly predicted SLP Praxis scores. Among few studies completed in the field of SLP examining the predictive validity of pre-admission scores, Moore (2013) employed the most systematic analyses including a large number of students across graduate programs. The sample consisted of 280 graduate student records during the years 2008-2012 from three state-supported comprehensive institutions in Kentucky. The results of stepwise multiple regression indicated that total GRE scores (T-GRE), Q-GRE, UCGPA, and GRE analytical writing scores (W-GRE) greatly contributed to success on the SLP Praxis exam.

As a whole, these studies show that the justification for using undergraduate GPA and GRE scores to identify potentially successful graduate students currently rests on a shaky evidence-base. Only a small number of studies have been reported, and results are inconsistent. There seems to be a general consensus that undergraduate GPA is a strong predictor of success in a master's program as measured by GGPA and SLP Praxis scores. However, the predictive validity of GRE scores has not been established. The current study sought to expand this literature by assessing the predictive validity of pre-admission criteria based on the records obtained from five cohorts of alumnae from a master's level SLP program at a comprehensive state university in the northeastern United States. In particular, the purpose of the current investigation was to test (1) whether UCGPA, MGPA, Q-GRE, V-GRE, W-GRE, and T-GRE scores predict GGPA and SLP Praxis scores and (2) whether T-GRE score explains the individual variability of GGPA and SLP Praxis scores beyond and above the influence of MGPA.

## METHOD

### Data and Sample Selection

Data were derived from the records of 89 individuals who had earned their Master's of Arts (MA) degree in a residential SLP program at West Chester University, PA. These alumnae represent 79% of the 112 graduate students accepted into the program from 2005 to 2009. Twenty-three of the 112 acceptances were not included due to missing information: Two withdrew from the program before graduation. Four were still completing the program when the analyses were conducted. Eight were allowed to waive the GRE because they had previously earned a graduate degree in another field. Five took the *Miller's Analogy Test* instead of the GRE, and five did not report their SLP Praxis scores.

### Variables in the Study

The six variables used to select candidates for WCU's MA program included (1) UCGPA, (2) MGPA, (3) V-GRE, (4) Q-GRE, (5) W-GRE, and (6) T-GRE, which were utilized as the predictor variables. The criterion variables included GGPA and

Predictive Variable	
UCGPA	The four-year undergraduate cumulative GPA was recorded on a 4-point ratio scale.
MGPA	The four-year undergraduate major classes-only GPA was recorded on a 4-point ration scale. Examples of major classes included introduction to communicative disorders, anatomy of speech and hearing mechanism, speech and language development, and disorders-themed classes.
V-GRE	Verbal reasoning GRE ratio score measures a student's ability to analyze and evaluate written material and synthesize information.
Q-GRE	Quantitative reasoning GRE ratio score measures problem-solving ability with basic concepts of arithmetic, algebra, geometry, and data analysis.
W-GRE	Analytic writing GRE ratio score measures critical thinking and analytical writing skills.
T-GRE	Total GRE score.
Criterion Variable	
GGPA	Graduate cumulative GPA was recorded on a 4-point ratio scale.
SLP Praxis	The score on the Praxis exam in SLP were obtained from the graduate coordinator. A minimum ratio score of 600 constituted a passing score.

**Table 1.** Description of predictor and criterion variables.

SLP Praxis scores. The predictor and criterion variables are described in Table 1.

#### Data Analysis

First, descriptive statistics for predictive and criterion variables were obtained. Second, linear regression analyses were conducted to evaluate the prediction of success in SLP programs from the six variables used to select candidates for a master's degree. Finally, two multiple regression analyses were conducted to evaluate whether T-GRE predicted the success in SLP programs over and above the MGPA.

## RESULTS

#### Descriptive Statistics

Results of descriptive statistics of predictive and criterion variable are presented in Table 2. Bivariate correlations between predictive and criterion variables are presented in Table 3. Interestingly, UCGPA was not statistically correlated with GRE scores or SLP Praxis scores. In contrast, MGPA was statistically

correlated with Q-GRE, T-GRE, and SLP Praxis scores,  $R_s = .25$  ( $p < .05$ ),  $.24$  ( $p < .05$ ), and  $.39$  ( $p < .001$ ), respectively.

#### Linear Regression Analyses

A series of linear regression analyses were conducted including one predictor and one criterion variable at a time to estimate the predictive power of pre-admission scores. Statistical findings are summarized in Table 4. Results indicated that the six independent variables (i.e., UCGPA, MGPA, V-GRE, Q-GRE, W-GRE, and T-GRE) were significantly related to GGPA. As individual variables used to select candidates for a master's program increased, GGPA in SLP programs increased. Approximately 5%, 19%, 14%, 14%, 14%, and 20% of the variance of UCGPA, MGPA, V-GRE, Q-GRE, W-GRE, and T-GRE, respectively, were accounted for by its linear relationship with GGPA. Results also indicated that the five independent scores (i.e., MGPA, V-GRE, Q-GRE, W-GRE, and total GRE) were significantly associated with SLP Praxis score. As the individual scores used to select the candidates for a master's program increased, SLP Praxis scores increased. Approximately

Predictive Variable	Minimum	Maximum	Mean	SD
UCGPA	2.61	4.00	3.50	.34
MGPA	2.83	4.00	3.71	.27
V-GRE	300	640	461.01	80.19
Q-GRE	320	730	533.82	78.82
W-GRE	3	6	4.05	.58
T-GRE	684	1325	998.87	134.09
Criterion Variable				
GGPA	3.47	4.00	3.86	.13
SLP Praxis	590	790	688.88	48.698

*Note.* UCGPA = undergraduate cumulative grade point average; MGPA = undergraduate major grade point average; V-GRE = verbal graduate record exam; Q-GRE = quantitative graduate record exam; W-GRE = writing graduate record exam; T-GRE = total graduate record exam; GGPA = graduate grade point average.

**Table 2.** Descriptive statistics: predictive and criterion variables.

Predictive Variable	1	2	3	4	5	6	7	8
1 UCGPA	---							
2 MGPA	.45 <sup>***</sup>	---						
3 V-GRE	-.08 <sup>n.s.</sup>	.16 <sup>n.s.</sup>	---					
4 Q-GRE	.12 <sup>n.s.</sup>	.25 <sup>*</sup>	.42 <sup>***</sup>	---				
5 W-GRE	.19 <sup>n.s.</sup>	.19 <sup>n.s.</sup>	.37 <sup>***</sup>	.22 <sup>***</sup>	---			
6 T-GRE	.02 <sup>n.s.</sup>	.24 <sup>*</sup>	.85 <sup>***</sup>	.84 <sup>***</sup>	.35 <sup>**</sup>	---		
Criterion Variable								
7 GGPA	.22 <sup>*</sup>	.43 <sup>***</sup>	.37 <sup>***</sup>	.37 <sup>***</sup>	.38 <sup>***</sup>	.44 <sup>***</sup>	---	
8 SLP Praxis	.07 <sup>n.s.</sup>	.39 <sup>***</sup>	.57 <sup>***</sup>	.37 <sup>***</sup>	.39 <sup>***</sup>	.56 <sup>***</sup>	.50 <sup>***</sup>	---

*Note.* UCGPA = undergraduate cumulative grade point average; MGPA = undergraduate major grade point average; V-GRE = verbal graduate record exam; Q-GRE = quantitative graduate record exam; W-GRE = writing graduate record exam; T-GRE = total graduate record exam; GGPA = graduate grade point average. \*  $p < .05$ . \*\*\*  $p < .001$ .

**Table 3.** Bivariate correlations among variables.



Predictor Variable	Criterion Variable					
	GGPA			SLP Praxis		
	$\beta$	$R^2$	$F$	$\beta$	$R^2$	$F$
UCGPA	.223	.05	4.570 <sup>*</sup>	<i>n.s.</i>	<i>n.s.</i>	<i>n.s.</i>
MGPA	.438	.19	20.633 <sup>***</sup>	.411	.17	17.641 <sup>***</sup>
V-GRE	.374	.14	14.160 <sup>***</sup>	.566	.32	41.077 <sup>***</sup>
Q-GRE	.370	.14	13.772 <sup>***</sup>	.367	.14	13.547 <sup>***</sup>
W-GRE	.379	.14	14.581 <sup>***</sup>	.387	.15	15.305 <sup>***</sup>
T-GRE	.443	.20	21.197 <sup>***</sup>	.556	.31	38.950 <sup>***</sup>

*Note.* UCGPA = undergraduate cumulative grade point average; MGPA = undergraduate major grade point average; V-GRE = verbal graduate record exam; Q-GRE = quantitative graduate record exam; W-GRE = writing graduate record exam; T-GRE = total graduate record exam; GGPA = graduate grade point average. *n.s.* = not significant. <sup>\*</sup>  $p < .001$ .

**Table 4.** Linear regression analyses.

17%, 32%, 14%, 15%, and 31% of the variance of MGPA, V-GRE, Q-GRE, W-GRE, and T-GRE, respectively, were accounted for by its linear relationship with the SLP Praxis scores.

#### Multiple Regression Analyses

Two multiple regression analyses were conducted to evaluate whether T-GRE predicted the success in SLP programs over and above the influence of MGPA. Results indicated that T-GRE accounted for a significant proportion of the variability of GGPA after controlling for the effects of MGPA,  $R^2$  change = .12,  $F(1, 86) = 15.05$ ,  $p < .001$ . Results also indicated that T-GRE accounted for a significant proportion of the variability of SLP Praxis score after controlling for the effects of the MGPA,  $R^2$  change = .22,  $F(1, 86) = 31.25$ ,  $p < .001$ . These results suggest that students who have similar MGPA scores are more likely to be successful in SLP graduate programs if they receive higher GRE scores.

## DISCUSSION

The current study examined how the pre-admission variables such as undergraduate GPA scores and GRE scores predict success in a SLP graduate program as measured by GGPA and SLP Praxis scores. The study's findings added to the limited and conflicting evidence for the predictive validity of pre-admission criteria by testing the relationship between UCGPA, MGPA, and GRE scores and GGPA and SLP Praxis scores. The study also extended previous research on the predictive power of GRE

beyond and above the influence of MGPA. These findings advance our understanding of the important role of pre-criteria scores and have implications for promoting the admission processes in a SLP program.

A major finding from this study is that MGPA strongly predicted success in a SLP graduate program. Interestingly, UCGPA was not a predictor for GGPA and SLP Praxis scores, which is consistent with the findings of Moore (2013). Despite a strong correlation between UCGPA and MGPA, only MGPA was found to predict success in a SLP program. This differential predictive validity between UCGPA and MGPA may occur because of students' passion in their major courses. In other words, poor performances of undergraduate students in required general education courses (e.g., art, language, and social science requirements) are not connected with poor grades in M.A. programs.

Another finding from this study is that T-GRE as well as all three specific section scores such as V-GRE, Q-GRE, and W-GRE strongly predicted success in a SLP graduate program, which is consistent with the results of Kjelgaard & Guarino (2012) and Moore (2013). More importantly, the predictive power of T-GRE was found beyond and above the influence of MGPA, which is a strong predictor of GGPA and SLP Praxis scores. It is suggested that students who have similar MGPA scores are more likely to be successful in SLP master's programs if they receive higher T-GRE scores. In other words, the verbal reasoning skills, quantitative reasoning skills, and analytic

writing skills that undergraduate students acquire while preparing GRE may be strongly associated with academic performances in graduate programs. It is noteworthy that preparing and taking GRE may *NOT* be an isolated and unrelated requirement for graduate application.

#### Limitations and Directions for Future Research

Due to the nature of retrospective data analyses, we had a small number of options to operationalize the critical concepts of our interest. First, a greater number of students across institutes should be included over time to represent the population and increase the statistical power. With a large sample size, one can control for extraneous variables (e.g., socioeconomic status, presence of previous bachelor's degree, and age) to conduct less biased analyses. Also, stronger statistical analyses such as cluster analyses and longitudinal analyses can be utilized. Second, qualitative variables such as scores of recommendation letters, curriculum vitae, and interviews were missing. A valid tool to evaluate these qualitative pre-admission criteria should be created, and subsequently, qualitative measures should be used to investigate the predictive validity. Finally, M.A. students' clinical performances were not included as a part of measuring success in SLP programs. Considering that a noticeable number of SLP students struggle in clinical practicum courses, inclusion of clinical measures is critical.

#### Implications for Practice

The results of the current study may be of interest to a graduate coordinator or graduate admission committee in a master's degree SLP program. First, MGPA should be strongly weighted in application reviews instead of UCGPA to "admit those students who will maximize the investment of time, energy, and resources of both programs and students" (Moore, 2013, p. 91). Undergraduate students' general education requirements should not be heavily evaluated to determine the acceptance of a M.A. program. This implication is critical, especially when graduate coordinators or admission committees evaluate those students who earned previous bachelor's degrees outside the field of SLP and later completed prerequisite classes to SLP graduate programs. These students' GPA from SLP undergraduate courses should be heavily weighted in admission processes.

Second, a student who is admitted into a M.A. program with a low T-GRE score should be advised to prepare SLP Praxis thoroughly considering the strong predictive validity of T-GRE. The faculty should carefully monitor the academic progress of student from the beginning of graduate program so that any possible failure can be minimized.

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**GRAMMATICAL MORPHEME  
DEVELOPMENT IN AN  
INTERNATIONALLY ADOPTED  
ENGLISH LANGUAGE LEARNER**

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**ABSTRACT**

Adoptive first language (AFL) acquisition is a process where knowledge of one's first language is reduced as a new language is learned after international adoption. This study examined the grammatical morpheme development of a four-year old, internationally adopted native of the Philippines. Data were collected and analyzed from four language samples taken over a seven-month period to determine whether or not sequential development of English morphology characterized AFL acquisition. Results indicated both a delay and an atypical pattern of grammatical morpheme acquisition. While one example of normal, progressive increase was noted, deviancies including decreases and static patterns characterized the participant's performance and suggest a language disorder. Clearly, great diversity exists among this high-risk population. However, results of this study suggest that analysis of grammatical morpheme acquisition post-adoption may have predictive value and clinical implications regarding intervention.

**KEY WORDS**

International Adoption  
Morphological Development  
Adoptive First Language

## INTRODUCTION AND REVIEW OF THE LITERATURE

The English language development of internationally adopted (IA) children presents a unique and multi-faceted topic for speech-language pathologists (SLPs). Adoptive first language (AFL) acquisition, a process whereby knowledge of one's first language rapidly diminishes as a second language is learned, distinguishes itself from traditional definitions of bilingualism, where simultaneous or successive development of two languages is expected. AFL appears as a variant of monolingualism and bilingualism. Researchers have documented risk factors to language development of international adoptees and have identified positive prognostic indicators, including adoption prior to age two (Glennen, 2002; Glennen & Masters, 2002; Johnson & Dole, 1999; Lubinski & Masters, 2001; Pearson, 2001; Scott, Roberts, & Glennen, 2011). However, more empirical information has yet to be gleaned concerning the language development, and more specifically the morphological development, of older international adoptees' acquisition of English.

It is important to differentiate AFL acquisition from conventional definitions of bilingualism and second language acquisition (SLA). While bilingualism may be defined as the ability to communicate in two languages with equal proficiency or greater proficiency in one of the two languages, simultaneous or successive acquisition at an early age results in an ability to use both languages. The additional language neither replaces nor reduces proficiency in the first language (*ASHA*, 1994). Issues of abnormal speech-language development are less likely with simultaneous and early exposure to both languages, though any deficits tend to be exhibited in both languages. SLA traditionally refers to learning that occurs after the first language has been developed after the age of three (Wong Fillmore, 1989). Several studies have confirmed that SLA involves the basic principles that apply to first language learning. For example, receptive language acquisition precedes expression, comprehension initially relies on contextual cues, and sentence construction develops from simple to complex (McLaughlin, 1998). SLA in children often is characterized by the existence of a silent period while children focus on listening to and understanding the second language. In addition, SLA includes processes of transfer and interference from first language (L1) to second language (L2) where L1 structure delineates morpho-syntax and expression in L2 (Roseberry-McKibbin & Brice, 2000). Whereas a silent period may also exist during AFL acquisition, for the internationally adopted "second" language learner, incomplete knowledge, arrested acquisition, and immediate and rapid attrition of L1 renders that language an inconsistent and inadequate model for acquisition of L2 (Schiff-Myers, 1992).

In their study of Eastern European adoptees, Glennen and Masters (2002) found that children adopted under three years of age experienced expressive language loss of L1 between six weeks to three months post-adoption. Of the eight older

children in the study who reportedly spoke the birth language in single words or simple sentences, none were reported to speak the birth language three months later as confirmed by families in follow-up surveys. As mentioned previously, cases of AFL acquisition typically lack the L1 support that characterizes SLA in young children. Schiff-Myers (1992) cautioned that such children are at risk for an inability to develop full competence in either language. To avoid the subtractive effects of second language acquisition, children must develop and maintain a threshold level of competence in the native language before the acquisition of the second language (Wright, MacArthur, & Taylor, 2000). Thus, simultaneous or successive acquisition of L2 or acquisition of L2 following attainment of threshold competence in L1 theoretically characterizes successful second language learning.

In terms of grammatical morpheme acquisition, normal second language learning follows the same developmental sequence of acquisition as native English language development, regardless of first language (Ellis, 1994; Glennen & Masters, 2002; O'Grady, Dobrovolsky, & Aronoff, 1991). In moving from simple to complex productions, normal English language acquisition in children is characterized by the emergence and mastery of 14 grammatical bound and free morphemes in a specific developmental sequence (Brown, 1973). These include, in typical order of emergence, present progressive *-ing*, plural *-s*, preposition *in*, preposition *on*, possessive *-s*, regular past *-ed*, irregular past, regular third person singular, articles *the*, *a*, and *an*, contractible copula, contractible auxiliary, uncontractible copula, uncontractible auxiliary, and irregular third person singular. Order of acquisition is determined by several factors including presence of the morpheme in utterance final position, syllabicity, clear-cut meaning, lack of exceptions and allomorphic variation, and specific semantic function (O'Grady et al., 1991).

Findings pertaining to AFL acquisition show similar developmental sequences. Glennen and Masters (2002) found that Eastern European infants and toddlers undergoing AFL acquisition followed the developmental patterns of non-adopted, native English speaking children. Focusing on acquisition of present progressive *-ing*, past tense *-ed*, regular plurals, and the possessive *-s*, subjects acquired morphemes in the same growth curve but at slower rates than non-adopted peers. Compared with their non-adopted peers, the delays in acquisition of adopted children increased with successively older groups of participants. It is important to note that the majority of participants failed to master all four morphemes during the study. Participants adopted less than 12 months subsequent to birth mastered two of the four morphemes by 28-30 months; those adopted between 13-24 months developed two of the four morphemes by 34-36 months; and those adopted at 25-30 months developed two of the four morphemes by 37-40 months. Thus, age at time of adoption significantly affected the rate at which children mastered the grammatical morphemes targeted for analysis.

While it is possible for IA children to quickly acquire a new first language, this can only be expected in situations where no observable compromise to health or development has been noted prior to adoption. However, international adoption has inherent risk factors, including inadequate prenatal care, poor nutrition, low birth-weight, lack of health care, trauma, neglect, and extensive stays in institutional care. These risk factors place this population at higher risk for developmental delays than their peers (Glennen, 2002; Glennen & Masters, 2002; Johnson & Dole, 1999; Pearson, 2001; Lubinski & Masters, 2001; Scott, Roberts, & Glennen, 2011). Potential to develop full proficiency of the acquired language also may be compromised by limited exposure to English prior to adoption, experience of delay in native language, and age at time of adoption (Pearson, 2001). Moreover, research has indicated that for each 3-5 month period in an institution an estimated one-month delay in developmental milestones may result (Lubinski & Masters, 2001).

Results of some studies indicate that adoption prior to age two was a significant prognostic indicator of positive language outcomes as this population advances through their school age years (Glennen, 2014; Scott et al., 2011). However, some researchers in this area contend that language skills of IA children are commensurate with those of their non-adopted peers by 1-2 years post-adoption (Glennen, 2007; Roberts, Pollack, Krakow, & Price, 2005; Scott, Roberts, & Krakow, 2008). Other studies indicate slower growth of language skills, poorer long-term language outcomes, and skill disparity between IA children and their non-adopted peers (Glennen, 2014; Scott et al., 2011). In all of these studies, differences are evident in sample sizes, ages of IA children, length of exposure to English, risk factors, and measures used to elicit data for analysis (Roberts et al., 2005). Scott et al. (2011) attempted to synthesize the results of studies of IA language development. These researchers found that a key variable was age at time of adoption, which indicated length of exposure to deprivation. A negative correlation between language development and children who are older at time of adoption also was found. Indeed, the majority of research in this area has focused on children adopted prior to age two. However, the population of IA children as a whole, particularly those adopted at older ages, is vulnerable to language learning issues. Thus, positive language outcomes and sufficient language skills early in life may not be reliable indicators of language abilities needed to succeed in school-age years where the need for metalinguistic skills is necessary for success with higher level language tasks (Glennen, 2014).

It is necessary to broaden the study of AFL acquisition and international adoption to include the study of older adoptees, predictive factors of later language issues, and the study of IA children of diverse backgrounds. Much focus has centered on IA children from Eastern Europe and China and on their early acquisition of English. Although the last ten years has seen a decline in overall intercountry adoptions, these areas continue

to generate higher numbers of international adoptions overall (U.S. Department of State, 2013). Glennen's longitudinal research examining speech and language development of Eastern European adoptees is helping to diversify and move research in this direction.

However, little research exists to document the English language development of IA children from other areas. Included within this unstudied population are children adopted from the Philippines. The Philippines has consistently ranked among the top 20 countries allowing U.S. citizens to adopt their orphaned children (U.S. Department of State, 2013), yet scant research exists addressing the English language development of these international adoptees as they lose their native language, Tagalog.

Tagalog, the predominant language of the Philippines, is a predicate-initial language that does not easily lend itself to cross-linguistic comparison with English morphology (Schachter & Otones, 1972). An overview yields several morphological differences. For example, each Tagalog aspect has several English equivalents and therefore does not conform to the English tense system. Tagalog verbs have no true tense distinctions between past and non-past and are classified by the affixes they take. In addition, Tagalog verbs have inflections for three aspects that characterize an event as completed, ongoing, and not yet begun (also referred to as the contemplative aspect, the imperfective aspect, and the perfective aspect). A Tagalog verb consists of a verb base, expressing the core meaning of the verb, and a verbal affix, which may be positioned as a prefix, infix, suffix, or as both prefix and suffix in a complex affix. Other differences between English and Tagalog include the existence but rare use of the verb "to be" in Tagalog as well as its absence as a copula. Noun phrase case marking and verb aspect marking do not correspond with traditional categories in English, with *ang*-being a topic or central marker and *sa*- being as somewhat of an oblique or directional marker of locatives such as indirect objects and benefactives (Llamzon, 1976; Maratsos, 1989). IA native speakers of Tagalog, akin to children adopted from other non-English speaking countries at a young age, may be affected in their language development by age at the time of adoption. Unlike children adopted as infants and toddlers, older adoptees from the Philippines do not experience several years of exposure to and development of English before entering school. Thus, early exposure to Tagalog and limited early exposure to English may affect the development of English morphemes for older children adopted from the Philippines.

The purpose of this case study was to provide descriptive analysis concerning the emergence of Brown's 14 grammatical morphemes in an older native Tagalog speaker undergoing AFL acquisition of English in the natural environment of his adopted home. It was hypothesized that the participant's age at the time of adoption, early history of privation, and suggestion of native language deficits would result in delayed, non-sequential development of these specific morphemes.

## METHOD

### Participant

The participant was a native Tagalog speaker who was 4 years 0 months of age at the beginning of the study. The participant was internationally adopted in the United States at 3 years, 10 months of age and had minimal exposure to English prior to adoption. In the Philippines, the participant was exposed to and learned Tagalog as his first and only language. The participant's adoptive mother suspected that the participant was malnourished prior to adoption, as evidenced by his diminished height and weight upon adoption. The age at which the participant met developmental milestones was unknown. The participant's development of early speech and language also was unknown. Upon adoption the participant had no further exposure to Tagalog, and English was the only language spoken in the home. Although the participant's speech and language skills were closely monitored during the study, he did not receive speech and/or language therapy at any point during the duration of the study.

### Materials and Equipment

Language samples were obtained in four, one-hour sessions in a speech-language clinic therapy room. The *Goldman-Fristoe Test of Articulation-2* (GFTA-2, Goldman & Fristoe, 2000) was administered to gather data about the participant's development of speech sounds for concurrent examination (Larrivee, Meyer, Soltano, & Vine, 2011). To elicit further conversation, a plastic kitchen set, plastic fruits, vegetables, and other assorted foods were used. In the fourth session, a Spiderman action figure, a dollhouse, dollhouse furniture, and dolls also were added. A Panasonic Quad System WJ MS 424 moveable camera, a Panasonic AG 1330 video recorder, and RCA Standard Grade Video-tapes were used to video-record each session, and a Radio Shack Optimus audiocassette recorder using Sony HF audiotapes were used to obtain data for language sample transcription and analysis.

### Procedure

The intent of these sessions was to gain a representation of the participant's use of Brown's morphemes in spontaneous and elicited conversation. Procedures were consistent throughout the four one-hour sessions during which language samples were obtained. The participant began sessions sitting at the table and chairs with the researcher. However, the participant was free to move about the therapy room during all activities. The GFTA-2 was administered informally as the researcher simultaneously collected a language sample. During administration of the GFTA-2, the client was allowed to comment on the pictures. The participant was allowed to play freely for several minutes, was prompted to name a picture, and then was allowed to play freely for several more minutes. All comments during the test administration were transcribed as part of the language sample. Mean Length of Utterance (MLU) was obtained to determine the participant's language age and expectations concerning mastery of grammatical morphemes.

To reduce the likelihood of examiner bias, the same researcher obtained and transcribed each of the language samples according to specific guidelines. Although the researcher probed for consistent responses to GFTA-2 pictures throughout the four language sample sessions, to decrease the influence of a practice-effect, the researcher posed wh-questions concerning pictures and verbally engaged the participant in conversation while manipulating the materials during play activities. The wh-questions employed allowed for analysis of obligatory context and use of the 14 grammatical morphemes. The same materials were used to collect the language samples in the first three sessions. In the fourth session, the addition of the dollhouse, figures, furniture, and Spiderman action figure helped provide obligatory contexts and gain representation of the participant's use of Brown's 14 grammatical morphemes.

The first language sample contained 319 utterances, the second contained 225, the third contained 314, and the fourth contained 330. The four language samples were analyzed in their entirety to assess grammatical morpheme production. To determine mastery of the 14 grammatical morphemes, use of a morpheme in 90% of obligatory contexts, a coder used standard criteria outlined by Retherford (2000) and Brown (1972) to identify the obligatory contexts and use of the 14 grammatical morphemes in context. Subsequently, the percentage of appearance of each morpheme in obligatory context was calculated. Consistent with criteria outlined by Lahey, Liebergott, Chesnick, Menyuk, & Adams (1992), a determination of grammatical morpheme use was calculated following occurrence in at least three obligatory contexts. Exclusion of data on grammatical morphemes with fewer than three obligatory contexts was completed to ensure reliable percentages of mastery (Retherford 2000).

To control for bias and ensure validity of the data, videotapes were viewed and transcripts were coded and analyzed by one researcher. Subsequently, a second researcher independently coded 50% of the language samples for obligatory context and use of grammatical morphemes. Independent judgments were made concerning obligatory context and use of morphemes and internal consistency was established through interrater agreement. Interrater agreement was determined to be 91%.

In addition to grammatical morpheme analysis, the participant's MLU was calculated for the fourth language sample. MLU was obtained to identify the participant's language age, or age at which a specific degree of linguistic complexity is expected in a child's repertoire. Using guidelines from Retherford (2000) as adapted from Brown (1973) for assigning morphemes, the participant's MLU in morphemes was calculated from 100 complete and intelligible utterances of the fourth language sample. The calculated MLU was subsequently used to determine the participant's placement in Brown's Stages of linguistic production.

## RESULTS

Participant's Performance		Norms for Chronological Age	
Language Age Equivalent	34.0 (months)	Language Age	55.0 (months)
MLU	2.9	Norm for MLU	5.6
Brown's Stage	III	Brown's Stage	V+

Note. Norms taken from Miller, J. (1981). *Assessing Language Production in Children: Experimental Procedures*. Needham Heights, MA: Allyn and Bacon.

**Table 1.** Participant's *Language Age Equivalent*, *MLU*, and *Stage Assignment* vs. norms for the participant's chronological age.

<i>Grammatical Morpheme</i>	<i>Brown's Stage</i>	<i>Sample 1</i>	<i>Sample 2</i>	<i>Sample 3</i>	<i>Sample 4</i>
1. Progressive -ing	II	----	33%	50%	95%
2. Plural -s	II	94%	90%	81%	80%
3. Preposition in	II	60%	----	----	100%
4. Preposition on	III	----	----	----	----
5. Possessive -s	III	----	----	67%	----
6. Regular past -ed	V	----	----	---	0%
7. Irregular past tense	V	----	----	86%	0%
8. Regular third person singular	V	----	----	75%	14%
9. Articles a, an, the	V	15%	31%	3%	27%
10. Contractible copula	V	23%	33%	1%	23%
11. Contractible auxiliary	V+	----	0%	0%	0%
12. Uncontractible Copula	V+	0%	0%	0%	40%
13. Uncontractible auxiliary	V+	----	----	0%	----
14. Irregular third person singular	V+	----	----	----	----

Note. Dashes indicate the percentage of use was not estimated due to fewer than three obligatory contexts.

**Table 2.** Percentage of grammatical morpheme use in Language Samples 1-4.

Prior to grammatical morpheme analysis, the participant's MLU was calculated, placement in Brown's Stages of linguistic development was assigned, and language age equivalent was determined. These calculations are shown in Table 1 and were used to determine expectations concerning mastery of grammatical morphemes. Due to the high rate of imitation and repetition in samples 1 through 3, these analyses were completed exclusively on the fourth sample, which provided a more accurate representation of the participant's capabilities during spontaneous utterances. The participant's MLU was determined through analysis of a 100-utterance segment of the fourth language sample. This data provided a general index of linguistic elements of the sample. As shown in Table 1, the participant's MLU, the average number of morphemes per utterance, was 2.94. The participant's MLU was typical for a normally developing English speaker with a predicted chronological age of approximately 34.0 months and was consistent with Brown's Stage III (Miller, 1981). An MLU of 4.0 or above and placement in Brown's Late Stage V or V+ would be more consistent with the participant's chronological age.

Obligatory context vs. use for all four language samples is shown in Figures 1-4. The number of grammatical morphemes used in at least three obligatory contexts increased from 4 in the first

and second samples to 7 in the third and fourth samples. However, while the number of different morphemes is consistent in language samples 1 and 2, as well as in language samples 3 and 4, the morphemes used in each of the samples was inconsistent. For example, use of the preposition *in* was noted in language sample 1 but was not noted in samples 2 and 3. In addition, the possessive *-s* was noted in language sample 3 but was not noted in language sample 4.

Table 2 shows the participant's percentage of use of Brown's 14 grammatical morphemes in each of the four language samples and the stage assignments for each morpheme. The morphemes reported include: progressive *-ing*, regular plural *-s*, preposition *in*, preposition *on*, possessive *-s*, regular past *-ed*, irregular past, regular third person singular, articles *a*, *an*, *the*, contractible copula, contractible auxiliary, uncontractible copula, uncontractible auxiliary, and irregular third person singular (Retherford, 2000). Mastery denotes use of the grammatical morphemes in at least 90% of all obligatory contexts (Brown, 1973). The mean percentage of use was calculated for each of the grammatical morphemes in at least three obligatory contexts. No conclusions were drawn concerning morphemes with fewer than three obligatory contexts. These morphemes are indicated with dashes on Table 2. Percentages of use ranged from 100%,

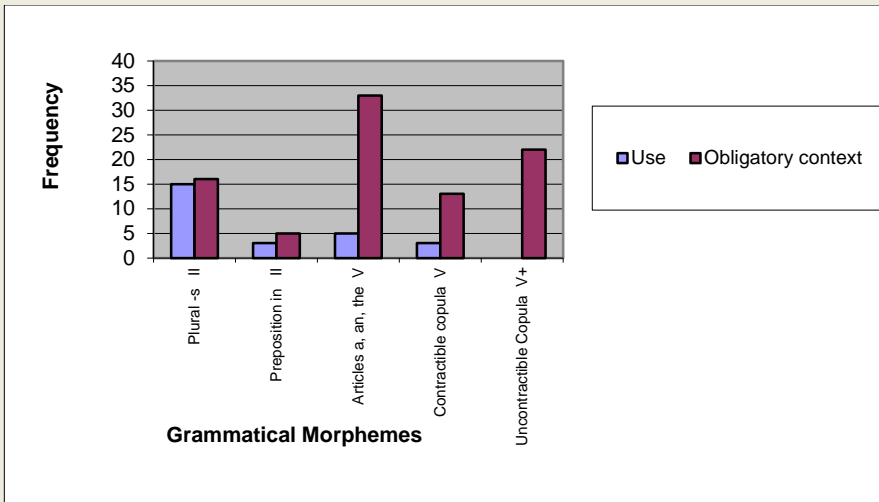


Figure 1. Obligatory context vs. use in language sample 1 ( $\geq 3$  obligatory contexts).

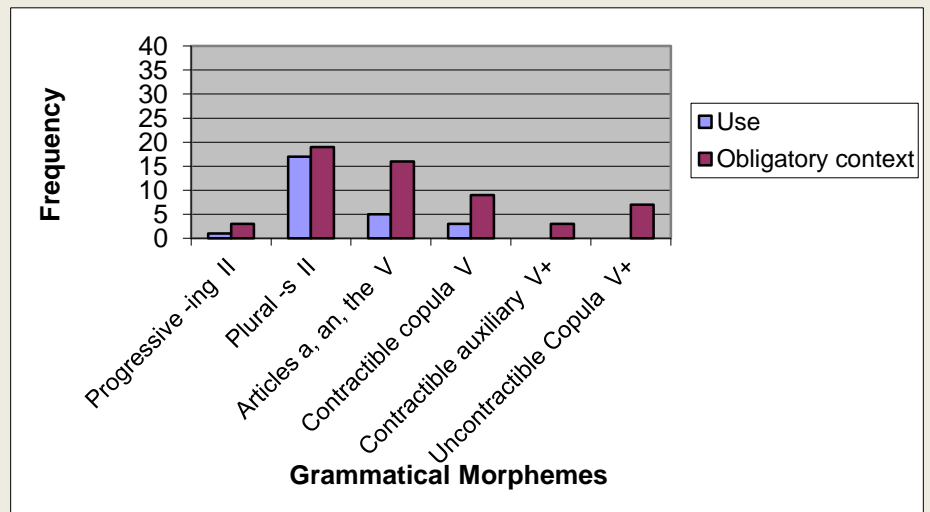


Figure 2. Obligatory context vs. use in language sample 2 ( $\geq 3$  obligatory contexts).

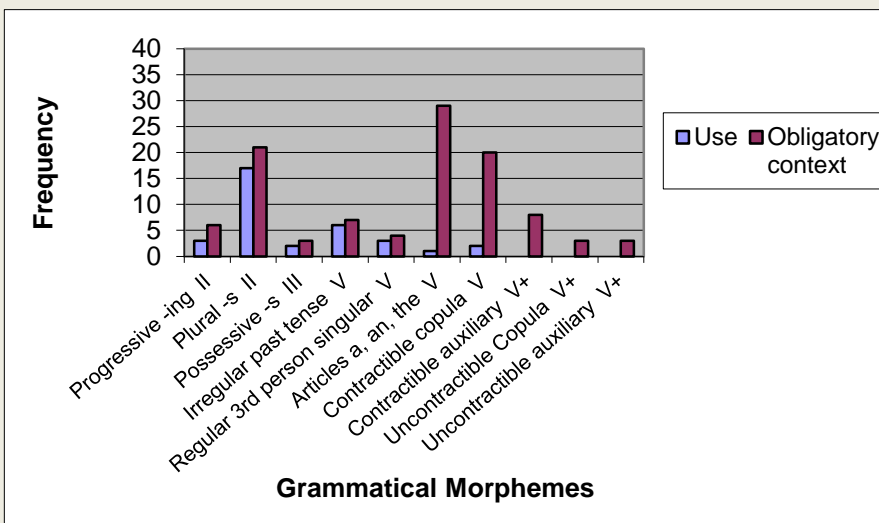


Figure 3. Obligatory context vs. use in language sample 3 ( $\geq 3$  obligatory contexts).



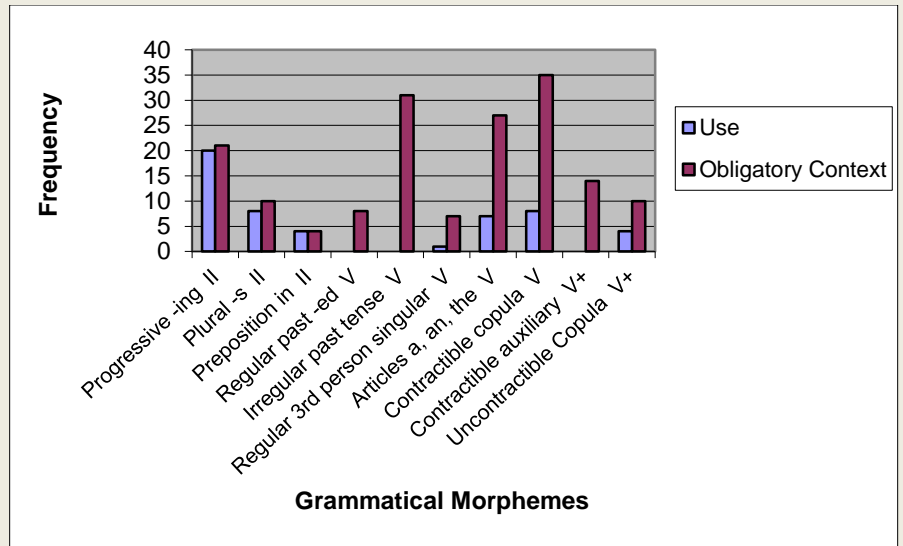


Figure 4. Obligatory context vs. use in language sample 4 (≥3 obligatory contexts).

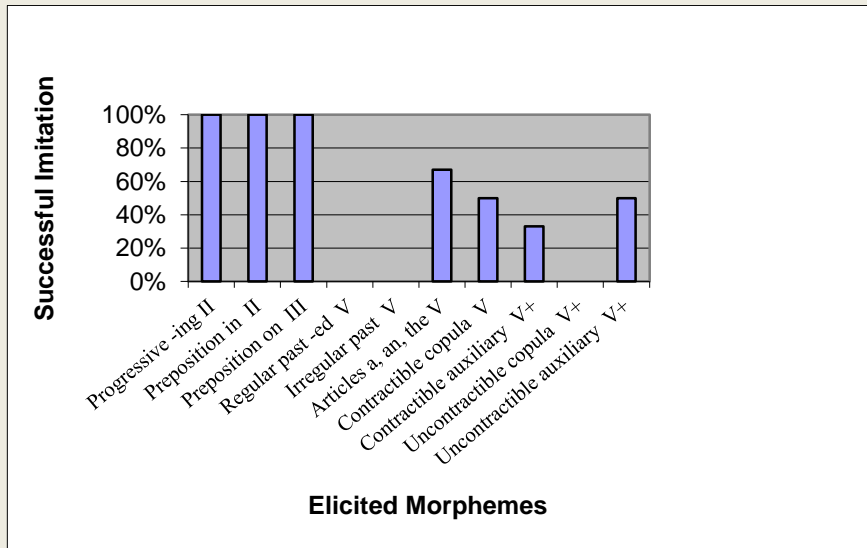


Figure 5. Participant’s success with elicited imitations of grammatical morphemes.

the preposition *in* in the fourth sample, to 0%, as shown in each of the language samples. In terms of Brown’s Stages, the participant showed mastery of only two of the three morphemes typically mastered in Stage II, progressive *-ing* and preposition *in*. Also included in Brown’s Stage II is mastery of plural *-s*. Mastery of this morpheme was noted in the first two language samples. However, percentage of use of this morpheme dropped in the third and fourth language samples to 81% and 80% respectively. Mastery was not noted in any samples for the remaining 11 grammatical morphemes, including the two morphemes typically mastered in Brown’s Stage III: preposition *on* and possessive *-s*. An insufficient number of obligatory contexts was noted for these two morphemes in all the language

samples but the third language sample, which placed the participant’s use of possessive *-s* at 67%. A similar lack of developmental pattern was noted for irregular past tense, with 86% use in the third sample and 0% in the fourth sample, regular third person singular, with 75% use in the third sample and 14% use in the fourth sample, and articles and contractible copulas where use increased from the first to the second sample, decreased in the third sample, and increased in the fourth sample. Table 2 illustrates that although development of the initial grammatical morphemes appeared consistent with Brown’s stages, emergence of morphemes in Stages III-V+ was not noted to follow a developmental pattern and did not consistently correlate with Brown’s developmental stages.

Although included in the language sample, elicited imitations (e.g., responses to the researcher's command, "Say, she fell down.") were not included in calculations of grammatical morpheme use. Of significance was the participant's performance with regard to elicited imitation of grammatical morphemes in the fourth language sample. Figure 5 shows the participant's percentage of success with regard to elicited imitation. The participant successfully imitated the present progressive *-ing*, preposition *in*, and preposition *on* with 100% accuracy; 67% accuracy was noted for imitations of articles, 50% accuracy was noted for imitations of the contractible copula and the uncontractible auxiliary, and 33% accuracy was noted for imitations of the contractible auxiliary. No successful imitations were noted for irregular past tense or the uncontractible copula. Thus, stimulability was consistently successful in the elicitation of morphemes typically mastered in Brown's Stage II and III and moderately to minimally successful at producing accurate imitations of grammatical morphemes in Stages V and V+.

## DISCUSSION

The goal of this study was to investigate grammatical morpheme development of a child past infancy who was undergoing AFL acquisition without the benefit of intervention. Rationale for use of Brown's 14 grammatical morphemes was predicated on the developmental order of emergence, as seen in typically developing native English speaking children and children acquiring English as a second language. Stage assignments for these morphemes allowed for analysis of the participant's use of morphemes to determine his stage of syntactic development and to compare this data with the participant's stage assignment, or language age equivalent, as determined through computation of MLU.

In light of the limited research in the area of language acquisition of IA children, this investigation focused on determining whether or not delayed, non-sequential development of grammatical morphemes was characteristic of a child internationally adopted at an advanced age, and with an early history of privation. In the present study, grammatical morpheme analysis was conducted on four language samples taken in a seven-month period. Analysis of this data indicated a delay as well as a generally idiosyncratic pattern of development with regard to grammatical morpheme use and mastery. Preliminary findings on the language acquisition of the IA population have suggested that such children without the previously described risk factors undergo normal development of English, albeit with possible delays, particularly in expressive language development (Gindis, 1999; Glennen & Masters, 2002; Glennen, 2005).

High-risk adoptees who arrive with deficiencies in their native languages encounter greater difficulties with regard to learning the new language. If proficiency in the first language serves as the best predictor of success in learning a new language, then older international adoptees, typically those adopted at age four

and older with diagnoses of speech language impairments in their medical histories likely will present with disordered development of the new language (Gindis, 1999).

Therefore, continued monitoring of IA children, particularly those who test in the low average range in the toddler or preschool years, is important to anticipate need for intervention as these children enter school. However, just as research continues its focus on risk factors and how and why they affect the development of IA children, speech-language pathologists also continue to strive for the assessment tools or measures that will help them predict which children may be at higher risk for language learning issues later in life. Results of Glennen's (2014) longitudinal study of IA children showed that MLU stood out as an area of relative weakness. Participants ages 12 months to 4 years, 11 months reached age-expected receptive language levels in three years post adoption. While expressive language also developed as expected, albeit more slowly than receptive language, results of testing focused on MLU indicated scores significantly lower than the participants' performance on other measures of receptive and expressive language.

Unlike the Eastern European adoptees studied by Glennen and Masters (2002) and Glennen (2007; 2014), this study's participant's grammatical morpheme development reflected not only a language delay but also an atypical pattern of grammatical morpheme acquisition. The participant's MLU indicated a stage assignment of Brown's Late Stage III. However, findings showed an increase toward mastery of only two of the three morphemes typically mastered in Stage II and no mastery of Stage III morphemes. A normal, progressive increase in use across time was noted for one morpheme only: the present progressive *-ing*. Mastery of the present progressive *-ing*, regular plural *-s*, and preposition *in* is expected prior to entry into Brown's Stage III, the stage equivalent for the participant's language age. With the exception of one use of the possessive *-s* in the third language sample, the participant showed no use and was not stimutable for morphemes typically mastered in Stage III. Additionally, inconsistent and atypical performance characterized the participant's use of grammatical morphemes. Several decreases were noted across time, specifically for use of the plural *-s*, irregular past tense, and regular third person singular. Such findings, coupled with a lack of change in use for articles and the contractible copula, indicate both a delay as well as a disordered pattern of development suggestive of language impairment. Paul (2001) noted that while debate exists over whether native English speaking children with language disorders show deviant or delayed patterns of acquisition, it has generally been found that children with language disorders such as specific language impairment (SLI) show development that resembles normal acquisition with difficulties in mastery of certain, less salient forms, including plural *-s*, possessives, third person singular, and irregular forms (Paul, 2001; Paul & Alforde, 1993). It must also be noted that typically developing, native speaking children are expected to show some variability in the developmental level of individual constructions with as much as

one or two stages above or below the MLU stage assignment (Miller, 1981; Paul 2001). While assessment of grammatical morpheme production alone may be insufficient criteria for diagnosing the nature of language deficit in IA children, the participant's idiosyncratic pattern more closely resembles that of native speaking children with language disorders than those with delays in acquisition. Thus, the participant's use of grammatical morphemes over time suggests that intervention is necessary for significant development beyond his current level of performance.

An interesting finding of this study concerned the participant's elicited imitations in the fourth language sample. Miller noted (1981) that imitative responses provide a measure of the child's linguistic knowledge, specifically with regard to the structural and grammatical components of language. Consistent with his language age equivalent, the participant successfully imitated all morphemes typically mastered in Brown's Stage II and Stage III and showed moderate to minimal degrees of success with imitation of four later developing morphemes, articles, contractible copula, contractible auxiliary, and uncontractible auxiliary. While the clinical significance of these responses is unclear, the link among imitation, comprehension, and ability to produce these morphemes may provide information on auditory processing capabilities and suggest viable directions for intervention.

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**Appendix A**  
Elicited Imitations

**Participant's Success with Elicited Imitations of Grammatical Morphemes**

Grammatical Morpheme	Stage	# of elicited imitations	# of successful imitations
1. Progressive -ing	II	7	7
2. Plural -s	II	0	0
3. Preposition in	II	1	1
4. Preposition on	III	1	1
5. Possessive -s	III	0	0
6. Regular past -ed	V	3	0
7. Irregular past tense	V	1	0
8. Regular third person singular	V	0	0
9. Articles a, an, the	V	3	2
10. Contractible copula	V	2	1
11. Contractible auxiliary	V+	3	1
12. Uncontractible Copula	V+	1	0
13. Uncontractible auxiliary	V+	4	2
14. Irregular third person singular	V+	0	0



JOURNAL  
CALL FOR SUBMISSIONS  
2015 EDITION

(DEADLINE: 15 SEPTEMBER 2015)

**PURPOSE:**

The PSHA JOURNAL is an annual electronic peer-reviewed publication of the Pennsylvania Speech-Language-Hearing Association. The revival of the PSHA Journal complements the aims of PSHA as (a) a means to broaden the nature of the services PSHA provides to PSHA members, (b) an outlet to showcase information about clinical education, clinical practices, and responses to professional issues, particularly as relevant to Pennsylvania, (c) a means to distribute scholarship in its diverse forms and to facilitate access to appropriate publication outlets, and (d) a tool to advance the information that will assist PSHA members in their quest to best address the clinical needs of individuals with communication disorders across professional roles and responsibilities.

**SUBMISSIONS:**

The PSHA JOURNAL accepts manuscripts for review that reflect diverse scholarly work. Manuscripts that reflect these scholarly orientations are welcome:

**Basic Scholarship:** *Basic Scholarship* includes those articles that expand our information base with respect to normal and non-normal communication processes, as well as normal and non-normal processes in the communication mechanism. Articles that illustrate this variation of scholarship are data-based studies (with quantitative and/or qualitative data) that, while not necessarily experimental in nature, may seek to confirm or disconfirm specific theoretical assertions.

**Conceptual Scholarship:** *Conceptual Scholarship* includes those articles that present and/or expand upon theoretical considerations, as well as those articles that conceptualize “older” ideas and/or data into “newer” perspectives. Articles that illustrate this variation of scholarship include theoretical discussions and debates, state of the art reviews of literature, meta-analyses of extensive corpora of data, and/or discussions and debates of salient professional issues and directions.

**Applied Scholarship:** *Applied Scholarship* includes those articles that present and address clinical and professional issues, typically with data-based studies as their focus. Data may be quantitative and/or qualitative in nature, and studies may be experimental and/or descriptive in nature. The results of applied scholarship often have clear implications for and applications to current issues. This scholarship may also consist of series of studies that build upon a theme.

**Instructional Scholarship:** *Instructional Scholarship* includes a diverse assortment of articles that aim to improve our approaches to and materials and methods for instruction. Because our disciplines have clinical practice at their heart, instructional scholarship also includes articles that aim to improve clinical service delivery across work sites, work duties, and clinical populations. Instructional scholarship also includes reports of innovative clinical education and professional development models.

In addition to these variations of scholarship, the PSHA Journal welcomes for review any other content the PSHA Executive Board deems important to advance our disciplines and/or serve our membership.

**AUTHOR INSTRUCTIONS:**

**Authors:** The PSHA Journal welcomes submissions from both PSHA members and PSHA non-members.

**Author Information:** In the cover letter to be submitted with the manuscript, please provide the names, academic degrees, CCCs and other professional credentials, professional titles, and professional affiliations for the manuscript authors. Each author is welcome to submit a professional photo to be published with his/her accepted manuscripts to further familiarize the readers with his/her identity. Please submit a 100- to 150-word biographical statement for each author that summarizes his/her professional contributions. Also, please provide the phone number, postal mail address, and electronic mail address for each author, as well as the PSHA membership status for each author.

**Authorship Information:** In the cover letter, please include verification that, in the case of multiple authors for a manuscript, the authors

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**Manuscripts:** Manuscripts should be the original work of the named authors. Plagiarism in any form is automatic ground for non-acceptance of a manuscript. Manuscripts submitted to the PSHA Journal should not be previously published in any form in any other venue.

**Manuscript Preparation:** Authors should submit manuscripts in electronic form. Authors should use Microsoft Word for the transmission of their manuscripts, APA style for the format of their manuscripts, and 12 point Times New Roman font for the text. At this time, the minimum word count for manuscripts is 2,500 words, and the maximum word count for manuscripts is 10,000 words. Authors who wish to exceed the maximum word count for a manuscript should consult with the Editor before submission. Each manuscript should contain an abstract of 100-150 words. Authors should indicate 3-4 Key Words to describe the primary content of the manuscript. A reference list of all works cited within the text/appendices should be included after the main text. Figures/Tables/Images/Other should be appended to the main text with their approximate locations indicated in the text. Images that are photos should be submitted in jpeg format with a minimum of 600 pixels per square inch. The manuscript should not contain footnotes or endnotes. The file should have editorial tracking utilities disabled. Authors should acknowledge any funding sources for support of their work, as well as any individuals whose contributions enhanced the work.

**Manuscript Submission:** Authors should submit their manuscripts on or before 15 September 2015 to PSHA Vice-President for Publications/Editor, at [psha@psha.org](mailto:psha@psha.org). Information about the manuscript review process will be available to authors at the time of their manuscript submission.

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