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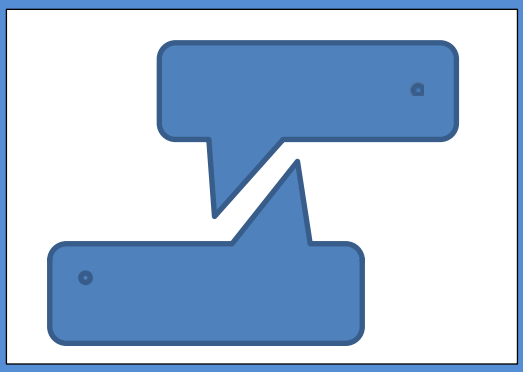

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Reviewers for this issue

Table of Contents

Articles

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Implications for Universal Grammar in emerging verb patterns of healthy, monolingual children exposed to Spanish and Italian

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Abstract

The present case study of early verb acquisition data revisits the debate among UG researchers as to whether a child's grammar initially resembles that of the adult, also referred to the Continuity Hypothesis, or whether it is something that matures over time, thus the Maturational or Discontinuity Hypothesis (O'Grady, 1997). Although proponents of both sides who have studied the developing verb phrase have made some arguments for their respective positions, arguably, neither side has been able to provide a comprehensive explanation for cross linguistic behavior. An example is Radford's (1990) maturational stance, which suggests the early absence of functional syntactic layers, but objected to by Rizzi (2000) as to the generalizability of this model to languages other than English. In terms of the continuity approach, Hyams (1986) suggested the initial miss-setting of the null parameter by early English speakers, but this was criticized by Pizzuto & Caselli (1993) for the very different behavior exhibited by null subjects in early English when compared to those of early null subject-languages, such as Italian.

This case study compares the trajectories of two monolingual children, one exposed to Spanish and the other to Italian, in the development of split intransitivity, the notion that intransitive verbs come in two varieties, namely, unaccusatives and unergatives (Burzio, 1986; Perlmutter, 1978). For reasons cited in Ryan (2014), Spanish and Italian adult targets represent opposite ends of the transparency spectrum in terms of split intransitivity, with Spanish at the least transparent end (with few, if any markers of this phenomenon in adult speech) and Italian at the greater transparent end (with comparably more frequent markers, such as a dual perfect auxiliary system and the clitic *ne*). Two longitudinal language samples (one for each language) from the Child Language Data Exchange System (CHILDES) (MacWhinney, 2000) are analyzed.

The findings of this study conclude that despite an apparent lack of transparency in adult Spanish language input, monolingual children learning Spanish may demonstrate a comparable degree of early sensitivity to split intransitivity as their monolingual counterparts who are exposed to adult Italian, a language rich in indicators of split intransitivity. Notwithstanding the need for additional work to be done on other early language databases of other languages, the implications for such striking similarities found between the data of both languages of this study, in terms of the correlation between early verbal morphology and intransitive verb type, are that the split intransitive distinction may possibly lie within the domain of Universal Grammar and not be the effect of adult input as received by the child. On the other hand, since the past tense of choice differed between both children (the passato prossimo for Italian and the preterit for Spanish), this latter variable is most likely determined by adult input and probably needs to be sorted out by the child with later development and with additional input from the target language. Another conclusion of the study is a proposal that additional work be done with additional early child Spanish

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and Italian data, as well as data of other languages, in order to determine corroboration of results and cross-linguistic implications for the acquisition of split intransitivity in children.

Keywords Universal grammar, emerging verbs patterns, Spanish and Italian speaking children, morphology, syntax

1. Introduction

1.1. Universal Grammar

Studies in the maturational camp of Universal Grammar, which by its very nature focuses on a less-than-full adult system that with input over time progresses toward the target adult structure, argue that children do not immediately possess adult syntax and that only with time do they develop this full system (Radford, 1990; Aldridge, 1989; and Potts and Roeper, 2006). Borer and Wexler (1987) point out that it is quite common for other biological systems, like memory and sexual behavior, to go through a maturation process before they can be utilized to their full potential by living beings, and so they pose the question as to why language, as another biological system, would necessarily be any different.

Contrasting the position of the maturationalists, researchers in support of the Continuity Hypothesis believe that syntax is present in the child in its adult form. This group further divides into two sides that differ in the extent to which they believe the adult syntactic system is immediately available to the child. The strong version, also called the Full Competence Hypothesis (FCH) argues that adult syntax is available immediately; the weak version, referred to by some as the Lexical Learning Hypothesis (LLH) (Clausen, 1996), believes that adult syntax is there from the start but becomes accessible to the child only gradually as more input is received. Research in this area has attempted to explain the same phenomena that the maturationalists did such as non-finite verb forms and null subjects, but instead of attributing them to a less than adult system, they suggest other possibilities such as the miss-setting of parameters (Hyams; 1986) or some degree of underspecification of features or constituents Hyams (1996), Clahsen (1996), and Rizzi (1994, 2000).

Despite the differences in professional opinion as to whether a full adult grammar exists from the start or whether this is something that is acquired, continuity theorists and maturationalists alike have pointed out that certain verb morphology surfacing in the developing language of young children can be strikingly different from that which appears in the target adult form.

1.2. Verb structure

Of all the words in the adult sentence, verbs stand apart as a focal point, connected in some way to moclitic *ne*

st of the grammatical activity in the sentence, whether this be agreement, tense, mood, the presence of a subject and/or object, a required prepositional phrase, or the relative placement of adverbs. In fact, given its central importance to the syntax of the sentence, it comes as no surprise

that the Romans employed the term verbum not only to mean 'verb,' but also more generally, for 'word'.

Recognition of the verb as the locus grammaticalis would seem to be one of the foremost challenges children have to come to terms with during the first two years of life, yet they systematically and seamlessly manage to do just that in a very short period of time. This is partly due to the fact that everything children do or come into contact with from the very first day they enter the world contributes to their eventual success as a speaker of the language(s) they are exposed to. Even such seemingly simple behaviors as listening, breathing, or crying, which appear to be more of less "automatic," play significant roles in the eventual acquisition and production of language. Very early on, a hearing infant instinctively learns to separate, recognize, and produce the sounds produced by adults. Crying helps coordinate breathing with the vocal chords. From this point it is not much later when children test their developing theories of how speakers of the target language piece sounds together in meaningful ways to form words.

In most languages, it has been proposed that nouns are among the first words to emerge in children because they require little more than the mapping between a symbol and a concrete referent, usually another person or some object, in the child's immediate environment. However, just after a few short months of mastering nouns, children take this mapping phenomenon to a new level of complexity, at which time they produce their first verbs. What makes verbs more difficult to acquire is that instead of simply designating other people or things, verbs refer to actions or states, in other words, abstract entities. Taken together, this abstraction in meaning and their complex relationship with other components of the sentence make the initial production of verbs by children a truly significant advancement in the transition from one-word structures to those consisting of two words or more. They also enable a quantum leap from concrete designation of objects and persons to more abstract conceptualization of actions and, eventually, concepts.

It is no coincidence that this relatively later stage of verb emergence has been found to occur simultaneously with other evolving, higher level abilities, like increased control of certain muscles and other organs, as well as physical maturation of the brain. The developing brain (meant to include here cognitive development) is directly responsible for a child's increasing ability to deal with a verb's complex relational characteristics as well as more sophisticated verbal meanings, such as cause and effect.

Despite the assertion by the Minimalist Program in generative syntax that any linguistic theory must be able to account for the ease and rapidity with which children acquire language, minimalist work on verbs has not paid much attention to data that is representative of the one-word stage, suggesting the traditional view that syntax must take place exclusively with the merging of two words and beyond. However, considering the fact that verbs do appear at the one-word stage as well as the eventual relationship they have with other words in the sentence, the Minimalist Program fails to capture some important early extra-syntactic phenomena such as verb type or morphology, as well as the tendencies for initial argument placement once it begins to occur in child output. Analysis at this early stage also allows for

isolation of these variables before other syntactic processes, such as negation, begin to cloud the analysis.

1.3. Split intransitivity

Split intransitivity is the notion that intransitive verbs, or verbs with a single argument, come in two varieties: 1) unaccusative; and 2) unergative. Unaccusatives are those verbs whose single argument is theme-oriented and can appear in canonical fashion as in (1), or in the form of pseudo-unaccusatives as in (2).

(1) Her flight arrives at one
(2) The doll broke.

In the first case, the verb only appears in the intransitive sense. In the second case, however, the verb may also appear alternatively in a transitive construction as in (3). As such the intransitive variant in (2) is often referred to as 'anticausative.'

(3) Mary broke her doll.

Unergatives, or the second type of intransitive, is one whose single argument is agent-oriented and like unaccusatives can also appear in both canonical and non-canonical fashion. Canonical unergative verbs such as 'sneeze' in (4) only appear intransitively whereas non-canonical unergatives such as 'write' in (5) may also appear transitively as in (6):

(4) Jane sneezed.
(5) We write often.
(6) Sam is writing a book about locomotives.

Cross-linguistic analysis suggests that some languages exhibit unique characteristics in terms of split intransitivity. For example, in Italian it has been pointed out (Burzio, 1986) that the clitic particle ne only appears in constructions involving themes, including both transitive and unaccusative constructions as in (7), whereas it cannot appear in constructions that lack a theme argument such as unergatives, as in (8).

(7) *Ne arriveranno molti.*
'Many will arrive.'
(8) **Ne telefoneranno molti.*
'Many will telephone.'

English too offers particular behavior with regard to split intransitivity in terms of its application of the pleonastic pronoun 'there' (Radford, 2004) whereby unaccusatives are more likely to admit the pleonastic than unergatives as in (9) and (10).

(9) There remains little hope.
(10) *There sings the diva.

There are other characteristics of split intransitivity that apply more generally though not exclusively across languages. These include the ability to derive agentive nouns by adding–ER, –IST, or –ANT (e.g., 'singer,' 'typist,' or 'informant'*) versus* more thematic (used here as pertaining to a Theme argument) ones with –ED, -EN or –EE (e.g., 'newly arrived,' 'fallen,' or 'escapee'). Another more common indicator of split intransitivity is the distribution of HAVE and/or BE as the perfect auxiliary as in (11) and (12) in Modern Italian,

(11) L'ho visto.
it-OBJ.CL have-PRS.PRF.1SG see-PST.PTCP
'I saw it.'
(12) Sono arrivato.
be-PRS.PRF.1SG arrive-PST.PTCP
'I arrived.'

It should be noted that not all so-called diagnostics of split intransitivity are fool-proof. For example, one might call into question the across-the-board applicability of either the -ER/-IST/-ANT diagnostic or "there" diagnostic in English. However, the one diagnostic that might be said to appear most stable or reliable among languages that use them is HAVE and BE perfect auxiliary distribution. This has undoubtedly led to the greater extent of scholarship which has been devoted to this topic. Regardless of the attention that split intransitivity has drawn in the research, however, little work has focused on the early acquisition of this notion by children except for that by Ryan (2012, 2014).

1.4. Purpose of this study

This case study compares the trajectories of two monolingual children, one exposed to Spanish and the other to Italian, in the development of split intransitivity. For reasons cited in Ryan (2014), Spanish and Italian adult targets represent opposite ends of the transparency spectrum in terms of split intransitivity, with Spanish at the least transparent end (with few, if any markers of this phenomenon in adult speech) and Italian at the greater transparent end (with comparably more frequent markers, such as a dual perfect auxiliary system and the clitic *ne*). The study focuses on two variables, intransitive verb type and morphological form of the verb, in order to elucidate whether any of the patterns associated with these variables might be explained by either Universal Grammar (in the case of similar patterns of verb usage between the two languages) or adult input (in the case of differing patterns)

1.5. Theoretical orientation

This study is based in the framework of generative syntax within which it is suggested that each syntactic phrase, or natural grouping of words in a sentence, including the verb phrase, consists of multiple layers that can explain how words move around and interact with each other within that

phrase. First introduced by Larson (1988), and later expanded by Hale and Keyser (1993; 2002), one phenomenon that the layered structure of the verb phrase has been able to characterize is the difference between two very different types of intransitive verbs, unergatives and unaccusatives.

Up until the 1970s, traditional grammar in adult speakers did not consider differences between intransitive verb types, simply analyzing them to have a subject, and no object. Influenced by the work of Fillmore (1968) in the area of semantic or thematic roles, linguists started to notice important differences in the behavior of intransitive verbs (Perlmutter, 1978; Burzio, 1986). For example, if a verb depicted some action, such as "run," the subject was an agent in control. On the other hand, if a verb depicted a change of state, such as "fall" or "die," the subject was not at all in control, but rather acted upon, more like what was considered the traditional "object" of a transitive verb. Such basic differences between what traditional generative grammar considered to be the same phenomena led linguists to re-evaluate the simple "subject and no object" perspective for one that more accurately describes the grammatical subject of an intransitive verb as being either an agent of an action or a patient that undergoes a change, earning these two very different types of verbs a new analysis as being unergative (for the agentive variety) or unaccusative (for the patient variety).

This agent versus patient distinction, as well as the similarities a patient subject of an intransitive verb has with an object of a transitive verb (e.g., 'The ball moves.' and 'John moves the ball.'), have led syntacticians to suggest a two-layered structure of the verb phrase that is applicable to all types of verbs, both transitive and intransitive alike. The structure in Figure 1 illustrates an inner layer of the verb phrase which corresponds to the combination of a verb plus its patient complement, and an outer layer which corresponds to causation by an agent.

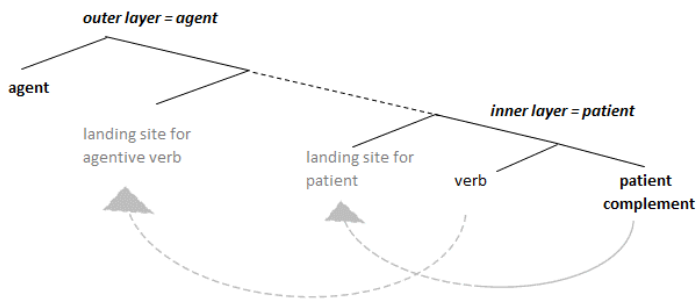


Figure 1. Two-layer structure of the adult verb phrase as proposed by generative theory

2. Methodology

This section presents the methodological bases of this study, namely, its: 1) hypothesis; 2) research question; 3) criteria for language and database selection; 4) justification of project variables; and 5) coding/presentation of data.

2.1. Hypothesis

The study starts with the overall hypothesis that the analysis of verb data at the one-word stage has important implications for how verbs develop more generally in children. Prior studies have relied on child language data which is produced after the one-word stage but still make assertions about earliest production of verbs in children. These prior studies include Hoekstra & Hyams, 1998; Salustri & Hyams, 2008; and Grinstead, 1998, as discussed below.

Hoekstra & Hyams (1998) conducted a cross-linguistic study of child data in order to test their hypothesis that in child languages other than English both tensed and non-tensed verb forms indeed coexist at a very early age and that these are used in particularly distinct ways. Partly motivated in response to an earlier analysis by Radford (1990) who claimed that his findings for child English suggested a universal stage of the earlier production of bare (uninflected) verbs before tensed forms and that tensed forms only appear later once a more complex structure is acquired. Hoekstra & Hyams's results were able to show that Radford's hypothesis was overstated and only worked for English because English is a morphologically impoverished language. Their findings for languages other than English included the appearance of both root infinitives and tensed forms more or less in early complementary distribution with each other according to verb meaning. That is, root infinitives were used for verbs that depicted a state, and tensed forms for verbs that depicted an event. Expanding on work by Hoekstra & Hyams, Salustri & Hyams (2008) made an important modification to the hypothesis of the earlier study with what they call the Imperative Analog Hypothesis (IAH). Simply stated, the IAH provides for the observation that in pro-drop languages the imperative form serves as the non-tensed form in lieu of the root infinitive which serves as this form for non-pro-drop languages. Despite their groundbreaking conclusions regarding the simultaneous appearance of both tensed and non-tensed forms in early child language, what neither Hoekstra & Hyams nor Salustri & Hyams investigated was which of the two verb types, stative or eventive, might emerge before the other. This is because the data they provide as examples represent speech production after the one-word stage. By contrast, the work conducted here will include the one-word stage as part of its overall perspective to early verb usage. As a result, it will be interesting to see whether the purported simultaneous use of tensed and non-tensed forms is indeed characteristic of the earliest stages, or whether this is something that appears beyond the one-word stage. Along similar lines, another study by Grinstead (1998) which focused on Spanish and Catalan, collected and analyzed child data beginning at 1;6. This study called into question whether the early non-tensed form was indeed an imperative or whether it was more a 3rd person singular "bare" form (in some Romance languages, such as Spanish or Catalan, the form come can either mean imperative 'Eat!' or the 3rd person singular 'eats'). Grinstead chooses for his hypothesis the third-person singular interpretation as a default form much like children use bare forms as had been reported for early English (Radford, 1990). What is interesting is that the children in Ryan (2012, 2014) begin to produce present tense "bare" forms as well, like Grinstead, but much later, beyond the two-word stage.

Both the transcripts and original recordings of the interviews on the Child Language Data Exchange System (MacWhinney, 2000) reveal that the form produced by the child at the early stages is most definitely the imperative as interpreted by the mother who had been both the interlocutor and the linguist who transcribed the early sessions. Figure 2 compares the youngest ages of children examined in Ryan's and Grinstead's studies during the second year of age:

								Grinstead (1998)						
								1;6	1;7	1;8	1;9	1;10	1;11	2;0
	Ryan (2012; 2014)													
Age of Children	0;11	1;0	1;1	1;2	1;3	1;4	1;5	1;6	1;7	1;8	1;9	1;10	1;11	2;0

Figure 2. Comparison of ages of Spanish children in Ryan (2012; 2014) and Grinstead (1998)

2.2. Research questions

The research questions of this study are as follows:

1) Does a child exposed to the adult input of a language which is rich in indicators of split intransitivity, as is adult modern Italian, show more sensitivity to this notion than a child exposed to the adult input of a language which is devoid of the same indicators, as is adult modern Spanish? If the data show that there is little or no difference in the production of split intransitives by the two children of this study, this may suggest that Universal Grammar is what determines such similarities in behavior. On the other hand, should the data show any differences between the two children of the study, this fact may point to behavior which is determined by adult input.

2) Also, if it is determined from the data that Universal Grammar may indeed be the reason for similarities found in early verb production, then what would be the implications of these findings in terms of adopting either the continuity or maturational (discontinuity) hypothesis?

2.3. Criteria for language and database selection

In addition to the fact that Spanish and Italian lie at opposite ends of the transparency spectrum in terms of split intransitivity, selection of these two languages as those for analysis had just as much to do with the availability of adequate longitudinal databases for a study of this scope. Selection criteria included: 1) the frequency and number of transcripted sessions; 2) an initial session starting minimally as early as 1; 4 (or earlier, if possible); and 3) an adequate number of tokens per recording session. Both data sets studied here were selected from CHILDES (Child Language Data Exchange System) (MacWhinney, 2000), namely, the Spanish (Sp) "Irene" (Llinàs-Grau, 2000) and Italian (It) "Francesco" (Volterra, 1976) databases. In the case of the Italian database, whose sessions are currently only available on CHILDES through 1; 08; 17, additional examples have been drawn from

Volterra (1976) which correspond to the time period not available publicly on CHILDES.

2.4. Variables

By its very nature, the one-word stage of language production limits the number of variables that can be considered. After all, there is only so much information that can be drawn from a single word. Notwithstanding this fact, even when standing alone in the one-word utterance, verbs typically embody two pieces of information, namely: 1) verb argument type; and 2) verb morphology. Verb-argument type has to do with the semantics of the verb and can be defined as whether the verb is agentive (e.g., 'OPEN') or non-agentive (e.g., FALL). Verb morphology can be defined as whether the verb is non-finite (e.g., infinitive or the imperative) or finite (e.g., tensed).

2.5. Coding and presentation of data

The inventory of verb-argument configurations studied here include: 1) single argument (intransitive) configurations, such as: a) Theme-only configurations such as anticausative structures of ergative predicates (e.g., *caer* 'fall', *abrir* 'open') as well as unaccusatives (e.g., *ir* 'go', *venir* 'come'); b) Agent-only configurations such as unergatives as *dormir* 'sleep'; and 2) dual argument (transitive) configurations, such as: a) Agent-plus-Theme configurations including standard agentive transitives (e.g., *hacer* 'make' or *coger* 'take'; and b) Experiencer-plus Theme configurations—verbs that appear with both experiencer and theme arguments. These include sentient verbs (e.g., *Vamos a ver el video* 'Let's see the video') and psychological verbs (e.g., *pensar* 'think').

2.6. Data

The data of this study is presented in two parts, the first from the Spanish corpus and the second from the Italian corpus.

2.6.1. Spanish data

2.6.1.1. Emerging verb type in Spanish

Table 1 illustrates the sequence of verbs as they emerged in the data for the Spanish child of this study

	Verb	Gloss	Age	Verb type
One-word	*ir*	'go'	1;1.28	Unaccusative
Two-word	*venir*	'come'	1;4.16	Unaccusative
	acabar	'end'	1;5.01	Anticausative
	caer	'fall'	1;5.01	
	abrir	'open'	1;5.01	Unergative
	mirar	'look'	1;5.01	
	oir	listen/hear'	1;5.01	
	quitar	'take away'	1;6.01	

Table 1
Emerging verb type in Spanish

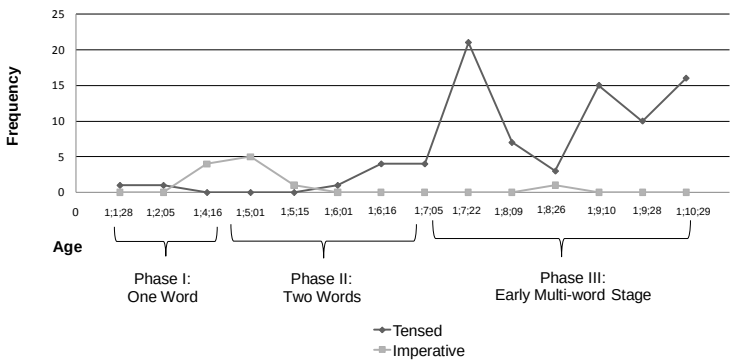
Source: "Irene" Spanish Corpus, CHILDES (MacWhinney, 2000)

According to Table 1, during the one-word period and into the onset of the two-word period, Irene's first verbs appear at 1; 1; 28 and are strictly

unaccusative. Her first two verb constructions were single-word, tensed versions of the unaccusative verb *ir,* 'to go.' At 1; 1; 28, Irene produced *va, va, va* (as a repetition, and therefore counted only once) which corresponds to the conventional third person singular present tense form of the verb *ir*. The second occasion, only seven days later on 1;2;05, Irene produced the form *vo*, a past tense innovation. At 1; 5; 01, the onset of the two-word stage, is when Irene begins to significantly expand her verb-argument structure production ability. I refer to this milestone as Irene's initial verb spurt where she expands to anti-causative forms of ergative verbs, or pseudo-unaccusatives, such as *abó* 'it finished' (*acabó* = target adult form) or *ayó* 'it fell' *(cayó* = target adult form). At this time, Irene also started to use verbs with only Agents such as *abe* 'Open!' (*abre* = target adult form) and *¡Mía!* 'Look!' *(¡Mira!* = target adult form). During this period, Irene's verb repertoire does not exceed eight verbs in all and only in single-word utterances.

2.6.1.2. Spanish unaccusative verb morphology

Figure 3 illustrates the emergence and distribution of morphology corresponding to both canonical and pseudo-unaccusatives (anticausatives) in the Spanish data:



Source: "Irene" Spanish Corpus, CHILDES (MacWhinney, 2000)

Figure 3. Emergence and distribution over time of the morphological form of unaccusatives in Spanish

As noted in the previous section, unaccusative verbs are the first intransitive verb type to appear in the Spanish data. Figure 3 shows an overwhelming preference for tensed forms by Theme-oriented verb types such as unaccusatives and anticausatives. Although sparse (only one occurrence per session on two occasions), the first occasion was at 1;1;28, when Irene produced *va, va, va* (as a repetition, counted only once) which corresponds to the conventional third person singular present tense form of the verb *ir*. The second occasion, only seven days later on 1;2;05, Irene produced the form *vo*, a past tense innovation that applies the standard 3rd person singular preterit tense morphology, *–ó*, to the regular present tense form *va* that was produced in the previous transcript. Shortly thereafter, by 1;5;01, Irene expands her verbal repertoire further to include verbs that are associated with constructions other than the unaccusative, namely, past-tensed anticausative forms of ergative verbs such as *abó* (*acabó* = target adult form) 'it finished' or *ayó* or later, *tayó* (target adult form = *cayó*) 'It fell.'

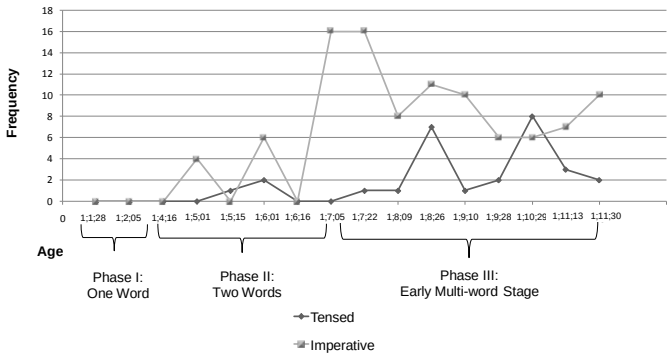
This tensed pattern continues for Theme-only verbs throughout the remainder of the period studied, as illustrated by the following examples:

Examples	Age
(19) *Vo* go-PST.3SG 'It went'	1:02;05
(20) *Abó* end-PST.3SG 'It ended'	1;05;01
(21) *Vavó* *toto* go-PST.3SG silly-OBJ.UNACC 'It went, silly'	1;06;09
(22) *Ya* *ababó* already end-PST.3SG 'It already ended'	1;07;05
(23) *Tayó* *toro* Fall-PST.3SG bull-OBJ.UNACC 'Bull fell'	1;09;10

To summarize, the Spanish unaccusative data, both initial and continued, almost exclusive, use of the preterit-tensed verb form for both canonical and pseudo unaccusatives suggests morphological form to correlate with verb type.

2.6.1.3. Spanish unergative verb morphology

Figure 4 illustrates the emergence and distribution of morphology corresponding to both canonical and pseudo-unergatives in the Spanish data.



Source:
"Irene" Spanish Corpus, CHILDES (MacWhinney, 2000)

Figure 4. Emergence and distribution over time of the morphological form of unergatives in Spanish

Unlike Spanish unnaccusatives, which as seen in the immediately preceding section almost always manifest themselves in the 3rd person singular past tense form, unergatives during this period show a tendency to appear in the imperative. At this time she begins to use such verbs as *abe* (target adult form = *abre*) 'Open!' and *!Mía!* (target adult form = *!Mira!*) 'Look!' Most importantly, unergatives never appear in a tensed form initially. In fact,

even as imperatives follow an overall downward trend over time, use of the imperative for unergatives is still preferred over both tensed and nonfinite forms for this verb type. Also, when unergatives do finally appear in tensed form they only occur with certain verbs such as *volo*, 'I fly' or *llora* '(she) cries' and they certainly never appear in the past or preterit tense as do unaccusatives. In fact, they tend to appear in the present tense as seen in (27) below. The following are examples of this progression from the data.

Examples				Age
(24)	¡*Mí*(r)*a!* look-IMP 'Look!'			1;05;01
(25)	*Ahí*	*ab*(r)*e,* open-IMP	*mamá.* mommy	1;07;05
	'There open, mommy'			
(26)		¡*Quita!* Remove-IMP		1;07;05
	'Remove (it)!'			
(27)	*Volo* Fly-PRS.1SG	(h)*a*(s)*ta* up to	*techo* ceiling	1;08;26
	'I fly to the ceiling.'			

To summarize, Spanish unergatives were found to follow a strikingly different developmental trajectory as compared to unaccusatives. At least initially, these appeared exclusively in the imperative. When unergatives do finally appear tensed, they do so in the present tense and person can vary between first and third person.
The following section presents the Italian data of this study.

2.6.2. Italian data

2.6.2.1. Emerging verb type in Italian

Table 2 illustrates the sequence of verb types as they emerged in the data for the Italian child of this study:

Verb	Gloss	Age	Intransitive Type
sedere	'sit'	1;4.03	Unaccusative
rompere	'break'	1;4.03	Anticausative
chiudere	'close'	1;4.03	
dare	'give'	1;4.03	Unergative
aprire	'open'	1;4.27	
andare	'go'	1;6;23	Unaccusative

Table 2
Emerging verb type in Italian

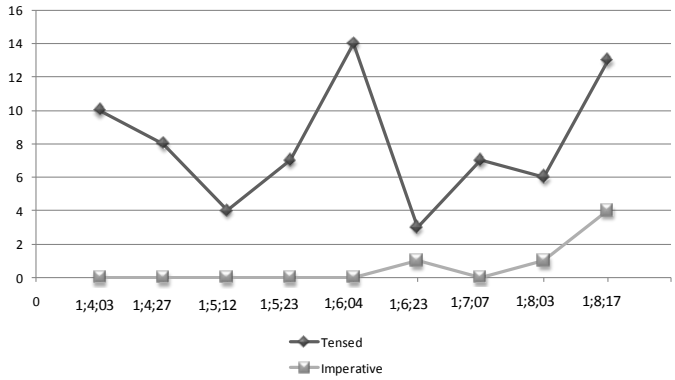
Source:
"Francesco" Italian Corpus, CHILDES (MacWhinney, 2000)

Despite the fact that the Italian corpus for this study does not begin until the child is 1;4;03, already at the two-word stage of language production, according to Table 2, a similar trajectory is observed as was for the Spanish corpus in terms of the emergence of verb type, with theme-oriented or unaccusative verbs taking the lead. In the case of Italian, the first canonical

unaccusative verb to emerge was *sedere* 'to sit', along with non-canonical unaccusatives such as *rompere* 'to break' and *chiudere* 'to close'. Although one unergative verb *dare* 'to give' appears at this point as well in the data, it does so in the same way unergatives begin to appear in the Spanish data, i.e., alone with no arguments. This one occurrence of an unergative as compared to the robust production of theme verbs of both canonical and anticausatives types, suggests a similar path in terms of a prior presence of themes before agents.

2.6.2.2. Italian unaccusative verb morphology

Figure 5 illustrates the emergence and distribution of morphology corresponding to both canonical and pseudo-unaccusatives (anticausatives) in the Italian data.



Source:
"Francesco" Italian Corpus, CHILDES (MacWhinney, 2000)

Figure 5. Emergence and distribution over time of the morphological form of unaccusatives in Italian

Figure 5 suggests that the use of tensed forms by the Italian child of this study appears to be characteristic of his production of both canonical and pseudo-unaccusatives (anticausatives). A closer look at the data reveals that the tense of choice for Francesco throughout the period studied is a past tense form, specifically, the 3rd Person Passato Prossimo (loosely translated and hereafter referred to as the "recent past" tense) which is roughly equivalent to the Present Perfect Tense in English. Initially, at 1;4;03, Francesco produces the form *uto* (target adult form = *seduto*) without the copula *essere* so that it appears solely as a simple past participle. However, only two weeks later, at 1;04;27, Francesco begins to produce the recent past tense form with another verb, *rompere* 'to break.' At this point, Francesco begins to produce both the auxiliary and past participle components for this particular verb as in (29), (30), and (32) below, although he does alternate between this form and the unaccompanied participle. The author suggests that the use of the past participle at this early stage is a truncated version of the full recent past form.

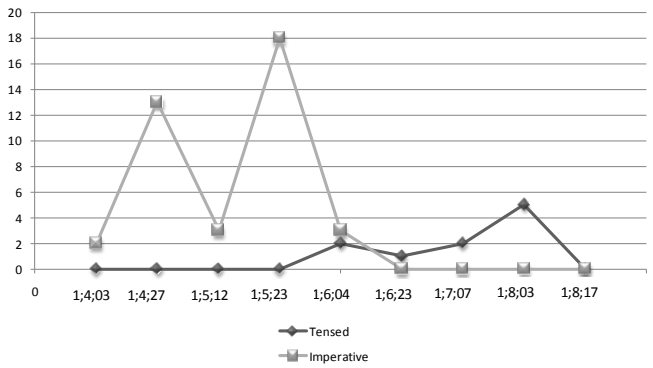
The third person singular present tense form of the copula *essere* is a phonologically insubstantial form (i.e., *è*) and so it wouldn't be surprising that this portion of the tense combination be suppressed. As the data also show, when the auxiliary does finally begin to appear it is always a form of *essere*, or BE.

Examples				Age
(28)	(sed)*uto* sit. down-PST.PTCP 'Sat down'			1;04;03
(29)	*èoto* be-PRS.PRF.3SG	break-PST.PTCP 'It broke'		1;04;27
(30)	*è* be-PRS.PRF.3SG	*otta* break-PST.PTCP 'It broke'		1;06;23
(31)	(andi)*amo* go-HORT.1PL 'Let's go'			1;08;03
(32)	*E'* 1;09;04	(r)*otto*	*bi*(b)*e*(r)*on*(e)	
	be-PRS.PRF.3SG	break-PST.PTCP	bottle-OBJ.UNACC 'Bottle broke'	

To summarize, the Italian child exhibited almost exclusive use of a past-tensed verb form (either the standalone past participle or the fully formed recent past form) for both canonical and pseudo unaccusatives. As Figure 4 suggests, throughout Francesco's verbal development, morphological form is exclusively associated with verb type.

2.7. Italian unergative verb morphology

Figure 6 illustrates the emergence and distribution of morphology corresponding to both canonical and pseudo-unergatives in the Italian data.



Source:
"Francesco" Italian Corpus, CHILDES (MacWhinney, 2000)

Figure 6. Emergence and distribution over time of the morphological form of unergatives in Italian

According to Figure 6, the Italian data for the emergence of the morphology of unergatives shows that at least initially, the imperative is the form of choice. It is not until 1;6;04 when Francesco begins to use tensed forms. Interestingly, unlike for unaccusatives, the tense of his unergatives is not limited to the past as was found for unaccusatives. indicated in (36) below where he produces *ap*(r)*o* 'I open'. Important to note here is that, eventually, by 1;07;07, unergative forms are exclusively tensed. This suggests that the

Italian child of this study may have mastered the ability of tensing unergatives and doesn't rely on using the imperative as a strategy for all agentive forms.

Examples			Age
(33)	*dà* give-IMP 'Give!'		1;04;03
(34)	*e* *apri* and open-IMP 'Well, open (up)!'		1;04;27
(35)	(v)*edi* look-IMP 'Look!'		1;06;23
(36)	*apro* open-PRS.1SG 'I open'		1;08;03
(37)	(chi)*uso* close-PST.PTCP Daddy closed!	*papà* Daddy A.SBJ	1;11;18

To summarize, Italian unergatives (like their Spanish counterparts) were found to follow a strikingly different developmental trajectory as compared to unaccusatives. At least initially, these appeared exclusively in the imperative. When unergatives do finally appear tensed, they do so much like the unaccusative, at first with the past participle as in (37).

3. Findings and conclusions

3.1. Universal Grammar or adult input?

This section answers the first research question of this study, namely:

1) Does a child exposed to the adult input of a language which is rich in indicators of split intransitivity, as is adult modern Italian, show more sensitivity to this notion than does a child exposed to the adult input of a language which is devoid of the same indicators, as is adult modern Spanish? If the data show that there is little or no difference in the production of split intransitives by the two children of this study, this may suggest that Universal Grammar is what determines such similarities in behavior. On the other hand, should the data show any differences between the two children of the study, this fact may point to behavior which is determined by adult input.

Contrary to the fact that one would expect there to be a striking difference between the early verb production of a Spanish and Italian child, the data of this study suggest that children learning these languages exhibit strikingly similar paths of acquisition in terms of split intransitivity. As a first stage unaccusatives were found to appear before unergatives in both languages, and in tensed form. The initial predominance of Theme-oriented verb types at the one- and two-word stages, included both canonical unaccusatives, such as 'go' *ir* (Sp)/*andare* (It) or 'come' *venir* (Sp) and non-canonical

unaccusatives or anticausatives, such as 'fall' *caer* (Sp)/*cadere* (It) or 'break' *rompere* (It)). It was only later, as a second stage when unergative verbs were found to emerge in the data, such as 'look' *mirar* (Sp)/*vedere* (It) or 'open' *aprire* (It). Also, unlike unaccusatives which were tensed, unergatives were found to appear exclusively at first in the singular imperative form. In other words, for both languages studied, despite the input, agentivity appears to come as a later stage and is marked morphologically, even before the child is able to manipulate the perfect tenses.

In terms of the specific morphology of the forms produced by the children of this study, again, both children chose the past tense (the preterit in Spanish and the present perfect in Italian) for unaccusative verbs (e.g., (Sp) tayó (cayó) 'it fell'; (It) *eoto* (*è rotto*) 'it broke') and the imperative with unergative verbs (e.g., (Sp) *¡Mira!* 'Look!'; (It) *Apri*! 'Open!').

It is suggested here that this early distinction in behavior between unaccusatives and unergatives results from the differences between these two types which is inherent in X-bar structure (Chomsky, 1995). Although both children are exposed to different input, basic binary structural relations (X-Bar) within UG hold as both children begin to "build" their trees, hence, both children capitalize at first on the head-complement relation, making unaccusatives easier to produce in both languages, initially without a complement (X^0 or X'). As this head-complement relation is reinforced, Unaccusatives can now appear with complements, primarily in post-verbal position (X'). Unergatives begin to appear only in the imperative before any overt agent is expressed, suggesting the CP may be present before the specifier appears within VP (X').

If the conclusions of this study are correct, despite a comparable lack of transparency in adult language input, monolingual children learning Spanish may demonstrate an equal sensitivity to split intransitivity as do those learning Italian, as evidenced by the correlations between verbal morphology and intransitive verb type. As noted, similar correlations were also found to obtain in the Italian data, confirming the split intransitive distinction to lie within the domain of Universal Grammar, with language specific characteristics to be sorted out with later development and with additional input from the target language.

3.2. Continuous or maturational? Implications for a universal, progressive development of the verb phrase

This section answers the second research question of this study, namely:

2) If it is determined from the data that Universal Grammar may indeed be the reason for similarities found in early verb production, then what would be the implications of these findings in terms of adopting either the continuity or maturational (discontinuity) hypothesis?

In terms of the other question of this study as to whether language acquisition is maturational or continuous, the data of the study suggests the former case. At the beginning of this paper, Figure 1 illustrated what the Minimalist Program has proposed as the fully developed architecture of the adult verb phrase, consisting of an inner shell that accommodates a Theme argument and an outer shell that hosts an Agent argument. Taking into account this structure, the Spanish and Italian data of this case study

suggest that a potential four-stage trajectory, characterized by a phasing-in process from agent-less to agentive verbs. The initial stage is that of a sole-standing, tensed, agent-less verb. This is followed shortly thereafter by a second stage in which the agent-less verb appears before an overt theme argument. Around the same time of this second stage, a second verb type emerges, that of a sole-standing agentive verb in the singular imperative form. Finally, the last stage observed is that of an agent verb in the imperative form followed by an overt agent argument. It is proposed at least for Spanish and Italian that this phasing -in process creates the layers necessary to accommodate successively more complex verb types found to be produced later.

Using the longitudinal data from the children of this study, the following is proposed as a detailed illustration of this possible universal trajectory for early verb development in children (Ryan, 2012; 2014):

3.2.1. One-word stage: Emergence of only the inner layer of the verb phrase

The data of this study suggest that the earliest verbs appearing at the one-word stage are past-tense, non-agentive intransitive verbs. In particular, they are either unaccusative (e.g., 'SIT' as in child Italian uto (adult target = *è seduto* 'it sat') or anticausative (e.g., 'END' as in child Spanish *abó* (adult target = *se acabó* 'it ended'). Exclusive presence of these verbs at this developmental stage suggests an initial underlying structure corresponding to the simple inner layer of the verb phrase that has been proposed for adult structures of this type, with no outer layer corresponding to agents. Early appearance of these verbs in the past tense in this stage, suggests that although verb structure appears to be "incomplete," a higher structure outside the verb phrase (here referred to as the tense phrase, or TP) which supplies the past tense morphology for both Spanish and Italian, appears to be present in child output. At this initial stage verbs appear without overt complements.[2] Figure 7 illustrates this proposed early structure.

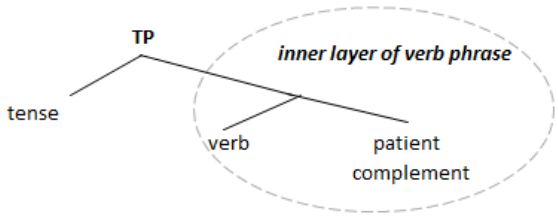


Figure 7. Emergence of verb phrase

[2] The one-word stage can be a tricky period for syntactic analysis because although children only produce one word utterances, they actually may have more structure than they reveal in their speech for reasons of memory limitations, or in the case of Spanish or Italian, both pro-drop languages, pronouns may be suppressed as they would in the adult language. A safe interpretation, therefore, is that the earliest verb structure is verb + complement and that children leave the complement blank and produce the verb alone. This assumption does not affect the overall hypothesis.

3.2.2. Two-word stage:

3.2.2.1. Continuation of the inner layer but with an expressed complement

As children move into the two-word stage, complements of early appearing non-agentive verbs are no longer suppressed, filling in the previously empty complement position with a patient (e.g., *vavó Peter Pan* (adult target = *se acabó Peter Pan* 'Peter Pan ended'). These exclusively appear post verbally.

3.2.2.2. Appearance of a new verb type in a non-tensed form and without an expressed agent

Right about the time complements start appearing with non-agentive verbs, in child output, a new type of verb starts to appear for the first time, the non-tensed agentive intransitive verb (e.g., 'OPEN' *api* (adult target = apri). The non-tensed form in the data of this study always appears in the singular imperative form, suggesting the introduction of another higher phrase outside the verb phrase, called the force phrase (CP) as has been proposed to correspond to adult imperative structures (Rizzi, 1994; Zagona, 2000) into the developing structure of the child. Figure 8 illustrates this proposed first period of expansion.

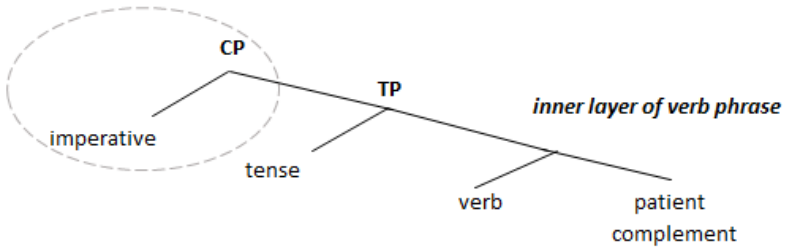


Figure 8. First expansion of structure to allow for an imperative

3.2.2.3. Completion of the verb phrase with an outer layer: Appearance of an expressed agent

Shortly after agentive intransitives emerge without agents they finally do start to appear with agents (e.g., *Mira, papá* 'Look, daddy'). This may be because the verb phrase has finally acquired the outer layer which provides a place for the agent, as illustrated by Figure 9.

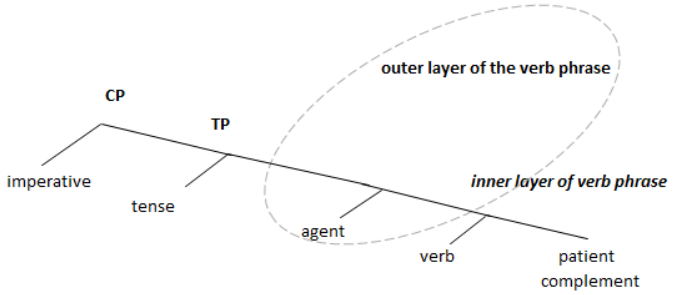


Figure 9. Emergence of outer layer of the verb phrase with an agent

To summarize, although the data of this study suggest that much is going on in the syntax at both one and two word stages, including the production of both tensed and non-tensed (imperative) forms, it is not until the very end of the two-word stage when the verb phrase appears to become fully developed in terms of the outer structure to accommodate agents. Another observation of the data suggests that the two-word stage is a critical period in the transition from agent-less to agentive verbs. If this hypothesis is correct, waiting until the two-word stage to collect data implies a risk of missing important early stages of verb acquisition. Figure 10 summarizes the assertions of this study.

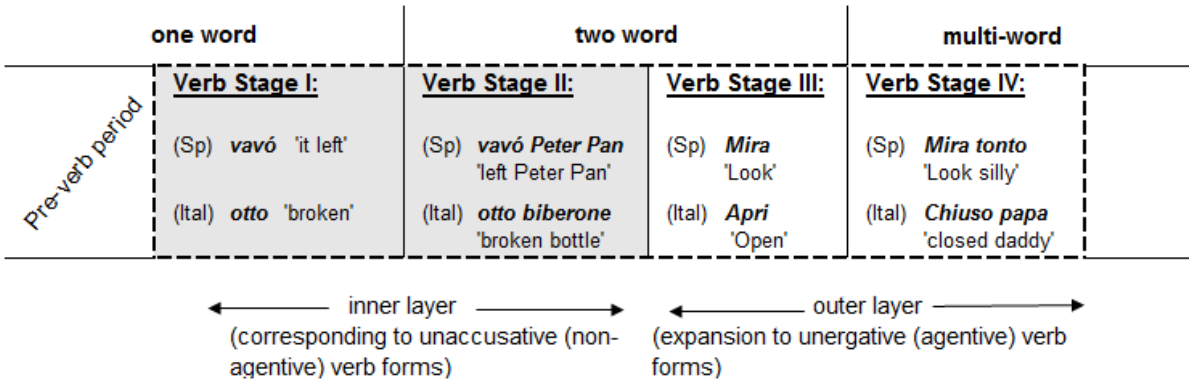


Figure 10. Summary of this study's assertions for the production of early verbs

3.3. Feasibility of claims

This project's findings that tensed, theme-oriented verbs emerge before non-tensed (in either imperative or infinitival) forms have empirical support in some previous work on early verb production, namely, case studies by Volterra (1976) for Italian, and Tomasello (1992) for English. Focusing on two children's emergent usage of the past participle in Italian, Volterra (1976) concluded that both children of her study produced type A participles, i.e., expressive of a state (e.g., *Luisa è uscita* 'Luisa has gone out') almost a year before they could produced type B participles, i.e., expressive of accomplishments (e.g., *Luisa ha dormito* 'Luisa has slept'). This familiar dichotomy for intransitive verbs that Volterra refers to is of course what would later be referred to as the Unaccusative Hypothesis (Perlmutter, 1978) with subsequent observations for Italian (Burzio, 1986). Similar observations in terms of timing in the emergence of verb types were made by Tomasello (1992) who observed the inventory of verb use by his daughter in terms of cognitive structure and social-pragmatic learning contexts and found that around the age of 1;3 the earliest appearing "verbs" were those that were related to movement or change (e.g., 'stuck' and 'gone') long before those of intentional action. Because his focus had more to do with underlying cognitive structure, Tomasello never expressed these verb types in terms of unaccusativity, unergativity, or transitivity, but suffice it to say that the early verbs he cites as those of movement or change are unaccusative while those of activity are typically agentive.

As to an explanation for why a child would produce theme verbs before agent verbs, this study cites the pioneering work of Piaget (1970) in the area of cognitive development. Piaget suggested that the earlier sensory motor stage of psychological development, estimated between 12 and 24 months of age, is a period when a child interprets the outside world as nothing more than an extension of herself. At this stage the unable to consider anyone else's needs, wants or interests, and are therefore considered to be 'ego centric'. It is also during this stage when the child acquires knowledge about objects and the ways that they can be manipulated. Through the acquisition of information about self and the world, and the people in it, the baby begins to understand how one thing can cause or affect another, and begins to develop simple ideas about time and space. Unaccusatives by their very nature have everything to do with movement and a complete lack of intentional action or agentivity. This would explain why both Spanish and Italian children of this study were observed to utilize the past tensed anticausative variants of the ergative verbs 'break,' 'end,' and 'close' before their transitive counterparts.

3.4. Next steps and closing remarks

This study was just the first step of a larger study whose goal is to determine the emergence of agentivity in child language and its potential correlation with verb morphology, as a child makes the transition between one-, two-, and early multi-word stages of language production. Similar analyses must be conducted utilizing early longitudinal datasets which correspond to the range of early language types, as suggested by Hoekstra & Hyams (1998), Salustri & Hyams (2008), and Radford (1990), including: 1) other imperative analog first language datasets (e.g., Spanish, Italian, Portuguese, Catalan, etc.) to see how they compare to the findings of this study; 2) root infinitive first language datasets (e.g., French, Dutch, German, Russian, etc.) to determine: a) how findings for these languages compare to those found for imperative analog datasets in terms of agentivity and b) what implications this has for the notion of early coexistence of tensed and infinitival forms; and 3) bare form/small clause first language datasets (such as English) to see how findings compare to those found for imperative analog and root infinitive datasets.

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English language acquisition in an expanding circle context: A longitudinal investigation

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Abstract

Language acquisition and language learning have been a matter of debate for so long. The main objective of this study is to trace the language acquisition of the child "Sara" from an Iranian non-native English speaking father in the Expanding circle context. The present study which is based on "naturalistic observation" covers the acquisition of English by the age of four. This study had two types of orientation in the procedure of data collection. The aspect of the Exposure procedure and Interaction procedure. The study was carried out by maintaining the irregular records of the child utterances in the form of a random diary and the traditional method of phonetic transcription was used to record utterances. The results showed that the Iranian girl who was exposed to and was brought up with an EFL input for four years could acquire EL as a native speaker of English. As a matter of fact, language is not inherited the same way as the eye color and other humanistic characteristics, any language a baby acquires after birth may not necessarily be her parents' mother tongue. In other words, English can be learnt as a native language even in non-native English speaking contexts. The whole study confined to Input and Output of English language.

Keywords language acquisition, expanding-circle, Iranian, English native-speaker

1. Introduction

To be native or not to be, that is a crucial question in the realm of language acquisition. In fact, the on-going debate to define nativeness has caused scholars to look at the issue from a deeper perspective and try to come up with some frameworks to characterize the features of a native speaker from the very beginning stages of language exposure. As Brown (2007) points out, the marvelous capacity for competence acquisition in one's native language within the first few years of life has been a field of attention for many centuries. This issue has indeed a long history and more than a thousand years ago, St. Augustine was very interested in analyzing the acquisition of his own first language (Brown, 2007).

In the eighteenth century, a modern research on child language acquisition was done. The German philosopher Dietrich Tiedemann recorded his young

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son's psychological and linguistic development. In the beginning of the twentieth century, when Francois Gouin had an unsuccessful experience of learning French, he observed his three-year-old nephew acquiring the language wonderfully in a short time just from saying almost nothing to becoming an actual chatterbox of French (Brown, 2007). Azmi Salim and Mehawesh (2014) have classified the history of child language acquisition studies into three periods of old, middle and modern. They state that longitudinal language sampling belongs to the modern period which began in the late 1950s. As they cite from Ingram (1989), "the child is visited at predetermined intervals for a reasonable length of time with the purpose of collecting a representative sample. However the professional look to child language acquisition started when the American linguist, Noam Chomsky, in the 1960s rose the idea of an "innate competence" that all children have in their first language learning and suggested that the language development of a child is widely dependent on an innate system (Halldórsdóttir , 2014) which is a mental mechanism named "Language Acquisition Device" (LAD) and Steven Pinker (1995, 2004) opened up and developed the idea of nature and nurture in the field of learning which has to be accomplished by innate circuitry. Linguists and psychologists focused seriously on fundamental issues of child language acquisition. Studying the children's life for days and nights became a model to find out how they master their first language in a short time. Although scholars have found out some factors such as linguistic and environmental factors, Halldórsdóttir (2014) believes that the first language acquisition has still many unknown parts and researchers are still arguing about how much of it is innate and how much of it is learned explicitly. From the other side, the wide-spread demand for English language learning puts considerable pressure on the educational resources of many countries (Park, 2005) so hand-reaching to a method of English language acquisition through experiments and longitudinal researches has become a global interest in recent century. Some of these studies will be reviewed as follows:

In a longitudinal, naturalistic case study, Hakuta (1976) researched about the acquisition of English as a second language by a five-year-old Japanese girl who had gone to the United Stated with her father. In this research, Hakuta focused on the problems of prefabricated patterns and language transfer. By analyzing the data he had gathered, he argued that for discussing about the second language acquisition process more empirical data is needed.

In a valuable research, Roy (2009) started a project called "speechome" which studied the Human Speech at Home in which he recorded his son's speech from the time he was born for three years. He aimed to discover the principles of cognitive processes in humans and language acquisition through computational models that are grounded in human data. He tried to teach a robot that could learn language in human-like ways. To evaluate the robot language learning, he decided to use child data as an audio-video input. He believes that the principles of learning by a language, is a lasting strategy that a child may also use to learn words.

A comparison research of Spanish second language acquisition in two different contexts was done by Segalowitz et al. (2004) in which the linguistic gains such as oral proficiency, oral fluency, grammar, vocabulary, pronunciation and communication strategies, made by two groups of native English-speaking students from the USA were studied. The general finding of the research shows that the students who spent a semester studying in Spain were found to have made greater gains in oral proficiency, oral fluency and communication strategies but the results could not be attributed simply to the fact that the students in Spain spent a greater amount of time out of class using Spanish.

In a recent child language developmental research, Azmi Salim and Mehawesh (2014) traced the language development of a Jordanian Arabic-speaking home girl called *Anwar* from her first vocal sounds to the first sentences. They tried to find out the most important factors that influence the child first language acquisition process through naturalistic observation. They concluded that *Anwar* acquired her mother tongue by the time she was five.

To date, the majority of research on children's language acquisition has focused on some aspects of linguistic factors, as mentioned above, such as the ones related to the earliest stages of language development: first sounds, words, sentences and oral proficiency, which are the *output* of the language acquisition. In other words, they study about "what a baby gains" in the process of acquiring a language not "How a baby gains". But to a lesser extent, as far as the researchers' knowledge is concerned, little attention has truly been paid to the factors of *input* in child language acquisition process as observed in some research studies (Rice, 1989; O'Grady, 2011; Zdorenko & Paradis, 2007; Shipley, 2012; Dahl, 2014; Halldórsdóttir, 2014).

Park (2005) as cited from Kline (1998) asserts that limited number of research studies have paid considerable attention to the process of language learning. In a case study, Park (2005) published the results of five young Korean children's English learning experiences in the United States. The aim of the study was to find out the processes by which children learn the complex phenomenon of a second language. Park (2005) explored what the students thought, felt and learned about English language while living in an English-speaking community. He applied primary Interview Survey, classroom observation and relevant documentation for data collection. Teacher and student interaction, student and student interaction, meaningful learning experience and classroom activities were analyzed as the findings of the nature of the developmental processes of English language learning. The interview with the children revealed that the relationship between "what a learning context offered" and "what an individual brought to the learning situation" had been a snapshot of the nature of the processes of learning and the development that these children experienced in learning English, which had a critical impact upon the children's English learning experiences in the U.S. school.

In line with Park (2005), it seems that there is a special relationship between *input* and *output* of child first language acquisition which is far different from the relationship in second and foreign language learning. That is, the contextual (parental or care-giver) input and child output in the process of

language acquisition has to be analyzed and studied from different points of view to fit altogether the whole aspects of language. Krashen (1985) in his book "The Input Hypothesis" maintains that humans acquire language by understanding messages or receiving comprehensible input. So the question is "How can we make the messages understood or How can we make the comprehensible input?". An example can clarify this issue. If we want to fill a jar with water, *what we are pouring* is simply water but *how we pour* the water is the matter of attention. Chomsky (1965, p8), in the book of "Aspects of the theory of syntax", asserts that:

> Although it was well understood that linguistic processes are in some sense "creative", the technical devices for expressing a system of recursive processes were simply not available until much more recently.

In studying first language acquisition, Parental or care-givers linguistic behavior with children usually fails to account. According to Figure 1 below, children are exposed to their parents' language as language input and in a period of six to ten months of comprehending the language, they show some tiny signals of language production and get the parental interaction to reinforce the language. Meanwhile, as many scholars such as Brown (2007) and Falk (1978) state there is a meaningful interval between Competence stage and Production stage in child first language acquisition which has to be zoomed in to deeply understand the differences of first, second and foreign language learning.

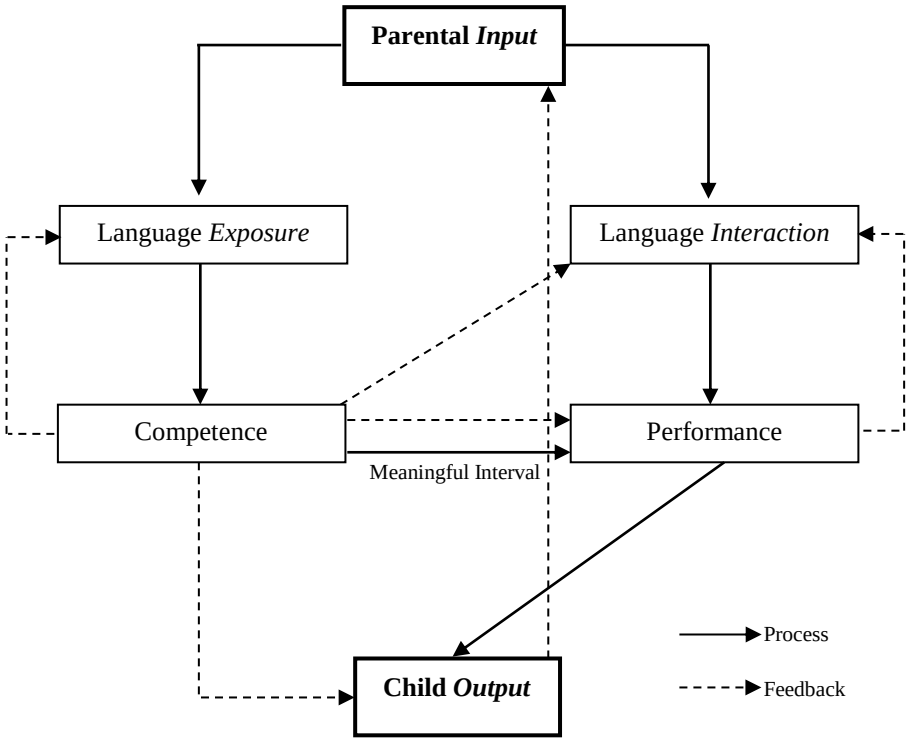

Figure 1. Input and Output relationship in the first language acquisition

In agreement with Yule (1988) who believes that language is not inherited the same way as other human characteristics, the researchers of this study claim that in case of following the input factors in first language process, the acquisition will be possible in any parts of the world through providing exposure and interaction to simulate the context (see Figure 1). In other words, one may acquire the language natively even though he/she has no native parents.

The nearest research to our claim had been a case study that Keshavarz (1999) has done. When he was researching on his Ph.D. in Great Britain, his son, *Arsham*, was born. *Arsham* was exposed to Persian and English right from birth time by his mother and father, respectively. Data collection began when *Arsham* was eight months old and continued for two years. In this research Keshavarz (1999) was trying to find out whether bilingual children, from early age, are able to differentiate their linguistic systems or they do not distinguish the two language systems. While many scholars support one-system hypothesis in the field of bilingual first language acquisition (BFLA) and believe that language mixing is the evidence for the bilingual child's lack of language differentiation at an early age but Keshavarz (1999) who is in favor of the two-system hypothesis, shows that only a small percentage of multi-word speech was mixed and the rest were language specific and *Arsham*, the child he studied, could demonstrate bilingual awareness and language differentiation from a very early age.

Following the above line of research, the researchers of this study aim at providing a detailed account of the longitudinal case study of an Iranian girl who has been exposed to Persian and English simultaneously from birth. The data collection procedure lasted for four years and this paper is just one section of the comprehensive carried out research. In succeeding parts of the study the researchers are going to deal with different components of a native speaker of English in the aforementioned expanding circle (Kachru, 1990) context. As a matter of fact, the present study is reported to outline the issues of English language acquisition process in a special case. It involves trying to study a native English speaking subject who had a non-native English speaking father in an expanding circle. Such a claim must be viewed in the light of analyzing the process of acquiring the first language. In the field of first language acquisition, the researchers set forth a challenging simple view for discussion. Since Kachru (1990) divided the English speakers of the world into three circles[3] and equal with his definition, the nations and people of expanding circle are users of English as a Foreign Language. Along the same line and with regard to the aim of this study, the following question was formulated: "If a baby is born in the Expanding Circle of WEs[4] whereas his/her English language input is the natural utterances of his/her father, who knows English as EFL, since birth time, can she really be called a native speaker of English?".

To accomplish this, first, the researchers collected sixteen factors of language input in child language acquisition process (Table 1 below) from some linguistics references such as Brown (2007), Krashen (1981), Yule

[3]Inner, Outer, Expanding Circles
[4] Worldwide English Speakers

(2010), Chastain (1988) and Folk (1978) and then compared the differences of first, second and foreign language learning processes and finally highlighted the proximity of this study's claim to the factors presented in the first column of Table 1 below:

Table 1
The comparison of first, second and foreign language learning process based on the factors of language input

Factors of Input	**ENL**	**ESL**	**EFL**
Early Time Starting (birth time)	√	-	-
Parental Teaching Advantage	√	-	-
Meaningful Interval between Comprehension and Production	√	-	-
Full Time Exposure (no time limitation)	√	√	-
Active and Dynamic (full of interaction)	√	√	-
No Translation	√	-	-
No Classification	√	-	-
No Test	√	-	-
No Anxiety or Stress	√	-	-
No Class	√	-	-
Need Base	√	-	-
Error Free	√	-	-
Example Based Education	√	-	-
Direct Relation between Forms and Meanings	√	√	-
Implicit Learning	√	-	-
Unconscious Learning	√	-	-

Note:
ENL= English as a Native Language
ESL= English as a Second Language
EFL= English as a Foreign Language

In the above Table of the sixteen factors, which shows the differences of input in language learning processing, second language learning has only three factors in common with first language learning and foreign language learning has nothing in common with that of the first but the findings of this research show that the process of language learning presented in the present longitudinal case study, is completely compatible with the process of first language acquisition. Meanwhile, it must be added here that in language acquisition the researchers followed Krashen's (1982,1985) advice to immerse the learner in the language he/she is acquiring, so this study has had two types of orientation in the procedure of data collection and all other stages of this research study. The first orientation was the aspect of the

Exposure procedure where Sara (the subject) met and got familiar with new things and the other orientation aspect was the *Interaction* procedure where Sara had to actively get involved in interactive activities which were tasked with the father and other sites of virtual, electronic software and platforms (father-baby interaction & baby- software interaction).
Since the father had tried to simulate the process of English language as a mother tongue in communicating with his daughter, the focal point of this research was to show the proximity of the processes of English language acquisition in different contexts.

2. Methodology

2.1. Participants

The participant in this research was an Iranian girl called "Sara". She was born on the tenth of February 2002 in Iran, Shiraz. Her core family was the father, the mother and later by the age of three and a half, she got a brother. They lived in Tehran, the capital of Iran, where English is accounted as a foreign language in the society as suggested by Kachru (1990) and cited by Kilickaya (2009). Afghari and Heidari (2012) state that Iran is among the expanding circle countries where English is often utilized for commercial and educational purposes. English is learned and evaluated regularly in connection with the most major varieties of English in Iran: British & American Englishes (Pishghadam & Sabouri, 2011). In this study the Iranian girl's main nonstop source of English language input was the father who knew English as a foreign language (EFL). The father had obtained an EFL certificate endorsement from one of the representatives of the University of Oxford in Iran and was licensed as a classroom EFL teacher. He had been kids' teacher for six years when Sara was born. The father has his own accent & dialect of English language and there were many cases of overlap in his idiolect with Standard English language. He talked to her daughter in English since she was born. The baby was not taken to any English speaking countries, but was treated linguistically like a native English learner/speaker by her father.

2.2. Instruments

A digital camera was the data elicitation tool in this study. In different contexts, her spontaneous audio/video interactions were recorded and transcribed later. Other used instruments include: a CD/DVD player and a television for watching cartoons, a Home-Computer and a Headphone to play software games and respond to the questions by the subject, an Internet line to search for Websites and other required information, and some books, software and pre-school scientific equipment such as microscope, telescope, etc.

2.3. Procedure

For the purpose of the present paper, that part of the collected data which consists of Sara's conversations with her father. Her father extracted them from a large corpus of longitudinal data to highlight the process of her English language acquisition. It should be pointed out that this study is restricted to just the analysis of Sara's English language output as the

comprehensive productive process relevant to her Foreign English language input. Sara's linguistic affairs development in different stages such as grammar, vocabulary, oral proficiency will be dealt with in specific articles.
In this study the recording regimes are not frequent and data was not recorded in a regular pattern such as every day, every week or every month. The father had recorded the responses any time that Sara was ready, fresh and eager. It is important to bear in mind that by recording we can only register what the child says not what the child could say (Ambridge& Ronald, 2013). As Brown (2007) believes "children seem to understand more than they actually produce. As mentioned before, this paper summarizes some of the major data gathered in a longitudinal, naturalistic study of an Iranian baby girl and maybe the easiest method for studying child language development is simply to record children's spontaneous speech in conversation with parents and caregiver but as Folk (1978) states "Speech itself is only an imperfect reflection of what an individual knows".
Sara's training and observation over a period of four years started immediately after her birth. Her father talked to her in English the same as English native parents from the first days of her birth. Indeed, there were two frequent inputs for the baby from the first: English language input by the father and Persian language by the mother (and other relatives as native speakers of Persian), as shown in Figure 2 below:

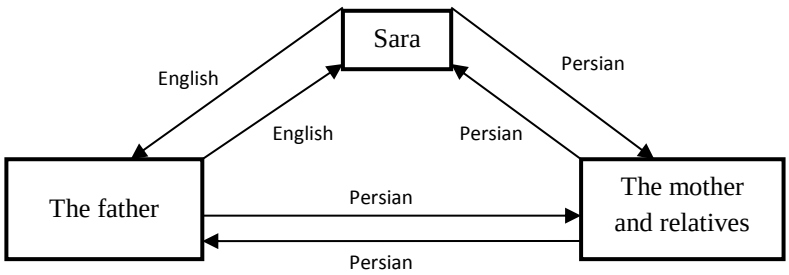

Figure 2. The language relationship between Sara and her family

When Sara began to respond to speech and later to utter words and sentences by the age of one and half to two years old, Spontaneous speech and responses were recorded and later transcribed and studied as suggested by Brown (2007). The chronological order of the research data collection procedure, which shows how the father proceeded is as follows:
In the mornings, Sara was kept in her mother's gentle and supportive hands and benefited her presence. In the afternoons her father joined them. Five days a week the mother had to leave the house for her job and the only one care giving of Sara was the father who had to feed her, to make her sleep, to amuse her, to take her to bathroom, to change her clothes and so on. Home was a suitable residence and it was a good opportunity for the father to enjoy life and talk to her daughter in English language about any matter he wished. Some classic English songs were helpful to soothe and make the baby sleep. The list of some classic nursery rhymes crooned and hummed by Sara's father is shown in Table 2 below:

Table 2
The list of some nursery rhymes and lullaby crooned and hummed by Sara's father

1	Hush Little baby, don't say a word.
2	Kumbaya (shorty's sleeping, kumbaya)
3	Twinkle, Twinkle, Little Star.
4	Good bye Little fish
5	Lavender's Blue
6	Good Morning To You
7	"A" you're adorable
8	Some other local songs translated in English and hummed

Under six months, she had no reaction to her father's saying and would just listen carefully to what he said. She was just amused by some crunchy toys. After her first birthday, when she could respond physically to her environment, Sara was taken to public places with her father almost every day getting familiar with the objects (such as toys, people, cars,...) around her and learning about them and their related topics in the environment (such as house, park, street, ...) and also their characteristics (such as color, weight, size, ...) contextually. Classic songs showing different parts of the body, sounds of animals, and counting numbers were applied in daily playing and amusing the baby. The following Table 3 shows the list of songs about parts of the body.

Table 3
The list of some classic songs about parts of the body, counting and sounds

1	Heads, Shoulders knees and toes
2	Sammy thumb
3	Two little eyes
4	One, two, three, four five, once I caught a fish alive
5	Ten green bottles
6	Ten little teddy bears
7	One potato, two potatoes
8	I love sixpence
9	The animals went in two by two
10	BAA, BAA, black sheep
11	Old Macdonald had a farm
12	One man went to mow

Sara could spend at least half of her days (until the age of five) with her father and they had many daily journeys, many plans and time-passing funs such as playing, singing English songs, drawing pictures, watching English language cartoons together, making artifacts, going to scientific journeys, doing scientific experiments, cooking. They even listened to English classic

music in the car. It seemed that an innate deal formed between Sara and her father to talk to each other in English about everything. Of course, at later stages Sara learned to communicate with others in Persian while the only means of communication between Sara and her father was English language. Since, in early stages of the plan, the father had been the main source of exposure and interaction in English language, he planned many contextual techniques such as role-playings, singing, game matches and even some planned struggles to show humanistic moods in speech.

Until the age of three, she was not in touch with any peers. Sara and her father watched many original cartoons as shown in Table 4 and talked about them together by following the stories excitingly with passion and love. Many times Sara identified with the characters of the cartoons she watched. Among these cartoons, "Magic English", the Walt Disney collection, had been the earliest and the most attractive one for Sara who was only one and a half year old at the time. Later "Arial" cartoon series had been the most attractive one for her. It was about an adventurous mermaid who was trying to meet humans out of the water. There had been many nice songs in the cartoons she watched and so many nice words and phrases which were applied humorously and seriously. Table 4 below demonstrates the list of some cartoons she had watched.

Table 4
The list of some cartoons watched by Sara

1	Magic English	32	Lady and Tramp
2	New Parade	33	Brother bear
3	Fairyland	34	Atlantic
4	Magic music man	35	Cloudy with a chance of meat ball
5	Muzzy	36	The smurfs
6	Ariel	37	Sleeping beauty
7	Mulan	38	Dragon hunter
8	Barbie (12 dancing princess)	39	Shreck I,II,III
9	Barbie (Swan lake)	40	Alice in wonder land
10	Barbie (The Nutcracker)	41	Aladdin
11	Barbie (A Christmas Carol)	42	Scooby
12	Barbie (Rapunzel)	43	Up
13	Barbie (Fairytopia)	44	Britz
14	Barbie (Princess Charm School)	45	Garfield
15	The Lion King 1-3	46	Anastasia
16	The magic school bus (scientific cartoon)	47	Tangled
17	Snow white	48	Thornberry
18	Hercules	49	Tarzan I,II
19	Hotel Transylvania	50	Brave

20	Whisper of the Heart	51	Frozen
21	The Ants Bully	52	Cook chief
22	Cinderella	53	Madagascar I,II
23	The story of JOSEF	54	Dragon
24	The story of JONAH	55	Surf's up
25	The girl with red hair	56	Legend of the Guardians
26	Hood winked	57	Kung Fu PUNDA I ,II
27	Beauty and Beast	58	Monsters *vs.* Aliens
28	Millionaire Dogs	59	Bee movie
29	Hanna Montana	60	Planet 51
30	IGOR	61	Wall "E"
31	Pocahontas	62	Mr.Peabody & Sherman

An amusing activity which would happen very often, was Picture Dictionary searching. Looking at the pictures, talking about them and practicing words and phrases had been full of fun for Sara and her father.
The implicit teaching was available every hour of days and nights whenever she was in the mood and ready to absorb. She was encouraged to talk in English and give her ideas about the pictures, movies and answer the questions about them.
"Night" stories were included in the implicit teaching plan tactically. A series of words were collected and checked phonologically and used in the father's made stories. Since they were so exciting for her, she followed them every night. Sometimes, the father read her the classical English stories listed in Table 5 below.

Table 5
List of some classic English stories read by Sara's father to her

1 Let go Picture Dictionary
2 Oxford Picture Dictionary
3 Alice in wonder land
4 The Junglies Go to Australia
5 Romeo and Juliet
6 The Girl with Red hair
7 The Lost World
8 Love or Money?
9 2000 leagues under the sea

"Ali Baba" was the first beloved night story for Sara told by her father from the time she was only two years old. The story would start with sadness and poorness of "Ali Baba" and ended up to his happiness and wealthiness. In the middle of the story, it was full of challenging and exciting matters. Some nights the father would say half of a sentence and waited for the baby to respond and say the rest of it. Table 6 below shows how Sara was participating in telling "Ali Baba" story:

Table 6
"Ali Baba" story narrated by Sara's father and Sara

	Once upon a time
Father	"Ali Baba" was a poor …..
Sara	*Man*
Father	He had only one shoe for his two … .
Sara	*Feet.*
Father	Even the mice in his house were … .
Sara	*Hungry.*
Father	One day his wife said: [the father changed the sound] "Ali Baba, we have nothing to eat. Go to jungle and pick some … ."
Sara	*Leaves.*
Father	I want to make some … .
Sara	*Soup.*

By the age of three, when Sara was in the two-word utterance stage of production, she discovered the story totally and needed a new story. So the father started a new tale called "Little Ant". It was a long tale lasting for more than seven years. Every night there was a new episode in which something exciting would happen. In this tale, there was a jungle where Little Ant lived in a colony under a big tree. He had a family, some friends such as Bunny, Piglet, Porcupine and Baby Bear and there had been some expert animals such as Mr. Goat as a doctor and Mr. Hippo as a scientist and Mr. Owl as the oldest bird of the jungle, who lived in an oak tree. Little Ant would meet them in every episode. The jungle was cut into two parts by a running river. The upper part was called "Green jungle" and the lower part was called "Blue jungle". The river would end up to water falling where strange animals of ancient days would live in and it was a dark spot and some journeys of Little Ant would happen there. The story was made by the father through his imagination and almost every night it was narrated. Sara was attracted by this story, too. She was familiar with all the characters in the story and her mind was engaged until the next night to hear the rest of the exciting events about Little Ant. She would keep the end point of the last episode in her mind to remind her father to start from that point and sometimes she was asked to predict what would happen next.

From the time Sara was three years old, she was persuaded to watch an English cartoon every day and later, tell her father the sentences she had heard. The following is the example of some phrases and sentences she had heard and talked about:

> "Metal kacoon" which was a name given to big cars moving in a street and expressed from an ant's point of view in the cartoon of "The Ants Bully".
> "Bees are making honey and we are making money" heard in "The magic school bus" cartoon.
> "To be a princess, you need confidence and character. Confidence without character is dangerous" heard in "Princess Charm School" cartoon.

From the age of four, Sara and her father had a weekly ceremony called "Ancestor Ceremony" in which they would pray to God, talked to him, reviewed their behavior, confessed and asked God to excuse them for their misbehaviors, asked God to give them another chance and finally thanked God for his benedictions to them. The ancestor ceremony would hold at home. Sara and her father lit some candles and talked to God. Later, when Sara became a girl of six aged and could read English words, her father made a "Praying Paper" in which some items were written in a table about her good and bad behaviors. She had to tick them every night. This went on for six months and Sara would read it every night next to her father and in a self-evaluated manner she answered them. Very soon she could learn reading all the phrases herself.

When Sara was four years old, her father bought her a software game called "Triple Play Plus". It was an Audio/Video software with many sections, so that, Sara could get familiar with the pictures of many objects and listen to their pronunciations in English. In the next step, as a bingo puzzle, she could hear a word and click on the picture or even say the name of a picture shown on a page by a microphone. The software would interactively announce the result. In another part of "Triple, Play, Plus" there were some conversations between some people so that Sara could listen and later she could talk as one of them.

The father had been a caregiver and later a practitioner of Sara to practice some knowledge with her in English. Some amusing games were designed to reinforce her reading by the age of six. In a game, they made a package of questions in ten, wrote them on some pieces of papers. On the first paper, which was available to Sara, next to the question there was a note which showed where she could find the answer and of course, where she could find the next question. In this exciting way, Sara could discover/solve the problems and learn reading.

Since she reached the age of four, Sara and her father role-played about many subjects spontaneously either by using some puppets or by mimicking sounds of some characters of cartoons. These days were equated with Sara's brother's birth and he had an active silent role in their role-playing.

They had a "Science" class in which they did some experiments in a vast range of fields. The scientific activities ranged from studying about airfoils and water stream and making a kite and a boat to studying about nature by keeping pets such as birds, bunny, fish, hamster and watching how they eat, lay eggs, give birth and feed their babies or to grow some seeds and plants.

"Scientific journey" was another plan since Sara was five aged. Climbing up a tree in the jungle, step in a cold water stream, going up a mountain, searching for some sprouts in the fields and watching sand moving in the desert, living in a village for some days, going to stable of domestic animals and touch them had been included all in the process of acquiring English language interactively.

3. Findings

The major findings of the study are summarized below in terms of the process of English language acquisition. The transcription of spontaneous

speech between Sara and her father by the age of three and half (43 months exactly) is offered in Table 7 which lasted about fourteen minutes. Sara was sitting at a computer desk, and her father asked her many questions.

Table 7
Spontaneous speech by the age of 43months

Father	Hello Sara
Sara	Hello
Father	How are you?
Sara	I'm fine, thank you
Father	What are you doing here?
Sara	I want to take a beautiful picture stick it to my, paint, stick it to my paint and send it to "Amme Golab". ["Amme Golab" is a T.V show for babies]
Father	Really?
Sara	Yes
Father	Sara, will you tell me a story?
Sara	Yes
Father	What story do you want to tell me?
Sara	Little ant [it was a night story her father had told her before]
Father	No please tell me the Cannibal story, can you?
Sara	Yes
Father	Sit on the chair and say, go on
Sara	One day the cannibal and his son was walking through the beach, looking for, through the beach, a beautiful woman to eat. Then, all of the sudden, the baby said, Father look, there is a woman. The Father said, let's take her and eat your mother
Father	-Hhh, what a nice story it was -Sara, what is it? [pointing to the monitor]
Sara	It is computer
Father	Can you work with the computer?
Sara	Yes, sometimes my father teach me something new
Father	Can you type anything?
Sara	Yes, I can type a new folder
Father	-Okay, please show me -Ah, you made a new folder? -Open the word. Word program. You know, don't you?
Sara	[she opens the Microsoft Office Word]
Father	Can you write "cat"?
Sara	Yes I can
Father	The font's Farsi, how do you change it?
Sara	I change it by….
Father	"Shift" and what?
Sara	"Alt"
Father	Show it [the camera zooms on the monitor].
Father	Ahha, do it.
Father	-"Shift" and "Alt" -"Shift" and "Alt" -This is shift -This is "Alt"
Sara	This is "Alt"?

Table 7
Spontaneous speech by the age of 43months

Father	Yes, this!
Sara	This?
Father	-Yes -Ahm.
Father	-Okay, now write -Write cat, can you?
Sara	Ahm
Father	-Type cat[she did] -Can you make it bigger?
Sara	Hmm
Father	-For making it bigger, first you have to select it -Can you select it?
Sara	No, yes
Father	-Only "T" is selected and is becoming bigger -First you have to make it bigger.
Sara	….. [she is doing]
Father	Ahha, enough, enough
Sara	How can I make it small?
Father	That's good, type cat.[she does] C,A,T [she is reading it loudly]
Father	Very good
Father	Sara, what is the vowel here?
Sara	Vowel? "A"
Father	"A" has what sound?
Sara	-/æ/ -look, I can paint.
Father	Really, can you paint it
Sara	[she is selecting and changing color]
Father	Ahha
Sara	Do you want "T" go up? [she has typed "CAT", but the size is too big and "T has gone to the next line"]
Father	Sara, I want to ask you some other questions, sit down please. Let me ask…. [she is busy with the computer when the father asks her a question]
Sara	You want "T" go up?
Father	Haa. [he is thinking to answer]
Sara	You want "T" go up or down?
Father	Yes, Up
Sara	Eh, [she is doing it with cursor]
Father	Sara, I want to ask you some other questions, sit down please
Sara	[she is busy with the cursor and word program and does not pay attention]
Father	Sara! Let me ask you some questions please…, stop working.
Sara	[She sits back]
Father	Sara, how many brothers & sisters do you have?
Sara	I have only a … one brother
Father	One brother, what's his name?
Sara	Koorosh!
Father	Koorosh, and what's your mother's name?

Table 7
Spontaneous speech by the age of 43months

Sara	Zahra
Father	What does your father call her?
Sara	Amitis
Father	Oh! Her name's Amitis!
Sara	My mother,… my father call my mother Amitis, but my mother's mother call him Zahra
Father	Your grandmother calls her Zahra!
Sara	Hmm
Father	Very good, and how old are you, Sara?
Sara	I'm ……, let me ask my mother[she is getting off the chair to go to her mother]
Father	Let me tell you. Sit there, I'll tell you
Sara	[she remembers, but not rightly] five years
Father	Five years old. Very good! Sara, look at me. Where are you now?
Sara	I'm in Esvehan [Isfahan is a city in Iran]. I'm living in Tehran but now I have come to Esvehan
Father	Why? Do you know why?
Sara	Here, because my father, … my father take me[pulls up her shoulder and can't answer]
Father	Here, and you don't know why? It might be your father's job.
Sara	Yes! [she falls into a deep thought]
Father	His boss has sent him here. Yes?
Sara	You know, hm, hm, … my father's boss call my father to come Esvehan.
Father	What's your father's job?
Sara	Job!?
Father	Yes, what does he do?
Sara	He does many things. When his car hit to another car, he go and fix the car, not buy another new car. My father love her car
Father	Your father loves his car!
Sara	Ahh
Father	What's his car?
Sara	It's a …..K, car
Father	You don't know? Sara, what happened, you said:" you had an accident here in Esfahan?"
Sara	Yes, no, in Naghshe-Jahan [it is a historical town in Isfahan]
Father	Ahh. How? Tell us about that accident.
Sara	[she is thinking]
Father	Were you in the car?
Sara	Yes, with my grandfather and my grandmother (Agha Joon and Maman Aziz). Agha Joon's head hit to my brother's carrier and wounded.
Father	Really! What about you? You were not wounded?
Sara	No!
Father	God blessed you
Sara	Koorosh was, my brother, was sleeping. All of a sudden, a truck come, hit to the back [of our] car and my brother said: "agh, agh. Agh[she made baby crying sound]
Father	He bursted into crying!?

Table 7
Spontaneous speech by the age of 43months

Sara	Aha
Father	Aha. Sara do you love your brother?
Sara	Yes. I love him very much
Father	Do you look after him sometimes?
Sara	Yes
Father	Do you help your mother?
Sara	Yes
Father	How do you help your mother?
Sara	Ah, I (e)stretch the table cloth
Father	Very good. In lunch time & dinner time, ha?
Sara	Yes
Father	Sara, what do you want to be in the future?
Sara	I want to become a police
Father	Police officer, very good. If you become a police officer, what do you do?
Sara	I, I, I fix cars, I, I, I have a friend, by name is Sara. Then, Sara wants to fix everything [she claps hands]. I say to Sara, something has broke, and something else has broke and Sara go and fix it
Father	Sara, what about your brother? Once I asked you about your brother and said "what does he want to be in the future", what did you say?
Sara	He wants to be a garbage collector.
Father	Why a garbage collector?!
Sara	Because he eats everything
Father	[laugh] naughty girl
Sara	And when my mother hug him, sit at the table cloth, Koorosh wants to take something
Father	Ahh, he is very naughty, ha? Sara, let me ask you another question. What food do you like? What is your favorite food?
Sara	I like pizza and hamburger.[she looks around]
Father	Look at me, what else?
Sara	like pizza and hamburger, …
Father	Ahh, …, very good
Sara	I love bread hamburger
Father	Tell me about your father a little
Sara	I love pizz …[looking at the camera and noticed the next question]
Father	Sara, Tell me about your father a little. What kind of a man he is?
Sara	He is a kind man. He is lovely man. He buy me everything when he goes to Club.
Father	What for example. What does he buy?
Sara	For example, if he finds a toy shop, he buy me toys.
Father	What has he bought you?
Sara	…
Father	No, What toy has he bought you?
Sara	He has bought a tent [pointing to it], a carrier
Father	A what?
Sara	A tent, a carrier.
Father	Is this your tent?
Sara	Ahm

Table 7
Spontaneous speech by the age of 43months

Father	Very nice tent, Sara. I love it. Eh, what's that on the wall?, what's that on the wall?
Sara	This is a white board.
Father	What do you do on the white board?
Sara	I will write [she is showing how to write]
Father	Really, can you write?
Sara	Yes, I can
Father	Very good, Sara
Sara	[sound scramble] I have a marker
Father	You have a marker! Very good!
Sara	Look! [she is writing]
Father	Sara, can you stand in front of your tent, …, ahha, sing ABC
Sara	song for me, please [Sara is singing ABC song]
Father	Very good, what about numbers?
Sara	Numbers, yes [she counts numbers from 1 to 20]
Father	Very good, Sara, very good. Sara, if you go to Tehran, what do you want to do?
Sara	I have a bed, … in Tehran and I will play, and doing things in Tehran. Kunneh Barbie, …
Father	Ahha, Sara, another question. On Thursday night, what do you do with your father? You have a ceremony? What do you do together?
Sara	I pray. I have a party
Father	No, No, on Thursday night. Every night you have… [waiting for her to remember]
Sara	Candle!
Father	Ahha, what do you do with the candle?
Sara	I light them and talk to God.
Father	You have a ceremony for talking to God, ha? How do you talk to God? Tell me about it
Sara	First my mother , second my father, and third me or first me, third mother, second father.[she mixes up]
Father	Ahha, you talk to God
Sara	Ahh.
Father	Very good

Note:
This symbol [] means an action is current or extra explanation is provided.
… means there is a delay or a gap in the sound.

The transcription of an Ancestor Ceremony[5] between Sara and her father by the age of four is offered in Table 8 below. They were sitting in a room and two lit candles were between them.

[5] An expression also used in Mulan cartoon

Table 8
Ancestor Ceremony transcription done by Sara and her father by the age of three

Father	Hello again. In our family, we have a ceremony and on every Thursday night. We light some candles together with Sara and Amitis, then we talk to God. Today we have lit some candles. Sara, can you tell me whose candle this is for?
Sara	Yes, this is for "Baba Jani" [her late grandfather]
Father	Yes, the first candle is for "Baba Jani" and what about the next one?
Sara	God
Father	Yes, the next one is for God. Now, it's Sara's turn to talk to God. Go on Sara
Sara	God, I love you and I every Thursday night, I light a candle and me and my father, light the candle. God, I love you because you are a good, good God. God, I promise not to make my father angry. God, I, I, I promise not to remind me my father to take me out.
Father	What do you promise to God?
Sara	I promised
Father	What do you ask?
Sara	God, please, please say to my father, I'm a good girl God, please take Satan away from me. God, I'm a good girl.
Father	Thank you. And Sara, when you are frightened, and when you see somebody and you are frightened, what do you do?
Sara	I kept God in ----, I kept god
Father	You'll call him, ha? So when you are frightened, you call God, ha? Sara, another question. When you want to see God, what do you have to do?
Sara	I have to find my third eye
Father	Your third eye? where is your third eye?
Sara	In my mind.
Father	In your mind! How do you find it?
Sara	I close my eyes.
Father	You close your eyes! How many eyes do you have?
Sara	2 eyes.
Father	You have 2 eyes? So what about the third eye?
Sara	I have 3 eyes.
Father	So you have 3 eyes.
Sara	When I find the third eye and it open, at that time I have 3 eyes.
Father	Yes, so now you have 2 eyes on your face and one eye in your mind. You close your eyes to find the third eyes, yes?
Sara	Yes
Father	Ahem, and if you find your third eye, what happens?
Sara	I can see God.
Father	Very good. How can you find your third eye? only by closing or you have to be [Sara will say the rest of it]
Sara	A good girl. I have to have a good behavior.
Father	You have to have a good behavior. What are good behaviors?
Sara	It's twenty law
Father	Just say one of them. If you lose your temper, is it a good behavior?
Sara	No, we have to, have a baby sleep, our baby, not to be angry.
Father	When your brother's sleeping, do you have to make noise?
Sara	No

Father You have to be [waiting for Sara to say the rest of it]
Sara Quiet.
Father Very good.
Sara I have to talk, talk slowly
Father When have lunch, after lunch, what do you say?
Sara I don't forgot to say :"God thank you"
Father And mother
Sara And father
Father Yes, very good. Ahh, what else, what else Sara?
Sara, do you love every day, every Thursday you light a candle and talk to God. Is that lovely?
You know, when I talk to God, I'm very happy that God has given me a nice girl and a good boy and I'm very happy that I have 2 darlings and every day every Thursday when I talk to God, I just ask him to keep them safe because I love them very much [the father fondles her hair and she is listening carefully]. Sara is a very good girl and she does whatever I ask her. She is not a bad girl. She has good behavior. That's why her mother and I love her. She loves his brother, Koorosh, too. Of course, sometimes she is a little naughty, but she is a good girl after all. What's your idea, Amitis [Amitis is Sara's mother]
Amitis That's right
Father Sara, do you want to say something. You can see this movie when you grow up and become older. So say something now for those days
Sara I will keep saying "thanks God".
Father Yes, Sara, by the way, where is "Baba Jani"?
Sara Heaven
Father He is in heaven! What happened he went to heaven?
Sara He died.
Father He died [Sara's shaking her head to confirm]. And where is heaven, is it a good place or a bad place?
Sara It's good place.
Father Oh, it's good place, very good. If you have good behavior, you go to heaven?
Sara Yes
Father And if you have a bad behavior, where do you go?
Sara Hell
Father To hell. And which one do you like more, hell or heaven?
Sara Heaven
Father Sara, by the way, do you love Satan?
Sara No, I don't
Father Why?
Sara Because Satan is bad
Father Satan is bad. How does Satan deceive you? Just say to the camera. How does Satan deceive you?
Sara Bad behavior
Father How, just tell us
Sara He say: throw your father, he say make your father angry, your father
Father He comes into your mind or you can see him?
Sara It comes into my mind.
Father It comes into your mind. If you want to keep him away, what do you say?
Sara I say: "Down with Satan"

4. Discussion

The results of this study portray the consummate aptitude of human being in language acquisition. The relation between Sara and her father was not a student-teacher relationship. They did not study English, they only lived English. That is why it was so fun and Sara never understood how she acquired the language because English had been in her daily use the same as Persian. Maybe a distinctive feature of child first language acquisition in comparison with second or foreign language learning is the indirectness of this process. Parents, as champions of their first language, give a hand to their poor little children to grow in communication and turn into future champions. Language, being the same as a coin, has two sides: *Exposure* and *interaction*.

4.1. *Exposure to English language*

Exposure is an undeniable orientation which is one side of the language acquisition coin. So the exposure by immersing in the target language had been in the father's plan from the first day of the child's birth. Nursery rhymes, story-telling and later visiting many objects and places, watching English cartoons and looking at picture dictionaries and talking about the pictures which supported the Exposure procedure of language learning as has also been asserted by Brown (2007,p.46):

> Since the role of the input in the child's acquisition of language is undeniably crucial. Whatever one's position is on the innateness of language, the speech that young children hear is primarily the speech heard at the home, and much of that speech is parental speech or the speech of older siblings.

The father's patience for about two years to get a tiny feedback from her daughter who passed the competence stage after two years and produced English words, showed that he was following the process of first language acquisition and was treating with her baby like a native learner of English language. According to what was explained in the Method section, the following activities are in fact the input types provided by the father, which have directly affected the baby's competence formation process and her English language acquisition:

The father lulled the baby to sleep. How important the competence period is? The baby can take this period in silence and dimness or in loudness and noise. But since in this period the baby is a receiver of language data, the more he/she receives the data the better the acquisition process would be. The father sang lullaby to her little infant to soothe her and support her not to cry. Nursery rhymes are the first repeated beloved forms which babies may hear. Apparently, it had been a monologue between the father and the baby but when she listened carefully and cooled down, it showed that this is not wasteful work and gave the primary elements of language to the baby. In the first six months there was nothing more than crying or laughing. There were just some physical movements of the body and some non-linguistic sounds but surely they provided the background of language learning.

Meet the world and get experienced. When the father took her out to show her the objects in the environment or even in the house he attracted her attention to different things. In fact, the baby was getting some experience

with new things in her life and hearing their names in English without providing any translations. It was a direct morpho-linguistic affair happening between forms and meanings in the baby's language acquisition. The songs listed in Table19 about parts of the body, sounds of animals and number counting in context made the baby's primary language structures. It was an indirect way of acquiring implicit knowledge of body parts and singularity/duality. Later, the pictures of the book or dictionary could support her English language knowledge by comparing what she could see in them and what she could find around herself.

Night stories as language structure producer. When Sara was told a repeated story every night since the time she was in babbling stage of English language production, she would not just listen to it, she would discover the meaning of all the sentences. She would find herself in the story and just the same as a swimmer moving up and down the waves of a sea, she would sense every moment of the story. That is, why she would participate in telling the story, which can support the claim that "Night Stories" have had salient effects on her English language acquisition. Another point of view is that by listening to a story every night, she linked the meaning to forms implicitly. This is a prominent feature which takes place in acquiring a language. Telling a repeated night story by the father and talking on behalf of all the characters of the story, with different and special tones, such as the narrator, "Ali Baba", his wife, and the thieves made Sara listen carefully and follow it eagerly. It can be said that the exciting listening procedure to discover the meaning of words, like a jigsaw puzzle, made Sara comprehend the story gradually. The meaning of the story was more important but forms and structures were supported by the father and acquired by the baby implicitly. Every sentence of the repeated story of "Ali Baba", as the first story of her life, was a generalizable sample of a structure which could generate unlimited sentences. It is Cazden's (1983) notion of "scaffolding" and what Burner (1983) asserts as "framework of scaffolding" which makes the baby acquire the language. Since there had not been any conscious control of structure, there had not been any classification of grammar and rules to use and all kinds of forms and structures of English language were used by the father in his stories unlimitedly the same as an English native parents or caregivers. When she reached to two-word utterance stage of production, she could use the structure of the sentences and the language models as she had heard. Sara made many sentences she needed. This only happens in first language acquisition contexts.

Cartoons as input source. Cartoons played the secondary role of English language input next to the one provided by the baby's father. The list of considerable cartoons shown in Table 4 watched by Sara and her father, exposed them to English language use and provided them with invaluable structures of language contextually and interactively. The cartoons had mostly a good effect on their pronunciation/stress of words. Many times when Sara was about ten years old she came to her father and said that the correct pronunciation of a word she had heard in a cartoon is different from what the father used, such as demon (/di:mən/ not /demən/), driven

(/drIvən/ not /dri:vən/), breath (/breθ/ not /bri:θ/) and balcony (/ˈbælkəni/ not /bʌlˈkəni/).
That was the sign of a good comprehension and production of a language acquisition. Sara had acquired English language dynamically and had not been exposed to just a limited range of language input. Meanwhile, there had been an implicit English language course for her i.e. away from pronunciation, her literacy of English as a native language was strongly considerable.

4.2. *Language Interaction*

Interaction is a predominant orientation which is indeed the other side of the coin in the process of language acquisition. Brown (2007) maintains that since language is used for interactive communication, children show what is called the "pop-go-weasel" effects unlike adults, who can be asked for example whether it is better to say "two foots" or "two feet". So the matter of interaction was covered up in this study by role-playing and getting involved in the interactive software and Games. According to McDonagh and McDonagh (2008), interactive storytelling, story sacks, story packs, magic microphone and games play are important in helping children to develop their expressive and receptive language in the early years. The significance of interaction in language learning is described by BerkoCyleason (1982, p.20) as cited in Brown (2007, p.47):

> While it used to be generally held that mere exposure to language is sufficient to set the child's language generating machinery in motion, it is now clear that, in order for successful first language acquisition to take place ***interaction***, rather than exposure, is required. Children do not learn language from overhearing the conversations of others or from listening to the radio, and must, instead, acquire it in the context of being spoken to.

McDonagh and McDonagh (2008) reason that parents and adults make some linguistics template forms and functions in their dealing with children so as early practitioners they need to ask variable questions from children and give them enough time to think and comprehend the questions and answer them.
Interactive role of software. The role of interaction is quite clear in acquiring language, *Interaction* means *Dialogue.* When a child can answer a question asked by somebody, it means he/she has listened and understood the linguistic/pragmatic meaning. The software that played by Sara such as Triple Play Plus, could ask many questions from her to make sure that she knew the language and can distinguish the words and their meaning and can even pronounce them rightly.
Sharing knowledge, practicing the language. From the age of eight, Sara and her father had a Sharing knowledge time in which they talked about a chosen subject by the father. The father played the role of a practitioner to lead his daughter's attention to some English forms for explaining a special subject.

4.3. *There is a baby-centered English class*

There had been a twenty four hour class for acquiring the language. The class had no walls and had been as wide as the child's life. In this class

there had been no test, no level. Mistakes were allowed and there was no stress and anxiety in getting the language. The indirect language class of English had a direct influence on the baby's mode and freshness and she would specify what to do next i.e. whether to watch a cartoon or look at a dictionary or draw pictures or play a software game. Indeed, it was a baby-centered class. Figure 3 below shows that there is a maximum proximity between all the sixteen factors of English (see Table 1) as a native language (ENL) acquisition process and Persian English as a native language (PENL)

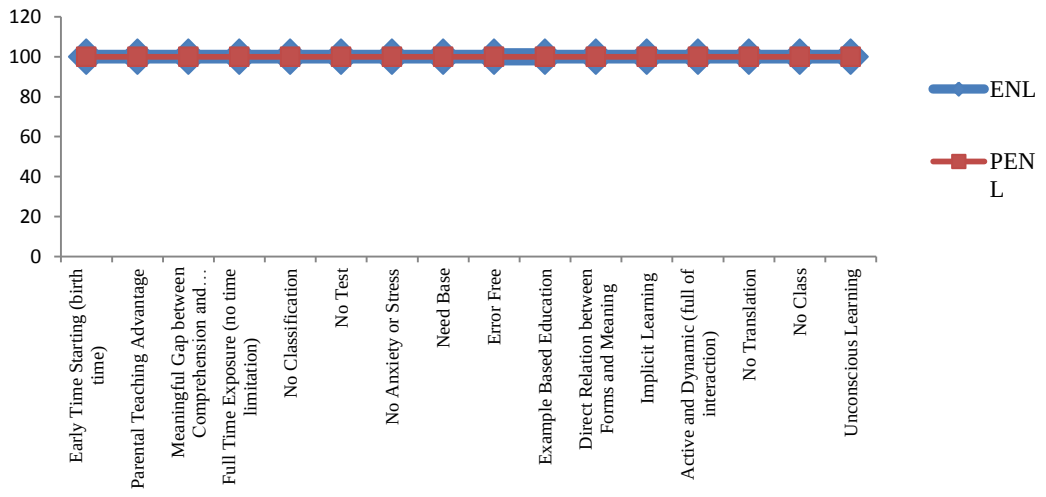

Figure 3. The proximity of English language acquisition process in the two different contexts

The findings of the study indicate that Sara's immediate and thoughtful answers to her father's various questions was the sign of "Automized Mechanism" in unconscious language acquisition process (Chomsky, 2006; Krashen, 1981; Krashen, 1982; Munoz, 2010). It can be claimed that Sara acquired English language natively the same way as children with native English speaking parents, even though there were some linguistic differences which will be reported in future research papers on the same case study. As a result of the findings of this research, English language can be acquired as a Native language from a more limited input in early language learning period.

The accomplishment of this research can be expressed as its priority to prevailing models of second and foreign language learning and the results can be engineered in a complex format by the educational centers for global exploitation.

It is interesting to mention that since English is an international language and is spoken in many varieties and environments natively or non-natively (Kilickaya, 2009; McArthur, 2001), pronunciation has its own variety and is not taken as the center of consideration in this study.

5. Conclusions

5.1. Limitations of the Study

The society the children find themselves in and how important each language is viewed within that society are very significant (Lindfords, 1991, as cited in Clark, 2000). In this research, since English as a speaking language was used in a limited speech community, there was no strong society support in this study.

Sara's early language learning did not have any negative effects on her Persian language learning process. It might indicate that being in the exposure of two languages at the same time, do not have any bad effects on each other. Of course, further neuro-liguistic studies are required in the realm of language acquisition to shed some light on this issue.

5.2. Suggestions for Further Research

The studies in this research had, of course, their weakness. In order to further investigate the issues discussed in this case study, a comparison study between two examinees, one from the expanded circle and one from the inner circle of English language speakers, in the form of longitudinal or cross sectional case study is suggested.

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Grade Level Expectations in Lexical Measures and Accuracy of Written Narrative Samples

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Abstract

This project aimed to describe selected microstructural aspects of written narratives of school age children and examine the relationship between narrative measures and performance on standardized assessments. Investigators utilized written personal narratives of 907 children in 1st-8th grade. Children's responses were described in terms of lexical diversity, productivity, and accuracy (grammatical, spelling, and conventions) by grade. The relationship between written narrative measures and performance on statewide assessments was analyzed through correlational and regression analyses. Findings demonstrated an upward trend in lexical measures across grades and a decrease in the proportion of errors. Children's performance on written language sample measures were significantly correlated to performance on standardized language and literacy assessments. The proportion of errors in written samples appeared to explain more unique variance than lexical measures. Findings substantiate that lexical measures and accuracy of written narrative measures are educationally relevant tools in first through eighth grade for predicting performance on standardized statewide language and literacy assessments. Results provide additional resources for educators on expected distribution of performance of school age children on written narrative measures. Findings further affirm the construct validity of using written narrative sample measures as a developmental index of language acquisition.

Keywords narratives, language samples, lexical diversity, productivity, accuracy microstructure, assessment

1. Introduction

Written language performance is recognized as a valuable tool for measuring school age language, literacy, and academic achievement (ASHA, 2002). Knowledge of expectations for children's performance on written language measures may be particularly important for educational teams who work in school settings (ASHA, 2010). Teachers, reading specialists, and speech language pathologists may assess and address written language competencies given the emphasis on writing within the Common Core State Standards (Common Core State Standards Initiative, 2010).

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In response to the need to expand informational resources available to educators and add to the knowledge base of children's school age written language skills, this study aimed to examine the written language skills of children in grades 1 through 8. A primary aim was to provide additional data on typical development, expected norms, and construct validity of written language sample measures as markers of maturity. Previous studies have identified several potential markers of maturity in written language samples (Puranik, Lombardino, Altmann, 2008; Wagner et al., 2011). A principle components analysis in Puranik et al., (2008) produced three dimensions: productivity, complexity, and accuracy which reflect microstructural features. *Productivity* refers to the amount of text (Berninger, 2010; Kim, Al Otaiba, Wanzek, Gaitlin, 2015) with total number of words being among common productivity indices.

Although productivity, complexity, and accuracy are among commonly reported indexes for microstructural analysis, there is no gold standard for writing assessment (Price & Jackson, 2015) and there have been mixed findings on what are typical expectations across grade levels (Dockrell, Ricketts, Charman & Lindsay, 2014; Fey, Catts, Proctor-Williams, Tomblin, & Zhang, 2004; Puranik, Lombardino, & Altmann, 2008; Scott & Windsor, 2000; Wagner, Puranik, Foorman, Foster, Wilson, Tschinkel, & Kantor, 2011). Variability in *normal* expectations may be partially explained by population differences (Kim et al., 2015) and different tasks and measures used for microstructural analysis. Previously, indices of lexical diversity such as NDW (number of different words) have been further complicated by the lack of consensus on whether to account for length of the transcript by truncating or taking a ratio of NDW to number of total words (NTW); however, type-token ratio was not found to be as indicative of performance on standardized tests (Wood, Bustamante, Schatschneider, & Hart, under review). It is thought that the relationships between written language measures may vary based on the child's developmental level. To further consider the constructs of written language measures, a review is provided of grade level differences in microstructural components of written narratives.

1.1. Developmental Progression

An increasing number of studies have examined the typical trajectory of written language development across grades and report mixed findings for grade level differences in school age children, with inconsistent results between language aspects or grades. One such study, by Puranik and colleagues (2008), examined the writing samples of 120 children in third through sixth grade based on retell of expository texts. The investigators examined nine components of written language. A significant main effect of grade was reported for total number of words, number of ideas, and number of clauses with increases by grade, with each grade significantly greater than the previous. Spelling also showed a main effect by grade but not steady changes with each grade level increase. Significant differences in spelling were reported between third and fifth graders; third and sixth graders; and fourth and sixth graders. No statistically significant differences by grade were reported for mean length of T-unit, clausal density, or conventions such as basic punctuation and use of capital letters.

The results of Puranik (2008) were later replicated and expanded by Wagner and colleagues (2011). Based on comparison of coded samples from 98 first graders and 88 fourth graders, Wagner et al., (2011) reported large developmental differences for measures of lexical productivity and writing fluency (timed writing tasks); moderate grade effects for complexity and macro-organization; and minimal developmental differences for spelling and punctuation. Given that other studies have reported larger developmental effects of accuracy than Wagner et al., (2011), differences in findings may be partially attributable to measurement differences. Spelling accuracy has been measured by number of errors (excluding multiple occurrences of the same error), while other studies report a proportion of errors in which reoccurrences of spelling errors are counted.

Although there is some agreement that lexical measures in written narratives are generally sensitive to developmental change (Berman & Verhoeven, 2002), there have been mixed findings in literature regarding the trajectory over time. A progression in number of different words (NDW) (lexical diversity) across development, has been evidenced in a number of studies (Fey et al., 2004; Wagner et al., 2011) and correlated with language proficiency levels (Yu, 2009). In the longitudinal study by Fey and colleagues, children made gains in NDW from 2nd to 4th grade. Furthermore, NDW was the only measure that showed a statistically significant group difference in growth between children with language impairment and typical language development. In contrast, Mills, Watkins, and Washington (2013), did not find significant differences in NDW in 2nd – 5th graders' personal and fictional narratives (n =43 children).

Studies that have examined NDW between consecutive grades have not consistently found differences between grades. In one cross-sectional study that sampled across the elementary school grades, Nelson and Van Meter (2007) found children in 1st and 2nd grade performed similarly (M = 20.64, SD = 8.69; M = 29.68, SD = 16.52 respectively), 3rd grade children performed at a significantly higher level (M = 46.18, SD = 21.81), and 4th and 5th graders performed similar to each other yet higher than all other grades (M = 64.22, SD = 26.91; M = 79.24, SD = 41.60 respectively) on NDW from written personal narratives. Additionally, Hall-Mills and Apel (2015) examined linguistic features in the written samples of 89 children in three grades (approximately 30 children in each grade) using the narrative prompt, "Tell me about a time that someone surprised you and what happened." The authors reported significant differences for both total number of words and different words on average between second grade (M = 18.31, SD = 7.05), third grade (M = 36.88, SD = 14.58) and fourth grade (M = 47.33, SD = 17.06)

1.2. Purpose

The purpose of the current investigation was to add to the burgeoning research on written language assessment procedures and analysis to provide tools and resources for educators (Hall-Mills & Apel, 2015; Price & Jackson, 2015) and extend the construct validity work of previous studies in an effort to establish expectations for lexical diversity in written personal narratives

and consider mean variance across a broad range of grades (first – eighth grade). Specifically, the present study addressed the research questions:

1- What are trends in lexical measures and accuracy of written language performance across school-age years for children?

   a- If there are grade differences in performance, what normative information can be derived for speech language pathologists using a written personal narrative prompt for assessment with school age children (e.g. expected performance with percentile rank equivalents)?

2- What is the relationship between selected microstructural measures of written personal narratives and children's performance on statewide assessments of language and literacy in 1st – 8th grade?

2. Methodology

1.1. Participants

To examine children's performance on lexical measures in written personal narrative language samples, the investigators used existent data from the Florida Twin Project on Reading, Behavior and Environment, a cross-sequential twin study focusing on correlates of reading development (Taylor, Hart, Mikolajewski & Schatschneider, 2013). The available database included written language samples from 1,023 school age children 1st – 8th grade. Among the available pool of participants, teachers had identified 116 children with diagnosed disorders using the state's categorization of exceptionalities (speech impaired, language impaired, deaf or hard of hearing, visually impaired, specific learning disabled, profoundly mentally handicapped, dual-sensory impaired, autistic, traumatic brain injured, developmentally delayed, and other health impaired) which constituted approximately 11% of the pool. Children with exceptionalities were then excluded from the database of interest, because it was not feasible to confirm correct diagnosis or acquire additional information about severity or services. The final database of students without identified disorders included 907 children in elementary and middle school (first through eighth grade). Reported race and ethnicity demographics included: 55% White, 23% Hispanic, 15% Black or African American, 3% Asian, and 4% more than one race. Parents reported their household income with the three largest percentages of income falling within three categories: 37% reported income between $10,000 and $49,000; 38% between $50,000 and $109,000; and 25% between $110,000 and $209,000 or greater. Parents reported their highest level of education to be: 4.6% without high school graduation; high school (12.1%), some college (19.1%), associate's degree (12%), bachelor's (23%), attended graduate school without obtaining masters (3%), and completed graduate school (25.5%).

1.2. Materials

1.2.1. Writing task

For the written personal narrative task, the typed prompt: *One day when I got home from school…*was provided at the top of a double-sided lined piece

of paper, which was similar to written prompts used in other studies (Connelly, Dockrell, Walter, & Critten, 2012; Dockrell, Ricketts, Charman, & Lindsay, 2014; McMaster & Espin, 2007). The writing task was untimed and not constrained in length. The instructions informed parents that the activity should take approximately 10-15 minutes but parents were not instructed to discontinue after any particular length of time.

1.2.2. Florida Statewide Assessment

Children's language and literacy performance was assessed through statewide testing and the data was made available to the current study. Florida students' performance on the FAIR, *Florida Assessments for Instruction in Reading Aligned to the Language Arts Florida Standards (FAIR-FS;* Foorman, Torgesen, Crawford, & Petscher, 2009) was used to describe students' global language and literacy skills. The *FAIR* is a norm-referenced computer-adaptive screening and diagnostic battery of reading component skills. The *FAIR* has been scaled to measure reading skills in grades K-12. The *FAIR* was normed on students in eight counties of Florida. The sampling strategy for the norming of the tasks matched the state achievement and demographic distribution across all grade levels (Foorman et al., 2009).

The *FAIR* subtests vary across grades; however, the vocabulary task, word reading, and fluency was used for grades 1st – 2nd. The Vocabulary Pairs task is comprised of 24 items, and does require a basal or ceiling to be established (Foorman et al., 2009). Students are instructed to look at pictures on the screen as they are named (e.g. *cow, orange, pig*) and then asked to pick the two that go together. Internal consistency was reported to be .92 for word reading, and .89 for vocabulary. The reading fluency subtest is a teacher-administered subtest of the FAIR, designed to task the student's decoding, rate, accuracy, and expression. For this subtest, the students are asked to read a passage aloud to the teacher who scores accuracy after one minute of reading. Examples of errors include mispronunciations, omissions, substitutions, reversals, and hesitations longer than 3 seconds.

For grades 3rd-8th, existing data that included the *FAIR* reading comprehension, word analysis (spelling), and reading efficiency (maze) subtests were utilized in the current project. The reading comprehension subtest is designed to take approximately 15 minutes. For this task, the student is asked to read a passage of 200-1300 words and answer 7-9 multiple choice questions. Students are allowed to refer back to the passage when responding to questions. The word analysis subtest, which is untimed, is thought to task phonological awareness and spelling. The computer provides an audio recorded word and a sentence using the word. Students are asked to respond by typing the word. Predictive validity of the word reading and phonological awareness tasks predicting to the Stanford Achievement Test-10 demonstrated correlations ranging from .40 to .60. The Maze task assessed text reading efficiency in 6 minutes, designed to task the student's decoding, rate, accuracy, and expression.

1.2.3. Reading vocabulary

As part of the Florida Twin Project on Reading, an additional test was administered to assess reading vocabulary, the *Gates-MacGinitie Reading Test- Fourth Edition* (GMRT-4) which involved two separate subtests depending upon grade. For children in first and second grade, Word Decoding subtest (GMRT-4, MacGinitie & MacGinitie, 2006) was administered. The Word Decoding test is a measure of word reading and vocabulary knowledge, in which the child is shown a picture (e.g. practice item: pig) and a list of four similar written words (e.g. big, fig, pig, dig). The child must pick the correct word that corresponds to the picture.

For children in third grade and above, the *Gates-MacGinitie Reading Test-Fourth Edition* Vocabulary subtest (GMRT-4, MacGinitie & MacGinitie, 2006) was administered. For this subtest, the child is shown a sentence with one word underlined (e.g. practice item: She felt happy). The student is asked to choose from a list of four options (e.g. sleepy, hot, ready, glad), the correct option that represents a synonym or short definition of the underlined word. The task is intended to draw upon children's vocabulary knowledge as well as other general literacy skills. The 2006 test manual reports construct validity estimates of .79 to .81; test-retest reliability of between .85 and .90; and internal reliability of .96.

1.3. Procedures

As part of the Florida Twin Project on Reading, investigators mailed a packet of materials in the mail to parents of twins including an informed consent to sign, questionnaires and an 'achievement pack' which included a writing task and a reading vocabulary test. The achievement pack included specific instructions to the caregiver on how to administer the tests, including verbatim instructions to read aloud to the twins, as well as a place for any testing errors to be noted. Caregivers mailed the packet back to the research team along with the signed consent and other questionnaire materials. The written transcripts were entered electronically by undergraduate students in speech-language pathology. A graduate research assistant reviewed the paper copies against the electronic file to check accuracy resulting in 99% reliability score in electronic transcription.

1.3.1. Microstructure text analysis

As part of the current study, investigators typed children's written samples into electronic transcript files and formatted the files for SALT analysis (Systematic Analysis of Language Transcripts) following standard SALT formatting (Miller & Iglesias, 2012). Children's use of capitalization, misspellings, and punctuation was maintained. Research assistants inserted codes proximal to each error or deviation from Standard English. In an attempt to describe errors, children's written language errors were categorized into three broad types of errors including: grammatical errors, spelling errors, and general writing convention errors including capitalization and punctuation errors. Examples of commonly occurring grammatical errors include the omission of past tense, omission of conjunctions and possessive markers, lack of verb-tense agreement, lack of singular and plural subject-verb agreement markers. Spelling errors included any

deviation from Standard English spelling rules. The spelling category also included errors related to homonyms (e.g. *no* instead of *know; right* substituted for *write*; and confusions between *their - there* or *your - you're*). Punctuation and convention errors were characterized by the misuse or omission of an apostrophe, omission of capitalization for proper names, omission of end punctuation, and run on sentences. A single lexical unit was allowed to receive more than one error code if any two categories occurred such as omission of capitalization and a spelling error.

Coding rules were established to distinguish potentially overlapping categories. For example, if the possessive marker was present but the apostrophe was missing (e.g. principals office), it was coded as a punctuation error. In contrast, if the possessive marker was not present (e.g. principal office) is was counted as a grammatical error. However, one lexical item was allowed to have more than one error attributed. In the above example, if *principal* was mis-spelled and lacking a possessive marker (e.g. principle office), the spelling error code was additionally assigned. Coders remained blind to any identifying information or background of the student, so that deviations from Standard English were initially identified without regard to cultural linguistic background. As such, dialectal differences were marked among other deviations from Standard English, despite representing normal or typical deviations from Standard English rather than errors.

Research assistants trained on the three codes entered the error codes as described above for grammatical errors, spelling errors, and convention errors. The SALT software was also utilized to aggregate the occurrence of each type of error code. The first author reviewed one of every ten transcripts to double score the error codes. It was expected that coding errors would occur at a rate of between 3%-6% during sample analysis based on what is commonly reported in the literature (e.g. Fey et al., 2004; Gillam & Johnston, 1992; Sun & Nippold, 2011; Windsor, Scott & Street, 2000). Any disagreements in error assignments were discussed to resolve errors as coding continued. Agreement was greater than 90%, not including formatting errors and 97% if comma punctuation errors are excluded.

1.3.2. Analyses

To examine trends in written language samples across grades, participants with identified disabilities were excluded (11%) and descriptive statistics were used to report the distribution of performance on lexical measures (number of total words, different words, and type token ratio) and accuracy. Correlational and regression analyses were conducted to address the second research question examining the relationship between lexical measures, accuracy, and performance on standardized assessments. The magnitude of the relationship was interpreted using Cohen's index in which .3-.5 was considered moderate; anything over .5 was considered large; and anything under .3 was considered small (Cohen, 1988). Regression models allowed for further examination of unique variance explained by written language measures as predictors of students' performance on selected language and literacy standardized assessments.

3. Findings

In response to the first research aim, descriptive statistics are reported in Table 1 to demonstrate the trends in measures of lexical productivity and accuracy across children in grades 1-8. There was generally an upward trend in NDW (number of different words) and NTW (number of total words) across grades with the average number of words steadily increasing between first through fourth grade, and fifth to eight grade showing growth at less consistent intervals by grade. There was a downward trend in the proportion of errors across grades with the highest proportion of errors in first grade. Spelling accuracy showed the largest change, with a decrease in proportion of errors, particularly between first and third grade.

Table 1

Means and Standard Deviations by Grade for Lexical Measures and Accuracy of Written Language Samples

	Elementary and Middle School (1st – 8th Grade)															
	1st Grade *n* = 91		2nd Grade *n* = 58		3rd Grade *n* = 64		4th Grade *n* = 116		5th Grade *n* = 129		6th Grade *n* = 173		7th Grade *n* = 186		8th Grade *n* = 90	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Productivity																
NTW	60.45	42.6	104.28	69.6	119.36	68.2	187.23	85.7	168.53	89.1	187.60	118.6	193.79	112.5	187.12	103.1
Complexity																
NDW	38.49	20.9	53.70	31.1	63.93	30.5	100.16	41.6	90.58	40.3	115.56	59.5	87.64	45.0	97.75	46.5
Accuracy*																
Spelling	.14	.10	.07	.07	.06	.05	.03	.04	.03	.03	.02	.03	.02	.02	.01	.01
Grammar	.03	.04	.03	.03	.03	.03	.02	.03	.02	.02	.02	.02	.02	.02	.01	.02
Conventions	.14	.10	.07	.07	.06	.05	.03	.04	.03	.03	.02	.03	.02	.02	.01	.01

Note. NTW = total number of words. NDW = number of different words. * Accuracy or percentage of errors is displayed in proportion to total number of words (e.g. number of spelling errors/total number of words).

In addition to an inspection of means of lexical productivity and accuracy, a series of curve fits were conducted on those means over time to examine whether the trends seen in the means over time were best described by a linear or quadratic function. The results of these analyses appear in Table 2. For each lexical productivity and accuracy measures we fit a quadratic function, and the intercept, slope, and quadratic term is presented for each. In these models, the intercept represents the predicted mean level for each variable for the students who are in first grade. The slope represents the rate of change per year in first grade, and the quadratic term represents how much the slope is changing (either accelerating if the term is positive or decelerating if the term is negative). The parameters in Table 2 indicate for NDW and NTW, there is a significant positive trend over time (as demonstrated by the significant positive slope terms for each variable) and that growth in both of those variables is decelerating, as evidenced by the significant negative quadratic terms. For errors of grammar and errors of composition, a significant negative linear trend for each indicated that errors of both kind are decreasing in a relatively linear fashion, while errors of

spelling demonstrated a significantly linear trend that showed evidence of slowing over time. Graphs showing these trends over time are provided in Figures 1 and 2.

Table 2

Parameter Estimates for Predicted Means for Lexical Measures and Accuracy of Written Language Samples of School Age Children (n = 907)

				Curve Fit	
Dependent Variable	Parameter	Estimate	SE	t value	p value
NDW	Intercept	11.34	6.45	1.76	.0793
	Slope	26.81	3.12	8.60	<.0001
	Quadratic	-1.90	0.34	-5.64	<.0001
NTW	Intercept	10.69	14.06	0.76	.4474
	Slope	54.36	6.79	8.00	<.0001
	Quadratic	-4.06	0.74	-5.52	<.0001
Errors of Grammar*	Intercept	0.038	0.004	10.23	<.0001
	Slope	-0.005	0.002	-2.76	.0060
	Quadratic	0.0003	0.0002	1.41	.1583
Errors of Spelling*	Intercept	0.166	0.007	24.79	<.0001
	Slope	-0.046	0.003	-14.08	<.0001
	Quadratic	0.003	0.0004	9.78	<.0001
Errors of Conventions*	Intercept	0.094	0.007	13.16	<.0001
	Slope	-0.13	0.003	-3.64	0.0003
	Quadratic	0.0006	0.0004	1.60	.1107

Note: SE is Standard Error. NDW = number of different words. NTW = total number of words. Errors are reported by proportion of errors to total number of words.

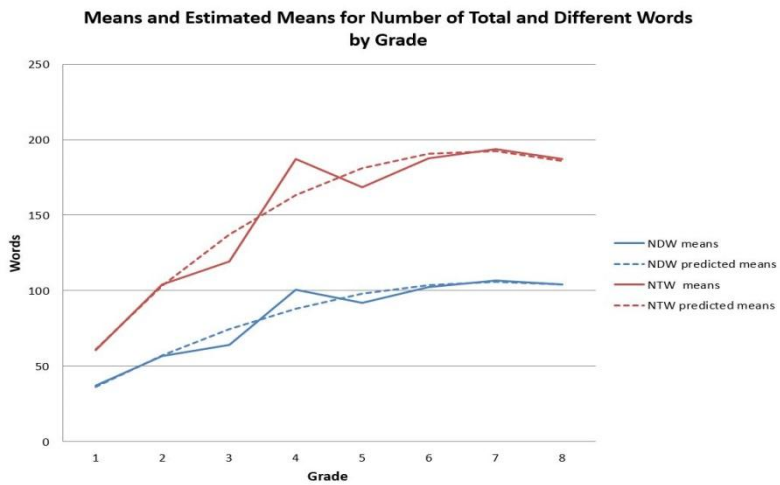

Figure 1. Means and predicted means for lexical productivity (number of total words) and lexical diversity (number of different words) are displayed across grades based on written personal narratives of school age children (n = 907). Number of total words (NTW) is displayed in red and number of different words (NDW) is represented in blue with solid lines for actual means and dotted lines for predicted or estimated means.

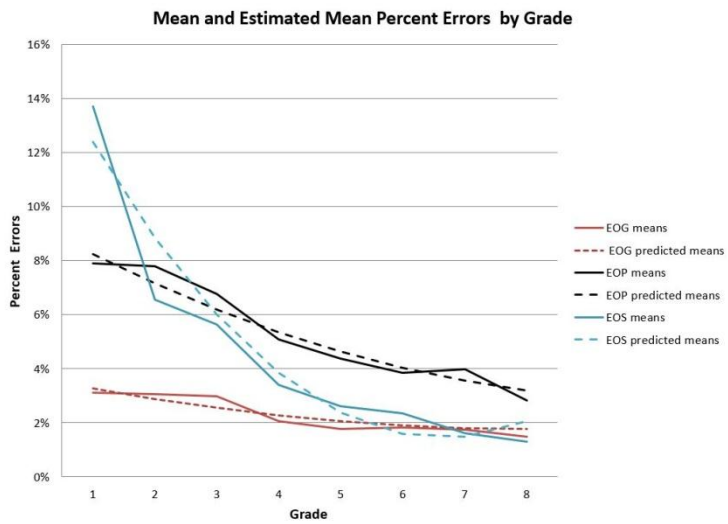

Figure 2. Means and predicted means for accuracy (proportion of errors to total words) are depicted across grades based on written personal narratives of school age children (n = 907). The rate of errors of grammar (EOG) are displayed in red; spelling (EOS) in blue; and errors of writing conventions or punctuation (EOP) are displayed in black.

To provide more information regarding the lexical measures scores across the range of the distribution, the average expected performance within each grade is presented for each decile. Table 3 provides the expected scores by percentile rank equivalents for 10th-90th percentiles based on the observed performance in NDW and NTW of the written language samples for grades 1st – 8th grade.

Table 3.
Percentile Rank Equivalents for Lexical Measures by Grade Based on Observed Performance of 907 School-Age Children on Written Personal Narrative Samples

	Percentile Rank Equivalents for Number of Different Words								
Grade	10th	20th	30th	40th	50th	60th	70th	80th	90th
First	17	23	25	28	33	35	42	52	58
Second	19	27	33	40	51	59	71	87	109
Third	30	38	47	49	60	72	78	84	108
Fourth	50	69	78	87	95	112	120	132	151
Fifth	41	58	70	85	91	99	108	119	132
Sixth	44	57	70	80	92	106	116	143	179
Seventh	47	61	78	94	103	113	123	140	179
Eighth	40	64	78	87	96	111	127	140	159
	Percentile Rank Equivalents for Total Number of Words								
Grade	10th	20th	30th	40th	50th	60th	70th	80th	90th
First	23	32	34	38	46	54	74	86	107
Second	20	40	51	63	92	115	139	164	215
Third	43	65	76	93	104	122	148	162	208
Fourth	83	117	130	160	177	207	228	257	295
Fifth	63	91	121	142	152	181	202	225	280
Sixth	62	89	113	139	159	184	223	282	343
Seventh	69	99	131	156	175	202	226	266	336
Eighth	67	104	134	154	174	200	225	266	301

Correlational analyses are provided to answer the second research question regarding the relationship between selected microstructural measures in written narratives and children's performance on statewide assessments. Separate Pearson correlations are provided by grade clusters due to the separate subtests given to lower and upper grades. For first and second grade students (refer to Table 4), moderately strong significant negative correlations were found between errors of spelling on written narrative samples and children's performance on the GMRT reading vocabulary subtest. In other words, high proportions of spelling errors in written samples were associated with children's low performance on tasks involving sounding out words on the reading vocabulary subtest of the GMRT. Similarly, lexical diversity or NDW was positively correlated with children's performance on the reading fluency subtest of the statewide assessment, as well as the reading vocabulary subtest of the GMRT. In contrast, errors of convention or punctuation were not significantly correlated to children's performance on statewide assessment subtests or the GMRT. The proportion of grammatical errors showed small negative correlations with lexical diversity and productivity in written samples but no significant relationship with statewide assessment subtests or the GMRT for children in first and second grade.

Table 4
Relationships Between Lexical Measures, Accuracy of Written Samples, and Standardized Tests for Participants in 1st -2nd Grade

	N	*Mean*	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1. Different Words	149	44.54	26.81	---	***.97***	***-.17****	***-.27****	***.-.11***	***.09***	***.38****	***.40****
2. Total Words	149	77.51	58.55	.97**	---	***-.18****	***-.27****	***-.10***	***.05***	***.35****	***.37****
3. Errors of Grammar	149	0.03	0.03	-.19*	-.20*	**---**	***.11***	***.17***	***-.12***	***-.14***	***-.12***
4. Errors of Spelling	149	0.10	0.09	-.18*	-.18*	.14	**---**	***.25****	***-.04***	***-.30****	***-.50****
5. Errors of Conventions	149	0.08	0.07	-.11	-.12	.18*	.23**	---	**-.14**	**-.00**	**-.08**
6. Vocabulary: FAIR	141	47.14	24.41	.10	.05	-.13	-.06	-.15	---	**.40****	**.22****
7. Reading Fluency: FAIR	124	77.41	29.87	.25**	.22**	-.13	-.21*	-.01	.42**	---	**.56****
8. Reading Vocab: GMRT	145	466.15	49.01	.31**	.25**	-.14	-.37**	-.09	.29**	.51**	---

Note:
**p<0.05, **p<0.01;* All values were rounded to the hundredth place.
Numbers in bold italics reflect the correlations before z scoring to remove the effects of grade.
Numbers in gray in the lower left area below the dashes represent the correlations between the z scores, after the influence of grade is removed.
GMRT = *Gates-MacGinitie Reading Test- Fourth Edition* (GMRT-4, MacGinitie & MacGinitie, 2006) Standard Scores
FAIR =Florida Assessments for Instruction in Reading Aligned to the Language Arts Florida Standards (Foorman et al., 2009).

For children in upper elementary and middle school, the proportion of errors in written language samples showed the moderately strong correlations with performance on standardized assessments as displayed in Table 5. More specifically, there was a moderately strong negative correlation between the frequency of grammatical errors (i.e. number of errors/total number of words) and students' performance on two subtests of the *FAIR*: Reading Comprehension and Word Analysis. In other words, students who demonstrated a high proportion of grammatical errors on their written language samples were more likely to show low performance in reading comprehension and word analysis. Similarly, there was a moderately strong negative correlation between errors of spelling and students' performance on Word Analysis (spelling), Maze (reading efficiency), and the GMRT-4 (reading vocabulary). Additionally, errors in writing conventions or punctuation showed a moderately strong negative correlation with students' performance on Word Analysis (spelling) and Maze (reading efficiency). Lexical measures of written samples (NDW, NTW) showed small but significant correlations with students' performance on standardized assessments.

Table 5
Relationships Between Lexical Measures, Accuracy of Written Samples, and Standardized Tests for Third-Eighth Grade Participants.

	N	*Mean*	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
1. Different Words	758	98.38	48.07	---	***.97***	***-.22***	***-.18***	***-.19***	***.27***	***.16***	***.27***	***.25***
2. Total Words	758	180.00	103.88	.97**	---	***-.18***	***-.16***	***-.18***	***.20***	***.10****	***.21***	***.19***
3. Errors of Grammar	758	0.02	0.02	-.19**	-.16**	---	***.24***	***.26***	***-.33***	***-.33***	***-.43***	***-.28***
4. Errors of Spelling	758	0.03	0.03	-.12**	-.12**	.19**	---	***.24***	***-.22***	***-.39***	***-.37***	***-.35***
5. Errors of Conventions	758	0.04	0.04	-.17**	-.14**	.24***	.25**	---	**-.27****	**-.34****	**-.44****	**-.25****
6. Reading Comp: FAIR	396	102.13	14.07	.25**	.19**	-.31**	-.18**	-.24**	---	**.44****	**.58****	**56****
7. Spelling: FAIR	370	103.28	13.89	.17**	.11*	-.31**	-.41**	-.34**	.42**	---	**.57****	**.44****
8. Reading Efficiency: FAIR	378	102.87	13.89	.23**	.17**	-.41**	-.34**	-.30**	.42**	.58**	---	.51**
9. Reading Vocab: GMRT	711	539.19	41.41	.21**	.15**	-.25**	.21**	.19**	.55**	.42**	.46**	---

Note:
**p<0.05, **p<0.01;* All values were rounded to the hundredth place.Numbers in bold italics reflect the correlations before z scoring to remove the effects of grade. Numbers in gray in the lower left area below the dashes represent the correlations between the z scores, after the influence of grade is removed.GMRT = *Gates-MacGinitie Reading Test- Fourth Edition* (GMRT-4, MacGinitie & MacGinitie, 2006) Standard Scores. FAIR =Florida Assessments for Instruction in Reading Aligned to the Language Arts Florida Standards (Foorman et al., 2009)

To further examine the variance in performance on standardized tests explained by selected written language measures, the results of regression models are provided in Table 6. With five written language measures included together as predictors (lexical measures and proportion of

accuracy), the model explained small to moderate amounts of variance (9%-30%) in performance on selected standardized assessments. As shown in Table 6, the proportion of errors in written samples appeared to explain more unique variance than lexical measures. For example, the proportion of spelling errors in the written sample accounted for approximately 10% of unique variance in Word Analysis (spelling) performance above and beyond other written language measures. Similarly the proportion of grammatical errors in the written sample explained approximately 12% of unique variance in performance on the Maze (reading efficiency) subtest.

Table 6
Summary of Regression Results for Written Language Sample Measures as Predictor Variables for Standardized Tests

				Unique Variance Explained				
Dependent Variable	R^2	F Value	P value	NDW	NTW	EOG	EOP	EOS
GMRT-4	0.16	F(5,850)=32.79	<.0001	0.05210	0.03946	0.02915	0.00852	0.03245
FAIR Reading Comprehension	0.20	F(5,390)=19.18	<.0001	0.06656	0.04031	0.05559	0.02530	0.00964
FAIR Spelling	0.30	F(5,364)=31.88	<.0001	0.02906	0.04211	0.06754	0.06964	0.09616
FAIR Reading Efficiency	0.32	F(5,372)=34.39	<.0001	0.05327	0.04217	0.11889	0.04171	0.06009
FAIR Reading Fluency	0.14	F(5,140) = 4.38	0.001	0.06200	0.01252	0.01764	0.00160	0.04140
FAIR Vocabulary	0.09	F(5,158)=3.06	0.0115	0.02132	0.02230	0.02499	0.01484	0.00488

Note:
GMRT-4 = *Gates-MacGinitie Reading Test- Fourth Edition* (GMRT-4, MacGinitie & MacGinitie, 2006) Standard ScoresFAIR =Florida Assessments for Instruction in Reading Aligned to the Language Arts Florida Standards (Foorman et al., 2009).

4. Conclusions and Discussion

The current study examined written narratives of a large sample of children to expand the existing literature base to provide resources for educators on expected distribution of performance and to further affirm the construct validity of using a written language sample as a developmental index across grades. Main effects for performance on lexical measures and accuracy by grade substantiate the construct validity of developmental indices of number of different words and number of total words. Additionally, the significant relationships between children's performance on lexical measures of written samples and statewide assessments further substantiates the utility of written narrative language samples for assessment and progress monitoring of language and literacy performance of school age children. Findings support the consideration of both lexical measures and proportion of errors (grammatical, spelling, and writing conventions) on written personal narratives as language and literacy performance indicators.

Findings of the current project substantiate the trends reported in previous studies, and extend to a broader range of grades. The upward trend in the number of total and different words across grades is consistent with several previous studies (Fey et al., 2004; Hall-Mills et al., 2014; Wagner et al., 2011. The observed grade level means for lexical measures in the current

study appeared to be somewhat higher than means reported in some of the previous studies (Hall-Mills et al., 2014). Based on the literature, this may be in part influenced by the writing topic used in the current project, in that it was an open-ended personal narrative on a familiar topic (Yu, 2009). Similarly, the trend for decreases in the percentage of errors across advanced grades found in the current study also substantiates trends reported by previous studies such as Wagner et al., (2011).

The significant relationship between written narrative measures and children's performance on standardized statewide assessments was not surprising considering the theoretical assumption that the skills tasked on the language and literacy assessments are interrelated and reflect underlying oral language skills that are intertwined with reading and written language skills (Mehta, Foorman, Branum-Martin, & Taylor, 2005; Storch & Whitehurst, 2002)). Although not surprising, this finding was thought to be an important in further validating the utility of written narrative measures as quantitative assessment tools for school age language and literacy performance indicators. Although at first glance, the proportion of errors in an open-ended written essay could be presumed to be a gross estimate of grammar and spelling skills; students' proportion of spelling errors in the written samples did show a moderately strong significant correlation to students' performance on the corresponding spelling subtest of the statewide assessment which further adds to the utility of written personal narratives.

4.1. Limitations

Results should be interpreted cautiously, given that only a single written sample was obtained from each participant. It cannot be assumed that the sample is representative of the students' typical language productivity, complexity, or accuracy. The authors acknowledge that a single sample can be influenced by uncontrolled variables such as communicative interactions that preceded the sample, time of day, motivation, fatigue, and interest in the topic or prompt. Additionally, the length of the written sample (measured by number of total words and number of sentences) may have been influenced by expectations of the parent administering the task (although no page length or time limits were imposed in the instructions). Despite the fact that the task was untimed, the students may have entrained to their teacher's typical expectations for classroom writing activities.

Frequency, type, or rate of errors is thought to be a gross estimate of accuracy but has notable limitations that should be taken into consideration when interpreting results. It is possible that percentage of spelling errors in an open-ended task may underestimate spelling difficulties since students have the option to self-select a different word if they do not know the spelling of a word. Additionally, it should be noted that deviations from Standard English were noted as "errors" despite the fact that some deviations may have represented typical dialectal variations of oral language that were evident in the student's written language as well (Whiteman, 1981). Another potential limitation in the utilized approach to quantifying errors, is that all errors within a category were weighted equally. Errors were not differentially scaled by type or severity. In other words, an occurrence of

a spelling error was counted as one spelling error regardless of type and nature. Children who inverted the order of two letters (e.g. greive instead of grieve) received the same "score" for a mis-spelled word as a child who may have presented an indiscernible approximation of a word characterized by multiple omissions and letter substitutions in the same word. Future studies may consider the use of a scaled point system for spelling error with a range of number assigned equivalent to the proximity to the Standard English spelling, or a categorization of spelling error type (e.g. phonological or orthographic) and crediting misspellings of foreign borrowings that do not follow typical rules (e.g. *ghost*, *chauffeur*) such as those scoring systems used in a recent study (Tops, Callens, Bijn, & Brysbaert, 2014).

4.2. Implications

Despite limitations, findings of the current study support the consideration of written personal narratives as valuable tools in language and literacy assessment due to their relationships with standardized assessments and statewide achievement tests. Specifically lexical measures (e.g. diversity and total number of words) and proportion of accuracy (grammar, spelling, and writing conventions) are thought to be valuable quantitative measures of language that may be useful for supporting assessment and guiding treatment goal selection. Percentile rank equivalents offered in the current findings are intended to be a useful reference for clinicians to provide additional informational resources when making diagnostic decisions.

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