Word Play
The Creation and Function of Novel Words in the Pretend Play of Two Siblings

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This article examines the creation of novel words by two English-speaking male siblings, ages five- and six-years-old, during a fourteen-month period of weekly play sessions. The questions the article addresses are: Did the boys produce novel words? What types of words? Why were these words created? And did they become a permanent part of the siblings' vocabularies? The authors categorized all novel words as either developmental substitution, word play, redundant duplication, or word gap, depending on how the words functioned in the boys' conversations. In this dyad, novel words functioned primarily as word play and filling a word gap (thereby providing a precise way to convey meaning). The novel words were nearly all nonce formations (isolated occurrences) and were composed mainly of compound words (two- or three-word combinations) and pseudowords (fictitious words). When the boys repeated novel words, they usually did so immediately, i.e. within the same play session. The study suggests that these children spontaneously produced a varied repertoire of novel words to meet and expand the needs of their imaginative or pretend play. The words were created in the moment and arose from the novel concepts and themes of pretend play. Research for this article was funded in part by the University of North Carolina at Greensboro.

When children engage in pretend play, they create new ideas and imaginative scenarios, they reenact experiences from their own perspectives, and they play roles using their perceptions of people and other characters they know and invent. We define *pretend play* as a multidimensional type of play that commonly combines communication and intimacy, that uses toys or props, and that involves more than one player. Pretend play is nonliteral, and it transforms actions, objects, persons, places, and, indeed, all other aspects of the children's immediate situations.[1]

Language is an important part of pretend play, used to express multiple meanings for characters, settings, and feelings. Such use of language provides an

ideal context to examine the way children produce novel words because the new and imaginative situations they create in pretend play increase the demand for new words to express those situations. Some linguists believe that novel words, also called *lexical innovations*, used by a child occur primarily to fill a gap in his vocabulary because he temporarily forgets a word, because he does not know the appropriate word, or because there is no word in the adult standard language that matches his intended meaning. Adults create words for similar reasons, though adults also do it just for fun.[2] Adults and children sometimes use novel words instead of more conventional language because these more quickly convey the same meaning. As children grow during the preschool years, their need to be more verbally specific increases. This specificity calls for the creation of larger subcategories of related words (e.g. "space-guy," "space-hat," and "space-boots") and increases the likelihood that they will invent more words.[3]

Children create novel words in everyday routines including play routines. Such words often are compound words, created by combining two words to mean something different from the individual words together. Younger children may combine words in a simple way by using two nouns (as in "sun-face") and, at later ages, in a more complex way by combining another kind of word such as a verb with a word ending, or suffix, and a noun (as in "catching-ball"). Numerous studies have documented this phenomenon in young children in a variety of languages, but they relied on data from parent-to-child interactions. We know less, therefore, about the spontaneous production of novel words in conversations between children of similar age especially in a play setting. In addition, linguistic studies of novel-word creation in spontaneous speech have only included real words combined in new ways or given new meanings. None has included the production of words that do not exist in English. For these kinds of words, otherwise commonly known as nonsense words, we use the term *pseudowords*.[4]

We can find occasional examples of novel words in children's conversations with each other in longitudinal studies such as William Corsaro's study of preschool conversations, in Susan Grohs Iwamura's study of the conversations of two girls while riding in the back of a car, and in Michael McTear's dyadic conversational exchanges. Because these studies focused more on conversational turns and content, however, they gave little attention to novel words. Also the children involved in these studies were all younger than five-years-old. Iona and Peter Opies' work with British children from ages five to twelve included more group-fantasy behavior and also offered

a greater range of experiences. Older children apparently engage in more complex and unusual narratives.[5]

Most word creations seem to occur in two- to five-year-olds, and there is limited evidence of such language creations in children older than five. Deanne Swan, based on an analysis of the number of lexical innovations per month of an English-speaking American child from thirty- to fifty-six-months-old and then from sixty-three- to seventy-one months-old, argued that there is a peak in the creation of coinages between the ages of three and four years and a decline by ages five to six. Rare examples of coinages in older children include a description of a "laying-down room" in doctor play between two five-year-old girls in data presented by Jacqueline Sachs, Jane Goodman, and Christine Chaille and a five-year-old who constructed a pretend elevator out of objects and warned about its being "tippy" in data described by Dennis Wolf and James Pusch.[6] Probably, as children increase their vocabulary, they have less need to create words to express new meanings. By the age of six, a child has a vocabulary of as many as ten thousand words.[7] As children grow older, they also become increasingly aware socially of the appropriate language and vocabulary for conversations with others. Emily Bushnell and Michael Maratos argue that children older than five create words less frequently than younger children because they have developed sociolinguistic inhibitions against using nonconventional language.[8] Given the limited evidence that adults and older children do coin new words, we would expect to find examples of such words in some contexts in school-aged children, even if these are transitory.

If children do use their knowledge of language to create new words, it might be interesting to explore what happens to these words. Are such words used only once or do they become permanent additions to a child's vocabulary? If they become permanent, we might assume that a shared vocabulary between some children results. Karen Thorpe found that twins more often develop their language skills later than they develop their own private language (*twinspeak*). Nonetheless, she and her colleagues have found some support for the presence of a secret language in some closely spaced singleton pairs. Others have also found evidence of other secret languages and secret codes among children in different cultures, such as talking backwards, which they use to exclude adults from their activities.[9] This is the kind of language usage—creating words only understood between familiar persons—we find in well-documented *familylects*, which consist of unique words and meanings employed within a family for half a decade or more. We do not know whether the idiosyncratic novel productions

of children older than preschool are transient, or whether—like familylects—they are used repeatedly on similar occasions and become part of a permanent language between children. The present study helps address this gap.[10]

In summary, we conducted a longitudinal case study of two school-aged boys to address the following questions: Do children older than five years create new words in pretend play? If so, what types of words do they create? Why do they create these particular words? And do these words become a permanent part of sibling vocabulary?

When and Why Children Create Novel Words

To explore the creation of novel words, we need to examine the concept of word innovation and understand the different views of why children create their own words. Eve Clark proposed that the primary reason children create novel words is to fill a word (lexical) gap. Thus, a novel word expresses a concept for which an established word does not exist. Clark argued that an existing word and a novel word in a child's vocabulary cannot both have the same meaning. Clark believed children rarely create novel words if they know standard words. Loekie Elbers disputed the notion that a word gap solely explained word innovation; she observed that children do, in fact, produce some novel compounds when they might as easily use a simpler form. Jennifer Windsor found other functions for novel words. She listed many examples from four children of compounds such as "birthday-day" for birthday, "cake-food" for cake, and "kitchen-room" for kitchen as evidence that children create novel compounds to duplicate or emphasize a concept. In other words, not all novel compounds function solely to fill a word gap. Using longitudinal data from a case study of a boy aged two to five, Judith Becker also questioned the view that nonconventional language fills chronic or occasional word gaps. She claimed that the reasons a child used nonconventional language were sometimes simply unclear. Her data revealed that a child produced "meaningless" words such as "thumble," redundant innovations such as "granola-cereal," and words to substitute for conventional, known forms such as "bee-house" for "beehive." She also suggested children create some words to make playful sounds that accompany certain actions, to dramatize narratives, or to confuse parents. We support her view that children may create novel words out of simple playfulness. By including pseudowords

and partial pseudowords in the analyses of novel words in our study, we might confirm that, in addition to communicative and conceptual motivation, children may be motivated by the process of simply playing with words.[11]

Are Novel Words Permanent?

Numerous studies show that novel words, especially compounds, are spontaneously created and immediately comprehended, but few of the studies address whether the words are permanent additions to a child's vocabulary. Thus, we did not know whether a novel word could occur only once or whether it could become a semipermanent part of a child's vocabulary. Could a child acquire and use a new word created by another child after only one exposure? There is some evidence for the rapid acquisition and recognition of new words. Experimental studies have shown that exposure to a novel word, object, or color once (or in some studies, a few times) is sufficient for young children to identify the word, object, or color a few moments later and again after several weeks. But none of these studies focused on whether such *fast-mapping* of words generalizes to the spontaneous and repeated use of a novel word.[12]

When children create new words, they sometimes use them repeatedly within the same context on the same day. For example, Eve Clark, Susan Gelman, and Nancy Lane describe a two-year-old who repeated the novel compound "light-car" many times during a fifteen-minute drive. Susan Grohs Iwamura describes the coinage of "happy dress" to refer to dresses made from fabric with smiley faces that one girl used several times in three consecutive utterances and that her friend also accepted and used. We do not know whether these words were reused on other occasions. Judith Becker also found that some novel words, from a child aged from about two-and-a-half to five years, were used multiple times within conversations and occasionally across time. Most studies report examples of novel words that appear to be mentioned only once, and we can assume they represent single uses of such words.[13]

David Crystal discusses researchers' lack of attention to *lexical isolates,* words or phrases that are rarely repeated, especially in written text. He distinguishes between lexical isolates that are nonce formations, "items spontaneously coined by a speaker or writer to meet the immediate needs of a particular communicative situation," and neologisms. He notes that in adult speech nonce

formations can include puns and coinages, momentary lexical gap fillers, and rhetorical anomalies. Nonce formations are coinages intentionally created by the speaker on the spur of the moment and without careful planning. Crystal observes that these words may be used several times within one speech event, but they do not generalize to other conversations or discourse events. Neologisms, however, are not only new words or expressions; they have, he argues, developed beyond the stage of idiosyncrasy and are recognized as new items in the language. Only after a nonce formation becomes a "twice-formation" and people become aware they have heard the term before, does it begin to emerge as a neologism. No language has a word for every concept that may arise in conversation, and many new coinages, according to Eve Clark, are nonce uses. They can be easily understood when someone uses them, but they do not remain permanently in an individual's vocabulary unless they are sufficiently useful for a large group of people. No study so far has systematically checked for the number of nonce formations versus permanent new words using longitudinal data from sibling-dyad interactions.[14]

There are two possible perspectives on language creativity between partners. One view is that, because children learn new words quickly and efficiently, any word they find appealing becomes a temporary or semipermanent part of their language. An alternative view argues that a novel word is created by an individual child. Though such a word may be acknowledged or even imitated by the other child in a dyad interaction, it will not necessarily be transferred to the other child's vocabulary. By keeping the play setting constant and increasing the opportunities for similar conversational and pretend-play topics, we created a situation that optimized the support for the persistent use of novel words once they were created.

Method

Based on previous studies, we hypothesized that the children in the current study would produce some novel words including compounds and pseudowords and that the main function of the words would be nondevelopmental substitution. Also, we hypothesized that the creation of new words would result in favorite words that would be established as a permanent, private vocabulary repeatedly used during dyadic pretend play in the same situation.

Participants

We selected two brothers (aged at the beginning of the sessions five-years-and-two-months, and six-years-and-four-months) for the study. From a middle-class family, they were the third and fourth born of four children, and they spoke English. They attended the same suburban public grade school (kindergarten and first grade) in the Midwestern United States. The names we used to identify the children in this article are fictitious. We called the younger child Edward, and the older child we called Stephen. Although there were only the two participants in our research project, a case-study method of just one or two subjects is common in longitudinal analyses of language acquisition in children.

Procedure

We placed a hidden audio recorder in the bathroom to record Edward and Stephen's conversations as they took routine baths. The bathing sessions took place in a forty-nine-week period. The recordings were kept one week apart within a day or two except for two recordings that were only three days apart. The children did not know any recording was taking place. The observer, who was not visible to the children, took detailed observational notes on social context and behaviors. The data for our study of 49 weekly sessions lasting approximately a half hour contained lexical innovations similar in number to those that Judith Becker found in her study covering 210 half-hour, weekly sessions of parent-to-child interaction involving a child aged two-years-and-four-months to five-years-and-zero-months.

Stephen and Edward talked mostly about their everyday lives and their play with Transformer action figures, robots, and boats they used as bath toys. Their play was pretend play—sometimes fictitious sociodramatic play or sometimes modified reenactments of their experiences. Most notable was the impact of video and television programs, which they recalled and reenacted, such as *Pinocchio, Star Wars, Winnie the Pooh, Sesame Street*, and a movie about the Australian outback. Experiences with older siblings proved important (e.g., a wok recipe cooked by their sister and their sister's birthday). Most of their pretend play involved water and boats but also included scenarios in which the older child played the role of a daddy and the younger child played the role of a baby. Personal experiences were popular themes (e.g., being sick the previous day) as were memorable novel experiences at school (e.g., watching origami being made). Other themes were after-school activities such as Kung Fu and

swimming lessons. Occasionally, a discussion of getting into trouble with their parents arose. They sang rhymes, music, and songs heard at home and school, but they often sang them with different words.

Coding and Reliability

Evangeline Nwokah transcribed the audiotapes of the play sessions. A second reader—a graduate student in speech-language pathology with clinical training in linguistic transcription and phonetics—independently transcribed 20 percent, or ten of the forty-nine sessions. Before we began analyzing the creation of novel words, we determined the degree of agreement between transcribers or coders, known as the *interrater reliability*. In this study, we calculated a simple percentage agreement expressed as the number of agreements divided by the total number of words (agreements plus disagreements) transcribed by the two coders. This number was then multiplied by 100 to arrive at the percentage agreement. Word-by-word transcription showed a mean agreement of 86.1 percent of the words in all sessions. Thus, only minor disagreements surfaced, and these mainly concerned the omission of a few words or phrases. They did not involve any of the data related to novel words and were resolved through discussion. Following transcription, we identified each novel word in the transcripts and italicized it for further analysis. For the purpose of our study, we defined a novel word in several ways: a word or phrase that already exists in standard English and is used with a new meaning, a distortion of an already-existing word, a new word or phrase using a combination of existing and new words, or a completely new word including nonsense words. Two graduate students naïve to the hypotheses of the study coded the novel words. They classified each novel word as a single word, a simple-compound word, a complex-compound word, or a pseudoword. Simple compound words combine two word roots such as *book* and *worm* or *jump* and *shot* to connote a new concept. Complex, or synthetic, compounds are simple compounds to which a morpheme, the smallest grammatical part of a word, has been added as in the words scratch*ing*-post and flag-bear*er*. Pseudowords are units of speech that seem to be a word in a language but are not part of the standard vocabulary of English. We prefer the term pseudoword to *nonword* or *nonsense word* because the latter include words that violate the sound-combination rules of English such as *xpukje*. Partial pseudowords could include a part of a real word combined with a pseudosyllable as in *missiphant* or two components

from real words combined in such a way to also combine their meanings, for example, *frobbit* for a cross between a frog and a rabbit. We also defined partial pseudowords as combinations of real and pseudowords such as *splosh-bucket*. Any words containing a pseudoword were coded separately from simple and complex compounds because it was not always possible to determine what part of speech the pseudoword was or if it contained an affix.

In analyzing the novel words in this study, we also made distinctions between *tokens* (all the novel words produced) and *types* (different novel words produced excluding repetitions of the same word). We used four categories of novel words established in previous studies of word formations in young children. The four categories, which researchers generally agree are mutually exclusive, and their definitions follow.

Developmental substitution. A real word exists in standard English for the concept the child intends to express, but he may not be familiar with it or he may have forgotten it. He creates a substitute word. Or, a child may use a real word appropriately but she distorts it by adding, changing, or omitting a syllable as in *freeze-food* instead of frozen food.

Speech and language play. The child creates nonexisting words or uses real words that have no clear meaning in the context used. This category includes words used in rhyming, for sound effect or for a similar, playful use.

*Redundant duplication.*The child creates a novel compound word by combining two words to produce a duplicated meaning as in the words *duvet-quilt* or *dirt-soil*. In such instances, the child could have said only *duvet* or *dirt*.

Word gap. Because no single word exists for the idea the child has, he would have to use several conventional words to communicate his concept. For example, *tofu-eater* is a compound word for a person who likes to eat tofu. In another kind of word gap, a single word may exist as a different kind of word as in "*spooning* the gravy" instead of using a spoon to eat the gravy.

We also used the percentage of agreements, as we have described, to obtain interrater reliability for the categorization of words. The interrater reliability was: for single words, 81.5 percent agreement; for single pseudowords, 85.2 percent; for simple compounds, 85 percent; for complex compounds, 82.6 percent; and compound pseudowords, 91.3 percent. Agreements on functions of novel words were: developmental substitution, 80 percent; speech and language play, 96.6 percent; redundant duplication, 100 percent; and word gap, 91.9 percent. The transcribers resolved the few disagreements through discussion.

Results: Children's Production of Lexical Innovations and Their Context

Our study included recordings of forty-nine sessions that occurred during a fourteen-month period. The average session length was approximately thirty minutes, but the sessions actually ranged from five to fifty minutes. Stephen, the older child, produced novel words in thirty-six sessions, and Edward produced novel words in thirty-three sessions. The total number of novel words, or tokens, was 236 (120 produced by the younger child; 116 produced by the older child). This number included 39 repetitions of novel words. Excluding repetitions, the number of different novel words, or types, was 197 (99 by the younger child; 98 by the older child). The mean number of different types of novel words from all sessions for the older child was 2.16 (*Standard Deviation or SD* = 2.77, Range: 0–16), and the mean number of all novel words including repetitions was 2.45 (*SD*=3.37). For the younger child, the mean number of types of lexical innovations was 2.14 (*SD* = 2.64, Range: 0–13), and the number of tokens was 2.56 (*SD* = 3.01). In twenty-five of the forty-nine sessions, both children produced novel words.

Nearly all novel words were compounds, created by combining two or more words. The younger child produced 31 simple compounds and 31 complex compounds, whereas the older child produced only 24 simple compounds and 43 complex compounds. Examples of word types and the ages of the children when they produced the novel words are given in table 1.

Most compounds were two-word combinations, but some compounds produced by the children consisted of three or four parts such as "spit-blow-ball" and "roof-bird-poo-poo-man." Many pseudowords were also composed of compounds. Pseudowords included partial pseudowords, the combination of one real word and one or more pseudowords such as "shellays-talk" and "spico-drip" (see table 2). Again, some pseudowords were three- and four-word combinations such as "ghost-bupper-peekaboo" and "cobra-wapper-slapper."

The Function of Novel Words

Table 3 shows the function of the novel words. The children in this study rarely produced novel words for developmental substitution, or because they did not know the adult word. Only two of Edward's and seven of Stephen's innovations were developmental substitutions. These included: "I'm the hair-maker,"

Table 1. Examples of Novel Single and Compound Words

Single Words	
Edward:	I can *magic* a water bath. I'll turn around 1, 2, 3 (= create a spraying bath) (5; 6: 16)
	It's *pissy* (squirting water from boat into brother's face) (5; 8: 10)
Stephen:	I want you to *experiment* my head. Put soap on my hair (= put hair up like a cockrel's comb) (6; 8: 9)
Simple compounds (eg. noun+ noun, adjective+noun, verb+noun)	
Edward:	Now shoot that *monster-person* = referring to sibling as a pretend monster (5; 4: 30)
	Yes, there is—my little *cloth-friend* = pretend person from facecloth (5; 4: 13)
	I'm a *China-baby* = baby from China (5; 8: 27)
	You have to be a *China-person* = person from China (5; 8; 27)
	This is my *drink-alligator* = toy alligator I am drinking from (5; 6: 16)
	This is *squirt-water* = water that is squirted (5; 7: 0)
	Now this is my luggage. Move out of the way. This is *poisonous-luggage* = luggage that has poison in it (5; 8: 21)
	What about *change-toys*? = the toys that change color in warm water (6; 1: 17)
	This is a *crash-up-one* = one that crashes up in the air (5; 10: 8)
	This is a *flip-up-one* = one that flips up in the air (5; 10: 8)
Stephen:	Look at my *mask-guy*. He's standing in the water = type of action figure (6; 6: 5)
	And he covered him with *battle-soap* = soap used in fighting (6; 7: 8)
	Say you're my *motor-machine* (leans on Edward's back) (6; 9: 27)
	This is called the *imagine-trick* = a pretend trick (pours water on own head from pail and also tries to hit the pail) (6; 8: 18)
Complex (synthetic) compounds (e.g. noun+affix+noun; noun+noun+affix)	
Edward:	I'll do the *snake-shooter* = tube toy he uses to blow water through and looks like a snake (5; 7: 25)
	Get more *sleeping-gas* on him = gas that will make people fall asleep (6; 2: 2)
Stephen:	Let's say that's a little *scaldy-fish* = related to scalding hot water (7; 4: 11)
	And this is called the *squisher-hand*. Squish the hand real tight = squeeze (7; 4: 11)
	I'm just relaxing you. You have to call me the *relaxing-guy* = massaging other child (6; 11: 12)

Table 2. Examples of Partial and Complete Pseudowords

Partial Pseudowords	
Edward:	Let's go, *matt-tracker* (5; 3: 19)
	I'm a *rysterasoarus* = type of dinosaur (5; 3: 27)
	Want the *high-gob?* Put your head up and open your mouth (5; 7: 18)
	Talk like you do. We gonna talk *shellays-talk* (5; 8: 3)
	Okay, *mecha-guy* (5; 8: 21)
	Some *spico-drips* (pours water on tissue) (5; 8: 21)
	My *super-ruper* (5; 11: 11)
	It's time for *mash-smash* (6; 2: 2)
Stephen:	I covered you with *soap-bukker* (6; 7: 8)
	No, you don't wash it off. That side is *ointmentalator* = a combination of ointment and mentholanthum (6; 7:19)
	This is my *super-jeyja* (6; 8: 19)
	Say *hank-hom-pizza* = pretending to take photo (7; 2: 13)
Pseudowords	
Edward:	*Malache malacata* That's enough = food item [mælæ'kɛ̲: mæ'l̲æ̲kætæ](5; 8: 21)
	Here's the spices. *Chele peles* [tʃe'le pɛ̲'l̲ɛ̲z] = spice (5; 8: 21)
Stephen:	I need *disepticode* [dɪ'sɛ̲ptikoud] = name of liquid (6; 8: 18)
	I need *shambraylocks*. Some more *shambraylocks* [ʃæm'brɛ̲ɪ̲l̲oks] = name of substance (6; 8: 18)
	Chantey [ʃæ̲ntɛ̲ɪ̲] = pretend substance (6; 8: 18)
	Now I need some *seebies* on it ['si̲:bɪz] = food substance (6; 11: 12)
	Flaternize. This is called *flaternize* ['flæ̲ter'n̲aɪ̲z] = to slap a wet face-cloth on the wall (6; 11: 12)
	Say *bukkali* [bukə'l̲aɪ̲] = a word to say when having one's picture taken (7; 2: 13)

Note: Stressed syllables are marked before the syllable. Phonetic transcription is used to indicate exact pronunciation of words

meaning hairstylist/barber; "Say I'm the maker, and I make your skin look good," meaning cosmetologist; "the under-thing," meaning underside or keel of the boat; "lady-thing," meaning female shampoo container; and "white-stuff," meaning foam from bubble bath.

Table 3. Function of Novel Words

	Edward		Stephen		
	N	%	N	%	Examples
Developmental substitution	2	2%	7	7.10%	hair-maker (hair stylist)
Speech and language play	61	61.60%	55	56%	Seebies (bubbles)
Word gap	36	36.40%	37	37.80%	slime-powers-soap
Total	**99**		**98**		

We coded most of the boys' novel creations as word play. The children usually used pseudowords for this purpose, but sometimes they used existing words. They used novel words for speech and language play in three ways. In some instances, they used real words in a meaningless way as play words. For example:

Stephen (at age seven years, two months, expressed as 7; 2): Let's go under the water. Wow, I'm sinking into *snowmobile*.
Edward (6; 0): This is how it turns into a double-cross.
Stephen: This is called *snowmobile*. Tell me if you think it's cool. Look, tell me if this is dumb or cool. (Starts singing the word *snowmobile*)

The boys used another type of speech and language play called *category expansion*. This involved what we term *slot filling* in a repetitive sequence or by creating lists of words. The children demonstrated slot filling in this sequence:

Stephen (7; 3): My name is Robert. I spit shine out of me. They think I'm a man smoking and shine comes out of my mouth. The girl screams when I do that. (Both children lean back spitting water out of their mouths.)
Edward (6; 1): My name is *Forty-two elbow*. I mean *Forty-two knee*. My name is *Peekaboo*. (Edward covers his head with a facecloth.) My

name is . . . (He hits Stephen's knee to get his attention and persists with the cloth over his head until he gets an acknowledgement.)

In this interaction, the novel words "Forty-two elbow" and "Forty-two knee" satisfy a subcategory of different names to fill the slot "My name is . . ." Edward, the younger child, follows Stephen's theme and invents names simply for fun.

Another example of category expansion involves repeating a list of words in a play scenario of pretend cooking. The boys make up words for the cooking ingredients. Their "YCA" probably derives from the YMCA and YWCA, places that both children frequented:

Edward (5; 9): I need pepper.
Stephen (6;11): I need foo yong. Tomatoes, good. I need some *fresh YCA*. I need some *fresh YCA*.

Finally, the boys demonstrated another type of speech and language play through rhyming. We recorded, for example:

Edward (6; 0): Get S's eyeballs and get some *tieballs.*
Stephen (7; 2): Sh-sh, my hamster may be sleeping.
Edward: Get Stephen's ears and make a *deers.*
Stephen: Get Edward's ears and make Edward's ears.

The second function of the boys' word creation was to fill a word gap, to express a concept for which words did not exist in standard English, such as "volcano-splutter," "high-blowed," "squirt-water," "water-bomb," and "spouting-juggle." These examples of words all referred to different water activities. The children were very specific in creating words to conceptualize different water-based activities, and they showed precision by expressing an idea in just one word instead of many. For example, "squirt-water" is water that is squirted out of one's mouth or out of a water gun, and "high-blowed" is water that is blown high into the air. A similar example involves directing a sibling to "overflow his tummy," which was a concise way of saying, "Fill the toy crocodile with water so its tummy is full, and the water will spill out of its mouth."

We did not find any instances of redundant duplication similar to those documented elsewhere, but the boys did express a different kind of duplication. The novel word was not always a substitute for a longer phrase, but sometimes both the new word and the longer, conventional version were combined. An explanation or expansion of a novel word would follow the word or precede it such as, "Let's see who bites the best. The gooder-biter;" "Now I have little rolls of it. Little-rolls-up;" "This is called the squisher-hand. Squish the hand real tight;" "Cos I got this beep-thing and when I beep it a machine appears;" and "Cachanacha. Put cachanacha. It's like soap. You squeeze it on your hair and stuff."

Such word and meaning explorations suggest an awareness of searching language to find the most appropriate word. What evidence do we find that these children were aware of their need for such inventiveness? There were six instances where Stephen clearly intended his lexical innovations. For example, he said, "I'm gonna call it . . ." Or, "This is called . . ." Stephen also created the term "flaternize." As he slapped a wet facecloth against the bathtub, he said, "This is called flaternize" (see table 2); and "This is called the long-shark." Occasionally, the boys were aware of wanting to find a word or to say a word in a particular way. For example, one called out, "Mom, can I say I want a towel in Japanese? I want an origami-towel." The younger child did not use the phrase "This is called . . . " but prefaced some novel words by "This is . . ."

The Permanence of Novel Words

The language exchanges of this particular dyad included frequent use of nonce formations. Neither Edward nor Stephen repeated his own or his brother's novel words in subsequent play sessions, and rarely did one of them repeat his own or his brother's novel words within the same play session. The thirty-nine lexical innovations that were repetitions of previously created words (eighteen by Stephen and twenty-one by Edward) were produced in a total of fifteen sessions.

Table 4. Types of Reoccurrences of Novel Words

Type	Edward	Stephen
Immediate self-repetition	15	13
Delayed self-repetition	5	1
Immediate repetition by sibling	1	3
Delayed repetition by sibling	0	1

Most of the boys' repetitions of novel words (see table 4) were immediate self-repetitions, occurring in subsequent utterances. They were nearly all single repetitions of the original word, except for two instances per child in which they repeated a word more than once. Multiple repetitions were an immediate repetition by the same child within the same phrase. For example:

> **Stephen** (6; 7): His *soap-bomb* came. *Soap-bomb*, I command you to get out of here. *Soap-bomb* go!

The children showed a similar number of delayed self-repetitions. There were a few repetitions of the other child's novel words. The older child repeated three of Edward's novel words. The only delayed repetition was a response by Edward to a demand to repeat the word by Stephen.

Discussion

More than 65 percent of the bath-time play sessions included the creation of novel words by both children. The study focused on a setting that supported extensive language exchanges during pretend play with a frequent need to label new ideas, objects, and actions occurring in the here and now.

The Production and Types of Novel Words

Our expectation that these children would produce some novel words comprising many compound and pseudowords was confirmed by the results. Why was the frequency of novel words greater than reported in other studies? Our findings are supported by evidence of extensive language play in peer interaction between older children in second-language learning environments where the manipulation and creation of words appeared to be part of both play and the language-learning process.[15] However, our siblings were monolingual and evidence to support novel-word creation in monolingual children of this age is sparse. It is possible the findings could be unique to our dyad, but we suggest that novel-word creations in this setting might be an outcome of both child-to-child play and the situation.[16] Researchers consider peer-to-peer communication to be qualitatively different from adult-to-child communication because the former does not involve the adult as a language expert in the dialogue. The pretend play of a preschooler with a sibling is more diverse than either play

with a mother or play with all three together.[17] The context may lend itself to a greater need for innovation than random occurrences found in the daily routines and interactions with parents. In child-to-child interaction where pretend play primarily involves fictional reenactments of previous experiences or imaginative narratives, children not only have license to fabricate stories, but they also have license to be creative with language. One of the advantages of investigating word formation in such informal contexts comes from the lack of constraints on the imagination of the children and their use of language. Novel-word creation, which children use to exaggerate and poke fun, is not only a part of their humor and playfulness, it may also contribute to their development of sociolinguistic competence through play and drama.[18]

The Function of Novel Words

Our second hypothesis, that novel words would not be developmental substitutions at this age, was only partially confirmed by the data. It was difficult to find any words that could be replaced by a single adult word, but, in a few such instances, the children did not appear to know the adult word. Our results also reveal that the boys created many words primarily for various kinds of playfulness. After word play, the boys most often created terms to fill a word gap. For example, sometimes words were already commercially created in connection with a toy, but the children supplemented the words with their own to meet the demands of their pretend play. Both of these findings support Eve Clark's view that a lexical gap is a common basis for such word formations. Our findings also support the suggestion by Loekie Elbers and Jennifer Windsor that some novel words are produced for reasons other than a lexical gap. Children might create such words in a playful, sometimes meaningless, way or they might change the meaning of familiar words just for fun. Unlike any other study of spontaneous novel-word creation, we included pseudowords. The use of newly created words that do not exist in standard English have long been popularized by such children's authors such as Dr. Seuss, Lewis Carroll, and, more recently, J. K. Rowling.[19] Our research provides solid evidence that some children older than five years, in the context of pretend play, also indulge in such novel-word creation as part of speech-sound and language creativity and playfulness.

The Permanence of Novel Words

Our third hypothesis, that these children might create their own language, was not supported by the data. The children never used previously created novel

words in subsequent sessions, and only very rarely did one boy use a word created by the other. There was simply no evidence of an idiosyncratic and "secret" language of novel words in this dyad and no evidence that the words had become neologisms. Nearly all novel words were nonce formations and created in the ongoing flow of imaginative play as need and inclination inspired the children. Michael Tomasello's social-pragmatic and usage-based theory of language acquisition emphasizes that the child experiences nearly all words during the flow of conversation and social interaction so that word meaning is derived from the surrounding context and in contrast to other words.[20] When one child introduced a novel term, one even with an apparent meaningful sound or humorous appeal to the other, it was simply embedded in the flow of conversation. The sibling appeared to treat it as any standard word: he either ignored it or built on the meaning of it with his own words. Our findings support David Crystal's observation that such formations can reoccur within the same conversation but do not reappear on other occasions. Even if these data were collected on a daily basis (rather than weekly), we do not think that the results would be much different because there were no reoccurrences of novel words in our data. Indeed, words repeated two or three times were more frequently self-repetitions occurring within the same session. The function of repetitions, although rare in this research, may reflect repetitions common in adult-to-child and child-to-child interaction to show attention and to confirm what was said or simply because the child liked the sound of the word.[21] The results support the view of word innovation even in a social context as primarily an individualized process with minimal permanent impact on shared vocabulary.

Future Research and Implications

The current study was limited to only two children, but the results were sufficiently consistent to provide evidence for novel-word creation in school-aged children that may be extended in future studies. The results are supported by limited findings in monolingual and bilingual children. Our findings suggest that exceptions to a developmental decrease in the production of novel words beyond preschool may occur in the context of pretend play where, as we said, there is license to create novel concepts and novel language. Alternately, individuals continue to create novel words through their youth and adulthood, but these creations have not been well documented in school-aged children.

We need additional longitudinal studies of spontaneous language in pretend play that focus on language creativity. A comparison of children who are

friends, twins, or siblings close in age also may reveal gender differences and differences in contrasting play settings. In addition, children who hear many languages in a multilingual setting may be more likely to experiment with language play and innovation. Opportunities for children to engage in informal and spontaneous peer pretend play without adult judgment and control can clearly create learning situations for children to analyze, manipulate, and experiment with the meanings, words, and sounds of language. These skills support the foundation for literacy and conversational skills. Further investigations of spontaneous dyadic language innovation in monolingual school-aged peer and sibling dyads may confirm trends similar to our data in the context of pretend play.

Notes

1. Jane Turnbull and Vickii B. Jenvey, "Criteria Used by Adults and Children to Categorize Subtypes of Play," *Early Child Development and Care* 176 (2006): 539–51; Catherine Garvey, *Play* (1977); Wendy Haight, James Black, Teresa Ostler, and Kathryn Sheridan, "Pretend Play and Emotion Learning in Traumatized Mothers and Children," in *Play = Learning: How Play Motivates and Enhances Children's Cognitive and Social-Emotional Growth,* ed. Dorothy Singer, Roberta Michnick Golinkoff, and Kathy Hirsch-Pasek (2006), 209–30.

2. Evangeline E. Nwokah, "The Humor of Family Slang" (paper presented at the 18th International Society for Humor Studies Conference, Copenhagen Denmark, July 2006); Evangeline E. Nwokah, "Word Play within Families of Twins" (paper presented at The Association for the Study of Play [TASP] Conference, Strong National Museum of Play, Rochester, NY, April 2007).

3. For additional information on definitions of pretend/sociodramatic play, see Greta G. Fein, "Pretend Play: An Integrative Review," *Child Development* 52 (1981): 1095–1118; and Alan M. Leslie, "Pretence and Representation: The Origins of 'Theory of Mind,'" *Psychological Review* 94 (1987): 412–26. Information on language in pretend play can be found in Lucia A. French, Joan Lucariello, Susan Seidman, and Katherine Nelson, "The Influence of Discourse Content and Context on Preschoolers' Use of Language," in *Play, Language, and Stories: The Development of Children's Literate Behavior,* ed. Lee Galda and Anthony D. Pellegrini (1985), 1–27; and Jacqueline Sachs, Jane Goldman, and Christine Chaille, "Narratives in Preschoolers' Sociodramatic Play: The Role of Knowledge and Communicative Competence," in *Play, Language, and Stories*, ed. Galda and Pellegrini, 45–61. Reference to hyperspecificity in children's language is given in Eve V. Clark, Susan Gelman, and Nancy M. Lane, "Compound Nouns and Category Structure in Young Children," *Child Development* 56 (1985): 84–94; and Jen-

nifer Windsor "The Functions of Novel Word Compounds," *Journal of Child Language* 20 (1993): 119–38.

4. For a detailed analysis of the development of novel words/lexical innovations, see pioneering work on this topic by Eve V. Clark, "Lexical Innovations: How Children Learn to Create New Words," *Papers and Reports on Child Language Development* 18 (1980): 1–25; Eve V. Clark, "The Young Word-Maker: A Case Study of Innovation in the Child's Lexicon," in *Language Acquisition: The State of the Art,* ed. Eric Wanner and Lila R. Gleitman (1982), 390–425; Eve V. Clark, *The Lexicon in Acquisition* (1993); Eve V. Clark, *First Language Acquisition* (2003). Additional studies that refer to the work of Eve V. Clark include Judith A. Becker, "'Sneak-Shoes,' 'Sworders,' and 'Nose-Beards': A Case Study of Lexical Innovation," *First Language* 14 (1994): 195–211; Loekie Elbers, "New Names from Old Words: Related Aspects of Children's Metaphors and Word Compounds," *Journal of Child Language* 15 (1988): 591–617; Deanne W. Swan, "How to Build a Lexicon: A Case Study of Lexical Errors and Innovations," *First Language* 20 (2000): 187–204; Jennifer Windsor, "The Functions of Novel Word Compounds," *Journal of Child Language* 20 (1993) 119–38; and more recently the work of Elena Nicoladis: "'Where is My Brush-Teeth?' Acquisition of Compound Nouns in a French-English Bilingual Child," *Bilingualism: Language and Cognition* 2 (1999): 245–56; and "The Acquisition of Complex Deverbal Words by a French-English Bilingual Child," *Language Learning* 55 (2005): 415–43.

5. William A. Corsaro, *Friendship and Peer Culture in the Early Years* (1985); Susan Grohs Iwamura, *The Verbal Games of Pre-school Children* (1980); Michael McTear, *Children's Conversation* (1985). Information on play in older children can be found in Iona Opie and Peter Opie, *Children's Games in Street and Playground* (1969); and Helen B. Schwartzman, *Transformations: The Anthropology of Children's Play* (1978).

6. Sachs, Goldman, and Chaille, "Narratives in Preschoolers' Sociodramatic Play"; Dennis P. Wolf and James Pusch, "The Origins of Autonomous Texts in Play Boundaries," in *Play, Language, and Stories,* Galda and Pellegrini, ed. 63–77. A few additional examples from ages five to six can be found in data collected by Eve V. Clark, "The Young Word-Maker," and Jennifer Windsor, "The Functions of Novel Word Compounds." Loekie Elbers (1988) also gives examples such as "yellow blood" (boy, 6; 11) for resin, and "cows-custard" for cow-pat, produced by a Dutch-speaking child aged 8:4. A study of the spontaneous vocabulary of ten German children aged 5; 8 to 6; 0 found they used innovative words 10.5 percent of the time, and these were mostly two- and three-element root compounds (Gerhard Augst, Andrea Bauer, and Annette Stein, *Grundwortschatz und Ideolekt: Empirische Untersuchungen zur Semantischen und Lexikalischen Struktur des Kindlichen Wortschatzes* [1977] cited by Eve V. Clark in *The Lexicon in Acquisition*). In Hebrew, an example of a novel word by child aged 6; 8 would be translated as "laughy crying" (*bexi cxoki*) to refer to crying about a funny situation (Dorit Ravid, "Deviational Morphology Revisited: Later Lexical Development in Hebrew," in *Language Development across Childhood and Adolescence,* ed. Ruth A. Berman (2004), 74. Eve V. Clark, in "The Young Word-Maker," reports of a French-

speaking child aged 7; 0 who used the words "to syrup" (*ensiroter*), and at age 13, "we'll microscope" (*nous allons microscope*), which suggests occasional novel word creation may persist into adolescence.

7. Jeremy Anglin, "Vocabulary Development: A Morphological Analysis," *Monographs of the Society for Research in Child Development* 58 (1993): 1–166.

8. Emily W. Bushnell and Michael P. Maratsos, "'Spooning' and 'Basketing': Children's Dealing with Accidental Gaps in the Lexicon," *Child Development* 55 (1984): 893–902.

9. Karen J. Thorpe, "Twin Children's Language Development," *Early Human Development* 82 (2006): 387–95; Karen J. Thorpe, Rosemary Greenwood, Areana Eivers, and Michael Rutter, "Prevalence and Developmental Course of 'Secret Language,'" *International Journal of Language and Communication Disorders* 36 (2001): 43–62. See also Schwartzman, *Transformations*: *The Anthropology of Children's Play* (1978), 291–92 on a discussion of play languages.

10. Paul Dickson, *Family Words: The Dictionary For People Who Don't Know a Frone From a Brinkle* (1988); Elisa Everts "Identifying a Particular Family Humor Style: A Sociolinguistic Discourse Analysis," *Humor: International Journal of Humor Research* 16 (2003): 369–412.

11. Eve V. Clark, "Coining New Words: Old and New Word Forms for New Meanings," in *Methods for Studying Language Production,* ed. Lise Menn and Nan Bernstein Ratner (2000), 53–67; Becker, "'Sneak-Shoes,' 'Sworders,' and 'Nose-Beards'"; Elbers, "New Names from Old Words"; Windsor, "The Functions of Novel Word Compounds."

12. Susan Cary and Elsa Bartlett, "Acquiring a Single New Word," *Papers and Reports on Child Language Development* 15 (1978): 17–29; Paul Bloom, "Roots of Word Learning," in *Language Acquisition and Conceptual Development,* ed. Melissa Bowerman and Stephen C. Levinson (2001), 159–81; Lori Markson and Paul Bloom, "Evidence against a Dedicated System for Word Learning in Children," *Nature* 385 (1997): 813–15.

13. Eve V. Clark and Ruth A. Berman, "Structure and Use in the Acquisition of Word Formation," *Language* 60 (1984): 542–90; Elbers, "New Names from Old Words."

14. David Crystal, *Language Play* (1998); David Crystal, "Investigating Nonceness: Lexical Innovation and Lexicographic Coverage," in *Manuscript, Narrative, Lexicon: Essays on Literary and Cultural Transmission in Honor of Whitney F. Bolton,* ed. Robert Boenig and Kathleen Davis (2000), 218–31; Clark, *Lexicon in Acquisition*, 6 (reference to nonce uses).

15. Maggie A. Broner and Elaine E. Tarone, "Is It Fun? Language Play in a Fifth-Grade Spanish Immersion Classroom," *The Modern Language Journal* 85 (2001): 363–79; Asta Cekaite and Karin Aronsson, "Language Play, a Collaborative Resource in Children's L2 Learning," *Applied Linguistics* 26 (2005): 169–91; Yongho Kim and David Kellogg, "Rules Out of Roles: Differences in Play Language and Their Developmental Significance," *Applied Linguistics* 28 (2007): 25–45.

16. It is possible that our sibling dyad was one that engaged in frequent pretend play. Nina Howe, Harriet Petrakos, and Christina M. Rinaldi found that forty kinder-

garten children and their siblings, videotaped in their homes, could be divided into two groups they called *infrequent pretend play dyads* and *frequent pretend play dyads*. "'All the sheep are dead. He murdered them?' Sibling Pretense, Negotiation, Internal State Language, and Relationship Quality," *Child Development* 69 (1998): 182–91.

17. Lisa M. Youngblade and Judy Dunn, "Social Pretend with Mother and Sibling: Individual Differences and Social Understanding," in *The Future of Play Theory: A Multidisciplinary Inquiry into the Contributions of Brian Sutton-Smith,* ed. Anthony D. Pellegrini (1995), 221–42.

18. Zazie Todd, "Metaphor, Play, and Drama: The Role of the Symbolic in the Development of Sociolinguistic Competence," in *Children Talking: The Development of Pragmatic Competence,* ed. Linda Thompson (1997), 82–90; Donna Varga, "Hyperbole and Humor in Children's Language Play," *Journal of Research in Childhood Education* 14 (2000): 142–51.

19. Judith and Neil Morgan, *Dr. Seuss and Mr. Geisel: A Biography* (1995); Nicholas Tucker, "The Rise and Rise of Harry Potter," *Children's Literature in Education* 30 (1999): 221–34. For a discussion of the relationship between word and meaning, see Jacqueline Flescher, "The Language of Nonsense in Alice," *Yale French Studies* 43 (1969): 128–44.

20. Michael Tomasello, *Constructing a Language: A Usage-Based Theory of Language* (2003).

21. Examples of word repetition can be found in Susan Grohs Iwamura, *The Verbal Games of Pre-school Children* (1980). For more information on the function of repetitions in conversation see Eve V. Clark and Josie Bernicot, "Repetition as Ratification: How Parents and Children Place Information in Common Ground," *Journal of Child Language* 35 (2008): 349–71.