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THE IMPACT OF INFLECTIONAL AWARENESS ON SYNTACTIC BOOTSTRAPPING AND FAST MAPPING OF NOVEL VERBS IN FILIPINO, ENGLISH, AND CHABACANO

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To utilize morphological cues for syntactic bootstrapping, language learners must recognize that inflectionally varying words are instances of the same word. Children who are exposed to languages with richer inflectional morphologies than English and Chabacano, such as Filipino, experience instances of inflectional variation often. Consequently, they may distinguish inflectionally varying words as instances of the same words at an earlier age than do learners of Chabacano and English. In this paper, Filipino-English- and Chabacano-English-speaking children aged 46-81 months were taught novel verbs in fast mapping tasks under two conditions: no inflectional variation, in which inflections did not vary between test and exposure (e.g. neps, neps*) and inflectional variation in which inflections alternated between exposure and testing (e.g.* neps, nepped*). This kind of procedure was aimed at examining the Filipino bilingual children's ability to fast map, their inflectional awareness and ability to use the syntactic bootstrapping mechanism to narrow down the referents of novel verbs, and their bootstrapping capability in relation to age and level of vocabulary development. Results revealed that the bilingual children were able to fast map the novel verbs presented to them in their two languages. They were also aware of the inflectional morphemes joined with the target novel verbs and used these as syntactic cues to narrow down the referents of novel verbs. This was indicated by the significant effect in the two conditions that were examined. There was also a significant difference in the performance between the Filipino-English- and Chabacano-English-speaking children, but the bootstrapping ability of the children did not correlate with age but related to the children's level of vocabulary development. These findings suggest that exposure to languages with richer morphologies can facilitate children's recognition of inflectional morphemes and enable them to break down the stem and the inflection.*

1. Introduction

This study takes the linguistic and psycholinguistic view and aims to explain how bilingual children in the Philippines are aware or not aware of inflectional variations at a stage (beginning at age three) they are presumed to already have knowledge of morphology and whether they are able to utilize this awareness as syntactic cues to bootstrap the meanings of novel verbs.

According to the Summer Institute of Linguistics (1996), the Philippines has 168 extant languages, and Chabacano and Filipino are two of them. This multiplicity is compounded by another second language, English. Children nowadays live in a very competitive world and parents believe that teaching them English at a very early age will also prepare them early to thrive in a competitive society. Thus, we find more and more children facing the need to speak not just their native tongue at home but another second

language – English. This acquisition of two languages like Filipino and English, or Chabacano and English in the case of the Zamboangueño children, is termed simultaneous bilingualism, and this is an area worth investigating, especially children as young as four years old not only because of the penury of studies in this field in the Philippines, but also because it is essential to determine what aspects of the languages the said bilingual children are aware of, what mechanisms they use to guide them in lexical acquisition, and at what particular stage they learn such language components.

Many theories and models have been offered to explain how children acquire language. Of particular interest is syntactic bootstrapping, a constraint or bias whose strength has not yet been fully established as an approach to early language acquisition and, therefore, more research has to be conducted to determine its usefulness and generalizability. Gleitman (1990) found that preschoolers learning a language normally can use syntactic cues to aid them in lexical mapping in structured situations. With syntactic bootstrapping, Gleitman asserts that the listener uses the syntactic frame and morphological markers including function morphemes (of which inflections are part) associated with a novel word to aid them in the identification of referents.

While a few have tested the viability of syntactic bootstrapping, others believe that it is a partial strategy, and thus, children must employ other means to solve the problems that arise from learning a language. Gleitman has revealed the limitations of syntactic bootstrapping. She has asserted that despite the evidence collected, the conclusions that can be drawn about the generality and pervasiveness of syntactic bootstrapping must be exceedingly tentative on various grounds. One is that no one has more than a glimmer of an idea about just how the verb lexicon is organized semantically, and as a result, we cannot be precise about the semantic information potential of the frame specifications (in relation to studies on verb frames like those of Naigles, 1996 & Naigles, et al., 1992). Another is there is only the most meager data concerning the orderliness and richness of the child's syntactic input. If this is the case, then there is a need to use syntactic bootstrapping in further research to discover its viability in language acquisition.

Another issue is that previous studies in syntactic bootstrapping have focused on syntactic frames (e.g. Naigles, 1996), word order, and phonology. Although performance accounts via bootstrapping have proliferated, most of them have dealt with nouns and verbs, and less on morphemes (Weissenborn & Hohle, 2001). Furthermore, there are few studies on bound morphemes like */-ing/, /-s/-es/, /-d/, /-ed/* for the present and past tenses/aspects making use of other languages aside from English. This is where Filipino and Chabacano come in. Filipino is one that is rich in bound morphemes not only for verbs but also for other forms. De Guzman (1978) argues that Filipino verbs have elaborate affixation. Reid (1987), on the other hand, points out that the syntax and morphology of Philippine languages are among the most complex in the world. This is true of Filipino but not of Chabacano. The latter, being a creole, has a very simple grammar and has fewer bound morphemes for verbs compared to Filipino and English. In fact, its verbs have no inflections like the English and Filipino to indicate present, past, or future actions or states. What it uses are separate particles to show aspects of verbs.

With the said differences, does the nature of Chabacano language matter in terms of developing inflectional awareness? Is the Filipino children's ability to use inflectional cues in bootstrapping the meanings of novel verbs affected? Do the Filipino children develop earlier morphological awareness than the Chabacano children inasmuch as their language is richer in bound morphemes and are exposed to these morphemes very early on?

This paper includes bilinguals because research has suggested that exposure to more than one language at an early age results in a heightened awareness of the arbitrary, phonological, and grammatical aspects of language. The first to have examined this was

Vygotsky (1962; 1975), later followed by Bialystok (1991), Ben Zeev (1977), Dash and Mishra (1992), Edwards and Christophersen (1988), Bruck and Genesee (1995), Campbell and Sais (1995), and Titone (1994).

In 1999, Cromdal conducted a study examining the metalinguistic ability in terms of the dual skill components outlined by Bialystok and Ryan (1985), and these were control of linguistic processing and analysis of linguistic knowledge. The results indicated that a high degree of bilinguality may enhance the development of linguistic analysis. Moreover, it was found that certain metalinguistic skills – especially control processing – were more readily applied in the subjects' weaker language. These results replicated previous findings on the advantages of bilingualism.

Next to the rationale of including Filipino and Chabacano is the reason for including morphology, specifically verb inflections. Inflectional morphemes have systematic distributional properties that make them ideally suited as potential cues to the identity of a referent (Gerken, Landau & Remez, 1990). For example, inflections have fixed positions relative to the syntactic class they mark (in English, inflections occur after stems). In addition, they are extremely frequent in speech. These properties could make inflectional morphemes salient to the children who are searching for patterns in the utterances that they hear. Yet, very little is known about children utilizing inflectional cues as aids to lexical acquisition.

As generally accepted, morphology is inherently part of syntax, which still has to be explored in the languages mentioned. Its importance cannot be undermined because it is part of the language that the child uses. Gerken, Golinkoff, Hirsh-Pasek, and Schweisguth (1992) argue that sensitivity to grammatical morphemes may contribute in important ways to the acquisition of syntax, and perhaps to the acquisition of L2. This claim will never be fully substantiated unless more research delving on this nature will be undertaken.

In 1984, Pinker wrote "that it appears to be common for unstressed closed-class morphemes not to be present in the earliest stages in the acquisition of languages." Thus, he said, as much as it would suit his purpose to claim that at Stage 1 children have latent control over morphemes whose presence defines the categorization of certain constituents, it does not seem to be tenable given the available evidence. Years after Pinker made that statement, evidence for children's sensitivity to grammatical morphemes became available. Examples are the work of Gerken and McIntosh (1993) and Gerken and Shady (1995) who, based on their findings, have suggested that toddlers may know some set of grammatical morphemes in English as well as their distributional properties prior to the time when they produce these morphemes. In fact, even earlier, Gelman and Taylor (1984) had already shown that children as young as 17 months are sensitive to the presence or absence of the morphemes such as "the" and "a" or its allomorph 'an" for signaling whether the modified noun should be interpreted as a proper noun or count noun. Thus, it was hypothesized that children would be sensitive to free standing morpheme like "the".

Golinkoff, Hirsh-Pasek, and Schweisguth (2001) conducted a study using the bound morpheme /-ing/. They compared toddlers' performance in three conditions: a correct morpheme condition /*-ing*/, an ungrammatical condition /*-ly*/, and a nonsense morpheme condition /-lu/. They discovered that children not yet producing grammatical morphemes in their own speech are indeed sensitive to them. They can discriminate grammatical morphemes that are used correctly from those used incorrectly and apparently recognize that a nonsense syllable is not a grammatical morpheme. Despite this evidence, we find that children learning English and other languages typically omit not just inflectional morphemes but also function morphemes in their spontaneous imitative speech, indicating that these cues may not be used in the earliest stages of language learning.

Related to the study of inflectional morphemes, Bedore and Leonard (2000) came out with a study on the effects of inflectional variation of verbs in English and Spanish. Their study was an answer to the call for more research on the use of bound morphemes by children in relation to syntactic bootstrapping. These inflectional morphemes are */-s/, /-d /-ed/* for present and past tenses, respectively. They showed that children who are exposed to languages with richer inflectional morphologies than English, such as Spanish, encounter instances of inflectional variation more often and, therefore, may learn to recognize inflections as instances of the same words than do children of English. In their study, three-year-old children participated, twenty for each language, and they were taught novel verbs in a fast mapping task under two conditions: no inflectional variation in which the inflections did not vary between exposure and testing (e.g. *neps – neps*) and inflectional variation in which inflections alternated between exposure and testing (e.g. *neps – nepped*). Results, however, revealed that children's scores were significantly higher in the no-variation condition (a condition where the inflectional morphology of the verbs in the testing were exactly the same as those presented in the exposure) than in the variation condition (inflectional morphemes in the testing alternated with those in the exposure). There were no significant differences between the performance of the language groups. The experimenters suggest that even children acquiring languages with relatively rich verbal inflectional paradigms may not be able to consistently parse stems and inflections to associate inflectionally varying forms.

The findings in Bedore and Leonard's (2000) study are a window for more research; thus, the present study is proposed to examine further children's knowledge of inflectional morphology, how they use these inflections as syntactic cues to bootstrap the meanings of novel verbs, and how the nature of languages (Filipino, English and Chabacano) influences it. In so doing, it will be possible to qualify in which situations the results obtained are applicable. Such a type of research is crucial because it has implications for language acquisition not just in L1 but also in L2.

This study considered Bedore and Leonard's (2000) results in their previous experiment and took up another investigation but this time including Filipino and Chabacano, which are extreme in terms of verb inflections. This study used different participants ranging in age (4, 5, and 6 years old) and who are simultaneous bilinguals. The experimental tasks are also different in that beginning with the warm-up, there is already an exposure to the novel verbs; nouns and verbs are different; and repetitions are employed in the testing phase to give children sufficient opportunity to respond to the tasks. The materials are also different. Because one of the questions has to do with whether recognition of inflectional morphemes relates with age and vocabulary learning, the mean length of utterance or MLU is also added.

2. Review of Literature, Problem and Conceptual Framework

Previous works on child language acquisition mention the cognitive and social capacities as the factors explaining what the child can do in each of the stages of language development, but the literature does not explicitly explain how the child does one thing at a particular stage. For example, assuming that children can hypothesize some appropriate set of concepts in a given situation, and they attempt to map speech segments onto those concepts, previous studies examined do not say how children determine which sound segment corresponds to which concept. Therefore, other theories must be looked into to account for not only what the children can do at a given time but also how children do it, and in relation to the just mentioned problem of assigning meanings to words a solution is proposed and it is that word meanings are learned by observing the real-world contingencies

of their use. The meaning of "rabbit" is learned by observing that it is uttered in the presence of rabbits. This theory goes back even to the days of John Locke who said:

> If we will observe how children learn languages, we will find that to make them understand what the names of simple ideas or substances stand for, people ordinarily show them the thing whereof they would have them the idea; and then repeat to them the name that stands for it, as "white," "sweet," "milk," "sugar," "cat," "dog". (Locke, 1690/1964, Book 3.IX.9)

While such is true as has been observed, it is not sufficient to explain the types of learning for different kinds of children. Gleitman (1990) enumerates some problems with this theory: (1) It fails to account for the fact that children with radically different exposure conditions (e.g. the blind and the sighted) acquire much the same meanings even with vision-related words; (2) Many verbs are used on the same events and only provide a perspective on an event (e.g. *chase* and *flee*); and (3) Many verbs differ only in the level of specificity at which they describe single events (e.g. *see, look, orient*). Furthermore, learning of verbs by observation of extralinguistic contexts seems to be especially problematic. Lederer, Gleitman, and Gleitman (1995) have shown that verbs used by mothers align poorly with ongoing events. Gentner (1982) also asserts that verbs standardly encode relational concepts, and the meaning the speaker has in mind is rarely accessible by observation alone.

To overcome the difficulties in the learning of verb meaning (about which the study is also concerned) it has been suggested that children use another important source of information: the systematic relationship between verb meaning and syntactic structure, a proposal known as syntactic bootstrapping (Landau & Gleitman, 1985; Gleitman, 1990; Gleitman & Gleitman, 1992; Naigles, 1990).

There are different kinds of bootstrapping proposed: prosodic and phonological bootstrapping, socio-pragmatic bootstrapping, semantic bootstrapping, and syntactic bootstrapping. The last type was tested in this paper.

2.1 Bootstrapping in general

There is a growing consensus that by the age of three children have acquired the basic phonological, morphosyntactic, and semantic regularities of the target language irrespective of the language or languages to be learned, and the language modality in which the learning takes place, i.e., spoken or signed language. Evidence is also accumulating that the stages for the major milestones of language development in the productive as well as in the receptive mode is by and large identical across languages (Jusczyk, 1997).

How is this learning or bootstrapping possible? The notion of bootstrapping implies that the child (on the basis of already existing knowledge and information processing capacities) can make use of specific types of information in the linguistic and non-linguistic input in order to determine the language-specific regularities which constitute the grammar and the lexicon of her native language (Weissenborne & Hohle, 2000). According to these researchers, there are four types of bootstrapping mechanisms, depending on the type of information which the child uses. These are (1) prosodic/phonological, (2) pragmatic, (3) semantic, and (4) syntactic bootstrapping.

2.2 Syntactic bootstrapping

The syntactic bootstrapping mechanism proposes that the child who understands the mapping rules for semantics onto syntax can use the observed syntactic structures as

evidence for deducing the meanings. Here, the learner observes the real-world situation and the structures in which various words appear in the speech of the caretakers. Such an approach can succeed because if the syntactic structures are truly correlated with the meanings, the range of structures will be informative for deducing which word goes with which concept (Gleitman, 1990).

In relation to verbs, the proposal of syntactic bootstrapping goes, thus: To overcome difficulties in the learning of verb meaning by observation, it has been suggested that children use another important source of information: the systematic relationship between verb meaning and syntactic structure (Laudau & Gleitman, 1985; Gleitman, 1990; Gleitman & Gleitman, 1992).

In English, knowledge of word order helps the child interpret what type of word it might be. For example, if the novel word "gorp" appears in a frame as "The 'gorp' eats cookies," then the child will know that an agent or subject must eat something, and that the most likely interpretation of "gorp" is that it is a noun. On the other hand, if "gorp" in a sentence such as "The dog 'gorped' the cookies" and it is preceded and followed by nouns, then it is most probable that "gorped" is a word that refers to the action that the dog performed on the cookies. Information of this type according to Golinkoff, Hirsh-Pasek, Cauley, & Gordon, 1987; Naigles, 1990; Naigles, Fowler, & Helm, 1992; Naigles & Kako, 1993 have been used throughout the preschool years.

With respect to verbs, syntactic bootstrapping holds that in the process of acquiring the meaning of a verb children will exploit the syntactic frame and/or morphological cues/markers (of which inflections are part) in which that verb appears, in addition to the extralinguistic scenes coincident with the verb's use (Landau & Gleitman, 1985; Gleitman, 1990). One reason that the syntactic information seems necessary for verb acquisition involves the plurality of interpretations allowed by the extralinguistic scene. For example, the child who hears "bring" while holding a doll and walking towards her parent could conjecture that "bring" refers to bringing, carrying, walking, holding, playing, or many other actions or relations. Syntactic frame may serve to constrain the set of possible interpretations for the verb learner because many frames and inflections have more or less specific semantic implications for the verbs that appear in them. In the above example, if the child heard, "Are you bringing me the doll?", the double object dative frame V NP NP suggests that bring is a verb of transfer, and thus eliminates the meanings of hold, carry, walk, and play from contention. In sum, according to Naigles, a major tenet of syntactic bootstrapping is that children will exploit correlations between syntax and verb semantics in verb acquisition.

What is the difference between semantic bootstrapping and syntactic bootstrapping? According to Gleitman (1990), the former mechanism deduces the structures from the word meanings that are antecedently acquired from the observation of events, while the latter deduces the form from the semantically relevant syntactic structures associated with a verb in the input utterances. It is possible that they operate in complementary fashion.

2.3 Prerequisites of bootstrapping

Gleitman (1990) holds that learners of any language should be able to employ bootstrapping strategies. However, for semantic or syntactic bootstrapping to work, several pieces need to be in place: (1) There must be stable semantic or syntactic relations, (2) Children must be able to parse the sentence so as to make the structural information available, (3) Children must know about the semantic/syntactic correlations, and (4) Children must apply this knowledge of correlations to perform bootstrapping.

The next question to ask is "Can children parse"? In order for syntactic bootstrapping to work, the learner has to be able to parse the sentence heard in order to

derive a syntactic analysis. Moreover, at least some of the mapping rules have to be in place; otherwise, the whole game is over. The discussion below provides the evidence supporting these claims.

It was generally believed that infants could divide up the sound wave into words but not into phrases. This perspective necessitated complex theories for how learners could derive phrasal categories from the initial word-like representations (Pinker, 1984). In retrospect, these ideas were somewhat probable. For one thing, there is evidence that infants are sensitive to such physical properties of the wave form as change in fundamental frequency, silent intervals, and syllabic length, all of which are universal markers of phrase boundaries (Cooper and Paccia-Cooper, 1980; Fernald, 1984; Klatt, 1975; Shreiber, 1987; Streeter, 1978). As Gleitman and Wanner (1982) pointed out, the physical correlates of word segmentation are far more subtle and less reliable. More generally, Gleitman and Wanner's reading of cross-linguistic facts about language learning led them to propose that infant's analysis of the wave form was a rudimentary phrase structure tree.

In a similar vein, Morgan and Newport (1981) and Morgan, Meier, and Newport (1987) showed in a series of artificial language-learning experiments that adults could learn phrase structure grammars if provided with phrase bracketing information but not if provided only with word-level information. This finding led these investigators to the same proposal as Gleitman and Wanner's about the child's initial representation of the input waveforms. Hirsh-Pasek, et al. (1987) and Juscyk, et al. (1988) showed that prelinguistic infants listen to maternal speech doctored so as to preserve phrase- and close-bounding information in preference to speech doctored so as to becloud this information.

The studies cited in prosodic and phonological bootstrapping are additional information that children can parse or segment words.

A crucial further requirement for the bootstrapping proposals is that the child understands the semantic values of the subcategorization frames. A child who recovers the meaning from observation and who is to infer the structures licensed for verbs in the linguistic contexts in which they are heard has to determine what semantic elements are implied by participation in these structures. As Jackendoff (1990) stresses, the burden of learning would certainly be lessened for a child in possession of such information. However, do learners actually have it? Striking evidence says that they do.

Golinkof, et al. (1987) developed a very useful paradigm for studying young children's comprehension. Essentially, they employed the preferential looking procedure designed by Spelke (1982) for studying infant perception. The child sees different scenes displayed on two video screens, one to the left, one to the right. The screens are accompanied by some speech stimulus. The mother wears a visor so that she cannot observe the videos and so cannot give hints to her child. Hidden observers are so positioned that they cannot observe the video, but they can observe which way the child is looking and for how long. It turns out that children look longer at the video that matches the speech input.

Much of the discussion on syntactic bootstrapping does not mention the use of morphosyntactic cues, but it has long been proposed that children use morphosyntactic information as one source of information in determining the referent of a novel word (Brown, 1958). This idea is currently captured in syntactic bootstrapping accounts, which propose that attention to syntactic frames, including morphological markers, narrows the possible referents of a new word. However, across languages the balance between attention to syntactic and morphological information may shift, depending on the nature of syntactic and morphological cues available to the learner. Language users tend to be most attentive to those cues that are used most frequently and provide reliable information (Bates & MacWhinney, 1987; Kail, 1989 cited in Bedore & Leonard, 2000). As a language, English is characterized by rigid word order and relatively impoverished morphology (de Viliers & de

Viliers, 1985; Miller, 1978; and O'Grady, Katamba, & Dobrovolsky, 1997). Word order cues available in syntactic frames may be relatively more useful to English-speaking children; they will know where to look for nouns and verbs within a sentence. However, English may be a poor test case for studying awareness of morphological information. Input to English speaking children often consists of bare stems, and even ambiguous words such as "call" and "drink" are likely to be inflected (Nelson, 1985). Moreover, many grammatical inflections are low in phonotactic substance, and thus may not be readily perceived and processed (Leonard, 1989; Slobin, 1985). Chabacano is somewhat similar to English in terms of the scarcity of inflectional morphology (in comparison to Filipino), but different in terms of word order because the former language has freer word order. In terms of phonotactic substance, no changes can be heard in the verb stems in the different aspects because separate particles are used to indicate the present, past and future actions. But why include these languages? The rationale for this is to determine whether indeed children using a language richer in bound morphemes have greater awareness of these morphemes than those using lesser inflectionally rich language.

A better test case for attention to morphology, according to Bedore and Leonard (2000), is Spanish, in which most words are morphologically marked, word order is freer, and arguments can be deleted. So compared to English, morphological cues may be more informative in Spanish than in English. Filipino is like Spanish, which is a morphologically rich language. De Guzman (1978) asserts that Filipino verbs have elaborate affixation. Reid (1987), as previously stated, also argues that the syntax and morphology of Filipino are among the most complex in the world. How is this so? Ramos and Bautista (1986) illustrate. First of all, Filipino verbs inflect for aspect, focus, and kind of action or mode. For aspects alone, there are five types, namely, infinitive (inf), perfective (perf), imperfective (imperf), contemplated (cont), and recent perfective (rec. perf). For focus, there are seven types, and these are the actor (AF), object (OF), directional (DF), instrumental (IF), benefactive (BF), locative (LF), and reason (RF). For basic modes or kinds of action, there are three: indicative, aptative, causative. Occasionally, if the functional load justifies it, also included are the reciprocal, intensive, distributive, associative, accidental, and involuntary modes. For example, the word *abot* (reach) when inflected can be *umabot* (inf), *umaabot* (imperf), *aabot* (cont), and *kaaabot* (rec. perf) for the indicative mode and actor focus. When it is the object focus, then the word changes to *abutin* (inf), *inabot* (perf), *inaabot* (imperf), and *aabutin*(cont). For the aptative mode with the actor as the focus, then *abot* changes to *makaabot*, *nakaaabot, makakaabot*, and *makaaabot*. For object focus, it becomes *maabot, naabot, naaabot*, and *maabot,* for the four types of aspects, respectively. For causative mode, on the other hand, then the stem *abot* changes to *magpaabot, nagpaabot, nagpapaabot, magpaabot, paabutin, pinaabot, pinapaabot, pinaaabot, papaabutin, and paabutin* for actor focus. For the object focus, the word *abot* changes to *ipaabot, ipinaabot, ipinapaabot*, and *ipapaabot* using the four aspects of verbs. Still other inflections could be seen in the word *abot*, like the *nagpangabot.*

Notice that other internal changes occur, and these are the addition of infixes and reduplications. Moreover, the bound morphemes used to indicate aspects are more phonetically audible and salient. Salience means they are syllabic and stressed. In line with stress, French (1988) points out that the stresses of a Filipino verb are organized around two parts: the prefix and the rest of the word. Stress needs to be assigned to the prefix separately from the rest of the word because stress in polysyllabic prefixes behaves independently from the stress in the stem. For example, in the word *makasama*, the stress remains on /ma/ of /*maka*/ regardless of the stress position in the stem. Furthermore, stress on the inflected prefix (reduplicated or infixed) seeks to retain the stress position of the uninflected (basic form) prefix just as the entire word maintains the primary stress of the verbal stem. An

uninflected prefix (e.g. */mag-/*) seeks to maintain prominence on the same syllable of prominence in its basic form.

For example, if an uninflected prefix has penultimate stress, that will shift to the right when the prefix undergoes reduplication so that penultimate prominence is retained relative to the entire prefix. If a prefix is both inflected and reduplicated, adding two extra syllables, the stress will shift two syllables to the right. For verbs, stress is assigned first to the stem, and then to the prefix if it exists. This salience may allow the Filipino children to perceive these bound morphemes more than the English speakers or, in the case of the Chabacano bilinguals, more than the latter. Below is a brief discussion of the fast mapping theory.

2.4 Fast mapping

Another approach to word learning that has been studied is initial word-referent mapping based on limited exposure. This is a process whereby children link, pair, or match the words to their referents, the latter of which are seen in their environment. This quick-learning process is often referred to as fast mapping (Carey, 1978). To give an example from Carey and Bartlett, when children hear "Bring me the beige one, not the blue one," they could realize that beige is an English word, that it refers to a property of an object, that it is a color word, and also know which color it names. Thus, by contrasting a novel term with a well-known term, one can provide an enormous amount of information about the meaning of a new term.

Heibeck and Markman (1987) expanded on this research in certain ways, obtaining some interesting results. First, even two-year olds can fast map new words. Second, fast mapping is not limited to color words; children can fast map shape and texture terms as well. Shape is the easiest to learn, while texture is the hardest, and color falls in between. Finally, explicit linguistic contrast (the Contrast assumption) is not necessary. Children do not need to hear something like "Bring me the chromium tray, not the blue one," in which the novel term is clearly contrasted with an existing color term; they do just as well if they hear "Bring me the chromium tray, not the other one."

Other fast mapping studies with normal language learners have shown that preschool children can form initial, partial representations of novel verbs in didactic teaching situations (Apel, Kamhi & Dollaghan, 1985; Dickinson, 1984; & Dollaghan, 1985, 1987). Furthermore, work by Rice and her colleagues (Oetting, Rice, & Swank, 1995; Rice, Buhr, & Nemeth, 1990) has demonstrated that children are able to form word-referent mappings when the new words are embedded in videotaped stories, a more natural learning situation. A recent study is that of Markson and Bloom (1997), which indicates that fast mapping is not limited to word learning but for learning facts as well.

While there are studies that prove the viability of fast mapping, especially those for the learning of adjectives and nouns, fewer studies have examined the fast mapping of verbs, and in the studies that have examined both object and action labels in the same fast mapping task, action labels often prove more difficult to fast map than object labels. Rice and Woodsmall (1988), for instance, showed 3- and 5-year old children videotapes of events which presented new object, action, and property labels in a story format. Word learning occurred at a significantly lower rate with action labels compared to object and property labels. Merriman, Marazita, and Jarvis (1993, 1995) similarly found a difference in favor of the fast mapping of object labels over action labels in studies with 4-year olds. Using a modification of the intermodal preferential looking paradigm (Golinkoff, Hirsh-Pasek, Cauley, & Gordon, 1987), children were asked to point at one of two simultaneously

presented videotapes. Either a novel and familiar objects were paired or a novel and familiar action. These pairs were accompanied by a novel noun or a novel verb, respectively.

Why does fast mapping occur? In fast mapping studies, it is up to the children to find a likely referent for a novel word. Although children appear to be capable of using social/pragmatic cues, they are not always available and, in any event, cannot solely aid children in deciding on the correct construal for the meaning of a novel word. To solve the problem of learning novel verbs, the fast mapping and syntactic bootstrapping (through the use of inflectional cues) are proposed as learning theories that guide the Filipino bilingual children in learning the novel verbs. The fast mapping theory will enable the children to link the novel terms with the action referents, and the syntactic bootstrapping mechanism will guide the children to parse the stems and the inflections, and use these inflectional/syntactic cues to narrow down the referents of novel verbs thereby disambiguating the meanings of novel verbs.

2.5 Morphology

Peters (1995) states that the morphosyntax of any language is the totality of those devices which can be used to express grammatical relations. These include not only word order but also morphemes, free or bound. It is with the acquisition of morphosyntax that a child's language progresses from a mere concatenation of lexical items to true "language". As has been pointed out, the present study had primarily concentrated on inflectional morphemes.

Although a great deal is known about children's acquisition of open-class morphemes and word order, much less is known about how they acquire the closed-class morphemes of which inflectional morphemes are part. The closed-class morphemes are also important for the expression of syntactic functions. These bits of language, whether free or bound, pose a particular problem to the learner of any language because in many languages, they have the tendency to be both short and unstressed, falling in the cracks between stressed syllables, which are both louder and carry fuller, more distinctive vowels. For these reasons, many of them are among the least salient components of a language – certainly less salient than open-class stems. So, the question of how children learn them very early on is a big question that invites many to research on.

Gaining full control of a grammatical morpheme entails mastering it both perceptually and productively. Consequently, children must learn at least three different kinds of perceptual information: what it sounds like, where in a sentence it is likely to occur, and what it is used for or what its syntactic functions are. From the point of view of production, children must learn which forms to use to achieve which functions.

By 20-24 months, when children are becoming aware of grammatical functors, they are well along in developing two major kinds of knowledge which will help them in this task. The first is their familiarity with the prosodic placement within an utterance of an open-class items, combined with their ability to recognize a growing number of open-class items even when embedded in these open-class items. Second, their expanding awareness of the sorts of functions language can accomplish leads them to look for the linguistic means to express these functions (cf. Slobin (1982, 1985b) for elaboration). Exactly how a given learner proceeds seems to vary, depending on an interaction between the prosodic and morphosyntactic characteristics of the language being learned.

At times and for some children, phonology acts as a kind of handle for getting hold of grammatical morphemes. At other times and for other children, it is the function or meaning of the morpheme that serves as the initial nucleus for collecting information about a

particular functor. In early acquisition, in general learners at this stage have not yet progressed at a syntax with fully recursive embedding.

2.6 Acquisition of grammatical morphemes

Bound morphemes are of two kinds: inflectional, which children are believed to begin to learn fairly early, and derivational, which are acquired later.

As compared with other languages such as Turkish, Finnish, and Eskimo, English has relatively few bound morphemes because most of its functors are free-standing particles, but in comparison to Filipino, the latter has more bound morphemes. Because most of the early work on acquisition was done in English, it was long thought that children's first productive combinations were of two words rather than two morphemes. Today, however, it is known that it is not the case particularly in agglutinative languages such as Turkish (Aksu-koc & Slobin, 1985) or West Greenlandic Eskimo (Fortesqcue & Lennert Olsen, 1992), even in less heavily morphological languages such as Japanese (Clancy, 1985, pp. 481-486), early combinations may consist of an open-class word or stem plus either an inflection or a free particle.

Cross-linguistically, derivational morphemes tend to occur closer to the root to which they are attached than do inflectional morphemes (e.g. Bybee, 1985). Schematically, this is represented as follows:

Inflections—derivations—root derivations—inflections

Moreover, researchers have found that the grammatical morphemes that children are first likely to combine productively are the more salient ones in the sense that they are (a) located in a prominent place as the end of a word, (b) can sometimes carry stress, or (c) have more easily identifiable semantic content. These early productive morphemes often include the equivalents of English pronouns and prepositions. Since the earliest productive bound morphemes tend to be those that occur on the ends (rather than in the middles) of words, we find inflections being combined before derivations. This has been found, for example, for Turkish (Aksu-koc & Slobin, 1985) and the other languages mentioned above including Mohawk (Mithun, 1989). The location of derivational affixes in the interior of a word, nearer the stem, is likely to render it harder to perceive and hence, to segment. One result of this can be that derivational affixes may actually be produced as early as, if not earlier than, inflectional ones, but only because they have been learned by rote as if they were part of the stem. This happens for instance, in Hungarian (MacWhinney, 1975a).

2.7 Inflectional morphemes

Inflections are those changes in a root word that indicate case, number, gender, person, mood, voice, tense, and aspect. Inflections do not affect the syntactic category of the root words. Compared with other languages, the inflectional morphology of English is superficially simple, and nearly all inflections are suffixes; there are relatively few of them, and their occurrence is controlled by rules of syntax (Miller, 1978).

An interesting and perhaps important characteristic of inflectional morphemes in English is the amount of homonymy that exists. Not only do the plural, possessive, and third person singular all utilize an identical set of allomorphs [/z/, /s/,and ∂z], the contracted forms of the copula *is* and the auxiliaries *is* and *has* also have the same phonological forms. This means that, except for the difference in the first word of the last line, there is no phonological distinction between these different forms. Such homonymy has two potential effects on the learner, one facilitative, the other not. On the one hand, it increases the frequency with which a given phonological sequence occurs. This may increase its perceptibility to the

learner and lead to early segmentation. On the other hand, having several morphemes "contained" within a single phonological sequence may make it more difficult for the learner to realize that it does not function in a unitary way. This may lead to delays in getting the form–function mappings sorted out.

Morphosyntactic information is by no means the only resource of information that young language learners use to narrow the referents of new words. Children must form a sufficiently detailed phonological representation of a new word to realize that it is unfamiliar and that they may need to identify its referent. When novel words are phonologically similar to known words, children are less likely to recognize that they are unfamiliar, according to Merriman and Schuster (1991). This is relevant to the question of inflectional variation because inflectionally varying pairs are phonologically similar to each other.

2.8 Mean length of utterance

It is often useful to have a metric which summarizes the overall syntactic development of the child. One of the best indicators of the overall productive development is the mean length of utterance (MLU) of the child's spontaneous utterances as measured in words and/or morphemes (Finnerty, 1995). Because MLU is strongly correlated to age in typically-developing children, the age predicted by the child's MLU can be used as basis for comparing linguistic development, comprehension, mental age, and other production variables.

In 1973, Brown established a language development scale based on MLU. Spontaneous language samples were studied, and ranges were established around MLU's of 1.75, 2.25, 2.75, 3.5, and 4.0, to characterize linguistic stages of development.

The Early Stages

The stages provide a framework within which to understand and predict the path that normal expressive language development usually takes, in terms of morphology and syntax (defined below). They are used extensively by speech-language pathologists when they perform a structural analysis of a sample of a child's spoken language. A structural analysis does not include a measure of a child's development in the area of the clarity of pronunciation of speech sounds. Such an analysis or assessment is done in addition to a structural analysis, and comprises a phonetic assessment of the speech sounds a child can produce, and a phonological assessment of the way those sounds are organized into speech patterns.

The sentences below illustrate how the morphemes are counted:

"He meets the unhappiest boys" is 1-sentence, it has 5-words, and 8-syllables, and it contains nine morphemes:

He	meet	s	the	Un	happi	est	boy	s
1	2	3	4	5	6	7	8	9

"The girl's mother slowly filled the bucket with water" is 1-sentence, it has 9-words, and 13-syllables, and it contains twelve morphemes.

The	girl	S	Mother	Slow	ly	Fill	Ed	the	bucket	with	Water
1	2	3	4	5	6	7	8	9	10	11	12

Between 15 and 30 months, children are expected to have MLUm's (mean length of utterance measured in morphemes) of about 1.75 morphemes. Their MLUm's gradually increase as they acquire more language. In Stage I, just after they have built up a 50-60 word vocabulary, children acquire the ability to produce the Stage I sentence types, outlined below. The column headed "communicative intent" includes examples of what the child might have said if they were mature enough to talk in full sentences.

Table 1. Stage I: Sentence types

Operations of reference	Examples	Communicative intent
Nomination	that car	That's a car.
Recurrence	More juice	There is more juice.
Negation – denial	no wee wee	I didn't do a wee wee.
Negation – rejection	no more	I don't want more.
Negation - non-existence	birdie go	The bird has gone.
Semantic Relations	Examples	Communicative Intent
Agent + Action	daddy kiss doggie bite	Daddy is kissing. The doggie is biting.
Action + Object	push truck give ball	Pushing the truck. Giving the ball.
Agent + Object	mummy 'puter man hat	Mummy (is at the) computer. The man (is wearing a) hat.
Action + Locative	go pool in bath	(We) are going (to the) pool. (I) am getting (in the) bath.
Entity + Locative	teddy car dolly bed	Teddy (is in the) car. Dolly (is on the) bed.
Possessor + Possession (object)	Daddy car. Baby toy.	Daddy's car. Baby's toy.
Entity + Attributive	water hot truck big	(The) water (is) hot. (The) truck (is) big.
Demonstrative + Entity	that train!	(Not this one.) (Not that one.)

As children's MLU increases, their capacity to learn to use grammatical structures of greater complexity also increases. They move from Stage I into Stage II, where they learn to use "/-ing/" endings on verbs, "in", "on", and "/-s/" plurals. They then proceed to Stages III and IV. The table below shows the first five stages.

Table 2. Brown's stages I to IV

Brown's stage	Age in months	Mean MLU	MLU range	Morphological structure	Examples
Stage I	15-30	1.75	1.5-2.0	Stage I sentence types	See above
Stage II	28-36	2.25	2.0-2.5	(1) Present progressive (/-ing/ endings on verbs)	it going, falling off
				(2) in	in box, pussy in
				(3) on	on tree, birdie on head
				(4) /-s/ plurals (regular plurals)	my cars, two ties
Stage III	36-42	2.75	2.5-3.0	(5) Irregular past tense	me fell down
				(6) /-s/ possessives	doggie's bone, mummy's hat
				(7) Uncontractible copula (the full form of the verb 'to be' when it is the only verb in a sentence	Are they there? Is she coming?
Stage IV	40-46	3.50	3.0-3.7	(8) Articles	a book, the book
				(9) Regular past tense (-ed endings on verbs)	she jumped, he laughed
				(10) Third person regular present tense	he swims, man brings
Stage V	42-52+	4.00	3.7-4.5	(11) Third person irregular	she has, he does
				(12) Uncontractible auxiliary (the full form of the verb 'to be' when it is an auxiliary verb in a sentence)	Are they swimming?
				(13) Contractible copula (the shortened form of the verb 'to be' when it is the only verb in a sentence	She's ready. They're here.
				(14) Contractible auxiliary (the shortened form of the verb 'to be' when it is an auxiliary verb in a sentence)	They're coming. He's going.

Studies on Syntactic Bootstrapping and Morphology

Bedore and Leonard (2000) noted that previous accounts of syntactic bootstrapping often center on syntactic frames and word order because research on bootstrapping has been concentrated on children acquiring English. However, morphological information is an integral part of syntactic bootstrapping. For instance, children as young as two-years old are

reported to use morphological cues to determine the form class. Below is a brief review of studies on the early acquisition of morphology.

Pinker (1984) wrote that, by and large, unstressed closed-class morphemes appeared to be very common not to be present in the earliest stages of acquisition of many languages, and so as much as it would suit his purpose to claim that at Stage I, children have latent control over the morphemes whose presence defines the categorization of certain constituents, it did not seem tenable, given the available evidence at that time. Years later, other researchers investigated this and came out with findings different from what Pinker wrote in 1984. The present study will review some of the available evidence for children's sensitivity to grammatical morphemes.

To begin with, there are a number of input cues that could signal grammatical categories for the learner. By way of example, there are distributional regularities such that certain words often appear at the beginning of phrase (e.g. verbs) and some at the end (e.g. nouns). There are also phonological regularities such that nouns generally have long durations and more syllables than verbs (Duriex & Gillis, 2000; Kelly 1992, 1996). Perhaps the most reliable cue for both segmentation into phrases and for identification of units, however, are grammatical morphemes. Morphemes as mentioned previously are either free or bound. They may assist in utterance segmentation and form class assignment because they are typically found with particular form classes. For example the grammatical morpheme "the" or "a" usually precedes nouns and sometimes adjectives and the endings */-ed/* or */-ing/* are associated with verbs. Aside from their complementary distribution, grammatical morphemes often appear in characteristic positions in the sentence. For example, in intransitive sentence frame, "the" usually commences noun phrases while /-ing/ tends to end the verb phrase. Thus, albeit grammatical morphemes are weakly stressed in the input, they can serve as reliable cues for both grammatical segmentation and identification. The question that remains is whether children can attend to these cues and can use them in the service of language development.

In 1996, Hirsh-Pasek and Golinkoff reported that 13- to 15-month olds know that when verbs and their objects appear in a sentence, they form a "package" that specifies events in the world. Hirsh-Pasek and Golinkoff presented infants with two different video events in the "intermodal preferential looking paradigm" (Golinkoff, Hirsh-Pasek, Cauley & Gordon 1987). On one screen, a woman was seen kissing a set of keys and holding a ball in the foreground. On the other screen, the same woman was seen kissing the ball and holding the keys in the foreground. The linguistic stimulus which came between the television was, "She's kissing the keys!" Children (especially girls) watched the screen that matched the stimulus more than the screen that did not match what they heard. Hence, even before children produce verbs they may expect that a verb somehow 'goes with" the object which follows in an utterance. This sensitivity to verbs suggests that toddlers may have early knowledge of the grammatical morphemes associated with verbs.

Brown (1957) already cited above as the first study (now a classic one) that investigated children's knowledge of syntax. It is cited the same as part of the studies on grammatical morphemes. To reiterate, he showed children someone performing a kneading action on a novel confetti-like substance. Children were asked to point to the correct part of the picture when the experimenter asked for "sib" or "sibbing". While Brown concluded that the participants were able to use the */-ing/* among others to find the correct item in the picture, children actually heard multiple sentences for each containing multiple cues to form class assignment. Consequently, it is not easy to determine precisely which aspect of the stimulus elicited children's responses. For instance, in the sentence used to request the novel action, children were asked, "Do you know how to sib?" and then "Can you find sibbing?" It is ultimately difficult to conclude that children found the action because the presence of the

/*-ing*/ morpheme in the second sentence (Golinkoff, Hirsh-Pasek, & Schweisguth, 2000).

Shipley, Gleitman and Smith (1969) took a different course in their exploration of whether young children were aware of grammatical morphemes. They asked whether children who were themselves holophrastic (one-word stage) or telegraphic speakers were also telegraphic learners. They asked whether children who did not include grammatical morphemes in their speech expect to hear grammatical morphemes or if they noticed whether the morphemes were present or absent in the input that they heard. Shipley et al. required children between the ages of 18 and 33 months to perform in an "act out" task in response to the three types of commands: (1) appropriate – with the obligatory grammatical morpheme (e.g., "Throw the ball!"), (2) omission – without the obligatory morphemes (e.g., "Throw ball!"), (3) nonsense – with nonsense syllables in the position in the utterance where the grammatical morphemes belonged (e.g. "Gor ronta ball!"). Interestingly, the results varied, depending on the language level of the children. Children in the holophrastic group carried out more commands when the commands omitted obligatory morphemes than when they included them. For those in the telegraphic group, the children carried out fewer commands when they omitted grammatical morphemes than when they included them. What is surprising, Shipley et al. noted, was that just those utterance types they themselves did not use were more effective as commands: the telegraphic children responded most readily to the well-formed sentences. Hence, these findings suggested something which most researchers had not considered in 1969 – the possibility that children were sensitive to grammatical morphemes even when they were not producing them. If these were true, then prior to the time when children produce grammatical morphemes in their own speech, they might be capable of using them for novel words to grammatical categories.

While this result is intriguing, there is an alternative explanation noted by the authors, and it is that perhaps children had not noted omissions or deformations of grammatical morphemes at all but just the way in which the prosody of the utterance was affected as a by-product of these changes. Further, these results raise the issue of why the effects were limited to the telegraphic speakers. Why were holophrastic children more willing to perform to telegraphic than to complete commands? Two possible interpretations of the findings are offered: Either children are not sensitive to grammatical morphemes until they are on the brink of producing them (the telegraphic speakers) or, the act-out task was simply too demanding for the youngest children. If the latter is true, then even the holophrastic speakers should show sensitivity to grammatical morphemes under other, simpler experimental conditions.

Much recent experimental research seems to favor the second alternative that even holophrastic speakers are sensitive to grammatical morphemes. Katz, Baker and Macnamara (1974) and Gelman and Taylor (1984) asked whether children not yet producing determiners reliably, are sensitive to the grammatical morpheme associated with the noun class. In English, common count nouns take an article (as in "The block"), while proper nouns (as in "Mary") do not. Gelman, Taylor and Katz, et al. found that children as young as 17 months of age were sensitive to this distinction, treating a novel word as a proper name when the article was omitted and as a common noun when the article was included. These findings, according to Golinkoff, Hirsh-Pasek and Schweisguth, are impressive because they turn on the child's detection of the presence or absence of an unstressed grammatical element (an article). Alternatively, it is also possible that children were responding in some way to the prosody of the test utterances.

The study of Gerken and her colleagues also indicates that young children are sensitive to grammatical morphemes. Gerken, Landau and Remez (1990) gave children whose MLU (mean length of utterance) ranged from 1.30 to 5 an elicited imitation task in which they were asked to repeat strings such as "Pete pushes the dog". Either the underlined

grammatical morpheme was replaced with nonsense (as in "Pete pusho na dog") or the content words were replaced by nonsense (as in "Pete bazed the fod"), or both were replaced by nonsense (as in "Pete bazo na dep"). The logic of this manipulation was as follows: If children omit grammatical morphemes because of a constraint on the complexity of their early productions, then grammatical morphemes which add grammatical complexity, would be good candidates for omission. If this is true, then grammatical morphemes should be omitted more than nonsense syllables in sentences where the grammatical morphemes were produced with same weak stress and in the same position, as in "Pete pusho na dog".

The results in Gerken et al.'s study suggested that children with low mean length of utterance (MLU) omitted more function morphemes than weakly stressed nonsense syllables. Such is an interesting finding because it is counterintuitive: One might think that failing to repeat a novel, low stressed syllable such as "na" would be more likely than failing to repeat a functor syllable (such as "the") that has been heard many times. This finding indicates that children do not omit functors in their speech because they fail to perceive them, but rather, they contribute to sentence complexity.

The studies on morphemes just presented suggest that children are sensitive to grammatical morphemes before they produce them. There is also data that suggests that somewhat older children, who are already producing some grammatical morphemes, are able to use grammatical morphemes to assign novel words to grammatical categories. Golinkoff, Schweisguth and Hirsh-Pasek (1992) created an ambiguous situation in which the children (mean age 32 months) could assign novel verbs to either the noun or verb class only on the basis of morphological and phrase structural information. For example, the experimenter moved a novel object up and down her arm as she talked. If a child was in the noun condition, she said, "Watch me fliffing!" Immediately following the demonstration three familiar objects and the novel object were arrayed on the floor. Children in the noun condition were asked "Do you see a fliff?" and "Can you give me fliff?" Children in the verb condition were asked "Can you show me how to fliff?" and "Can you show me fliffing?" Thus there was information – both at training and at test – for interpreting the newly offered word "fliff" as either a noun or a verb.

The results indicated that in the noun condition, children selected the novel objects 81% of the time and did not act the action. In the verb condition, children acted out the novel action 69% of the time. These data suggest that children do indeed detect grammatical morphemes in the input and that they can use morphemes to assign novel words to form classes after very few exposures.

Another study by Gerken and McIntosh (1993) and Gerken and Shady developed a picture pointing task to assess young children's awareness and use of grammatical morphemes. The rationale for their study is that children should be sensitive to the distributional properties of grammatical morphemes if they are to help them in segmentation and form class assignment. They chose to test distributional sensitivity by creating violations of the context in which grammatical morphemes can occur. Their logic was as follows: If children detect these violations, they should have the effect of disrupting sentence comprehension. Gerken and McIntosh created their stimuli like the one below:

1. Find the dog for me.
2. Find was dog for me.
3. Find gub dog for me.
4. Find dog for me.

Children were given all sentences. The first contained the correct grammatical morpheme ("the") in the expected position in the sentence and therefore represented a control. The second sentence, while containing an actual grammatical morpheme of English, used that morpheme inappropriately. The third sentence contained a nonsense morpheme in

the position where the determiner is usually found and the fourth sentence omitted the morpheme entirely. The said experimenters conducted two experiments. Children (mean age = 25 months) had as their task to point to the picture requested in a storybook with the four pictures on each page. Of much interest were those children who were not yet producing grammatical morphemes and so their MLUs were below 1.5. The results indicated that children made the greatest number of correct choices (86%) in the condition where the expected morpheme was included. The subjects may have noticed the absence of the obligatory grammatical morpheme in the fourth condition (75%), although this condition and the control condition were not statistically different. There was a significant difference between the control condition (86.5%) and the ungrammatical condition (56%), indicating that even children not yet producing morphemes are aware of the morphemes and expect them to be in certain places in the sentences. When 'was" – a verbal auxiliary – occupied the position in which "the" is ordinarily found, children's sentence processing is disrupted. Finally this finding must be coupled with the fact that response patterns were maximally disrupted by the presence of a nonsense word (39%), indicating that toddlers know which items are permissible grammatical morphemes as well as their privileges of occurrence.

The findings of Gerken and her colleagues indicate that toddlers may know some set of grammatical morphemes in English as well as their distributional properties prior to the time when they produce these morphemes.

Katz, et al. (1974) and Gelman and Taylor (1984) had shown that children as young as 17 months are sensitive to the presence or absence of free standing morphemes like "an", "a" and "the" for signaling whether the modified noun should be interpreted as a count noun or a proper name. Hence, there was reason to hypothesize that children would be sensitive to free standing morphemes like "the". However, the questions concerning acquisition of grammatical morpheme do not rest here. There are other questions that need to be answered. For example would children show a similar precocity with bound morphemes like /-ing/ which according to Golinkoff, Hirsh-Pasek and Schweisguth (2000) are possibly more difficult to detect because they are bound to a stem? Would similar results obtain with a morpheme that shares its position not with just one other form (as in the case of the determiner) but with a wide range of possible forms serving different functions like the third person singular /-s/, the null morpheme on the other persons, the past tense marker /-ed/, and the adverbial ending /ly/? Not too many studies have been conducted to answer these questions. To the best of the researcher's knowledge, only very few studies so far have been conducted that delve on bound morphemes. One study is that by Golinkoff, Hirsh-Pasek, and Schweisguth (2000). Their experiments were patterned after Gerken and McIntosh (1993) and Gerken and Shady (1995). They compared toddlers' performance under three conditions: a correct morpheme condition /*-ing*/, an ungrammatical morpheme condition /*-ly*/, and a nonsense morpheme condition /*-lu*/. In the control conditions, children heard familiar verb stems such as "dance" with the correct morphological ending, /ing/. In the ungrammatical condition, children heard that same verb accompanied by a possible morpheme of English /-ly/ which is not used on verbs. The study's ungrammatical condition did not hang on to the placement of the morpheme in the sentence. The adverbial morpheme -*ly*/ is in the correct position – at the end of a word – but is not used on verbs. In some ways, this provides an even more powerful test that young children are sensitive to bound morphology because if a disruption occurs in sentence comprehension, it is because a mismatch has been detected between the type of stem and type of morpheme. Finally, the nonsense condition, /-lu/, gives an opportunity to assess whether it is just familiarity with the bound morphemes that drives correct responses. The method they employed was a preferential looking paradigm in order not to tax the children so much since they were younger compared to those who participated in Gerken, et al.'s study.

The results showed that children not yet producing grammatical morphemes in their own speech are indeed sensitive to them. They can discriminate grammatical morphemes that are used correctly from those used incorrectly and can apparently recognize that a nonsense syllable is not grammatical morpheme. They also found that correct grammatical morphemes prompted more correct responses than nonsense syllables. The study also yielded more correct responses for the /*-ing*/ control condition than for the ungrammatical /-ly/ condition than for the nonsense syllable condition /*-lu*/.

The results gathered from Golinkoff, et al.'s study add to those found by Shipley et al. (1969) as well as those of Gerken and her colleagues (Gerken & McIntosh 1993); Gerken and Shady (1995).

In 2000 Bedore and Leonard came out with another study on bound morpheme. Their objective was to examine children's learning of novel words that were inflected differently at the time of testing versus the time of exposure. To do this, they manipulated the inflections that appear with a new word and compared groups of children whose native languages (English versus Spanish) differ in the degree to which inflectional variation occurs. English- and Spanish-speaking three-year olds participated in the study, 20 for each language group. They were taught novel verbs using a fast mapping task under two conditions: no-inflectional variation in which inflections did not vary between exposure and testing, and variation condition in which inflections alternated between exposure and testing (e.g. *nends*, *nended*). The results showed that children's scores were significantly higher in the no-inflectional variation condition than in the inflectional variation condition. There were no significant differences between the performance of the two language groups. The results in the no-variation condition confirmed past findings that young children are able to fast map verbs. When English- and Spanish-speaking children were exposed to and tested on the same form of the novel verb, they were readily able to demonstrate comprehension of the novel verb. On their own, however, these findings, according to Bedore and Leonard are inadequate to bolster for the use of morphological cues in the initial representation of a novel verb. Children did not have necessarily to process the morphological marker that the exposure and test words were the same. Further they argued that these results provide a baseline against which the findings for the inflectional condition can be interpreted. From the findings the experimenters inferred that young language learners are able to form a sufficiently detailed phonological representation of a novel verb after minimal exposure and test form. However, participants in this study did not appear to parse the stem and morphological marker to consistently associate the two forms of the novel verb presented during exposure and testing. It seems therefore that these findings are at odds with earlier claims that children use morphosyntactic cues as part of syntactic bootstrapping. It should be stated here that the assumption made by Bedore and Leonard at the beginning of their study was that a child must be aware of the morphemes if they are to be used as syntactic cues. Most researchers look at the productive use of morpheme as an indicator of development. Previous studies revealed that even at two years old, children are sensitive to bound morphemes. Bedore and Leonard expected the Spanish-speaking children are at an edge or greater advantage because they produce grammatical morphemes more consistently than their English-speaking counterparts. This factor, however, did not appear to facilitate the children's ability to recognize the novel verbs in the variation condition. According to the experimenters, it was observed that Spanish-speaking children aged 3-5 years were using some over-regularized forms. Tomasello (1992) argued that if Spanish-speaking children are recognizing linguistic knowledge at this age, it may be that earlier correct productions are based on learned forms. Thus, Tomasello said that it may be that for children acquiring Spanish, the period of acquisition of grammatical morphology may be drawn out and more closely resembles the time frame for children acquiring English. Moreover, he said, that in

this type of account, young children who are beginning to make use of tense-marked forms may not be completely aware of the morphological status of the inflectional marker.

It should be noted that the children who participated in Bedore and Leonard's (2000) experiment were at an age where they should be producing morphology productively. However, some of them who were already nearing four years did not reliably associate the inflectionally varying forms.

Children's response patterns in the latest study may reflect a conservative strategy used during initial representation of a new word, or they may reflect a more drawn-out period of morphological learning in which children rely for an extended period of time on lexically-based representations or word-specific inflectional paradigms. To further evaluate these possibilities, the researcher conducted a rather similar study using respondents of different age ranges with increased exposure. It must be remembered that it was hypothesized earlier that exposure to a relatively rich language facilitates awareness of morphological cues. Filipino, as stated earlier, is like Spanish and compared to English it is more inflectionally rich. As illustrated in the preceding pages, Filipino verbs undergo more morphological/inflectional changes than English and Chabacano. Table 3 below again shows a few examples.

Table 3. Samples of inflectional variations in English, Filipino, and Chabacano

Tense/ Aspect	English	Filipino	Chabacano
Present	She dances.	Sumasayaw siya.	Ta baila le.
		Nagsasayaw siya.	
	He is taking a bath.	Naliligo siya.	Ta baña le.
Past	Dan butchered the pig.	Kinatay ni Dan ang baboy.	Ya mata si Dan con el puerco.
	Dan butchered a pig.	Kumatay si Dan ng baboy.	
Future	She will dance.	Sasayaw siya.	Baila le.
	I will drive a car.	Magmamaneho ako ng kotse.	Maneha yo un kotse.
	I will drive the car.	Mamanehuhin ko ang kotse.	Maneha yo el kotse.

What are underlined in the table above are bound inflectional changes for verbs in English and Filipino and as can be seen, Filipino undergoes more changes. Chabacano, however, does not contain any change. The verbs are in their base form. To mark the aspects of verbs, this creole uses separate articles like *ya* and *ta*, which are preposed in front of verbs. To realize the proposition that Filipino is inflectionally richer than English and Chabacano, another example is offered here.

Take the case of the word *bukas* or in English open and in Chabacano *abre*. The Filipino word can have verb forms like *buksan, bumubukas, bimuksan, binukas, nagbukas, nagbubukas, nabubuksan, , magbukas, ipinambukas, and ipagbubukas,* where *-an, /-um/, /-in, /nag-/, na-, mag-,ipang-, and ipag-,* together with some repetitions of syllables or modifications are the bound morphological changes. English, on the other hand, has forms like opens, opening, and opened with */-s/*, */-ing/* and */-ed/* showing bound morphological changes. In contrast to Filipino and English, Chabacano has no change in the stem. The word *abre* is the same for all aspects.

It has been observed that children as young as two years old already produce infixes in Filipino, a type of bound morpheme that is more difficult to develop and, therefore, may

take a longer time to achieve. This is rare in English. The /–in/ in the word *ibinigay* is an instance of infix and it is in the nature of Filipino that infixes are inserted in the process of word formation. If infixes are more difficult to develop but apparent in the children's productions as young as three years old, then it is possible that these children have greater and earlier morphological awareness.

Aside from infixation, Filipino verbs undergo reduplication. It is a kind of "adjustment rule" (Carrier, 1979, p. 48) and belongs to a subcomponent of the lexicon which until now has been fully recognized.

If the mentioned bilinguals participated in this study, it would be possible to validate the assumption that a morphologically rich language does factor in the recognition of inflectional morphology. Now the question that comes in is why include Chabacano? Radford (1990) stated that young children's language productions provide no evidence of a determiner system or an inflectional system. Golinkoff and Hirsh-Pasek (1995) agreed, but not completely. They said one possibility is that Radford may be correct: the absence of these linguistic elements is what gives early speech its character. On the other hand, Radford may be wrong. Although these elements do not appear in speech, perhaps the child is sensitive to and aware of these systems in comprehension. This is in a way consistent with the results in Soja, Carey, and Spelke's (1991) study who found that English-speaking 2-year olds, who did not seem to have acquired count/mass grammar, distinguished objects from substances in a word extension task, suggesting a pre-linguistic ontological distinction. Given that Chabacano-English bilinguals have fewer bound morphemes in Chabacano, will this affect their performance on novel verbs with made-up inflectional morphemes for present and past tenses. Will their comprehension of the sentence be affected by this manipulation of inflectional morphemes? Such questions deserve to be investigated and this proposed study is the appropriate opportunity.

Conceptual Framework

Two major approaches to lexical acquisition that guided this study were syntactic bootstrapping and fast mapping. The reason for the use of syntactic bootstrapping is that this study focuses on the inflectional morphemes in Filipino, English and Chabacano. As stated earlier, inflectional morphemes are syntactic cues, and syntactic bootstrapping is the employment of these cues to determine whether the inflectionally varying words are instances of the same words and in the process use these morphemes to narrow down the referents of novel verbs. Therefore, no other theory is more appropriate to this study than syntactic bootstrapping. Using it is important not only to see the bilingual children's syntactic bootstrapping ability but also to verify the influence of Filipino, English and Chabacano on the children's inflectional awareness. Another approach to language acquisition that guided this study was phonological bootstrapping. For children to recognize that a speaker is using a new word requires attention to the phonological form of the word. Again morphosyntactic/inflectional cues can influence a child's decisions about whether a new word is being used. However, if they have knowledge or awareness of morphemes as children even younger than the participants in this study have been shown to have, then they must be able to use these inflectional morphemes for syntactic bootstrapping to decide that the action verbs inflectionally altered in the variation condition are instances of the same words in the no variation condition.

Third, mutual exclusivity principle was also invoked in the present study in addition to other assumptions and propositions on morphosyntactic development.

The fast mapping of word learning was used to see how the children could match or link the terms in the testing phase with those in the exposure with the aid of the syntactic bootstrapping mechanism.

According to Golinkoff, Hirsh-Pasek, and Schweisguth (2000), age influences recognition of inflectional morphology and they have pointed out that somewhat older children, already producing morphemes, are able to use grammatical morphemes to assign novel words to grammatical categories. Age also correlates with vocabulary development. In this study, the mean length of utterance indexes the children's vocabulary development. The language groups of this study are the Filipino-English (group 1) and Chabacano-English bilinguals (group 2) who range in age from 46-81 months or 4, 5, and 6 years old. Each language group is divided into three age groups: 4, 5, and 6 years old. This study posits that the older the child, the higher will be his/her mean length of utterance and the younger the child, the lower will be his/her mean length of utterance. For language backgrounds there are two for each group. For the first language group, these are Filipino and English while for the second these are Chabacano and English. Below is the conceptual diagram of this study.

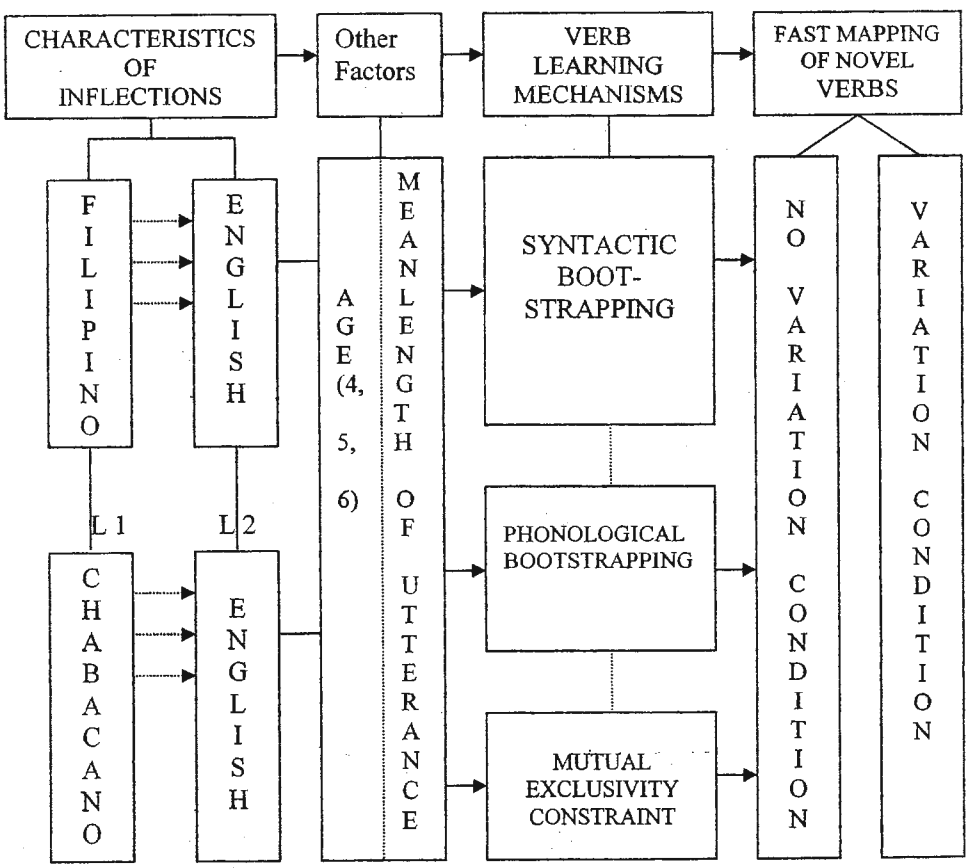

Figure 1. Conceptual Diagram

The first box in the left side of the diagram indicates the characteristics of the inflections of the languages examined. First, the languages are arranged according to L1 and L2, and since Filipino and Chabacano are the children's first languages, then they are placed before English, the latter of which is the subjects' L2. In order of inflectional complexity, however, Filipino, being the richest, comes before English for the Filipino-English bilinguals, whereas for Chabacano-English bilinguals, English should come before Chabacano. The broken lines connecting the L1 to L2 indicate the transfer of the children's language processing skills from L1 to L2.

Next to the characteristics of the languages' inflections are age and mean length of utterance or MLU. As can be seen in the diagram, age is juxtaposed to MLU, which suggests that age is parallel to the children's level of vocabulary development. Age and level of vocabulary development are included because they also factor in the children's utilization of the word learning mechanisms, namely, syntactic bootstrapping, phonological bootstrapping, mutual exclusivity constraint, and ultimately in fast mapping the novel verbs. Since Filipino is the richest in terms of inflectional morphology and children's language processing in this language may transfer to English, then it follows that the Filipino-English-speaking children will be better able to use the syntactic bootstrapping ability and consequently be better able to fast map the novel verbs in the no-inflectional variation and inflectional variation conditions than the Chabacano-English-speaking children. This greater ability is shown in the top to bottom positions of the languages in the diagram.

The syntactic bootstrapping mechanism is placed in a bigger box and higher than the other word learning mechanisms, and this is to emphasize the study's claim that syntax, specifically the morphological inflections of the languages, is an important source of information that guide the children in lexical acquisition. The phonological bootstrapping mechanisms and the principle of mutual exclusivity are smaller to signify that in cases where children fail to benefit from the syntactic information, they use these alternative sources to attempt to arrive at the meanings of novel verbs. The arrows connecting these mechanisms to the fast mapping results indicate the influence that these mechanisms can play in the acquisition of word meanings.

With regard to the fast mapping of novel verbs, the diagram again shows that the no-inflectional variation and inflectional variation conditions are placed side by side of equal size. This parallelism signifies that if the children have awareness of the inflectional morphemes attached to the novel verbs in their two languages and use these as part of syntactic bootstrapping to narrow down the referents of novel verbs, then they will have more or less the same results in both conditions. Below is the statement of the problem.

Statement of the Problem

In view of what has been discussed, the following questions are raised:

1. Are the Filipino-English- and Chabacano-English-speaking children aged 46-81months able to fast map novel verbs presented to them in the following languages: English and Filipino and English and Chabacano?
2. Are the Filipino-English and Chabacano-English-speaking children aware of the inflectional morphemes associated with the novel verbs in their languages?
3. Are the Filipino-English bilingual children more aware of the inflectional morphemes in their respective languages than the Chabacano-English bilingual children in their own languages?

4. Is the inflectional awareness of the Filipino-English-speaking children greater in Filipino than in English and the Chabacano-English-speaking children less in Chabacano than English?
5. Does their syntactic bootstrapping capability relate to age and level of vocabulary development?

Hypotheses

1. The Filipino-English- and Chabacano-English-speaking children aged 46-81 months are able to fast map novel verbs presented to them in English and Filipino and English and Chabacano.
2. The Filipino-English and Chabacano-English-speaking children are aware of the inflectional morphemes in their respective languages.
3. The Filipino-English bilinguals are more aware of the inflectional morphemes in their languages than the Chabacano-English bilinguals.
4. The inflectional awareness of the Filipino–English-speaking children is greater in Filipino than in English and the Chabacano-English children less in Chabacano than in English.
5. The bilingual children's syntactic bootstrapping capability relates to their age and level of vocabulary development.

Significance of the Study

The present study is significant for six reasons. First, the general problems stated have intrinsic importance affecting how a child processes a language and therefore has implications for child language acquisition and even for teaching.

Second, previous studies have turned up conflicting evidence on the use and awareness of morphology by children at a very early age, but results of the present study can yield important insights about the phenomenon being examined.

Third, the syntactic bootstrapping mechanism may be accepted in the field of child language acquisition but one that is so confined to a few linguistic components, as illustrated in the review and therefore so far little tested. Using it in further studies of which the present is one will give further proof to its use by children. The same may be said of fast mapping, a learning theory known in child language acquisition abroad but not commonplace to linguistic researchers in the Philippines.

Fourth, many studies have been conducted on bilingualism but with conflicting results, and most of these studies are not in the Philippine contexts. The language situations to which children in our country are exposed are so unique, and up to this time in the Philippines studies employing such situations have been too few. According to Gonzalez (1986), for a country composed of citizens with large families, the Philippines has surprisingly few scholars who have done significant research in child language acquisition and learning during the critical years before schooling and the first few years of schooling. This is still the case at present, and therefore warrants further research. This study is an answer to this call which may yield meaningful results that can augment the literature on child language acquisition and on bilingualism in the Philippines.

Fifth, Chabacano is a language that poses many challenges to researchers but seems to be unnoticed. Studying it further in the area of morphology may allow us to see whether its lack of inflectional morphemes affects children's awareness of inflections in a second language whether that is English or Filipino. The findings that may be obtained in such an

investigation can have important pedagogical implications for children in their early preschool years.

All the questions posited are important to be answered because their effects can play vital roles in language acquisition not just for L1 but also for L2.

Scope and Limitation

The present study has focused on the Filipino-English and Chabacano-English children's fast mapping ability and morphological awareness and how they use the latter as part of syntactic bootstrapping to narrow down the referents of novel verbs. In particular, the present study has centered on inflectional markers conjoined with action novel verbs. For English, the inflectional markers used were /-s/ for the present tense singular and */-d/-ed/* for the past tense form. For the plural verb in the present tense, no inflectional marker was used. For the Filipino language, the inflections */-um/* and */nag-/* were used for the perfective and contemplated aspects. For Chabacano, no inflectional marker was employed in the present action, while for the past, */-n/* and */-ba/* were utilized. Albeit included in the study, the familiar nouns and verbs were included simply to find out whether the subjects were attuned to the procedure of the tasks. The testing procedure in this experiment is referred to as comprehension test. The idea was drawn from the original study of fast mapping of Carey and Bartlett (1978). Other studies that make use of the same type of test (also called act out task) are Goodluck and Sloan (1978) and McDaniel, Mckee, and Cairns (1996) [cited in Lust, Flynn, Foley & Chien, 2002]. Comprehension, in the context of the present study, does not involve production but a showing of the action verb through puppets or dolls to show the meanings of the novel verbs. With respect to nouns, the children's comprehension involved pointing, holding or picking up of the object.

In general, the current investigation hinges on lexical and syntactic acquisition – two areas under child language acquisition.

3. Methodology

To explore the questions posited in the statement of the problem, experimental tasks were designed to determine how children fast map and how they utilize the morphological cues embedded in the novel verbs. With these tasks, children's recognition of a novel word independent of its morphological marking at the time of presentation would be seen. In this study, the child heard a novel word and the referent for the novel word was provided. Within a few minutes of presentation, the child's comprehension of the new word was tested. In the first study of fast mapping by Carey and Bartlett (1978), they called the testing procedure (pointing to the referent) comprehension. Again, comprehension here involved the demonstration of an action, not production. The motivation behind the selection of this task is that it provides a particularly stringent test of how children use morphological cues during their initial exposure to the novel word because exposure to the novel word was minimized. Only the information presented by the examiner was made available to interpret it. By manipulating the inflections that appeared with a novel word, we could verify if children recognized the stem of the novel word despite the inflectional change. By using Filipino and English and Chabacano and English on two language groups, the impact of language experience on the recognition of inflectional cues could be examined.

Participants

Thirty Filipino-English-speaking children who ranged in age from 46-81 months and thirty Chabacano-English-speaking children of the same ages participated in this study. The participants were divided into three age groups: 4, 5, and 6 years old. The rationale for selecting respondents of these ages was because in the study of Bedore and Leonard involving three-year olds, they did not find a significant difference between the English-speaking and Spanish-speaking children. If in their study no significant result was found in the three-year olds, the researcher of this study thought that perhaps at age four, significant difference could be found between the two groups of Filipino bilinguals. If not, then perhaps at five or later at six years old this significant difference could be seen. This is the first reason that drove the experimenter to select the three consecutive preschool ages. Another reason for selecting the three age groups was to determine whether with the one year or so gap there is an improvement in the way they use the syntactic bootstrapping and fast mapping of novel verbs.

The two language groups came from middle-income families. The number of children in the families ranged from 1-3. The parents are teachers, businessmen, bank employees, lawyers, accountants, physicians, and government and private employees.

The Filipino-English bilinguals were recruited from Manila schools such as St. Scholastica's College (7), Estrada Nursery Tutorial Center (6), Think and Try Educational Systems in Makati (15), Aurora A. Quezon Elementary School (1), and Kiddie Lab, Merville Parañaque (1). The Chabacano-English bilinguals from Zamboanga City, on the other hand, were selected from Ateneo de Zamboanga University Grade School Unit (10), Zamboanga Puericulture Kindergarten School (7), Hansel and Gretel Preparatory School (8), Mercedarian Preparatory School (1), Claret High School (1), Guided Knowledge Preschool (1), Tetuan Elementary School (1). One was not enrolled in any preparatory schools. For those schools that had only one subject, the child was recruited through referrals.

Selection Criteria

The selection criteria for the respondents were the following: children had to be 4-6 years old (46-81 months) who speak Filipino and English and Chabacano and English equally well, no speech defects and other gross auditory and visual problems, residents of Metro Manila (and of Zamboanga City for the Chabacano-English bilinguals), belong to at least middle-income families, Filipino citizens, and whose parents have Filipino (Chabacano for group 2) as their first language and English their second, and must not have stayed outside the country for more than six months. The amount of input given by the parents and other members of the family in contact with the children was also determined as this has direct bearing on the child's language competence. Most of these criteria for inclusion were indicated in the letter written to the directors/principals of the schools and to the parents of the children. The last two criteria were observed in the interview with the parents or in their absence, with the grandparents who live with the children. They were also reiterated in the interview to see whether they really paid attention to the qualifications stated in the letter.

Selection Process

The researcher first wrote to the directors/principals of the said preparatory schools and later to the parents of the selected children to ask for their permission to allow the pupils to participate in this study. The teachers of the pupils facilitated the distribution of the letters to the parents and the collection of the reply slips. For those who responded

positively, they were then contacted for a schedule of the interview and the experimental tasks of the children.

Before the conduct of the experimental tasks, the researcher first interviewed the parents to gather more information about their children. The interview was guided by background questionnaires that involved questions on the families' socio-economic status, the kinds of television programs their children watch, other languages spoken at home if any, how languages are used, whether they separate or use both simultaneously, and other language-related questions. These questions were part of the inclusion criteria.

The TV programs watched by the respondents are mostly similar. Examples of these are Cartoon Network shows such as *Tom and Gerry*, *Popeye*, *Powerpuff Girls*, and *Dexter's Lab*, *Justice League*, *Johnny Bravo*, *Looney Tunes*, *Beyblades* (most for boys), and *Bugs Bunny*. On the Nikelodeon Channel, the children often watch shows such as *Blue's Clues*, *Little Bill*, *Dora the Explorer*, and *Gullah Gullah Island*. All these programs are in English. On the local channels, children have been found to watch those cartoon shows on GMA and ABS-CBN and educational shows like *Epol-Apple*, *Mathtinik*, and others. Some children also watch teledramas, especially those shown at night. A few watch National Geographic Channel and Discovery Channel.

With respect to books, the respondents read almost the same books and majority of them are fairy tales. Examples of these are *Cinderella*, *Snow and the Seven Dwarves*, *Jack and the Bean Stalk*, and *Three Little Pigs*.

'ollection of Speech Samples

Sample speeches of the respondents were also tape recorded (40-60 minutes) during the play session with them to allow for the analysis of their individual mean length of utterance measured in terms of morphemes. To motivate them to talk, different kinds of toys and reading materials were shown. Virtually all of them spoke naturally upon seeing the toys. With regard to the reading materials, most of them were the children's own books which the researcher asked from the mother or the father to show. The researcher also told the children's stories to the participants. The children were attentive to these stories, and when asked to tell their own favorite stories, they did so happily. It was here where the children were so excited to pick out their favorite stories and books for narration. Some told stories from the movies and television programs they watched, and some spoke about their favorites like colors, favorite shows, toys, and what they did during their free time.

The sample speeches were transcribed using the transcription symbols of Schiffrin (1998), with a little modification. These are shown in Appendix P, together with the participants' transcripts. Brown (1973) suggested that 50 utterances are already sufficient to obtain a reliable measure of MLU. An utterance could be a complete sentence or a fragment separated by a pause, a falling intonation, or a release of breath at the end of a preposition. Based on this suggestion, 50 utterances were randomly sampled from the 40-60-minute speeches of the participants. To obtain the MLU per respondent, the number of morphemes was counted divided by 50 utterances. For example, if a child produced 210 morphemes out of the 50 utterances sampled, this number was then divided by 50, or 4.20 MLU.

To obtain the MLU, the following guidelines were set. First, fillers and disfluencies, except for the most complete forms, were not considered. Second, compound words, proper names, catenatives (*gonna*, *wanna*, *hafta*), diminutives, auxiliary verbs (including negatives), irregular plurals, and ritualized reduplications, were counted as single words. Third, possessive nouns, plural nouns, third person singular present tense verbs, regular past tense verbs, and present progressive verbs were counted as two morphemes. Fourth, imitation of the researcher's utterance was not counted as spontaneous utterance of

the participant. Finally, children with MLU falling below the standard rate for their age were not included in the analysis. Brown (1973) gave an MLU of 3.75- 4.50 for children aged 47 months and above. However, when the sample speeches were analyzed, all had MLUs corresponding to their ages. Moreover, subjects who did not respond to the tasks were not included in the experimental tasks.

Materials

The materials used in the experimental tasks are given below.For the pilot tests, 25 labels for familiar and novel nouns and verbs were used in three languages, namely, English, Filipino, and Chabacano. The labels were invented but had to conform to the sounds of each language. For example, no label was included in English containing three consonant clusters *ngwe*. They had to conform to the syllable patterns of each language examined. Some of the labels had to be in the past and some in the present tense as these were the instances of novel words on which they will be tested. In addition to this, the number of syllables in each of the three languages was also considered. For English, the worded labels for the novel terms should not go beyond two. For Filipino, they had to be in the perfective and imperfective aspects but polysyllabic, it being the nature of Filipino and children are exposed to it in their early acquisition of languages. For Chabacano, the novel verb labels had to be those expressing present and past actions. The novel verb labels were a mixture of two to three syllables.

With regard to the children's background information, two sets of questionnaires – one for the socio-economic status and the other for the language background of the children – were utilized. These were also pilot-tested with four children before they were formally used with the respondents of this study. For the fast mapping tasks, the scripts were used, and to record the scores of the respondents, a scoring sheet for each language was devised. The scoring of the participants' responses adhered to a set of criteria, and they are the following: (1) The familiar object would be scored correct (✓) if it was identified correctly, i.e. if the child held it or pointed to it and no other object. (2) The familiar and named novel action would also be marked correct (✓) if the child demonstrated the action employing any of the puppets or dolls on the table. If the child used any of the puppets or dolls other than the one used in the exposure to demonstrate the action, the information would be coded in the response sheet. (3) Any other responses would be marked incorrect (X). Below are the other materials and verbs utilized in the study.

English

Familiar Objects	Novel Objects
1. Spoon	1. Ripper
2. Bicycle	2. Sunglass Keeper
3. Motorcycle	3. Needle Threader
4. Book	4. HP Printer Cartridge
5. Drum (musical instrument)	5. Ear Plugs
6. Box	6. Metal Cuticle Remover

Novel Verbs

1. Neps. (Head bent to the left, right hand half raised, puppet shakes its head)
2. Pended. (Baby puppet sways his hands at his back)
3. Glorks. (Mounted on a scate board, body bent to the right

4. Bunkled. (Two dolls, Robin and Woody, rise on the floor with Woody riding on Robin's back. Robin's hands are spread and pointed on the floor)
5. Splirks. (With an open mouth, rat puppet brings its left hand to it and shakes it)
6. Twinded. (Batman does forward bending of his wings)

Filipino and Chabacano

Familiar Objects	Novel Objects
1. Bola (Ball)	1. Fingertip Moistener
2. Telepono(Telephone)	2. Magic Clipper
3. Lapis (Pencil)	3. Magnetic Clip Box
4. Kotse (Car)	4. Tox
5. Tinidor (Fork)	5. Metal Bookmarker (of Japanese design)
6. Baso (Drinking Glass)	6. Toothpaste Squeezer

Novel Verbs
1. Tumatalimpak (Rubberized doll holds feet in each of his hands upwards, and then moves backward)
2. Nagwayway siya! (Doll bent, face up and left foot touches the head)
3. Gumugulod (Puppet swings both unusually long arms in a pendulum motion)
4. Nagsurakan (Two puppets seemingly fighting with their heads and their mouths doing a sort of spinning)
5. Humahapak (Puppet glides right foot with the left hand holding the left foot upwards)
6. Naglitab (Doll does a hamstring stretch)

Chabacano Novel Verbs (Same actions and materials as those in Filipino)
1. Ta trota le.
2. Ya atroman
3. Ta graye le.
4. Yan derigan sila.
5. Ta brusa
6. Ya gocen le.

For Filipino, two morphemes were selected for the experiment: */-um/* and */nag-/* with reduplication and infixation to express the perfective and imperfective aspects and actor focus. For Chabacano the invented inflectional morphemes were */-n/* and */-ba/*, both used to express the past actions. For the present aspect, no inflection was used. The verbs remained as they were or in their null or base form. This is similar to the case of English where the subject is plural (e.g. The children play). For English, the */-s/-es/* (for present) and */-d/-ed/* (for past) inflectional markers were used. No irregular verbs were included for the novel action words. The distribution of inflections was counterbalanced across exposure and testing conditions.

The said inflectional morphemes were selected because these are representative of the types of inflections children might hear when they are exposed to the novel verbs. Another reason is that these are the types of inflectional morphemes children usually hear, except in the case of the Chabacano respondents where the inflectional morphemes were fabricated. For the inflectional morphemes, only tense/aspect varied to minimize the contextual clues available to the child. The changes in tense/aspect required some

modifications of the script. For example, for introducing the simple past action, the sentence frame was "Watch! He nepped. Did you see how he nepped?"

Both familiar and unfamiliar objects and verbs were included in the experiments. For the verbs, the sentences were presented in the intransitive frame in order to focus the child's attention on the verb. The props needed to act out the action were puppets and dolls with movable parts. The items for English had to be different from the two languages mentioned to avoid monotony and to eliminate the possibility of establishing a pattern for the answer. Familiar and novel verbs were paired so that they would be different from the other words that were presented in the series of sessions. The assignment of foil items was also counterbalanced to ensure that they were tapped an equal number of times in the two conditions mentioned.

The unnamed novel action, the familiar action, the unnamed novel object, and the familiar object served as foils to reduce the child's reliance on pragmatic and lexical cues to solve the fast mapping problem. In the exposure phase, the familiar object and action were presented and named to prevent the child from attending solely to the named novel verb. A novel action and a novel object were shown but not named in the exposure phase. The logic for this is that if the child judged the novel verb heard during presentation and testing did not match, the unnamed action could be interpreted as a referent for the novel verb during testing. Pragmatic and lexical information, however, would point towards a verb interpretation. However, if the child recognized that the target novel word was a verb, the novel object was available as a referent.

The novel verbs chosen for this study conformed to the phonotactic patterns of English, Filipino, and Chabacano. This should facilitate the children's processing of the words (Gathercole & Baddley, 1990). The verbs and nouns ranged from monosyllabic to polysyllabic in their citation forms, with the exception of Filipino as the words used with children are most often bisyllabic or polysyllabic, especially with verbs. The Chabacano-English group had the same items as the Filipino-English group. The Filipino items were translated into Chabacano. The English terms remained.

To reiterate, the Filipino verbs had the /*-um*/ and /*nag-*/ inflections for the aspect with some infixal changes and reduplications depending on the words used. The English had /*-s*/ and /*-d*/*-ed*/ inflections for the tenses. For Chabacano /*-n*/ and /*-ba*/ were used to express past action). The assignment of verbs in the two conditions was counterbalanced to make sure they were used an equal number of times in the no-variation and variation conditions.

The experimenter conducted all the experimental sessions for both types of bilinguals. She is a native speaker of Chabacano with English and Filipino as her second languages. The experimental tasks were mostly done at the residences of the respondents. The researcher specifically informed the parents of the children that there should be no distractions that would interfere with the child's performance. Nor should they be allowed to coach or repeat the terms uttered by the experimenter.

Design of the Experimental Tasks

It should be noted that before the items were chosen, the researcher conducted pilot tests with the Filipino-English and Chabacano-English children to find out whether the terms were indeed familiar and novel. For the Filipino-English respondents, 22 were interviewed on the English terms, whereas for the Filipino labels, 26 responded. The Chabacano-English group, on the other hand, had 22 interviewees for both the English and Chabacano labels. Twenty-five labels were included for each of the categories: familiar objects, familiar verbs, and novel verbs. Only the English language had a category for novel objects since only 12 were to be used in the experimental tasks. There was no need to balance this inclusion in the

remaining two local languages – Filipino and Chabacano – since the novel objects were not to be labeled during the exposure just like the unnamed novel actions. Those novel objects sampled under the English labels were sufficient. To reiterate, the novel objects were included to serve as foils to reduce the clues to the novel verbs, the latter of which were the main concern of the study.

Moreover, the experimental tasks were an implicit measure of the children's ability to use fast mapping and syntactic bootstrapping and can be said to be an indirect gauge of morphological awareness.

Procedure

Each participant was exposed to six novel verbs in each language over the course of four sessions scheduled in one day. In the first session, the researcher secured a background information from parents about their children. This was followed by a getting-to-know session with the child and a collection of his/her speech sample (free-flowing). The second session commenced with a warm-up activity to familiarize the participants with the nature of the tasks. Here, they were shown puppets and dolls performing familiar and novel actions, and then asked to demonstrate them. After such warm-up, the exposure phase began, and this consisted of presentations of five different items: (1) familiar object (e.g. spoon), (2) familiar action verb (e.g., slides), (3) target novel verb (e.g. *neps*), (4) unnamed novel verb (no word given, just a demonstration of another novel action, and (5) novel object (e.g. ripper). See Table 4 below for an illustration of the first set in English and Filipino.

Table 4. Sample script for the English and Filipino exposure and testing procedure

ENGLISH	FILIPINO
EXPOSURE	
1.	
Look, here's a spoon. (Experimenter holds the spoon on the on table) Now, I have a spoon. (After few seconds, the experimenter gets the spoon and shows it to child)	*Tingnan mo, may bola dito.* (Experimenter holds the ball on on the table) *Ngayon mayroon akong bola.* (After few seconds, the experimenter gets the ball and shows it to the child)
Look! He slides. (Experimenter demonstrates the action with the doll and utters the sentence.) Now, watch how he slides.	*Tingnan mo! Lumulukso siya.* (Experimenter demonstrates the action with the doll and utters the sentence at the at the same time.) *Ngayon, tingnan mo kung paano siyalumulukso.*
(Experimenter again demonstrates the action with the doll and utters the sentence for the second time.)	(Experimenter demonstrates the action with with the doll and utters the sentence for the second time.)
Look! He neps. (Bent to the left.	Tingnan mo! Tumatalimpak siya.

Puppet shakes its head.)	(Rubberized doll holds feet upwards in each of her hands, and then moves backward)
(Experimenter performs the action with a puppet and at the same time utters the sentence.) Watch how he neps.	(Experimenter performs the action with the with the doll and at the same time utters the sentence) *Ngayon, tingnan mo kung paano siya tumatalimpak.*
(Experimenter performs the action with a puppet and utters the sentence for the second time.) Watch what he does. (Magnetic McDonald rolls upside down inside two metal bars with legs folded) (Experimenter again demonstrates the action to the child with the material but this time does not label the novel verbs.)	(Experimenter performs the action with a doll and utters the sentence for a second time.) *Tingnan mo kung anong ginagawa niya.* (Doll bent on the floor and face down raises its feet.) (Experimenter again demonstrates the action with the material to the child but this time does not label the novel verb.
Now look what he does. (Experimenter performs the action to the child for the second time)	*Ngayon, tingnan mo kung anong ginagawa niya.* (Experimenter performs the action to the child for the second time.)
Look at this one. (ripper for clothes) (Experimenter holds the ripper on the table) Now I have it. (After few seconds, experimenter gets the ripper and shows it to the child.)	*Ay! Tingnan mo ito.* (fingertip moistener) (Experimenter holds the fingertip moistener on the table) *Ngayon nasa akin na ito.* (After few seconds, the experimenter gets the fingertip moistener and shows it to the child.)

TESTING

Here, the experimenter repeated each item twice to give the participant time to process the requests. When the experimenter asked the child to show each of the items, the child was expected to point, pick, or touch the object if it was a concrete noun that was requested, or demonstrate the action using the puppet/doll used in the exposure if it is a verb that was asked for.

Array: dolls, puppet, spoon, and ripper

No Variation Show me:	Variation Show me:
Spoon	Spoon
Slides	Slides
Neps	*Nepped*

Array: *bola* (ball), transparent fingertip moistener, two puppets and one doll

No Variation	Variation
Ipakita mo sa akin ang:	*Ipakita mo ang:*
Bola	Bola
Lumulukso	Lumulukso
Tumatalimpak	Tumalimpak

After the exposure, the child was tested on three different items: familiar object, familiar action, and target novel verb. The test was in the form of demonstration using puppets/dolls. Next, the child was given a 10-minute play break before the presentation of the second novel verb together with the other four items. Each session therefore consisted of two fast mappings. In the remaining sessions, the same procedure was followed. Since the participants of the study were tested on two languages, the sessions in each language were scheduled two days apart.

The administration of the experimental tasks differed slightly for the two language groups. For the Chabacano-English bilinguals the first 15 respondents were given the English experimental tasks first, whereas the remaining 15 were given the Chabacano experimental tasks first. The same procedure was followed for the English-English bilinguals. Only the L2 changed; instead of Chabacano, the tasks were in Filipino.

Table 5 below gives a sample script of the fast mapping procedure in English and Chabacano for the first set of five items. The items that were used with the Filipino-English-speaking children were the same items used with the Chabacano-English-speaking children.

Table 5. Sample script for Chabacano and English exposure and testing procedure

ENGLISH	CHABACANO
Exposure	
1. Look, here's a spoon. (Experimenter holds the spoon on the table)	*Mira tu, tiene qui bola.* (Experimenter holds the ball on the table)
(After few seconds, experimenter gets the spoon and shows it to the child).	(After few seconds, the experimenter gets the ball and shows it to the child.)
Now, I have a spoon.	*Ara, tiene yo bola.*
Look! He slides. (Experimenter demonstrates the doll and utters the Sentence:	*Mira tu! Ta brinca le.* (Experimenter demonstrates the action with a a doll and says the sentence:
Now, watch how he slides. (Experimenter demonstrates the action with a doll and utters the for the second time.)	*Ara, mira tu paquemodo le ta brinca.* (Experimenter demonstrates the action with a doll and utters the sentence for the second time.)
Look! He neps. (Bent to the left, puppet shakes its head.)	*Mira tu! Ta trota le.* (Rubberized doll holds feet upwards in each of her hands and then moves backward)
(Experimenter performs the action with a puppet at the same time utters the sentence.)	(Experimenter performs the action with a doll at the same time utters the sentence.)
Watch how he neps. (Experimenter performs the action with the puppet and utters the sentence for the second time).	*Ara, mira tu paquemodo le ta trota.* (Experimenter performs the action with a doll and utters the sentence for the second time).

Watch what he does. (Magnetic McDonald rolls upside down inside two metal bars with legs folded)	*Mira tu cosa le ta hace.* (Doll bent on the floor, face down and raises its feet)
(Experimenter again demonstrates the action with the material to the child but this time does not label the novel verb.)	(Experimenter again demonstrates the action to the child but this time does not label the novel verb.)
Now look what he does. (Experimenter performs the action to the child for the second time)	*Ara mira tu cosa le ta hace.* (Experimenter performs the action to the child for the second time).
Look at this one. (Ripper for clothes) (Experimenter holds the ripper on the on the table).	*Mira tu con este.* (fingertip moistener) (Experimenter holds the fingertip moistener on the table).
Now I have it. (After few seconds, the experimenter gets the ripper and shows it to the child.)	*Ara taqui este comigo.* (After few seconds, the experimenter gets the fingertip moistener and shows it to the child.)

TESTING

Here, the experimenter repeated each item twice to give the participant time to process the requests. When the experimenter asked the child to show each of the items, the child was expected to point, pick, or touch the object if it was a concrete noun that was requested, or demonstrate the action using the puppet/doll used in the exposure if it was a verb that was requested.

Array: dolls, puppet, spoon, and ripper		Array: bola (ball), transparent fingertip moistener, two puppets and one doll	
ENGLISH		CHABACACANO	
No Variation	Variation	No Variation	Variation
Show me:	Show me:	*Dale tu comigo mira*:	*Dale tu comigo mira*:
Spoon	Spoon	*Bola*	*Bola*
Slides	Slides	*Ta Brinca*	*Ta Brinca*
Neps	*Nepped*	*Ta Trota*	*Ya trotaba*

The experimental tasks consisted of six novel verbs because giving them more than six novel verbs would already tax the children, especially in this fast mapping task where they had to demonstrate the actions. Giving them more items would also make the experimental tasks a test of memory rather than a test of their syntactic bootstrapping and fast mapping abilities. The verbs were demonstrated with a puppet or pair of puppets and dolls that had movable body parts. The target novel verb was shown and the experimenter named it using the sentence frame *Look! He neps. Now watch how he neps.* In Filipino, the counterpart is *Tingnan mo. Tumatalimpak siya. Ngayon, tingnan mo kung papano siya tumatalimpak.* Note that the items utilized in Filipino were different compared to those employed in English. In Chabacano, the sentence in Filipino was translated into *Mira tu! Ta trota le. Ara mira tu paquemodo le ta trota.* The familiar action was demonstrated using

the same sentence frame *Look! He jumps* or in Filipino *Tingnan mo! Lumulukso siya! or in Chabacano Mira tu! Ta brinca le.* The novel action foil was shown as well, but was not named. Instead, the experimenter drew the child's attention to the novel action by saying *Watch what he does. Now watch what he does* or in Filipino *Tingnan mo kung ano ang ginagawa niya. Ngayon tingnan mo kung anong ginagawa niya,* and in Cabacano *Mira tu cosa le ta hace. Ara mira tu cosa le ta hace.* The actions were demonstrated just after or before the experimenter's carrier phrase, as these are the contexts in which verbs are readily learned, according to Tomasello and Kruger (1992).

As Tables 4 and 5 show, in addition to the verb items, two objects were presented. One was a familiar object that the experimenter named using the sentence frame *Look, here's a cup. Now I have a cup.* In Filipino it was *Tingnan mo. May bola dito. Ngayon mayroon akong bola dito,* which in Chabacano was *Mira tu, tiene qui bola. Ara tiene yo bola.* Finally, a novel object was presented but not named. The child's attention was drawn by the experimenter saying, *Look at this one. Now I have it.* In Filipino, on the other hand, it was *Tingnan mo ito. Ngayon nandito ito sa akin* or in Chabacano *Mira tu con este. Ara taqui le comigo.* All of the items in every fast mapping task were presented to the child in random order, and then put away. After presentation, the puppets, the familiar object, and the novel object were placed in random order on a clean table. During testing, the child was first asked to point to the familiar object (e.g. *Show me spoon*), or to demonstrate the familiar action with one of the puppets (e.g. *Show me jumps*). Testing the familiar items first would permit the experimenter to determine whether the child was attending to the testing procedure. The order of the presentation of these two test items was randomized. Next, the child was asked to demonstrate the target named novel verb using the sentence frame *Show me nends* or in Filipino *Ipakita mo sa akin ang tumatalimpak,* and in Chabacano *Dale tu comigo mira ta trota.* The questions were given twice to provide the child time to process questions sufficiently.

In the testing phase, specifically in the no-variation condition, the named novel action was tested using the same tense and number markings as at the same time of exposure. In the variation condition, the named novel action was presented using a different tense marker (or aspect in the local languages), but the number did not vary. The difference between testing in the no-variation and variation conditions is shown in Tables 4 and 5 above. It should be noted that in the testing phase, the endings of the familiar verbs matched those of the inflectional markers used during the presentation. It was only the markings in the variation condition, that is, the inflectional markers that were changed. In each session, one of the novel verbs was formed from the no-inflectional variation condition and the other from the inflectional variation condition as Tables 4 and 5 again show. The order of the presentation of the no variation and variation conditions was counterbalanced across sessions.

Analysis of the Data

The children's responses were scored as correct or incorrect using a scoring sheet. The familiar object was scored as correct if it was identified correctly. Any other response was marked incorrect. The familiar action and named novel action were also marked correct if the child demonstrated the action employing any of the puppets displayed on the table. If the child used a puppet other than the one used in the exposure phase to demonstrate the action, the information was coded on the response sheet. The results of the children were tallied, and then compared across languages and ages. To determine the children's ability to fast map novel verbs, the percentages of correct responses in the no variation and variation conditions were computed. To determine the effect of language group, language, and age, a

mixed 2X2X2X3 ANOVA was used. The within-subjects factors were first language and variation, while the between-subjects factor was language group (between Filipino-English and Chabacano-English). To answer question number 5 on whether the bootstrapping capability of the children relates to their age and level of vocabulary development, a Pearson correlation was employed. Since the research questions centered on novel verbs, the dependent variables focused on the scores obtained in the following: L2 (English) no variation novel verbs, L2 variation novel verbs, L1 (For Filipino and Chabacano) no variation novel verbs, and L1 variation novel verbs. However, there are separate analyses for the two language groups mentioned.

4. Results

Results from the experimental tasks were calculated on the basis of the participants' overt responses. Where a child showed no action or uttered the sentence "I don't know" when asked to show the familiar object, action or novel verb, that same child was excluded from the study. Below are the answers to the research questions and they are organized according to hypothesis inasmuch as each question had a corresponding hypothesis.

Hypothesis 1: Fast Mapping Ability of the Filipino-English- and Chabacano-English-Speaking Children

Hypothesis 1 predicted that the Filipino-English- and Chabacano-English-speaking children aged 46-81 months are able to fast map novel verbs presented to them in English and Filipino and English and Chabacano. To answer this question, the percentages of correct answers in the no inflectional variation and inflectional variation conditions were first examined. To get the percentages, first the number of correct and incorrect responses were counted, totaled and were then divided by 30 since there were thirty respondents for each language group. The obtained scores were then divided by the total number of items to arrive at the percentages. Table 6 below presents a summary of the children's performances on the fast mapping of novel verbs in the two conditions.

Table 6. Percentages of correct responses and errors on the target novel verbs per language

	No variation		Variation	
Group 1	English	Filipino	English	Filipino
Correct responses	(83.33%)	(85%)	(73.33%)	(79.44%)
Acting out foil action	(10.56%)	(8.33%)	(16.11%)	(10%)
Acting out different action	(2.78%)	(6.11%)	(2.22%)	(8.89%)
Choosing the familiar object	0		0	0
Choosing the novel object	(3.33%)	(.56%)	(8.33%)	(1.67%)
Group 2	English	Chabacano	English	Chabacano
Correct responses	(80.56%)	(78.33%)	(68.33%)	(62.77%)
Acting out foil action	(13.88%)	(8.89%)	(21.11%)	(24.44%)
Acting out different action	(2.78%)	(10%)	(2.22%)	(10.56%)
Choosing the familiar object	0	0	0	(.56%)
Choosing the novel object	(2.78%)	(2.78%)	(8.33%)	(1.67%)

Table 6 shows that the groups of bilingual children selected the correct referents for the novel verbs requested in the test phase. For the no variation condition, the Filipino-English children or group 1 were able to fast map the novel verbs with more than 83%

correctness for both English and Filipino, while in the variation condition, they demonstrated above 73% correctness. The Chabacano-English children, on the other hand, showed more than 78% correctness in mapping the novel verbs in the no variation condition for both languages, while in the variation condition they were able to fast map the novel verbs with more than 62% correctness. All these figures are above chance levels and are greater than the errors the children committed. The first type of error is acting out the foil actions. The foil actions here refer to the unnamed novel verbs. The second type of error is acting out different actions, and this category already includes the familiar actions which few children selected in response to the target novel verbs requested. The third type of error is selecting the familiar object, and as Table 6 shows, no one chose this to be the referent of any novel verb. The fourth type of error is selecting the novel object, and again, Table 6 shows that this garnered the lowest percentage, indicating a very low tendency of the learners to choose it. On the basis of percentages of correct answers, therefore, it can be concluded that the Filipino-English- and Chabacano-English-speaking children are able to fast map novel verbs in their two languages. From this point on, the term fast mapping would be used until the end of the result section to refer to the process of children's matching words with their referents. The proposal that syntactic bootstrapping is what led the children to be successful at fast mapping retains and is explained in the ensuing page.

Although not the main target of this study, since familiar nouns and verbs were included in the experimental tasks, it is noteworthy to report that the same children showed a 100% accuracy in mapping the familiar nouns that came in the form of objects in all the languages and 96.39% accuracy for the familiar English verbs on both conditions. For the Filipino and Chabacano familiar verbs, the children obtained 98% correctness on the first condition and 98.06% in the second condition. Beyond this accuracy, however, these figures indicate two things: the first is that the terms used were indeed familiar, and the second is that the respondents were attuned to the procedure of the tasks.

Hypothesis 2: Children's Awareness of Inflectional Morphology

Hypothesis 2 predicted that the Filipino-English- and Chabacano-English-speaking children aged 46-81 months are aware of the inflectional morphology of their respective languages. To answer this question, the means and standard deviations on the fast mapping of novel verbs on the two conditions were looked into. A mixed ANOVA with variation as the within-subjects effect was also performed. The latter would reveal if indeed the two language groups examined in this study are aware of the inflectional morphologies of their two languages. If the participants were found to be aware of the inflectional morphologies in their two languages, this would also show that they were using the syntactic bootstrapping mechanism to narrow down the referents of the novel verbs. Table 7 below shows the children's awareness of inflectional morphology in the two languages they use.

Table 7. Means and standard deviations of the fast mapping results of the Filipino-English and Chabacano-English bilinguals

	N	TOTAL NO. OF ITEMS	MEANS	STD. DEV.
FILIPINO-ENGLISH GROUP	30			
L2 No Variation Novel Verbs	30	6	5.00	.98
L2 Variation Novel Verbs	30	6	4.43	1.10
L1 No Variation Novel Verbs	30	6	5.10	1.09
L1 Variation Novel Verbs	30	6	4.78	1.14
MLUs	30		7.2920	2.3432
CHABACANO-ENGLISH GROUP	30			
L2 No Variation Novel Verbs	30	6	4.83	.99
L2 Variation Novel Verbs	30	6	4.10	1.06
L1 No Variation Novel Verbs	30	6	4.70	1.26
L1 Variation Novel Verbs	30	6	3.78	1.41
MLUs	30		7.11	1.7998

Table 7 shows the fast mapping results of each of the language groups. The English items were classified as L2, whereas the Filipino and Chabacano items were classified as L1. The number of participants of each language group was 30, while the total number of each category (e.g. L2 no variation novel verbs, L2 variation novel verbs) was five. Centering on the means for the fast mapping of novel verbs in L2, the Filipino-English participants obtained a mean of 5.00 in mapping the novel verbs in English in the no-inflectional variation condition, whereas for the novel verbs in English in the variation condition, they obtained a mean of 4.43. In L1, on the other hand, the Filipino-English bilinguals obtained a mean of 5.10 in fast mapping the novel verbs in Filipino in the no variation condition, whereas in the variation condition, the mean declined to 4.78. Looking at the standard deviations of their fast mapping results in both languages and conditions, it can be seen that the items in the variation condition were the highest, but by and large, the standard deviations are not wide.

Concerning the mean length of utterance, group 1 had 7.2920 (or 7.29) as the average mean, while for the standard deviation, they got 2.3432 (2.43).

With regard to the fast mapping results of group 2 or the Chabacano-English bilinguals, Table 7 shows that their scores are a bit lower compared to the Filipino-English bilinguals. For the mapping of novel verbs in English or L2 in the no-inflectional variation condition, group 2 obtained a mean of 4.83, whereas in the second condition, they garnered a mean of 4.10. Again, there is a decline in the result. For the fast mapping of novel verbs in Chabacano or L1 in the no variation condition, group 2 obtained a mean of 4.70; however, in the variation condition, their score further went down to 3.78. With respect to the standard deviations, again group 2 deviated from the correct answers more than the Filipino-English bilinguals. As Table 7 again shows, for the mapping of English novel verbs in the no variation condition, group 2's deviation is .98, while in the variation condition, the standard deviation is 1.09. For the fast mapping of novel verbs in the no variation condition in Chabacano or L1, the standard deviation is 1.19 and 1.36 in the second condition. For their mean length of utterance, the mean is 7.11, whereas the standard deviation is 1.79.

Looking at the means as well as at the standard deviations, it can be seen that the number of correct responses even on the variation condition is high. The standard deviations also show that not too many of the respondents deviated from the trend of selecting the correct referents. A mixed ANOVA with variation condition as the within-subjects factor

revealed that the Filipino-English- and Chabacano-English -speaking children were aware of the inflectional morphologies of their respective languages, F (1, 54) = 41.33, p = .00 and therefore used this awareness as part of syntactic bootstrapping to narrow down the referents of the novel verbs, or put otherwise, to fast map the novel verbs.

Hypothesis 3: Filipino-English Children's Greater Inflectional Awareness

Hypothesis 3 predicted that the Filipino-English-speaking children aged 46-81 months are more aware of the inflectional morphology in their languages than the Chabacano-English-speaking children in their respective languages. To answer this question, the means and standard deviations of the two groups on the fast mapping tasks were examined and a mixed ANOVA with language group as the between-subjects factor was performed. Table 8 on the next page (same as Table 7) shows the comparisons of means and standard deviations of the two language groups on the two conditions.

Table 8. Means and standard deviations on the fast mapping of novel verbs across languages

	MEANS	STD. DEV.	MEANS	STD. DEV.
ITEM CATEGORIES	FILIPINO-ENGLISH N= 30	FILIPINO-ENGLISH N=30	CHABACANO-ENGLISH N=30	CHABACANO-ENGLISH N=30
L2 No Variation Novel Verbs	5.00	.98	4.83	.99
L2 Variation Novel Verbs	4.43	1.10	4.10	1.06
L1 No Variation Novel Verbs	5.10	1.09	4.70	1.26
L1 Variation Novel Verbs	4.78	1.14	3.78	1.41
MLU	7.2920	2.3432	7.11	1.79

As Table 8 shows, the Filipino-English bilinguals performed better than the Chabacano-English bilinguals in the no variation and variation conditions. The mean length of utterance for group 1 is higher compared to that of group 2. A mixed analysis of variance with language group as the between-subjects factor revealed that the differences in the two language groups' performances were significant, F (1, 54) = 4.826, p = .032 which proves that group 1 performed significantly better in syntactic bootstrapping and fast mapping of novel verbs in their respective languages than group 2.

Hypothesis 4: Effect of Language

Hypothesis 4 predicted that the Filipino-English children have greater awareness in Filipino than in English and that the Chabacano-English children would have less awareness in Chabacano compared to English. This hypothesis stems from the nature of morphology of each language. As stated in the review and bolstered by sufficient examples, Filipino is the richest in terms of morphology, seconded by English, and lastly Chabacano. The latter has no inflections attached to its verbs to identify aspect or to show whether the action is past, present, or future. There are bound morphemes attached to the verbs only when the action done is reciprocal.

To answer this question, a mixed ANOVA with language as the within-subjects factor was performed. Statistical analysis revealed that there was no significant effect for

language, F(1,54)=.003, p=.96. Group 1 performed as well in English as in Filipino and similarly, group 2 performed as well in Chabacano as in English.

Hypothesis 5: The Children's Bootstrapping Capacity in Relation to Age and Level of Vocabulary Development

Hypothesis 5 predicted that the bootstrapping capability of the children relates to age and level of vocabulary development. To reiterate, the level of vocabulary development is indexed by the mean length of utterance of each participant, and this was measured in terms of the number of morphemes that the bilingual children produced from their spontaneous speech samples. To determine whether this hypothesis is valid or not, which is also answering research question 5, again the means and standard deviations of the performances of the respondents were examined. A Pearson correlation was performed on the fast mapping scores of the participants. The results in the English fast mapping of novel verbs in the no variation condition were merged (represented as L2 for both groups), and the same was done to all the respondents' results in the two languages and conditions. Statistical analysis revealed no significant correlation between age and the bootstrapping ability of the children in the L2 no variation condition (r=.164, p=.210 and L2 variation condition (r=.046, p= .725) . In the L1 no variation condition, again a Pearson correlation revealed no significant correlation between age and the children's syntactic bootstrapping capability (r=.224, p=.085). In the L2 variation condition, again a Pearson correlation revealed no significant correlation between the said variables (r=.080, p=.545).

A mixed ANOVA with age group as the between-subjects factor was performed as well to see whether age group had an effect in the children's syntactic bootstrapping ability. Statistical analysis, however, revealed no significant effect ($F(1, 54) = .215$, p=.808).

The raw scores of the respondents indicate that not only did some 6-year olds get perfect scores in the three languages that were examined; some 5-and 4-year olds were also successful. See the table below for a comparison of the scores of the three age groups on the fast mapping tasks in the languages examined.

Table 9. Means and standard deviations of the 3 age groups on the fast mapping tasks in L2 and L1

		AGE: 46-57 MONTHS N=20		AGE: 58-68 MONTHS N=20		AGE:69-81 MONTHS N=20	
ITEM CATEGO-RIES	Total No. of Items	Means	Std. Dev.	Means	Std. Dev.	Means	Std. Dev.
L2 No Variation Novel Verbs	6	4.70	.92	5.00	.97	5.05	1.05
L2 Variation Novel Verbs	6	4.20	1.15	4.45	1.15	4.15	1.18
L1 No Variation Novel Verbs	6	4.55	1.28	4.95	.45	5.20	.95
L1 Variation Novel Verbs	6	4.20	1.54	4.10	1.37	4.50	1.19
MLU		4.21	.97	7.13	1.68	8.78	2.15
Age (Months)		53.27	2.87	64.30	2.91	76.02	3.25

Table 9 indicates that the fast mapping results of the subjects were merged. Hence, we see 20 as the total number of subjects per age group, and this represents the two language groups. The first age group is 46-57 months representing the 4-year-olds, followed by the 58-68 months representing the 5-year-olds, and then 69-81 months representing the 6-year-olds. The total number of items per item category is 6.

Looking at the means and standard deviations, it can said that the three age groups performed with almost the same bootstrapping ability. Differences can be seen, but they are too little to support the hypothesis that the bootstrapping ability of the children who participated in the study correlated with age. However, a Pearson correlation performed on the scores of the three age groups in relation to their MLUs revealed a significant correlation (r =638; p=.000) . The bootstrapping ability of the respondents also significantly correlated with their MLUs (r=.367, p= .004 for L2 no variation condition and r=.272, p=.035 for L1 no variation condition). These findings now indicate two things: first, as the Filipino children age, their MLUs increase, and second, as the Filipino children's MLUs increase, their bootstrapping ability also increases.

Summary of Results

Results in the experimental tasks that gave the children considerable opportunity to respond freely showed that first, Filipino-English- and Chabacano-English-speaking children aged 46-81 months readily fast mapped novel verbs to novel actions. From a double exposure (first in the warm-up and second in the exposure proper to the novel verbs) children showed differing percentages of accuracy in each of the two languages on which they were tested. In the no variation condition, children appeared to have better fast mapping ability than in the variation condition.

Second, the Filipino-English and Chabacano-English-speaking children were aware of the morphological/inflectional variations in their languages and therefore used this

awareness as part of the syntactic bootstrapping mechanism to narrow down the referents of the novel verbs.

Third, the Filipino-English bilinguals showed greater morphological/inflectional awareness and use of syntactic bootstrapping mechanism than the Chabacano-English bilinguals.

Fourth, language did not create a significant effect between Filipino and English and between Chabacano and English.

Fifth, the children's syntactic bootstrapping mechanism did not correlate with age, but the latter was significantly related to the children's level of vocabulary development as indexed by their MLUs. The bootstrapping capacity of the children was also found to be related to the level of vocabulary development of the children in the L2 no variation condition and L1 no variation condition.

5. Discussion of Findings

The present study was conducted to investigate the Filipino bilingual children's ability to fast map, their awareness of inflectional morphologies in their two languages (English and Filipino for group 1 and Chabacano and English for group 2), their use of syntactic bootstrapping mechanism, the Filipino-English children's greater awareness of the inflections compared to the Chabacano-English bilinguals, and the correlation of their bootstrapping ability with age and level of vocabulary development as indexed by their mean length of utterance. The following discussion of the findings will explain how the theory of fast mapping and syntactic bootstrapping were operative in the children who participated in the study.

Hypothesis 1: The Filipino-English- and Chabacano-English-Speaking Children's Ability to Fast Map Novel Verbs

In this investigation, the hypothesis that the Filipino-English- and Chabacano-English-speaking children aged 46-81 months are able to fast map novel verbs was first addressed. Based on the data, it was found that these same bilingual children obtained above 70% correctness on the fast mapping of novel verbs on the no variation condition. This figure indicates the bilingual children's ability to fast map novel action verbs even with a limited exposure. This fast mapping was not seen in Bedore and Leonard's (2000) study. The participants in their study responded to fewer items on the variation condition and selected the foils and other actions more frequently than the target novel verbs. This finding implies that the Filipino-English- and Chabacano-English-speaking children did better at fast mapping the novel verbs compared to the respondents in Bedore and Leonard's study. This difference may have been caused by the methods of the fast mapping tasks (there was increased exposure to the novel verbs in this study), the language nature of the subjects (Bedore and Leonard used monolinguals, whereas this study employed bilinguals), or age in that the participants in this investigation were older. These factors will be explained in greater detail in the ensuing discussion.

For the fast mapping of novel verbs, the children also demonstrated more than average accuracy. This accuracy manifests their comprehension of the novel terms. If comprehension was demonstrated, then there was acquisition or learning of the novel verbs. This was seen when they demonstrated the correct actions for the novel verbs requested on the no variation condition. They could have also realized that a specific word (such as the novel verb) was mapped onto an action verb or that such-and-so action verbs had those novel terms associated with them.

This finding supports previous results that young children can grasp aspects of the meanings of new words given a limited exposure without specific training or feedback like those of Carey and Bartlett (1978) who studied the fast mapping ability of 3- and 4-year olds and Heibeck and Markman (1987), who found that even two-year olds can fast map, and they can fast map not only color words but even shape and texture terms. Unlike the studies of Rice and Woodsmall (1988) and Merriman, Marazita and Jarvis (1987) which found that action labels were more often difficult to fast map than object labels by the children, this present study has shown that the Filipino-English- and Chabacano- English- speaking children did not have so much difficulty on fast mapping the action labels. As Table 6 illustrates, only 3.33% from group 1 chose the novel objects when they were requested to demonstrate the novel actions on the no variation condition, whereas for the mapping of Filipino novel verbs, only .56% of the children from group1 chose the novel objects.

For group 2, 2.78% of the children selected the novel objects when they were tested on the English and Chabacano novel verbs. When the children were further tested on the variation condition, their tendency to select the novel objects over the novel verbs was still very low. For both language groups, 1.67% showed the tendency to choose the novel objects, whereas for the test of English novel verbs, 8.33% chose the novel objects. In fact, though they were wrong in choosing the foil actions when they were tested on the variation condition, the interesting thing in the present study was that the children still chose the verbs instead of the novel objects. The greater tendency of the children to select the novel verbs instead of the object labels suggests that the Filipino-English- and Chabacano-English-speaking children in the Philippines beginning with age 4 have already a strong and clear distinction between nouns and verbs. This finding also indicates that children at the ages mentioned are already abandoning their bias toward objects. This new finding goes against previous findings that showed that children are inclined to choose objects when asked for the referents of novel terms. For example, Macnamara (1972) was the first to note that this is children's default assumption when learning a new word. Other researchers that have shown children's bias toward objects are Baldwin (1989), Golinkoff, Mervis, and Hirsh-Pasek (1994), Markman and Hutchinson (1984), Markman and Wachtel (1988), and Soja, Carrey, and Spelke (1991). In this study, however, the tendency of choosing the objects for novel terms was not seen, which now implies that the particular period at which this object bias appears in children should be determined.

Hypothesis 2: Children's Morphological/Inflectional Awareness

The second hypothesis this paper posited was that the Filipino-English- and Chabacano-English-speaking children aged 46-81 months are aware of the inflectional morphologies in their two languages. Answering this second question would also answer the question on whether the children did use these inflectional cues as part of the syntactic bootstrapping mechanism to narrow down the referents of the novel verbs. As stated earlier, the fast mapping ability of the children alone, especially in the no variation condition, would not suffice to prove that the bilingual children who participated in the study were indeed aware of the inflectional morphologies in their two languages. To be more explicit, the fast mapping results would be indicative of the children's use of syntactic bootstrapping, but the percentages of correct answers would not be sufficient to answer the question of whether the bilingual children did use the syntactic bootstrapping. To answer this question statistically, a mixed ANOVA with variation as the within-subjects factor was performed. To do this, first the scores of the children from the no variation condition served as baseline against which the results on the variation condition would be assessed. If the children demonstrated the same actions for the same novel verbs requested in the variation condition despite the

manipulation or alteration in the inflections, then it could be stated indirectly that children were aware of the inflectional morphemes and used these to parse the stems and the inflections of the novel verbs. As shown in the results previously, a mixed ANOVA revealed a significant effect for the variation condition. This pointed to the children's inflectional awareness. The accuracy of the participants' answers even on the variation condition, which represented their consistency, was above 70% for group 1 and above 60% for group 2 on both the conditions they were tested. The fact that the majority of the children were able to demonstrate the same actions on the variation condition despite the differences in the inflections is an indication that they were aware of the morphological/inflectional variations, and therefore, were utilizing this knowledge of inflections as syntactic cues to narrow down the referents of the novel verbs. Their ability to narrow down the referents of the novel verbs also suggests that they were able to get the meanings of the novel verbs. This fact could be established since no other clue was provided to assist the children in learning the novel verbs.

As stated previously, fast mapping is the act of linking, pairing, or matching the words with their referents given a limited exposure. Note that fast mapping of novel terms was not only seen in the no variation condition; it was also applied in the variation condition, and as the data have shown, the syntactic cues helped the children to narrow down or in other words to fast map the referents of the novel verbs in the variation condition.

However, some did not show complete consistency in the inflectional variation condition, but by and large, the percentages indicate that the morphological/inflectional awareness represented each language group. This finding corroborates past findings of Fisher (1996), Gleitman (1990), Katz, Baker, and Macnamara (1974), Naigles (1990), Naigles and Kako (1993), about syntax as a viable source of information for learning verbs. It also confirms the findings of Gerken, Landau and Remez (1990) who showed that as early as two years of age children can recognize familiar closed-class words and are able to utilize grammatical morphology in decisions about form class categories and semantic membership. In this study, the participants used their inflectional awareness to select the verbs.

Another finding which this current finding supports is that of Behrend, Haris, and Cartwright (1995). Their result shows that 3-year-old children can use inflectional morphemes to guide their inferences about verb categorization, and that they used these morphemes as part of syntactic bootstrapping. These are only a few examples.

If the present finding on the use of morphological awareness and it being utilized as syntactic cues to guide children in learning novel verbs supports previous findings, it also diverges from other findings. Bedore and Leonard (2000) did not find morphological awareness and the use of syntactic bootstrapping as useful guides to verb learning even for those children already nearing 4 years old and those whose language (Spanish) is complex morphologically. Thus, they argued that although production data from the children have shown that they have awareness of the morphemes, the latter are only applying them to familiar words. Koenig and Naigles (1995), who studied 15-month olds, found that these children failed to distinguish between a noun and a verb on the basis of grammatical morphology. In the study of Rice and colleagues, their results show that only the 5-year-old nonaffected children (meaning no language problems) evidenced the use of syntactic bootstrapping. The 3-year olds did not. What explains this divergence in the present finding aside from the claimed effect of a morphologically rich language? First, there is success in children's syntactic bootstrapping because of the ages of the participants, and second is that there was an increased exposure to the novel verbs: first in the warm-up, then in the exposure proper wherein the target novel verbs were uttered twice, and finally, in the comprehension test (also uttered twice). The terms were repeated six times, not thrice as what Bedore and Leonard (2000) did in their study. In addition, their warm-up did not introduce the novel

verbs yet. From this difference of procedure it can be inferred that children will be more successful at fast mapping and syntactic bootstrapping if exposure to the novel verbs they are asked to process is adequate. Repeating the stimuli to them thrice may not be enough, especially if these are accompanied by other words. This further suggests that the more frequent the syntactic cue, the more the children are able to process the words that go with the cue. This prediction supports the argument given by Kempe and MacWhinney (1999) who state that the strength of a cue relies on its frequency or availability, which is the proportion of times a cue is present and can be used for accessing the underlying function. This is what Bedore and Leonard did not have in their study and could be one of the factors that affected the subjects' performance.

Hypothesis 3: Filipino-English Children's Greater Morphological/Inflectional Awareness

On the hypothesis that the Filipino-English bilinguals were more aware of the inflections in their two languages than the Chabacano-English in their own languages, the results revealed that the differences between the two language groups were significant. Group 1 scored higher in both the Filipino and English fast mapping of novel terms compared to the Chabacano-English bilinguals.

What could be responsible for the better performance of group 1 compared to group 2? One possible explanation is their exposure to Filipino. Earlier, it was posited that a morphologically rich language could influence the child's recognition of these inflections. Since Filipino is inflectionally richer and its inflections are more salient and phonetically audible than English and Chabacano, it is possible that it has facilitated group 1's recognition of inflectional changes and could have aided them to narrow down the referents of novel verbs in Filipino more successfully than group 2. As would be seen in Appendices M and N, 7 (23%) from group 1 were able to get perfect scores across the two conditions in the test of Filipino (L1) novel verbs. Many got only one mistake. In the English (L2) test of novel terms, however, only two (6.67%) from group 1 got a perfect score of six. The rest got five correct answers on both conditions (23%), and the others got lower. For group 2, on the other hand, only two (6.67%) were able to get a perfect score when they were tested on the Chabacano (L1) novel verbs while in the English (L2) test of novel verbs, nobody got a perfect score on both conditions. Highest score on the variation condition was 5. For some, they were able to score a perfect score of 6 but were not consistent on the variation condition.

The above finding is contrary to what Bedore and Leonard (2000) found in their research. When they compared the English-speaking children's (3 years old) performance to those of the Spanish-speaking children, no significant effect was found between the two language groups. Thus they argued that Spanish, a morphologically richer language compared to English does not facilitate children's recognition of inflectional variations, hence the 3-year old children's inability to parse the stem and the inflection. In this study, however, group 1 who are exposed to Filipino, an inflectionally richer language compared to Chabacano and English scored significantly higher on the fast mapping of novel verbs on both conditions and languages on which they were tested, and again this could be attributed to group 1's exposure to Filipino. In comparison to Filipino, Chabacano has no inflectional endings, thus when the verbs were conjoined with the invented inflectional markers such as /–n/ and /–ba/, many children selected a different answer when they were tested on the variation condition. It is possible that some of them assumed that the novel verbs they were requested to demonstrate, though having the same stems, were different since it is not in the nature of Chabacano to have inflectional markers.

The Chabacano language could have also influenced group 2's recognition of English (L2) novel verbs with the past inflectional endings in the variation condition. Recall

that in the no variation condition, group 2 obtained 80.56% correctness in the tests of English novel verbs, which is not far from the 83.33% of group 1. With these figures it cannot be said that group 2 were poor in terms of morphological awareness and use of syntactic bootstrapping. When it came to the variation condition, however, group 2's syntactic bootstrapping ability in the English novel terms declined to 68.33%. It is possible, therefore, that the group 2's treatment of the novel verbs in Chabacano on the variation condition influenced their processing of the English novel verbs on the same condition. The Chabacano children could have noted the differences in the endings of verbs on the variation condition phonologically, and this could be the reason why they chose other referents as Table 6 shows in the preceding page. If so, then it can be inferred that these learners are able to form a sufficient phonological representation of a novel verb after minimal exposure to note a difference in the exposure and test form. This is where the phonological bootstrapping could be said to be operative and is consistent with Bedore and Leonard's finding of the subjects who, although did not successfully parse the stem and the inflections, were able to notice the differences in the sounds of the novel verbs on the variation condition.

The influence of Chabacano on the inflectional awareness of English novel verbs in the variation condition of group 2 has implications for the metalinguistic skills of the children. It may point to group 2's inability to separate the two languages. Language separation is believed to be one of the hallmarks of linguistic competence and reflects their metalinguistic skills. The reason for this is that probably the children in group 2 are processing the two languages interchangeably, or that they are using a single system to process the words.

While the data like those shown in Table 6 show that many Filipino-English and Chabacano-English children took advantage of the inflectional/syntactic cues to guide them in getting the meanings of novel verbs, it also reveals that some did not benefit so much from the syntactic cues provided, and this is not only true of group 2 alone but of group 1 as well. Therefore, what other factors could explain the errors that some children in the two language groups committed? One possible explanation is that the children were using the mutual exclusivity constraint or principle, one that biases the children to think that words should not have an overlapping reference, or that each object can only have one label. Inasmuch as they had already shown the referents for the novel terms asked in the no variation condition, they assumed that the novel verbs requested in the variation condition had other referents. This explains why the children who were not very successful in mapping the novel verbs in the variation condition chose the foil actions, other actions, and a few of them the novel objects. This factor converges with studies like those of Markman and Wachtel (1988). In their study, preschool children were shown a banana and a whisk and were presented with a new word, as in "Show me the fendle." The children tend to interpret the new word as naming the whisk, not the banana. If only the banana is present, children are prone to take the novel name as referring to a part of the object, not the object itself. Other studies that show the mutual exclusivity constraint as operative in the children learning novel verbs are those of Golinkoff, Shuff-Bailey, Olguin, and Ruan (1995) and Merriman, Marazita, and Jarvis (1995), who found that if children are shown two actions, one familiar, and the other unfamiliar, and produce a novel verb, as in "Where's gorping?", they will tend to assume that this novel verb refers to the action they do not already have a name for.

Hypothesis 4: Effect of Language on the Bootstrapping Ability of the Bilingual Children

Hypothesis 4 predicted that the Filipino-English bilingual children would have greater awareness of the inflectional morphemes in Filipino than in English, and that the Chabacano-English-speaking children would have less awareness in Chabacano (L1)

compared to English (L2). The data, however, revealed that the differences in the languages were not significant. The children in group 1 performed similarly on the fast mapping of novel verbs in English. Group 2 also obtained similar results on the fast mapping of novel verbs in English and Chabacano. Note, however, that between the two language groups, the differences in their performance were statistically significant. This was answered in hypothesis 3. One candidate explanation for this is group 1's exposure to Filipino which, as has been illustrated, is an inflectionally rich language and therefore appeared to have a facilitating effect on the children's recognition of inflectional variations associated with the novel verbs on the variation condition. What explains now for group 1's similarity of performance on the fast mapping of novel verbs in English? One potential factor is that the children's morphological awareness in Filipino could have influenced the children to also recognize the inflectional variations in English. Hence, the scores of the children in the English test of novel verbs were similar to Filipino. The same explanation may be given for the equally lower results of group 2 in both languages they were tested. Chabacano, not having inflectional endings in its verbs, could have influenced the children to have lower recognition of the inflections attached to the novel verbs on the variation condition. This is not very surprising for, as the language acquisition literature shows, L1 influences L2. The system that children utilize in L1 may transfer to L2 and sometimes vice versa. Since the Filipino bilingual children who participated in this study are using two languages simultaneously, it is possible that they were using one system to process the novel terms given them. This prediction is consistent with Koda's (2000) contention, which is that language experience influences the development of morphological awareness in specific and predictable ways. The transfer of L1 to L2 or vice versa also bolsters the argument of Hancin-Bhatt and Nagy (1994), Koda (1998), and Sasaki (1993), who point out that linguistic knowledge and its corollary processing skills transfer from language to language (very likely this is the reason why the Chabacano-English bilinguals showed good inflectional awareness in the Chabacano inflections though the latter was simply invented). Their knowledge of inflections in English could have aided them to have awareness of the inflections in the Chabacano novel verbs), and therefore, it is conceivable that L2 processing is heavily constrained by L1 metalinguistic awareness, and that L2 awareness is an amalgamation of previous crosslinguistic processing experiences in L1 and L2. The influence of L1 on L2 in morphological/inflectional processing seen in the present study, which led to the no effect in the performance of the children in fast mapping novel verbs for both group 1 and group 2 cannot be seen in the Bedore and Leonard's study inasmuch as they used monolinguals. This finding, although tentative, suggests that the bilingual nature of the participants has an advantage in inflectional tasks compared to monolinguals.

Hypothesis 5: The Filipino-English- and Chabacano-English-Speaking Children's Bootstrapping Ability in Relation to Age and MLU

The last research question this study tried to answer was whether the bootstrapping capability of the bilingual children aged 46-81 relates to age and level of vocabulary development. Statistical analysis of the data revealed that the syntactic bootstrapping ability of the children did not correlate with age, but it did with the level of vocabulary development and even with the grammatical development as indexed by the children's MLU. It would be noted that even among the 4-year olds, there were those who were successful at mapping more than the 5-and 6-year olds. The tables showing the means and standard deviations of the children also manifest that even at 6 years old, children were not at an advantage over the 4- and 5-year olds. They were expected to achieve the highest scores across the two languages and conditions on which they were tested, but this did not come out. Even for the

6-year-olds of group 1, who despite being aided by the relatively morphological richness of Filipino as has been explicitly explained supported by evidence through examples, did not demonstrate a very robust ability in the use of syntactic bootstrapping to fast map the novel verbs on the variation condition. Therefore, what are the reasons for this lack of robustness in the use of the syntactic bootstrapping ability? One candidate explanation is that although children were aware of the inflectional morphemes, they were applying them to the novel verbs conservatively. This conservatism may be due to the fact that the children who participated in this study did not yet have a well-established knowledge of inflectional paradigm and to establish it, perhaps more time is needed. From this finding it can also be inferred that at age 4, the syntactic bootstrapping capability of children is just beginning and continues to develop in the early preschool years. This is consistent with the finding of Rice and colleagues in 2000 who studied children with differing abilities and ages. They studied 3-to 7-year-old learners of differing ages and language abilities, and on these bases grouped them into two: one developing typically, and the other with specific language impairment. They found that even for the seven-year-old learners who were developing typically, the use of syntactic bootstrapping was well below ceiling performance.

Further results of the study revealed that age correlated with the children's mean length of utterance. Note that the MLUs taken from the children were sampled from the fifty utterances only. If 100 utterances would be selected, their MLUs would be higher. In this study, those that appeared to have high MLUs also achieved good scores in the fast mapping tasks. From this finding, it could be inferred that recognition of inflections also depends in part on the learner's level of vocabulary development. This is consistent with Carr and Johnston's (2001) argument. In their study they found that 3 ½ -year-old children did use inflectional morphemes as syntactic cues to guide their initial semantic representations. These researchers point out that what leads to the morphological success of the children may lie in part in the children's grammatical developments. Bates and Goodman (1999) also contend that further language experience and vocabulary growth lead to the separation of the root from the inflection and the emergence of inflectional paradigms in the grammar. Brown (1973) also asserts that as children age, their language development also increases. Therefore, with respect to the children's MLU in the present study, the finding also adheres to what Brown posits and it is that as children grow, their mean length of utterance also increases. He points out that the MLU shows the syntactic development of the child, and that it is one of the best indicators of the child's overall productive language development. Moreover, Finnerty (1995) argues that MLU is strongly correlated with age, and that the age predicted by the MLU can be used as basis for comparing linguistic development, and comprehension among others. Therefore, the more advanced a learner is in terms of vocabulary development and grammatical development on the whole as MLU also reflects the child's grammatical development, the greater his/her morphological awareness and his/her syntactic bootstrapping ability.

6. Conclusion

The present investigation has given us a glimpse of how a morphologically rich language like Filipino can influence children's recognition of inflectional variations, and how this recognition can impact children's use of syntactic bootstrapping to narrow down the referents of novel verbs and to fast map novel verbs. It has also enabled us to see how the nature of one language can factor in the children's processing of word learning. In addition, it has enabled us to see partly and tentatively, some advantages of bilingualism. In general, this study has given us an initial understanding of lexical acquisition and child language

acquisition as a whole, particularly in relation to the Filipino-English and Chabacano-English-speaking children in the Philippines.

It should be made clear that this study does not claim that syntax where syntactic bootstrapping falls completely solves all the problems of word learning, or that it is the only thing that the child needs in order to learn the meanings of novel words. What this study has shown is that syntax, particularly the inflectional cues, can guide children to narrow down the referents of novel verbs, given multiple interpretations (like the presentation of five items in the exposure phase). In this study, it is what guided them to fast map the novel verbs successfully, especially in the variation condition. Another source of information that the child derives is the extralinguistic context like the demonstration of an action, which he pairs with the syntactic structure of the novel verb. This initial narrowing dictated by the inflections is the precondition for using the scenes in the exposure phase efficiently to derive the novel verbs' meanings.

All the findings of this investigation are tentative and, therefore, should encourage other researchers to seek more answers to the research questions.

7. Pedagogical Implications

The findings imply that the inflectional paradigm must be well- established in the three age groups who were examined and in the preschool years. It should also extend beyond the level that the respondents had shown in the present study. The absence or lack of awareness of the inflectional morphemes may cause misunderstanding in the communication of the children. Therefore, parents and teachers must give attention to this area as early as the preschool years because poor control of it could impede children's early learning of words or in general slow down their acquisition process in the early stage of acquisition.

As early as preschool years, parents and teachers alike can already make the children aware of the inflections by emphasizing differences in their sounds when formed in the different tenses/aspects but no difference in their meanings. This could be done through conversations, word games, or other communicative approaches. Another is if teachers would like to teach inflections to children, they could do it with the familiar words to enable the child to parse the stem and inflection. However, if their aim is to teach new vocabulary, then they could do it with the inflections already shown. In this way, children's lexical processing would be facilitated and would not tax them so much. In addition, since children are exposed to two languages, parents and teachers could also stress the differences in the inflectional forms of the two languages to preclude the children from using the same rules in the formation of the inflections. The languages of the children examined in this investigation happened to have contrasts in their syntactic rules (inflections are dictated by syntactic or more generally, grammatical rules), and such difference may be stressed to children. This emphasis could aid them in separating the two languages, which is important because, according to Bhatia and Ritchie (1999), language separation is one of the major aspects of bilingual linguistic competence.

8. Theoretical Implications

The participants' use of inflections as syntactic cues for narrowing down the referents of novel verbs and consequently arriving at the their meanings implies that syntax is an important source of information as to the meanings of words. However, children's task is not simply to depend on it; rather, they should integrate it with other sources of verb information to be able to infer the most plausible candidate for the word's meaning.

With regard to fast mapping, there are limitations as well. It does mean that once children have gotten the meanings of novel terms through this undertaking, their understanding is already fixed. Fast mapping is initial and partial. Children typically refine and perfect their understanding of a word for many months after the word's first appearance. Thus, word learning is both fast and slow – fast in its initial phase and slow in the movement to completion. Thus, Carey (1978) says: suppose on the average six months is required for the full acquisition of a new word. If the child is learning nine words a day, then he is working out the meanings of over 1, 600 words at a time. This fact is a clue to the real significance of fast mapping. What is included in that initial mapping – that a new word is a word along with some of its syntactic and semantic properties – must allow the child to hold onto that fragile new entry in his lexicon and keep it separate from hundreds of other fragile new entries, and it must guide his further hypothesis about the meaning.

9. Recommendations

The results of this study have given rise to further questions that beg to be answered and to do this, further research is recommended. Below are some recommendations for further investigations to shed more light not only on the usefulness of syntactic bootstrapping and fast mapping, but also on how bilingual children in the Philippines perform in terms of language acquisition.

1. The usefulness of fast mapping in this study was explored only in so far as word learning was concerned. Other studies still need to be conducted to further determine its strength not only in terms of word learning but in terms of learning novel facts. Doing so could help determine the scope of fast mapping.
2. This study included only thirty respondents for each group since it was not feasible to include more, given the limited time. There was the difficulty of finding bilinguals who spoke the said languages with equal competence. Many children were dominant either in the local language (Filipino or Chabacano) or in the second language (English). Therefore, further studies of the same nature but with many participants should be conducted to further validate the findings obtained in the present investigation.
3. Another study using two groups of children (those with high mechanical skills and low mechanical skills) should be conducted to see whether the difficulty of mapping novel verbs is influenced by the mechanical ability of the child.
4. The age groups included in the present investigation were too close to one another to see big differences/contrasts in the use of fast mapping and syntactic bootstrapping. It is therefore suggested that a gap of at least two years for the three age groups be tried in another study.
5. Chabacano is only one of the languages in the Philippines that were paired against Filipino. It is therefore recommended that another study be conducted comparing the performance of children in Filipino with the performance of other groups exposed to other local languages that are not morphologically rich. Such will enable us to see whether children exposed to other inflectionally impoverished local languages indeed have less recognition of inflectional cues. It will also provide additional insights into these children's learning of a second language like Filipino. From a limited knowledge of morphology in their L1, how will they fare in their initial acquisition of inflections in L2?
6. This study indicated that the bilingual nature of the children played a factor in their learning of novel verbs. Therefore, more studies with Filipino bilinguals should be

conducted to further see the advantages of speaking two languages. Such studies may give additional proof against the argument that speaking two languages or a mixed input may lead to a stuttering disorder or a pathological problem in bilingual children.

7. In some instances, children in Zamboanga City learn Chabacano first and subsequently, Filipino. It will be interesting to investigate whether children speaking Chabacano and Filipino will have high inflectional awareness in both languages. The kind of input in the second language must also be qualified. Do they only learn it from peers, school, or television? If so, how much time is spent with each? Doing so will also enable us to see the impact of each of these factors and consequently determine how much input is necessary for optimum benefits in the children's second language acquisition, especially now that children are taught in Filipino as another medium of instruction as early as the preschool years.
8. Up to this time, few studies have been conducted involving trilingual children. Another study employing participants who speak Chabacano, English, and Filipino may be worthy to conduct to see whether children will be able to parse the stems and the inflections in all these three languages equally well. Doing this will also enable us to see how they separate and mix the languages creatively as this has implications for their bilingual linguistic competence.
9. Finally, it may also be worthy to conduct a similar study comparing Filipino- and Spanish-speaking monolingual children to see their inflectional awareness. This can yield significant findings about the richness of Filipino language in the area of inflectional morphology.

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