

## **Successive single-word utterances and use of conversational input: a pre-syntactic route to multiword utterances\***

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### ABSTRACT

In the period between sole use of single words and majority use of multiword utterances, children draw from their existing productive capability and conversational input to facilitate the eventual outcome of majority use of multiword utterances. During this period, children use word combinations that are not yet mature multiword utterances, termed ‘successive single-word utterances’ (SSWUs). The language development of five children, observed in play with their mothers, was studied longitudinally across the transitional period (age 1;3 to 2;0). Results demonstrate a common developmental trajectory from single words to SSWUs, formed with the support of conversation, to more independent SSWUs, and finally to majority use of multiword utterances. The children varied in the extent to which they produced SSWUs and whether they first produced across-turn versus within-turn SSWUs. Possible reasons for variability and why SSWU production may be important to the development of multiword utterances are discussed.

### INTRODUCTION

Despite the frequent assumption that children leap from a single word phase to grammar, both early diaries (e.g. Leopold, 1949) and more recent case studies (e.g. Scollon, 1976; Veneziano, 1999) report observation of ‘successive single word utterances’ (Bloom, 1973: 39), sequences of two

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words that occur earlier than the ability to use grammar. The goal of this study is to document this phenomenon, previously reported only in a few analyses of single children, by longitudinal analysis of data from five children, beginning during the one-word period and extending to majority use of multiword utterances. With conversation serving as a scaffold, children build toward the syntactic and semantic skills needed for mature multiword speech.

The phrase ‘single-word period’ implies qualitative homogeneity across the period. Even during the single-word period, rather than simply relating an internal symbol to an single external object or event, children begin to produce combinations of two meanings in the form of sequential utterances that are not yet mature multiword utterances, as demonstrated in detail by Veneziano’s (1999) study of a single child. During this transition period, children may be learning how words ‘behave differently’ in combination: essentially developing the potential for learning the first rules of syntax (Ninio, 2006).

#### *Pre-syntactic routes to multiple word production*

From the first day of life, children experience people and things undergoing a variety of motions in space while maintaining identity and appearance. This extensive and ongoing experience provides them with two basic elements of meaning: words focusing on entities (usually people, animals or things) and words expressing dynamic action (usually some form of motion or change) (e.g. McCune, 2008; Talmy, 2000; Werner & Kaplan, 1963). Taken together ‘entity’ (a topic) and ‘change’ (a comment) can form the essential elements of a proposition. Participation in conversation is the key learning ground for understanding and producing propositions. Conversation between parent and child occurs long before children begin to use words. Before children are verbal they use eye contact, smiles, gestures and grunts to communicate. Adults respond with either a behavioral or verbal reply. So conversation can facilitate proposition formation before the transition to combinatory speech as the adult models the behavior. For example, if the child gestures with his arms that he wants to be picked up, the mother may say *baby up?* In this example, the mother has interpreted what the child has gestured and modeled a multiword utterance. In the early part of the transition to multiword speech, the child can use conversation to produce sequences of utterances that prefigure propositions that he would not be able to produce on his own (Scollon, 1976; Veneziano, 1999). For example:

Situation: The child is attempting to put the doll’s coat on

CHILD: coat

MOM: do you want the baby’s coat on?

CHILD: on

A child incapable of producing *coat on* has managed to verbalize this meaning across two conversational turns. This is an example of an across-turn successive single-word utterance (SSWU), where the child is able to express a two-word meaning about the doll's coat with the help of the mother's intervening utterance. The child both answered a question posed by the mother and also imitated the word *on*.

Veneziano (1999) demonstrated how sequential utterances produced in the transitional period might proceed from the essential dependence on maternal support to greater independence. Conversation also facilitates the development of multiword speech by modeling the use of two or more different words for a given situation. In the transitional period, the child may be cognitively ready to do this only with the help of a conversational partner. Veneziano (2004) found that, for a given communicative intent, children first have successive centers of attention regarding a given situation involving different single words, then progress to simultaneous consideration of two aspects of a situation, and hence two-word sequences. For example, in the single-word period, a child who has eaten a cookie and wants another is limited to either the word *cookie*, focusing on the entity, or the more informative *more*, focusing on the desired change: the appearance of another cookie. When she is cognitively able to consider both aspects of meaning at the same time and combine words fluently, she will be able to produce *more cookie*.

Conversational prompts during this transitional period may help the child move from a phase of attention to each aspect of a situation one at a time (and thus production of one word at a time) to the simultaneous attention to both aspects (entity and change) that is required for multiword utterances. In supported SSWUs, the child can produce two (or more) of the several words that are appropriate within a communicative event earlier than mature independent multiword production. The earliest dynamic or 'change' words are often particles such as *on*, in the example *coat on*. Adult conversation may assist the child in the shift to using verbs, a topic addressed in the discussion (Herr-Israel, 2006; Herr-Israel & McCune, 2008).

In addition to the child's cognitive and communicative readiness, dyad interaction style also plays a role in SSWU production. Research indicates that mothers differ in the extent to which they provide conversational prompts and children vary in their responsiveness to prompts which both influence the child's overall production of SSWUs as well as the extent to which they produce across-turn versus within-turn SSWUs (Herr-Israel, 2006).

#### *Previous work on successive single-word utterances*

Leopold (1949) was the first to describe a child's tendency to produce single words successively, but not in an integrated, syntactic pattern.

He mentioned his daughter's production of 'two (related) one-word utterances ... said in succession' just before the emergence of two-word combinations in her speech (p. 20). Bloom (1973) observed this sort of construction in her study of four children, aged 1;4 to 1;7, which she called 'holistic successive single word utterances'. Greenfield, Reilly, Leaper & Baker (1985) also identified SSWUs in their account of how children make the transition from single- to multiword speech. They argued that such successive utterances may lead directly to two-word speech through several different pathways. These several authors observed the existence of SSWUs in the transitional period without detailed developmental analysis.

Scollon (1976) showed developmental change in children's use of conversational structure to facilitate more complete expressions of meaning. He devised a coding system for different types of conversational structure between adult and child and described the transition from single-word speech to combinatory speech for one child, Brenda (age 1;0–2;0). Scollon found a progression, in Brenda's development, from: (i) use of SSWUs that were supported by self-repetition and bridged by an intervening adult turn (here termed 'across-turn' SSWUs); to (ii) SSWUs that were supported either by self-repetition OR an intervening adult turn; and then to (iii) SSWUs that were not supported by either self-repetition or such conversational support.

Veneziano (1999; 2004) evaluated the development of SSWUs in a single French child between the ages of 1;3 and 2;2. She expanded on Scollon's distinctions among types of SSWUs, first by including whether, in across-turn SSWUs, the child's second word was: (i) elicited, a repetition of the parent's utterance or neither; and (ii) whether this conversational support was relatively immediate or more delayed. Second, for within-turn SSWUs, she distinguished between immediate, delayed and absence of conversational support.

Veneziano (2004) found that at 17.9 months the child in her study produced few SSWUs. From there the child progressed to production of across-turn SSWUs directly dependent upon preceding conversation to less dependent across-turn SSWUs, dependent within-turn SSWUs, and some multiword utterances and finally to multiword utterances outnumbering SSWUs. Although using systems with different emphases, Scollon and Veneziano both found a progression from more dependent to more independent SSWUs. Both Scollon (1976) and Veneziano (1999) recognized the child's use of self-repetition as an aid to the production of SSWUs. The repetition provides support but it is support provided by self rather than the conversational partner. Priming the second element of an SSWU, then, can be obtained from prior utterances of the conversational partner or in a more independent fashion through use of self-repetition.

Branigan (1978) questioned the definition of SSWUs as comprised of two separate single-word utterances with regard to the prosodic shape of the intonation contour, especially at terminal juncture. Focusing on within-turn SSWUs, Branigan found that non-final words in SSWUs did not have terminal intonation contour whereas words used alone and words used in the final position in both SSWUs and multiword utterances did have terminal intonation contour. This indicates that the component words of within-turn SSWUs are not identical in nature to other single-word utterances. Branigan states:

In these data, successive utterances show evidence of being planned as a single unit, at least on the measures of duration and intonation contour. The terminal boundary of the planned unit is marked on the final word in successive utterances and non-final words are compressed. Multiple word utterances (essentially, those that are not in question) exhibit the same properties of being planned as a unit. In light of these facts, it seems reasonable to suggest that successive utterances ARE a multiple word form at the level of planning. The difference between successive utterances with noticeable pauses between elements and multiword utterances with no such pauses appears to be one of fluency of execution (p. 418).

Branigan's finding of similarity between within-turn SSWUs and multiword utterances in length and final contour, along with differences in fluency, supports the gradual nature of the transition to combinations. In shifting to true multiwords, children add both length (additional words) and meaning to their utterances, along with typical sentence intonation.

### *Purpose of the study*

Despite a number of single case studies and some controversy concerning whether SSWUs are distinct from multiword utterances (Branigan, 1978), no study has addressed the nature and extent of SSWUs use across a number of participants in a single longitudinal study. Hypotheses for the current study are as follows: (i) children will proceed from single words, through a period of successive single word utterances to a dominance of multiword utterances; and (ii) their combinatorial speech will proceed from dependence on maternal conversation to greater independence.

## METHOD

### *Participants*

Five children (three girls, Alice, Aurie and Shanti, and two boys, Jase and Rick, all from white, English-speaking, middle-class homes) were followed

longitudinally across the transition from exclusive single-word use to predominance of combinations (1;5–1;11 for Aurie, Rick and Shanti; 1;5–2;0 for Jase; and 1;3–1;8 for Alice). The data, gathered by Lorraine McCune, included an additional ten participants (see Herr-Israel & McCune, 2008; McCune, 1995; 2008; McCune & Vihman, 2001). The participants chosen for the purposes of the current study were those most advanced in multiword production as assessed by MLU at age 2;0. Future work will require analysis beyond age 2;0 to extend the generality of findings to children developing more slowly than those studied here. All children had begun single-word use prior to the period analyzed for this study (McCune & Vihman, 2001).

### *Data collection and transcription*

Data were collected in homes at a time of day when mothers indicated that their children were usually awake and engaged in play activities. The Bayley Mental Development Index and Infant Behavior Record (Bayley, 1969) was administered in several monthly sessions to ensure that the children exhibited normal cognitive development. The participants were videotaped monthly in the home during half-hour free-play interactions between mother and child.

For the play observation, mother and baby were seated on the floor in a room free of the child's own toys. For each session the investigators brought a set of toys, which included dolls, cradles, small dishes, toy bottles, toy cars, boxes and books (McCune, 1995; 2008). In order to minimize variability in maternal stimulation during the play sessions, mothers were asked to 'let the child take the lead' in play, especially for the first few minutes of the 30-minute sessions, and to respond to their children as naturally as possible. The play sessions were videotaped using an external microphone placed near the mother and child. If the baby left the room, or the mother answered the phone, or other similar events occurred, the taping was stopped until the participants were ready to resume the session.

Transcriptions of the children's language were made with accompanying contextual descriptions of the child's actions, the mother's actions and the mother's language. All transcripts were subsequently entered into the CHILDES database.

Words had been identified for a previous analysis (McCune, 1995) by the following criteria: proximity to adult phonological shape, appropriate context and multiple occurrences (McCune & Vihman, 2001; Vihman & McCune, 1994). Utterances containing only one identifiable word were treated as non-combinatorial single-word speech. Multiword utterances were identified by the following criteria from a previous analysis (McCune, 1995): an utterance was considered a multiword utterance if it contained

two or more words that share a single intonation pattern with terminal contour only on the final word and no discernible pauses between the words. For the present study, all single words were evaluated for potential inclusion in an SSWU.

#### *Coding of successive single word utterances*

Veneziano (1999) identified the critical variables and a potential sequence of development in examining the role of SSWUs. In the present study, the individual characteristics identified by Veneziano (see Table 1) were judged separately so reliability could be computed on each type of judgment. In order to be identified as an SSWU construction, two utterances were required to be semantically related by inclusion in the same event, referring to the same object or objects but with a temporal delay between the words. In practice, each single word was evaluated by the first author, looking at the word that followed, the situation, the object attended and what the mother said, using categories in Table 1. To illustrate the process, take the example given in (Id) in Table 1. In that situation, the child is playing with a jack-in-the-box that contains the elephant Dumbo throughout the utterances. If the situation changed between the mother saying *elephant* and the child saying *out*, for example if he picked up a bottle with small toys inside and then said *out*, the two words *elephant* and *out* would not form an SSWU.

Once a word was identified as part of an SSWU, the SSWU was evaluated to determine its status as across-turn or within-turn, and the relationship of each word to prior child and adult utterances, as illustrated in Table 1. The categories in Table 1 entail different levels of dependence on surrounding conversation as indicated. Across-turn SSWUs are inherently more dependent on conversation than within-turn SSWUs, so the analysis concerning the children's production of dependent SSWUs and their developmental sequence begins with analysis of across-turn versus within-turn SSWUs in the transitional period. Each utterance was separately coded for the inclusion of self-repetition of the first word of the SSWU.

#### *Inter-rater reliability for coding types of SSWUs*

Reliability for the identification and assignment to the SSWU categories in Table 1 was calculated for the five children. One-third of the children's longitudinal transcripts were randomly selected for the purpose of establishing inter-rater reliability. Neither coder was aware of the ages of the children for the samples included in the randomly selected data.

Coding was done in two phases. First, coders went through the transcripts and coded each line of the transcript that included a child

TABLE 1. *Successive single-word utterance types with examples*

Type of utterance	Example
(I) Across-turn	
(a) Across-turn immediate child imitation of mother (dependent)	C: monkey M: where's the monkey's face? C: face
(b) Across-turn delayed child imitation of the mother (dependent)	M: his face is under the cup. You're going to get water in his nose. C: Oscar M: yes that's Oscar. C: cup
(c) Across-turn response to a question (dependent)	C: that M: what is this? C: button
(d) Across-turn conversationally independent: neither response to a question or a verbal imitation (independent)	M: that's a nice toy C: elephant M: elephant C: out
(II) Within-turn	
(a) Within-turn immediate child imitation of the mother (dependent)	M: see the little holes? That's where her hair comes out. C: head # out
(b) Within-turn delayed child imitation of the mother (dependent)	M: ooh, it's hot C: yeah M: you have to blow. C: it # hot
(c) Within-turn response to a question (dependent)	M: what should I do? C: eat # soup
(d) Within-turn conversationally independent: neither a response to a question or a verbal imitation (independent)	M: this is for the doll C: bottle # look

# indicates a perceptible temporal space between words.

single-word utterance as being only a single word, or a word that was part of an SSWU. In the second phase, each coder independently coded the details concerning whether the SSWU was across-turn or within-turn and assigned subtypes for across-turn and within-turn SSWUs as shown in Table 1. Cohen's kappa for phase one and two was 0.71 and 0.92, respectively.

## RESULTS

### *Developmental changes in the proportion of single-word utterances, SSWUs and multiword utterances in the transitional period*

There were several factors in the developmental path of the three utterance types that were common to all five children (see Figure 1). First, the highest proportion of single words produced in a given month's session occurred within the first three months of the time period studied for all five children.



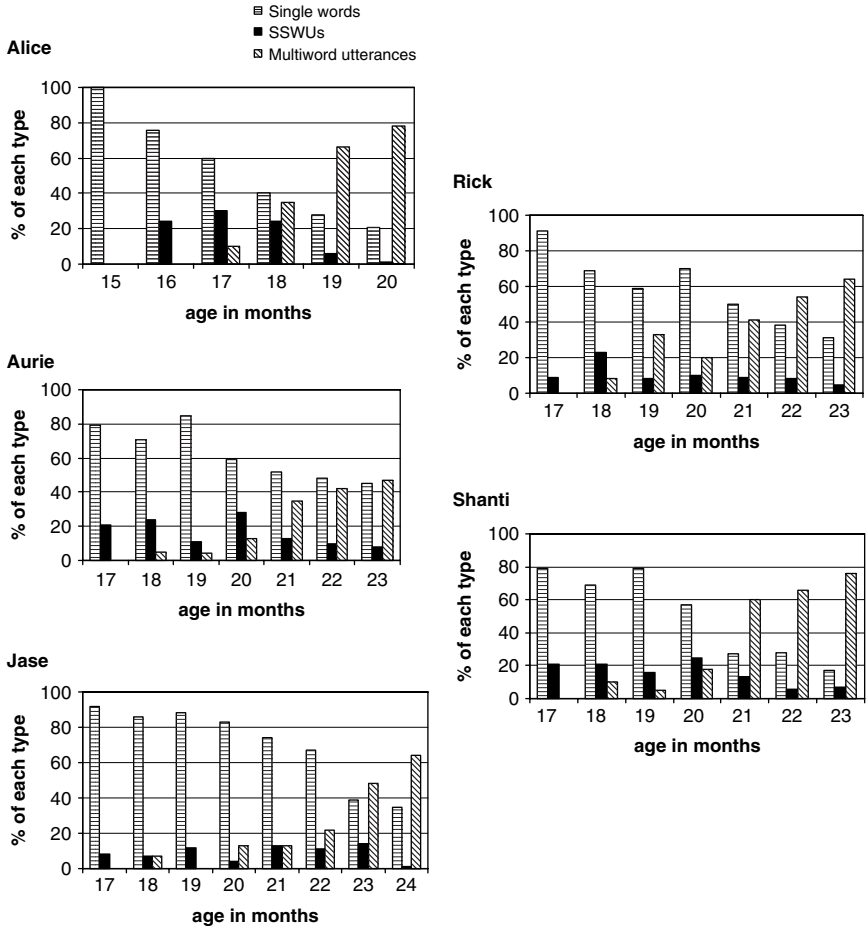


Fig. 1. Developmental changes in the proportion of single-word utterances, SSWUs and multiword utterances.

The lowest proportion of single words produced in a given month's session occurred in the last month of the study for all five children. Regarding SSWU development, all five children produced at least one SSWU before they produced a multiword utterance. The highest proportion of SSWU production for each of the children occurred in the middle months (i.e. not the first or the last month) of the transitional period. Also, for all five children, the production of SSWUs in the last month of their transitional period was maintained at a level lower than peak production (Aurie, Rick and Shanti) or tapered off sharply (Alice and Jase). Lastly, all of the

children, after several months of mostly producing single words and SSWUs, had a month in which their production of multiword utterances increased sharply, gaining momentum thereafter with production of multiword utterances surpassing production of single words and SSWUs.

Differences between the five children were the extent to which they used SSWUs versus single words in their transition, the extent to which they used across-turn versus within-turn SSWUs (see below) and the number of months until multiword utterances became prominent. Alice, Aurie and Shanti produced greater proportions of SSWUs throughout their transitional periods than Jase and Rick. Jase, the least verbally mature child, in terms of MLU at 2;0, used the least number of SSWUs of the five children. The children varied in the number of months between having produced at least one SSWU and gaining proficiency with multiword utterances (ten or more types in a given month). Jase had the longest span, from 1;5-1;10, while Rick had the shortest, from 1;5-1;7.

*Developmental changes in the proportion of across-turn and within-turn SSWUs and those that were dependent and independent*

Unlike the general pattern of developmental change in proportional production of single words, SSWUs and multiword utterances, the development of production of across-turn versus within-turn SSWUs did not show a clear pattern across the five children's development (see Figure 2). Some children appeared to utilize or have access to circumstances for across-turn SSWU production more than other children. Two children (Alice and Aurie) produced more across-turn SSWUs than within-turn SSWUs in their first month of production. Aurie in fact produced more across-turn than within-turn SSWUs throughout her transitional period. Jase and Rick began SSWU production with one within-turn SSWU and then produced some of each type in most subsequent months. Jase and Rick both first produced single, dependent within-turn SSWUs, which is indicated with an asterisk in Figure 2. Shanti produced one across-turn and two within-turn SSWUs at 1;5 then produced more within-turn than across-turn SSWUs throughout her transition.

Although across-turn SSWUs are often more directly dependent on conversation than within-turn SSWUs, some types of within-turn SSWUs are also dependent. In an analysis of the dependent productions of both types of SSWUs (Table 1, types (Ia-c) and (IIa-c)) that were produced in the first four months of each child's production period, 67% or more were dependent. They were produced using imitation, answering a question or they included a self-repetition. The highest number of types of more independent SSWUs (Table 1, types (Id) and (IIId)) were produced in the last three months of the time period studied for all five children.

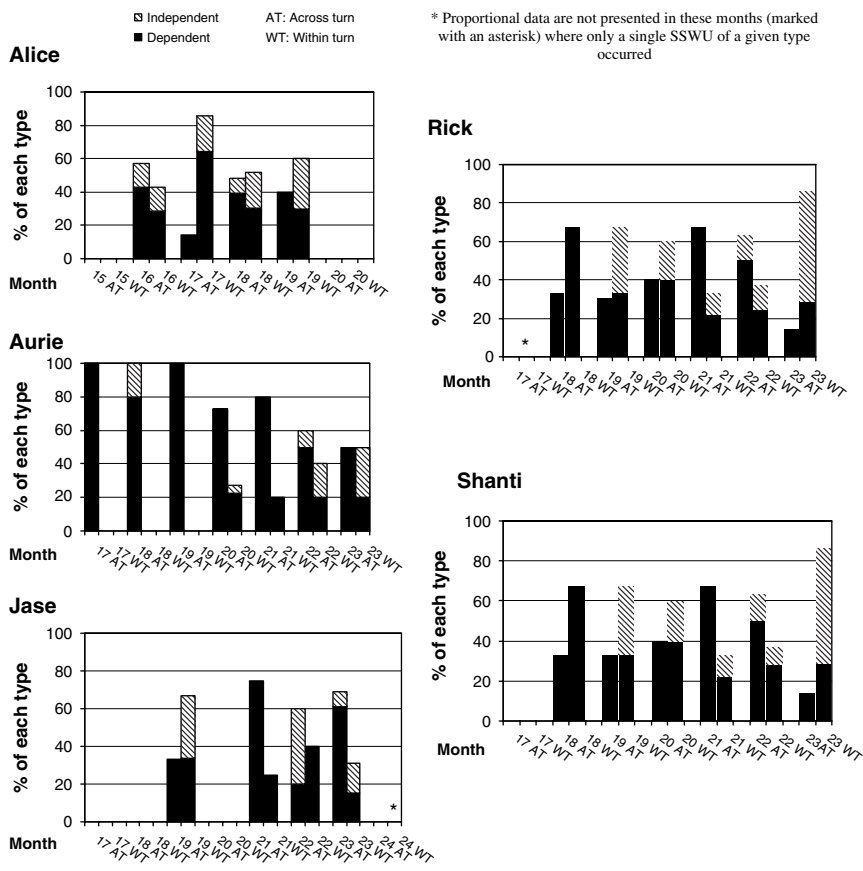


Fig. 2. Developmental changes in the proportion of across-turn and within-turn SSWUs and those that are dependent and independent.

DISCUSSION

Two developmental patterns are evident in the findings. First, all five children produced SSWUs prior to multiword utterances. Second, there was a trend for each child from more dependent to more independent productions of SSWUs. The general pattern of development for the five children was single words before SSWUs, an increase in SSWU production with peak levels occurring in the middle months to a leveling off or fall in SSWU production in the last month when multiword utterances were the dominate type of utterance. This pattern supports the hypothesis that SSWUs serve as a stepping-stone to multiword utterances. It appears that SSWUs are a genuine phenomenon used by children. They fulfill some

functions of multiword utterances as they decline when competence with multiword production is available.

Across-turn SSWUs were not produced first by all children. Jase and Rick produced a few within-turn SSWUs before they produced an across-turn SSWU, Shanti produced both types in her first month and Alice and Aurie produced across-turn before within-turn SSWUs. However, dependent SSWUs preceded independent SSWUs for four children and coincided with first independent SSWUs for the fifth child. In addition, the majority of SSWUs in the first four months were dependent. Most independent SSWU types produced by each child occurred in the last three months.

This scenario supports the Veneziano (1999) and Scollon (1976) models. Both systems, although with different emphases, demonstrated developmental patterns in the transitional period as evidence for constructive processes leading from the simplest constructions that rely on preceding maternal utterances (and self-repetition in Scollon's model) for their construction to more self-generated constructions and finally to multiword utterances. Veneziano's findings suggested that across-turn SSWUs may precede within-turn SSWUs, but the primary distinction in her model is level of dependency on prior conversation, which she argues lessens as the child develops. Our results support this view.

Variability among the children concerning their proportional use of SSWUs and whether they produced more across-turn than within-turn SSWUs may reflect the child's cognitive and verbal maturity, as well as maternal style of verbal interaction with the child. If the child is not yet cognitively ready to consider two aspects of meaning at the same time and produce a word for each aspect, he or she will not be able to produce SSWUs. All of the children had produced combinations in their representational play (an indicator of advances in cognitive ability over non-combinatorial play) prior to producing SSWUs, with Alice, the most precocious participant, showing this ability at 0;11 (McCune, 1995; 2008). In further support of this developmental interpretation, two children with the lowest proportional use of SSWUs, Jase and Rick, had their highest proportions of across-turn SSWUs in the middle to later months, when their verbal abilities had increased from earlier months. Another factor in the relationship between a child's cognitive/verbal ability and the production of SSWUs is that mothers may increase verbal input and its complexity as their child gains verbal competence, thus enabling the production of more SSWUs.

Parental style of verbally interacting with the child may also be a factor in the variability found in the amount and type of SSWUs the children produced. While a formal analysis of the five dyads interaction styles is beyond the scope of this analysis, it is likely that parents differ in the

amount and type of verbal input they provide and, in turn, the number of prompts available for SSWU production. Herr-Israel (2006) provides an analysis of the interaction styles of three of the dyads who participated in the current study and how differing maternal styles may have influenced the child's production of SSWUs. The mother of the child that produced the most SSWUs, Aurie, had a facilitative input style, commenting and expanding on the child's focus of attention in play. The mother of the child that produced the least SSWUs, Jase, had a directive input style, continually directing him toward another activity that he often failed to acknowledge.

In the Introduction, we suggested two ways in which SSWUs may be important in the formation of multiword speech. Producing first SSWUs, usually with the support of the conversational partner, constitutes the child's first experience with producing words for two aspects of a situation, and more specifically their first experience with producing propositions, 'entity' and 'change' combinations, which are two primary components of a mature sentence.

An example for each child in which a proposition was constructed with the help of mothers' verbal input can be found in Table 2. In the first four of the five examples, the child imitated a verb from the mother's prior utterance (Jase also repeated the noun). It may be that parental input not only facilitates proposition formation but also provides a boost in semantic complexity to children's early propositions. Greenfield, Reilly, Leaper & Baker (1985) noticed a phenomenon that they called 'structural growth within semantic constancy, semantic growth within structural constancy' (p. 246). They distinguished semantically sufficient entity words (content words) from semantically empty entity words (proforms). They suggested that children use proforms (e.g. *it, that, this, one*) in their first uses of a particular linguistic structure and later substitute content words for proforms as the structure becomes familiar. Herr-Israel (2006) found that participating children used content words with first 'change' words (e.g. *on, up*) but used proforms with more semantically complex 'change' words (i.e. verbs). In the first four examples in Table 2, the child produces a verb/content word SSWU with the aid of prior maternal input. In the fifth example, the child produces a less complex 'change' word (*more*) and, prompted by a question, pairs it with the content word *cookie*.

### *The study in context*

The study provides an analysis of children's beginning use and development of two-word utterances and use of parental and self support to facilitate production of SSWUs across the period of transition from single to combinatory speech. A major contribution of the study is that it includes analysis and comparison of more than one child's SSWU development and

TABLE 2. *Examples of propositions produced using prior maternal input*

Child	SSWU Example
Alice (1;5)	Context: the child pretends to feed a doll M: does she want a drink or something? C: drink # C: milk
Aurie (1;8)	Context: The child has a book and is sitting with her mother C: book, book M: do you want me to read? C: read
Jase (1;11)	Context: the child is playing with a toy hammer M: can you hammer the wood? C: hammer # C: wood
Rick (1;10)	Context: The child successfully opens a toy toolbox M: there you did it C: did # C: box
Shanti (1;6)	Context: the child forms a proposition through response to a question and clarification C: more, more M. more juice, are you thirsty? C: cookie

# indicates a perceptible temporal space between words.

use of conversational support at the transition to majority use of multiword utterances. However, research with a larger number of participants is needed to confirm the developmental patterns found in this study, to explore reasons for the differences among the children in their use of types of SSWUs and to explore the influence of maternal interactional style on SSWU production.

The transition from sole use of single words to majority use of multiword utterances is an important period because it represents children's developing knowledge that words are semantic pieces that can be put together to more effectively convey one's communication than is possible with use of a single word. This period of development coincides with children's dawning awareness of self as a separate functioning and experiencing person (Amsterdam, 1971; Smiley & Huttenlocher, 1995). With this comes the desire to include more detail about self wishes and intention into social communication. Knowledge gained from an investigation of optimal styles of engaging children in conversation in terms of eliciting children's use of verbal input may be useful for children with language delays. In some circumstances, dyads could be taught optimal ways of interacting in play sessions to facilitate production of SSWUs and early multiword utterances. These combinatorial utterances provide experience with the semantic, syntactic and pragmatic aspects of language.

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