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The development of discourse and the acquisition of connectives and clause combinations: An analysis of three-year-olds' linguistic production

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The Development of Discourse and the Acquisition of Connectives and Clause Combinations: An Analysis of Three-Year-Olds' Linguistic Production

by

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Abstract

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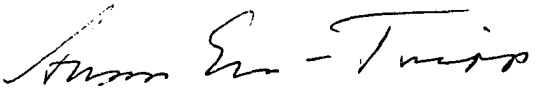
Professor Susan Ervin-Tripp, Chair

This dissertation explores the development of discourse and its impact on the acquisition of connectives and subordinate/coordinate clauses. Two studies are presented: a comparison of planning narratives and verbal disputes from 3- and 4-year-olds, and a six-month longitudinal study of 3-year-olds' production of connectives and clause combinations during preschool activities. The functions and contexts of connectives were analyzed for developmental changes. The types of units marked by connectives included speaker turn exchanges, subordinate/ coordinate clauses within turns, independent clauses within turns, changes in speech events and phases of activities, and the subunits of speech events. The semantic and pragmatic relations encoded by connectives were also analyzed. The contexts of connectives included planning narratives, verbal disputes, negotiations, directing talk, and casual conversation. The studies indicated that the earlier stages of the acquisition of connectives and clause combinations were heavily influenced by pragmatic and discourse factors. Three conclusions illustrate this: (1) connectives were initially limited in their context of use, such as temporal connectives limited to narratives and causal

connectives limited to verbal disputes; (2) the relations encoded by connectives were primarily pragmatic for the children age 3;0 to 3;6, with an increase in semantic relations after 3;6; (3) a child's level of discourse ability influences what kinds of form-function relations are constructed in the initial stages of acquisition, such that connectives acquired later (then, so) were more likely to mark global discourse units than connectives acquired earlier (and, because). The results indicate the important role of language's interactional functions in the initial stages of acquisition, as predicted by certain theories in cognitive linguistics and theories of language acquisition from a functional perspective.



To my partner in life

and to my parents

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1. Introduction

For many years both linguists and psychologists have noted that language has a dual function: it represents or symbolizes something about the world we live in, and it also acts to change the world we live in, especially the social world we have created (Austin, 1962; Halliday, 1971, 1975; Searle, 1983). The awareness of this distinction or dual function is becoming integrated into recent language acquisition research and grammatical theory from a functional perspective (Budwig, 1989; Langacker, 1987; Van Valin, 1993); previously there had been a bias towards the referential-propositional function of language (Ervin-Tripp, 1989). Attention to the social-conversational function of language has been aided by advances in discourse analysis, especially the study of discourse markers (Fraser, 1990; Redeker, 1990; Schiffrin, 1987) and by advances in the study of the speech-act, speech event, and activity contexts of grammatical development (Ervin-Tripp & Bocaz, 1989; Gerhardt, 1990; Guo, in press; Pak, Sprott, & Escalera, in press). For example, the system of alternative tag question forms acquired by Hawaiian children is organized along functional lines which take the distinction between interactional and ideational functions into account: yeah and kay are semantically and syntactically equivalent, but yeah is used by children for questions which share information (e.g., "We're playing together, yeah?"), while kay is used for questions which direct others' actions (e.g., "Put this on top, kay?"). These are distinct from questions which request information (Pak, 1989).

There is a subsidiary function of language in addition to the ideational and the interactional functions: the textual function of language (Halliday, 1975; Schiffrin, 1987). It is now recognized that language not only represents information symbolically, but organizes information for discourse purposes. For

example, the presentational cleft construction in French occurs when a new referent is introduced into a conversation (e.g., "Y'a Jean qu'a téléphoné"); spoken French discourse is constrained against mapping new focal information onto the grammatical subject, and so a cleft construction is used (Lambrecht, 1988). In effect, the textual function of language is a blend of referential-propositional and social-conversational functions. Attention to the textual function of language has also been aided by the study of discourse markers (Schiffrin, 1987), by the study of the connection between the status of information and the structure of grammar (Clark & Haviland, 1977; Givón, 1987; Prideaux, 1993; Tomlin, 1985), and by the study of the discourse functions of grammatical elements such as tense or clause-combining syntax (Bamberg, 1987; Slobin, 1989).

The research presented in this dissertation is an analysis of the acquisition of English connectives between the ages of 3;0 and 4;0, with the ideational, interactional and textual functions of connectives in mind. Connectives are an ideal area of study because they are grammatical elements which play important roles in both discourse and syntax, even for adults. The analysis will include examining the semantic and pragmatic relations encoded by connectives, the different kinds of structural units marked by connectives, and the speech event contexts of connective use over the course of development between 3;0 and 4;0. These factors will be discussed in terms of the ideational and the interactional functions of language. The studies will also include an analysis of the interaction between the textual functions of connectives and the different kinds of units marked by connectives, including coordinate and subordinate clauses.

The aim of this dissertation is to explore further the role of the interactional function of language in the language acquisition process. The argument will be made that the interactional function of language is as central to grammatical

acquisition as the ideational function and that the syntactic properties of connectives and clause combinations are not acquired independently from either the semantic or pragmatic aspects of connectives and clause combinations. A complete understanding of both language as a system and the process of acquiring of this system requires that researchers investigate how the ideational, interactional, and textual functions influence the acquisition of linguistic forms.

1.1 Starting Assumptions and Theoretical Descriptions of Language

Before presenting the theory and the data on which this dissertation is based, it is important to distinguish more clearly the differences between the formalist and functionalist perspectives of language acquisition. There are important differences in not only the basic starting assumptions of each kind of theory, but in the criteria for an adequate description of language. These differences have led to differences in methodology and in the criteria for judging evidence; in fact, there is a growing awareness of the incommensurability between formalist and functionalist perspectives of language, because the debate between the two types of theories has yielded little knowledge (Dent, 1990; Tomasello, 1992a).

The best way to discuss the differences in starting assumptions is to examine the history of these ideas. The starting assumptions are the pre-theoretical decisions of what delineates the subject matter and how to describe the subject matter. Theories may change without the underlying assumptions changing, and in fact it is exceedingly difficult to empirically test one set of basic assumptions against another. After an examination of the history of the formalist vs. functionalist perspective, current theoretical work in the functionalist perspective will be reviewed. Once these perspectives have been set forth, I will briefly state the area of study, hypotheses, and methodology which are informed

by the functional perspective. This will conclude the introduction to the study. Following this, a review of the literature will cover the relevant work in the area of discourse development and the acquisition of connectives. Chapter Three presents the hypotheses which guide the studies present in Chapters Four and Five. These two chapters are written as complete studies, and therefore they each have sections reviewing parts of the literature relevant to the study; some duplication with Chapter Two will be inevitable. Chapter Six will conclude the dissertation by connecting the present study back to the issues discussed in this introduction.

1.1.1 The Formalist Answer vs. The Functionalist Answer: A Historical Review

One of the best places to begin such a review is go back to the start of the cognitive revolution in psychology and linguistics. Two books were published in 1957 which became the primary catalysts: B.F. Skinner's Verbal Behavior and N. Chomsky's Syntactic Structures.

1.1.1.1 When Behaviorists Roamed the Earth

B.F. Skinner wrote Verbal Behavior to show how a behaviorist science could be extended to include the most distinguishing characteristic of human beings, the use of language. Skinner defined language and problematized language acquisition in a "functionalist" framework, although there are only a few characteristics which can also be found in the present-day functional perspective of language acquisition.

There are several distinctive characteristics of his particular approach: the emphasis on the functions of language for social interaction, the characterization of the structure or syntax of language as transparent and exhaustively accounted for by surface descriptions, the position that the acquisition of both the functions

and structures of language is accounted for by general learning mechanisms, and the belief that the prediction and control of verbal behavior were possible and in fact necessary for the science of psychology.

Skinner defined language solely by its social functions, thereby defining the study of language solely by interactional functions:

> Behavior which is effective only through the mediation of other persons has so many distinguishing dynamic and topographical properties that a special treatment is justified and, indeed, demanded. Problems raised by this special mode of action are usually assigned to the field of speech or language. [p. 2]

Skinner goes on to discuss this "mediation" in a systematic and taxonomic fashion, delineating phenomena which would later be similar grounds for speech act theory, but which also included phenomena now analyzed by semanticists and pragmaticists interested in modality, negation, and evidentiality. These characteristics of language use were explained by the behaviorist concept of "autoclitic": "The term 'autoclitic' is intended to suggest behavior which is based upon or depends upon other verbal behavior." [p.315] Essentially, the qualification of a basic message (which originates by virtue of stimulus and response) such as negation was emitted as a response to that basic message as a stimulating text. This 'autoclitic' characteristic of language enabled certain words or morphemes to become the stimulus for other words or morphemes.

As for the structural aspects of language:

> Purely formal analyses of grammar and syntax...are of little interest here, where no <u>form</u> of verbal behavior is significant apart from its

> controlling variables. ...The behavior of the lumber-camp cook in calling Come and get it! is as unitary as the response Food! or the ringing of a large metal triangle. We do not need to analyze grammatical or syntactical processes in accounting for such behavior. ... In general, as verbal behavior develops in the individual speaker, larger and larger responses acquire functional unity, and we need not always speculate about autoclitic action when a response appears to include an autoclitic form. [p.331, 336, emphases in original]

For Skinner, grammatical phenomena are a variant of autoclitic behavior, as certain stimuli, both verbal and nonverbal, control the use of inflections, connectives, and other morphemic and syntactic phenomena. For verbal behavior which is not as frozen in form and function as the above example, Skinner proposed "frames":

> Something less than full-fledged relational autoclitic behavior is involved when partially conditioned autoclitic 'frames' combine with responses appropriate to a specific situation. ... If [a speaker] has acquired a series of responses such as the boy's gun, the boy's shoe, and the boy's hat, we may suppose that the partial frame the boy's _____ is available for recombination with other responses. [p.336]

The behaviorist analyses of language assumed that the formal aspects of language are arbitrary and determined by patterns of stimulus and response, both of which are acquired by general learning mechanisms:

> The basic processes and relations which give verbal behavior its special characteristics are now fairly well understood. Much of the experimental work responsible for this advance have been carried out on other species, but the results have proved to be surprisingly free of species restrictions. [p. 3]

In comparison to the functional perspective of language acquisition today, Skinner's formulation of the acquisition problem is naive in terms of the complexity of linguistic function and linguistic structure. Skinner clearly recognizes the interactional function of language, but does not recognize in any form the ideational and textual functions of language. The ideational function of linguistic forms presupposes that language is referential and propositional, which in turn presupposes that the mind cannot be adequately described by a system of S-R principles. The textual function of linguistic forms presupposes that extended discourse possesses structural and communicative requirements which also cannot be adequately described a system of S-R principles. Skinner also did not recognize that linguistic structure possesses characteristics which are not directly connected to interactional functions, that there is a certain level of autonomy between linguistic structure and interactional function. Present-day functional theories recognize that each level of linguistic description cannot be reduced to any of the other levels (Ervin-Tripp, 1989; Slobin, 1985).

The largest difference between Skinner and contemporary functional theorists is the basic assumption concerning the mind. The present-day understanding of the mind includes theoretical concepts such as categorization, prototype and schematicity, and the idea of the active, constructive mind which transforms the information it perceives in the environment. This change in basic

assumptions came about through Chomsky's challenge of Skinner's attempt to explain language acquisition.

1.2.2 The Formalist Challenge and the Nativist Answer

Chomsky's Syntactic Structures provided a sharp contrast to Skinner's theory in both definition of language and account of language acquisition. Chomsky begins by defining language purely in a formal sense: "From now on I will consider a language to be a set (finite or infinite) of sentences, each finite in length and constructed out of a finite set of elements." [p.13] Chomsky proceeds to define grammatical and ungrammatical sequences of elements, describing how the distinction between the two is unrelated to semantics, meaning or use by using the classic "Colorless green ideas sleep furiously":

> Despite the undeniable interest and importance of semantic and statistical studies of language, they appear to have no direct relevance to the problem of determining or characterizing the set of grammatical utterances. I think that we are forced to conclude that grammar is autonomous and independent of meaning, and that probabilistic models give no particular insights into some of the basic problems of syntactic structure. [p.17]

After defining language in this way, Chomsky proceeds to introduce two innovations to linguistics: transformational rules and rigorous, explicit characterizations of forms as linguistic theory rather than description. In Lee's (1957) summary:

> One of the two most far-reaching results of Chomsky's study is then his discovery of a new level of linguistic structure which at once sweeps away most of the difficulties encountered in any attempt to extend phrase structure beyond a description of the most central declarative sentences of the language. For a given rule to apply within this level of grammatical description the derivational history of an expression must be taken into account for each rule serves to convert, or transform, one constituent structure into another. ...The other most important result of Chomsky's theory of language is his very strict axiomatization of linguistic theory. He has chosen to take seriously the requirement that a grammar be not merely an arbitrary reorganization of some corpus, but (in a specifiable sense) a simplest machine which will generate all and only the grammatical sentences of a language. (p. 387, 391).

In a 1959 review of Skinner's Verbal Behavior, Chomsky dramatized the clash between these two incommensurate approaches to linguistic behavior and language acquisition. After arguing successfully that Skinner's theory, relying on concepts like stimulus, response, conditioning, and reinforcement, becomes too vague to adequately describe language behavior in a rigorous scientific fashion, Chomsky admonishes Skinner by discussing language acquisition:

> As far as acquisition of language is concerned, it seems clear that reinforcement, casual observation, and natural inquisitiveness (coupled with a strong tendency to imitate) are important factors, as is the remarkable capacity of the child to generalize, hypothesize, and 'process information' in a variety of very special and apparently

> highly complex ways which we cannot yet describe or begin to understand, and which may be largely innate, or may develop through some sort of learning or through maturation of the nervous system. The manner in which such factors operate and interact in language acquisition is completely unknown. It is clear that what is necessary in such a case is research, not dogmatic and perfectly arbitrary claims, based on analogies to that small part of the experimental literature in which one happens to be interested. [Chomsky, 1959; p. 43]

Chomsky finishes the review by directly critiquing Skinner's concept of the grammatical "frame":

> The idea that sentences consist of lexical items placed in a grammatical frame is of course a traditional one, within both philosophy and linguistics....This view of sentence structure, whether phrased in terms of autoclitics, syncategorematic expressions, or grammatical and lexical morphemes, is inadequate....It is evident that more is involved in sentence structure than insertion of lexical items in grammatical frames; no approach to language that fails to take these deeper processes into account can possibly achieve much success in accounting for actual linguistic behavior. [p. 54]

After this challenge, Chomsky has continued to develop and revise his theory of syntax extensively (1981, 1986). Studies using this theory of syntax now see language acquisition as parameter-setting, because the studies assume

that child's knowledge of linguistic structure is largely innate, only requiring children to experience a particular bit of linguistic behavior from the environment in order to "fix" an open parameter, thereby determining if a particular language has structure or requirement A vs B (Roeper & Williams, 1987). But while there have been substantial changes in theory over the years, Chomsky's metatheory, his initial conceptions of what language is and how to account for it, have not changed. Grammar is still defined as a purely formal, computational system, completely autonomous from meaning and use. Because syntax is not directly connected to meaning or use, it possesses characteristics which could not be learned through association, abstraction, induction, or assimilation (Chomsky, 1957, 1975, 1986). The "poverty of the stimulus" argument is grounds for concluding that knowledge of syntax is innate; the uniqueness of the formal properties of syntax is grounds for concluding that knowledge of syntax is modular, since no other aspect of human knowledge possesses the same formal properties of syntax. The autonomy, innateness, and modularity of syntax are distinctive characteristics of parameter-setting theories of language acquisition.

1.2.3 Cognitive Science and a New Functionalist Answer

Present-day functional theories of language and language acquisition recognize that syntax has properties which cannot be fully reduced to semantics or pragmatics; the arguments today are in terms of the degree of autonomy (Givón, 1989; Van Valin, 1988), the necessity of assuming innate knowledge (Dent, 1990; Morgan, 1990), and the modularity of syntax, at least in the initial stages (Karmiloff-Smith, 1992). Functional theories begin by assuming an interaction between semantics, pragmatics, and syntax, and by assuming that aspects of cognitive and social development have direct roles in language acquisition. These basic assumptions are adopted due to the requirements of

falsifiability in scientific endeavors; the proposed interaction of semantics, pragmatics, and syntax and their connection to cognitive and social development results in identifiable effects in language acquisition and other areas of child development, whereas the proposed autonomy, innateness, and modularity of the grammatical system cannot be falsified, since there are no means of assessing these hypotheses in a straightforward empirical fashion independent of linguistic behavior and its description (Morgan, 1990).

Investigating the more falsifiable hypotheses has led functional theories to investigate the full range of cognitive, social, and communicative phenomena associated with language. Consequently, research in other areas of cognition has become incorporated into several linguistic theories; these theories make use of concepts such as prototype structure, schematicity, and metaphorical structure (Fillmore, 1988; Fillmore, Kay & O'Connor, 1988; Givón, 1989; Lakoff, 1987; Langacker, 1987). This has prompted radically different descriptions of language from the formalist theories, especially in the issue of autonomy:

> ...what distinguishes the Role and Reference Grammar conception from the standard formalist one is the conviction that grammatical structure can only be understood and explained with reference to its semantic and communicative functions. Syntax is not autonomous. (Van Valin, 1993, p. 2)

> Briefly, construction grammars differ from transformational grammars in not having transformations....construction grammarians differ from many other workers in the generativist tradition by their insistence on simultaneously describing grammatical patterns and the semantic and pragmatic purposes to

> which they are dedicated... (Fillmore, 1988, p. 35-36; emphasis in original)
>
> Central to [cognitive grammar's] conception of grammatical structure are three closely related claims... (1) Semantic structure is not universal; it is language-specific to a considerable degree. Further, semantic structure is based on conventional imagery and is characterized relative to knowledge structures; (2) Grammar (or syntax) does not constitute an autonomous formal level of representation. Instead, grammar is symbolic in nature, consisting in the conventional symbolization of semantic structure; (3) There is no meaningful distinction between grammar and lexicon. Lexicon, morphology, and syntax form a continuum of symbolic structures, which differ along various parameters but can be divided into separate components only arbitrarily. (Langacker, 1987, p. 2-3)

There is a wide range of variation in the exact description of linguistic structure and its connection to the ideational, interactional and textual functions of language, but these functional/cognitive linguistic theories all share the same basic premises regarding the interaction of semantic, pragmatic, and syntactic characteristics, the presence of both general and language-specific processes (not knowledge) in the initial stages of acquisition, and the connection between language and other areas of human cognition.

1.2.3.1 The Role of Interactional Functions in Language Acquisition

The relation between discourse or activity context and particular linguistic constructions is one area of investigation which highlights the need to understand

the role of interactional functions in language acquisition. Research on the development of the speech-act, speech event, and activity contexts of grammatical development finds that many linguistic constructions are, at first, limited to highly defined contexts organized by discourse and speech-act functions (Budwig, 1989; Ervin-Tripp, 1989; Gerhardt, 1988, 1990). Linguistic forms seem to have a property of indexicality in the initial stages of acquisition; for the child there is a direct association between linguistic forms and the immediate discourse context, activities, and purposes in speaking. Investigating the exact nature of the relation between form, function, and context depends on understanding to what extent social-conversational functions interact with semantics and syntax.

Interactional or social-conversational functions are most apparent in the analysis of the contexts of linguistic constructions, but there are also some structural features of language which relate directly to these functions. For example, the 'let alone' construction in English possesses pragmatic characteristics related to particular discourse contexts, as well as unusual syntactic and semantic characteristics (Fillmore, Kay, & O'Connor, 1988). Other syntactic forms seem to be highly associated with particular discourse contexts and functions, such as clefts and other patterns of clause chaining (Lambrecht, 1988; Haiman, 1988). Linguistic particles and discourse markers also have syntactic features associated with the periphery of clause structure (Van Valin, 1993). Interactional functions are associated with particular types of syntactic constructions, but the theoretical relation between these constructions and other areas of syntax remains unclear.

The analyses of adult linguistic constructions give us some clues as to the role of interactional functions in language acquisition, but the child's mapping of linguistic form and function does not necessarily reflect the adult's mapping of

linguistic form and function. It is possible that interactional functions play a greater role in the early stages of language acquisition than ideational or textual functions, or that the child's linguistic system is more sensitive to interactional functions than the adult's linguistic system. It will be important to analyze children's language very carefully in terms of ideational, interactional, and textual functions in order to fully understand the interactions between semantics, pragmatics, and syntax and the connections between language and other areas of human communication and cognition.

2. Review of the Literature

This chapter is divided into two sections, each addressing the questions of the development of discourse organization and the acquisition of subordinate and coordinate clauses. The first section reviews the field of linguistics and the second reviews the child language literature.

The analysis of subordinate and coordinate clauses and their connectives has a long history in linguistics, this being one of the central phenomena studied by the field. I will review more recent analyses which investigate the pragmatic and discourse functions of connectives and the functional linguistic analyses of subordinate and coordinate clauses.

2.1 Linguistic Studies

The analyses of discourse and pragmatics have identified many functions and structures beyond the sentence level; in fact, one of the most confusing elements in this literature is the variety of levels of analysis and the different kinds of functions identified. I will systematically discuss the different levels of analysis in the literature and the types of functions they identify.

It should be noted that researchers in the area of functional linguistics emphasize the similarities between the functions and structures of discourse units and those of subordinate and coordinate clauses. This reflects the basic assumption that the same cognitive processes which lead to the construction of subordinate and coordinate clauses also operate on the larger units of discourse structure. Because of this, many theorists have discussed both levels of linguistic forms.

2.1.1 Textual Functions of Language

The textual functions of language are concerned with the coding and management of information for communicative purposes during interaction (Chafe, 1987; Clark, 1988; 1990; Clark & Haviland, 1977; Givón, 1989; Prideaux, 1993) and with the organization of language into structures larger than the clause (Sacks, Schegloff, & Jefferson, 1978; Schiffrin, 1987).

The degree of assertion is a pragmatic principle concerned with the status of information and how linguistic forms encode this status. It has been examined in terms of the given - new distinction (Clark & Haviland, 1977; Prideaux, 1993) and the foreground - background distinction (Givón, 1987; Hopper, 1979; Tomlin, 1985). The given - new distinction describes the status of information as on a cline between known or recoverable to the hearer (given) or unknown to the hearer (new) (Halliday, 1985; Prince, 1981). The foreground - background distinction describes information as either more central, salient or important to the development of the discourse theme (foreground) or as elaborating or developing the foregrounded information (background) (Tomlin, 1985). The foreground - background distinction also has a cline structure. For both distinctions, a speaker may present information which is considered to be peripheral to the main point, and therefore the speaker does not assert it as strongly:

> The pragmatic notion of backgroundedness entails that the speaker expects that the hearer will not challenge the information. In the stronger case of presupposed old information, no challenge is expected because of presumed shared knowledge. In the weaker case of backgrounded new information, the speaker invites the hearer not to challenge the information by coding it as subsidiary,

non-central, less important. (Givón , 1989, p. 147, emphasis in original)

The two basic cognitive/communicative acts in the management of information are asserting and grounding: "In general, grounding is essentially a background task, as opposed to asserting. That is, a grounding clause does not assert in the usual sense of that term, but merely locates the referent in conversational space." (Fox & Thompson, 1990, p. 301). The information peripheral to the main point functions to make the main point more understandable by highlighting relevant but less important aspects or implications.

The structure of dependent clauses is considered to be iconic with the degree of assertion: the more a clause is asserted, the more likely that it will be separate in order to focus attention on it. The more a clause is backgrounded, the more likely will it be incorporated with the main asserted clause which it supports (Givón, 1989; Haiman, 1985). Tomlin (1985) has argued that "a given syntactic device pragmatically codes a particular semantic or pragmatic function when one can demonstrate a highly significant statistical association between the two, independent of speaker and discourse genre." (p. 96). In an analysis of 15 adults' narratives describing the same cartoon, produced both orally and in written form, Tomlin (1985) found that 80% of all dependent clauses co-occurred with background propositions, regardless of the particular discourse production condition. The other 20% of the dependent clauses contained foreground propositions which related to rhetorical functions at the global level of discourse; for instance, the matrix clause contained a meta-comment on the production task or a highly evaluative generalization, while the dependent clause contained the foreground information: "This brings about a complication, since the fish gets caught in one of the portals." (example 31, p. 116).

Current research along this line of inquiry is attempting to adequately describe the criteria for given, new, foreground, and background independent of linguistic characteristics. The criteria are becoming more complicated and beginning to share some similarities with speech-act criteria, in the sense that a person's purpose in speaking influences whether something is considered background or not, in addition to other cognitive or perceptual characteristics (Givón, 1989).

2.1.2 Discourse Organization

Apart from textual functions, many researchers have examined in detail the different kinds of textual relations inherent in discourse structures. While there are some differences in analyses and theoretical explications, all agree that there are three basic dimensions to discourse: the message level of ideas or propositions (ideational level), the instrumental level of speech acts or conversational moves (action level), and the mechanical level of turn-taking (exchange level) (Fraser, 1990; Redeker, 1990; Sacks, Schegloff, & Jefferson, 1978; Schiffrin, 1987). These, and other aspects of discourse organization, can roughly be divided into two levels, the ideational and the interactional (Pak, Sprott, & Escalera, in press; Redeker, 1990), which reflects the same functional distinction which others have argued for at the clausal level (Halliday, 1973, 1975). The ideational, action, and exchange levels have their own organizing principles and together they determine the form of discourse structures.

The ideational level of discourse consists of the semantic relationships between propositions. There are three different types of relations between propositions which contribute to discourse coherence: cohesive relations, functional relations, and topic relations (Schiffrin, 1987). Cohesive relations are exemplified by anaphora: the interpretation of a linguistic construction in one

clause is dependent upon information contained in a prior clause. The functional relations between propositions consist of such relations as "justification," "circumstance," and "elaboration." Each proposition plays a particular role in relation to another; for instance, in a narrative one idea may provide a particular kind of background for another, providing the "circumstance" for an action (Matthiessen & Thompson, 1988; Redeker, 1990). Topic relations organize discourse at a higher level than clause to clause relations, as each clause relates to a single superordinate message, point or idea.

The interactional level of discourse consists of speech acts and their interrelations, turn-taking, management of topics, and the participation framework which organizes interactants vis a vis each other at a higher level (Schiffrin, 1987). Speech acts organize discourse through the relation of the interactants' beliefs and intentions as they use language for instrumental purposes. For instance, a refusal or denial of one utterance may lead to a challenge, or a request may be followed by a justification. These interrelations form patterns of discourse which may not show coherence at the ideational level:

(3) A: Get out of here!
B: Who do you think you are?

[constructed example]

(4) A: How do you know, 'cause you're only seven!

[Ervin-Tripp Family database: CA 11, line 314]

Turn-taking and the management of topics and speech activities organize discourse at the mechanical level of interaction: just as a single utterance is a transformation of a holistic idea into a linear production, interactants must

transform their intentions and messages into a format which allows speakers to take turns or to pursue a line of action over time. Discourse structures such as shifts to new topics, asides, clarification requests, and corrections highlight the mechanical level of topic/activity management and turn-taking. Participation frameworks (Goffman, 1981) are the roles which interactants take in relation to each other, and in relation to their talk (Schiffrin, 1987). People may change from collaborators to combatants over the course of a conversation, or shift from talking neutrally to the use of irony. Participation frameworks are influenced by elements such as solidarity and power between speakers. The relations between interactants and between speakers and their talk organize discourse at a global level, and affect the coherence of discourse units.

This area of investigation has uncovered a range of discourse functions for connectives which operate beyond the clausal level[1]:

(5) KE: now first Sleeping Beauty has to fall asleep- she falls asleep\
CO: (xx and-)
KE: she close her eyeses like this\
[KE gets into play bed; CO follows]
CO: no\ no, the- the bad *witch is coming:\
KE: yeah, and the bad *witch (is called) her to sleep\
but the prince has to kill, *kiss her\
CO: yeah, and she's like *this\ [closes her eyes,
falls asleep with arms crossed]
KE: and then she *opens her eyes: and saw the prince\
<1>
here, what happened\ [something in environment]

[1]A key explaining the transcription symbols is located in the appendix.

a *very pretty movie- Sleeping Beauty is a very pretty movie, *isn't it\

[no answer from CO]

KE: my daddy *loves Sleeping Beauty\

CO: ==Sleeping Beauty is the *best movie\

KE: so first I'm gonna fall asleep\

[nonverbal playing; CO giggles]

In the example above, KE uses and then and so to coordinate turn-taking and to indicate the storyline of the planning talk, shifting between descriptions and actions within the planning talk (and then) and returning to the planning talk after a brief interruption (so). These uses of the connectives mark coherence at the level of exchange and shifts in participation frameworks. KE's use of and then connects her turn ideationally to CO's nonverbal demonstration in a sequence relation, but her use of so does not connect her turn to any prior turn ideationally.

Recent research has found that connectives belong to a class of morphemes known as discourse markers, which signal discursive or textual organization (Fraser, 1990; Redeker, 1990; Schiffrin, 1987). Discourse markers can draw attention to coherence between units of discourse at any level of discourse, and many times draw attention to coherence at multiple levels simultaneously. Discourse markers are plurifunctional, fulfilling both interactional and ideational functions. As a subset of discourse markers, connectives also have these characteristics and function both at the level of discourse and at the level of sentential syntax. The fact that connectives function at both levels may indicate an underlying functional continuity between discourse organization and syntactic constructions.

The proposed underlying functional continuity has been the focus of several lines of linguistic investigation (Mann & Thompson, 1988; Matthiessen & Thompson, 1988; Mithun, 1988; Polanyi & Scha, 1983; Polanyi, 1988). In Rhetorical Structure Theory (Mann & Thompson, 1988; Matthiessen & Thompson, 1988) the semantic and pragmatic relations between clauses are analyzed regardless of syntactic realization, and the same relations exist between all units of discourse, ranging from single clauses to paragraphs. RST also identifies a handful of structural arrangements of text which are defined as schemas: "They are abstract patterns consisting of a small number of constituent text spans, a specification of the relations between them, and a specification of how certain spans are related to the whole collection. They are thus loosely analogous to grammatical rules." (Mann & Thompson, 1988, pp. 246-247). These schemas underly both discourse organization and subordinate and coordinate clauses. Based on this fundamental analogy, Matthiessen and Thompson (1988) hypothesize that "clause combining in grammar has evolved as a grammaticalization of the rhetorical units in discourse defined by rhetorical relations." (p. 301). Mithun (1988), in a comparative survey of the grammaticalization of coordination, notes that coordinating conjunctions are quite young: "Both internal and comparative evidence indicate that conjunctions have been grammaticized quite recently...in languages all over the world." (p. 351). Her hypothesis is that the grammaticalization is motivated by the processing constraints of literacy, and that grammaticized coordination was originally signalled pragmatically from the discourse context or through the use of adverbials or linguistic particles which mark discourse structure.

Another theory of the structure of discourse, the Linguistic Discourse Model (Polanyi, 1988), posits that "discourse structure can be represented as the recursive sequencing and embedding of discourse units of various types." (p.

603). This sequencing and embedding forms hierarchical tree structures analogous to the formal syntactic descriptions of sentences. A new unit of discourse can be added to any open node along the right edge of a tree. This property accounts for the structure of returns to prior topics and the hierarchical nature of clarification requests and other forms of interruption or digression. "Similarly any attempt to add propositions to a closed unit will be accompanied by intonational repair or initiation signals and will receive a syntactic and phonological encoding as a new rather than a resumed unit." (p. 616). LDM implies that coordination and subordination exist at all levels of linguistic structure, a hypothesis which underlines the concept of a functional continuity between discourse and clause-combining syntax.

2.1.3 Content, Speech-Act, and Epistemic Levels of Discourse

Sweetser's (1990) investigation of the polysemy of connectives uncovered three levels of structure in language which cannot be completely collapsed into the ideational and interactional levels identified above, although there are some strong similarities. She analyzed connectives as "formal markers of aspects of content, aspects of speaker's reasoning, and aspects of the current speech-act." (p. 22). Each of these levels of discourse represent different cognitive domains, and there are inter-domain connections between them, structured through metaphor. For example, the following three statements function at different levels:

(5) John came back because he loved her.

(6) John loved her, because he came back.

(7) What are you doing tonight, because there's a good movie on.

[Sweetser, 1990, p. 77]

In example (5) the causal connective indicates a causal relation in the sociophysical domain of knowledge, and thus marks a relation at the content level of discourse. The causal connective in example (6) indicates a reason for the conclusion in the main clause, marking a relation at the epistemic level. The causal connective in example (7) indicates a cause for the speech act contained in the main clause, which is an enablement relation functioning at the level of the speech-act domain. Sweetser proposed that the use of language to indicate causation in the epistemic and speech act domains is a metaphorical extension of our understanding of causation in the sociophysical domain. The domains and their related levels of linguistic expression explain the polysemy of connectives in a principled way.

There are strong similarities between Sweetser's (1990) content level and speech act level of meaning and the ideational and action levels of discourse discussed by discourse analysts, but there are also important differences between the two models which need to be acknowledged. The discourse analysts do not address the use of language to mark logical and epistemic relations. Sweetser's (1990) analysis does not address the use of language to mark relations at the exchange level of discourse, changes in participation frameworks or shifts in topic. These differences in their analyses reflect the central concerns of each: for Sweetser (1990) it is the polysemy and semantic structure of connectives, and for discourse analysts it is the organization of discursive interaction. Yet coming from two different directions with different concerns, both types of analyses address the fact that language reflects both ideational and interactional concerns and that connectives and subordinate/coordinate clauses are inherently plurifunctional.

2.1.4 Summary

Much of the recent work done in linguistics indicates a rich functional basis for connectives and for subordinate and coordinate clauses, especially in terms of communication and discourse, which hasn't been part of the traditional analysis. In addition, there is a new appreciation of the multi-layered nature of discourse and of the fact that language is used both for representation and social action, a distinction which all the above-mentioned researchers make in their analyses. We see how information is coded by language and affected by communicative concerns by analyzing pragmatic principles, how connectivity and coherence work both at a semantic/ideational level and a pragmatic/interactional level, and how language functions the same at many different levels of analyses, from syntax to discourse. These findings indicate a strong possibility that a fundamental and pervasive interaction between linguistic representation and linguistic action exists, but it will require both historical analyses and language acquisition analyses to capture this interaction.

2.2 Developmental Studies

Functional studies of connectives and subordinate/coordinate clauses have become numerous, as child language researchers recognize the importance of discourse and social interaction in the acquisition process. There is also a new interest in the development of discourse for its own sake, rather than just as a theoretical explanation for the acquisition of linguistic forms. I review both types of studies below.

2.2.1 Discourse Development

The research which focuses on the development of discourse organization and coherence is not extensive and indicates a gap in our research on children's

social and linguistic development. The work that has been done shows a developmental sequence from simple, routinized and very short interactions to complex, flexible, and longer stretches of interaction (Boggs, 1990; Ervin-Tripp, 1978; McTear, 1984, 1985; Watson-Gegeo & Boggs, 1977; Watson-Gegeo & Gegeo, 1987).

Children's early attempts at conversation, between the ages of 1 and 3, show stage-like qualities: utterances at first do not show signs of coherence or relevance to previous utterances, then begin to show greater contingency (Bloom, Rocissano, & Hood, 1976; Ervin-Tripp, 1978; McTear, 1985). Specific devices are used to signal this greater contingency in response, including repetition first, then the use of anaphoric pronouns, auxiliary ellipsis, and connectives across turns (Ervin-Tripp, 1978; McTear, 1985). By the age of 3 these specific developments create a marked shift in conversational development, so that utterances begin to systematically presuppose features of the partner's speech (Ervin-Tripp, 1978). The next stage of development involves the appearance of utterances "with a dual discourse function: that is, they respond to a previous utterance as well as simultaneously setting up expectations for a further response." (McTear, 1985, p. 138). This stage allows children to construct longer sequences of dialogue, both across turns and within turns.

The developments noted by McTear (1985) are the building blocks of routines (Boggs, 1990; Watson-Gegeo & Boggs, 1977). Routines are sequences of talk which have a repetitive pattern of component moves recognized as constituting a particular speech event. Some routines have strong constraints on the alternative moves allowable, such as knock-knock games, while other routines have weaker constraints, such as a telephone conversation. In the early stages of development, these routines are common in children's talk. As children

get older, routines become less important in discourse organization, giving way to such constraints as topic (Boggs, 1990) and participation frameworks (Goodwin, 1990). Studies such as these indicate that it is crucial to distinguish between local versus global discourse organization. Local organization consists of the relations between one turn or utterance and the next; these can be at the exchange, action, or ideational level. Global organization consists of the relations between a particular turn or utterance and a regulatory constraint which pertains to sets of turns or utterances; this regulatory constraint can be semantic/ideational (such as topic) or pragmatic/interactional (such as participation framework). Children's discourse is at first only locally organized, and then gradually it is organized globally. This development is reflected in the increase of flexibility in conversational moves as routines become less important, and the increase of topical coherence and of identifiable subunits of speech events as global organization becomes more important.

While the above research on discourse development has examined children's spontaneous, casual conversations, more research has focused on specific speech events, of which the most notable is narrative (Berman, 1988; Berman & Slobin, 1994; Fivush & Slackman, 1986; Hicks, 1991; Hudson & Shapiro, 1991; Kemper, 1984). By the age of 3, children are telling personal narratives and reporting what happens in events which are familiar and general with very little support from adults, making it one of the earliest types of connected discourse to develop (Hudson & Shapiro, 1991). Different structural aspects of narratives develop in the preschool years; 3-year-old children are using introducers and abstracts in their personal narratives (Preece, 1987) and evaluations occur in the personal narratives of 2-year-olds, often communicated by nonverbal or paralinguistic means (Miller & Sperry, 1988). Between the ages of 2 and 5, children's narrative plotlines develop from chains of unrelated events

to narratives that focus around a climax (Kemper, 1984). There are significant differences between ages 3 and 4 and between 4 and 5 in the number of narrative components which advance the plotline (Berman, 1988; Berman & Slobin, 1994). In terms of local organization vs. global organization, research has also shown that children structure narratives at the local level first, then structure narratives at a global level (Bamberg, 1987; Bamberg & Marchman, 1990). Researchers have also discovered the importance of genre differences in narrative development: personal narratives and scripts emerge at about the same age, between 2 and 3, while fictional and hypothetical stories emerge later, during the elementary school years (Hudson & Shapiro, 1991). These genre differences directly affect the style and the organization of the narrative speech event (Hicks, 1991).

Research in discourse development is not extensive, but already we see significant issues that affect discourse organization and discourse coherence. At the very least it will be important to examine local versus global organization and its effects on the functions of connectives and subordinate/coordinate clauses, and the role of routines in their acquisition.

2.2.2 Acquisition of Connectives and Subordinate/Coordinate Clauses

The first studies which examined the initial stages of the acquisition of connectives (between ages 1;6 and 3;0) found a recurring pattern based on semantic complexity: additive > temporal > causal > adversative > conditional (Bloom, Lahey, Hood, Lifter & Fiess, 1980; Ervin-Tripp, 1978). The first connective acquired, and, was used to encode many of these semantic relations before any new connectives, such as because, were acquired. In the initial stages, and not only connected two constituents (either phrasal or sentential structures), it also connected a nonverbal event occurring in the context to an

utterance. For example, a child in Bloom et al.'s (1980) study said "and I close them" after having put several puppets inside a box. For one child in this study, the "contextual" function occurred before syntactic use; for the other children both types of uses were present initially (Bloom, et al., 1980). The studies also found a recurring distinctive pattern for because: unlike the other connectives, it is first acquired to mark cohesion between one person's turn and a previous turn (Bloom, et al., 1980; Ervin-Tripp, 1978).

These early studies focused more on semantics than pragmatics, but they did presage the need to attend to discourse structure by noting the importance of nonverbal context and turn exchanges. At this level of analysis, though, these studies concluded that discourse structure, or conversational cohesion, was not a dominant factor in the initial stages of acquisition of these forms (except for because).

More recent work has examined the functions of connectives with regards to new discoveries about pragmatics and discourse, especially in the narrative context (Peterson & McCabe, 1991a, 1991b). Examining elicited narratives of personal experience from 96 children (3;6 - 9;6), Peterson and McCabe (1991a, 1991b) analyzed semantic and pragmatic factors in the use of connectives and, but, so, because, then, and and then. In terms of semantic relations between clauses, they found no age differences; however, there were age differences in the use of connectives. As found in earlier studies, the semantic relations were encoded by old forms before new forms were acquired. Peterson and McCabe (1991a) identified the children's uses of connectives that were not fulfilling the canonical semantic function and analyzed them in terms of pragmatic factors. These included marking the global organization of the narrative (beginnings and endings of narratives) and distinguishing plotline from other components of the narrative. They found that but and so were used for pragmatic purposes 22%

and 31% of the time in narratives, while because, then, and and then were used for pragmatic purposes 9%, 3%, and 5% of the time in narratives. They found significant age-related increases in semantic functions for but, but no developmental changes in functions for so. Because, but, and so were pragmatically used to begin narrative discourse units and to mark departures from the plotline, whereas the pragmatic uses of then and and then were used to mark returns to the plotline. They also found that the most common connective, and, was used to connect two events in the plotline significantly more often than to connect two propositions which were off the plotline (Peterson & McCabe, 1991b).

In contrast to these narrative studies, Sprott (1992) has examined the use of connectives in verbal disputes. Archival data from the 1976 Ervin-Tripp family corpus were used for this study; 23 children, ranging in age from 1;6 to 9;6, and ten adults were videotaped at home during activities such as role-playing and construction tasks. 128 verbal disputes were identified, and in each the functions of connectives because, so, and, and but were analyzed. The functions were coded as exchange if the marker appeared at the beginning of a speaker's turn, action if the marker appeared at the beginning of a directive speech act, local ideational if the marker combined clauses in one intonational unit, and global ideational if the marker appeared at the beginning of a topic shift or new argumentative tactic. The criteria for each coding category were very conservative interpretations of the discourse marking functions of the connectives. The results showed a gradual development in the functions, from the youngest children using connectives only at the beginning of their turns, to using connectives to combine clauses and mark subunits of the dispute between 3;6 and 4;0. After this age, development continued up to adulthood as different connectives acquired the range of functions at different rates.

The results were similar to those found by Peterson and McCabe (1991a). The connectives so and but were found to be highly related to pragmatic functions until middle childhood. The other connectives were used for both semantic and pragmatic functions by 3;6. As found in Bloom et al.'s (1980) and Ervin-Tripp's (1979) studies, the connective because marked relations between speaker turns initially, and it continued to serve this function even through adulthood. Unlike the earlier studies, though, pragmatic factors were found to be highly salient for all connectives, not just because, in the earliest stages of acquisition in this context. The contradiction may indicate the importance of speech event context in the functions of connectives.

Other studies have directly compared speech events, and found significant contextual differences in the use of connectives (Laubitz, 1987, 1988; Peterson & McCabe, 1988). In a study of elicited personal and picture narratives, explanations of game rules, and casual conversation in preschoolers 2 to 5 years old, Laubitz (1987, 1988) found that narratives contained significantly more connectives than did the other contexts for the 3-5 year-olds. The 2-year-olds hardly ever used connectives in any context. The speech context also affects the type of connectives used, not just the frequency; 80% of the clause relations in narratives were temporal, and the most common connectives were and, and then, and then. In casual conversation, only 20% of the clause relations were temporal; the most common connectives were and, but, and because. Laubitz (1988) concluded that the preschool children were acquiring the concept of narrative as a text type, having a particular linguistic form as well as a distinguishing content and function. In other words, linguistic forms may index speech events and other aspects of social interaction in addition to symbolically encoding information. Furthermore, this indexing may be of primary importance

in the initial stages of acquisition of linguistic forms (Bamberg, Budwig, & Kaplan, 1991; Gerhardt, 1988).

While connectives may directly index speech events as well as mark discourse structures in the early stages of acquisition, subordinate and coordinate clauses themselves reflect textual functions which organize information according to the degree of assertion. Subordinate and coordinate clauses also appear to interact with the three kinds of structure in language discussed by Sweetser (1990). In an analysis of causal constructions, Kyratzis (Kyratzis, Guo & Ervin-Tripp, 1990; Kyratzis, 1991) has examined how these factors affect the acquisition of subordinate and coordinate clauses. Using the 1976 Ervin-Tripp family corpus, the studies identified all causal expressions produced by children 2;7 to 11;1, whether expressed with causal connectives and clause combinations or unmarked. The causal constructions were also coded according to their level of discourse: content, speech-act, or epistemic (Sweetser, 1990). Kyratzis found that before 3;6, children seldom produced a complete causal construction with two clauses (22.2% of the clauses); the connectives and reasons were dependent on discourse structures for their coherence and functions rather than syntactic structures. Additionally, all the complete causal constructions before 3;6 marked relations on the speech-act level. Between 3;6 and 11;1, the number of causal constructions on the content level increased and incomplete constructions decreased (Kyratzis et al., 1990).

The content, speech-act, and epistemic levels of discourse relations may also interact with the degree of assertion for the causal clause (Kyratzis, 1991). Making a distinction between continuous combinations (both main and subordinate clauses are in the same intonational unit), comma combinations (the main and subordinate clauses are in two different intonational units), and independent clauses, Kyratzis (1991) found that causal constructions at the

speech-act level were predominantly independent (67%) or in comma combinations (33%), while constructions at the content-level were mostly in comma combinations (63%) or continuous combinations (22%). She interpreted these construction types as reflecting the force with which the reason was asserted: the less forceful assertion backgrounds the information in a prototypical subordinate clause. The degree of assertion, then, is influenced by the level of discourse marked by the causal construction (Kyratzis, 1991).

2.2.3 Summary

The results of these studies demonstrate just how plurifunctional connectives are and how the use of subordinate and coordinate clauses is influenced by the interactional level of discourse from the very beginning. These factors explain the observation made by Bloom et al. (1980) in the earlier studies: there is no evidence of a sudden insight or an "across the board" acquisition for subordinate and coordinate clauses. In fact, a full functional analysis finds that development occurs up to early adolescence for some of these form-function patterns.

A formalist position will allow for all these developments but say that they do not actually reflect the core ability of subordination or clause combination, which is separate from discourse and pragmatic functions. Still, the functional perspective can explain in a principled fashion why acquisition is not instantaneous and across the board, whereas the formalist position can only do so in an ad hoc fashion. The functionalist position does this by putting linguistic structure back into its broader context of linguistic action, influenced by cognitive and social factors.

3. Hypotheses

The review of the literature allowed us to identify several factors which may explain the acquisition of connectives and coordinate/subordinate clauses through ideational, interactional, and textual functions. The analyses of connectives in this dissertation will take into account the following: discourse marking functions and clause-combining functions, local versus global discourse organization, and the context-indexical properties of linguistic forms. The analyses of subordinate and coordinate clauses also takes into account the content level and the speech-act level of relations between clauses. These factors generate two general hypotheses regarding developmental patterns of linguistic use and the role of interactional functions, which the present research was designed to test.

3.1 Interactional Functions Hypothesis

Recent research in child language from a functionalist perspective has consistently uncovered the importance of the interactional functions of language in the initial stages of acquisition in areas such as pronouns, modal auxiliaries, and discourse markers (Budwig, 1989; Gerhardt, 1990; Pak, Sprott, & Escalera, in press). In these areas of the linguistic system, the functions of children's forms are more sensitive to the immediate discourse context, activities, and purposes in speaking than are the functions of adults' forms, and less sensitive to ideational features which are constant across discourse contexts, activities, and purposes in speaking. Previous research has uncovered this pattern by inductive means after intensive analysis of the functions of children's linguistic forms; the present research proposes to test this pattern's applicability to connectives, thereby taking this direction of research one step further. Based on this research, an interactional functions hypothesis can be proposed: The first functions of

children's linguistic forms will be more sensitive to speech-act and discourse functions than ideational functions (Pak, Sprott & Escalera, in press; Sprott, 1992a).

At this stage of research, however, it is unclear if interactional functions are applicable to only part of children's linguistic system, such as only to modal auxiliaries, linguistic particles, and discourse markers which mark speaker status and other deictic features, or if interactional functions play a role in the acquisition of the entire linguistic system for children. A functional theory such as Role and Reference Grammar (RRG) (Foley & Van Valin, 1984), which analyzes clause structure in terms of a layered organization of the nucleus (the predicate), the core (the predicate and its arguments), and the periphery (modifications of the core as a unit), might argue that interactional functions operate only in the periphery while ideational functions operate in the core and nucleus. Thus linguistic forms which indicate illocutionary force, negation, evidentiality, and modality would be more likely to exhibit interactional functions than number, transitivity and aspect. Halliday (1975, 1976) has argued along similar lines, but from an analysis of the functions of language rather than the structure of language. He speculated that transitivity reflects ideational functions while mood and modality reflect interactional functions in the adult linguistic system. In child language theory, the Basic Child Grammar (Slobin, 1985) contains both grammaticizable Notions which mark different parts of a Scene and grammaticizable Notions which mark perspectives on a Scene, including pragmatic perspectives. The Notions which relate to different parts of the scene appear to be primarily ideational or referential-propositional, while Notions which relate to perspectives appear to be interactional or social-conversational, at least in part. Both RRG and the Basic Child Grammar would argue that interactional functions are limited from the beginning to only parts of the child's linguistic

system, and therefore only parts of the child's linguistic system would fit the developmental pattern predicted by the interactional functions hypothesis.

In contrast, the Developmental Approach discussed by Bamberg, Budwig, and Kaplan (1991) posits that interactional and ideational functions are not clearly defined in earlier stages of child development. The Developmental Approach also recognizes a distinction between parts of the adult linguistic system which are ideationally-based and parts which are interactionally-based: "...it may be argued that the telos of some linguistic sub-systems is abstract [without a direct relationship to pragmatic functioning], while the telos of other systems is functionally motivated." (Bamberg et al., 1991, p. 137). However, the child is viewed as starting the language acquisition process with a proposed "early fusion of undifferentiated 'action' and 'representation' ... out of which particular (language specific) functions and forms are increasingly differentiated and hierarchically integrated." (Bamberg et al., 1991, p. 126). All sub-systems of language are considered to reflect form-function relations in which interactional and textual functions play a role; as the child develops, some linguistic forms come to reflect semantic or syntactic characteristics only, while other forms continue to reflect interactional functions.

Halliday's analysis of the functions of child language (1973, 1975) has also made similar arguments regarding the pattern of development: children begin with a variety of functions which are directly related to social, expressive, and instrumental purposes, and over the course of development these functions are reorganized, transformed, and integrated into three macro-functions, the ideational, interpersonal, and textual. Simultaneously, children's forms develop from being unifunctional to plurifunctional, so that "nearly all words and structures were first used to express meanings in either one or the other of these two functions [pragmatic or mathetic] but not in both; after an interval, the resources

that had been mastered in the one function were then transferred to the other. But, at the same time, all utterances were becoming plurifunctional." (1975, p. 55).

The approach of Bamberg et al. and Halliday would argue that the pattern of development predicted by the interactional functions hypothesis would be applicable to all parts of the child's linguistic system in the earlier stages of acquisition.

Future research on children's form-function relations will need to explore the differences outlined above by careful analysis of many sub-systems in children's linguistic system. The present studies examine whether connectives reflect interactional functions, and whether there is evidence of differentiation between ideational and interactional functions. In the present studies, interactional functions of connectives are reflected in both type of unit and type of relation: turn exchanges and conversational particles are units which are directly related to conversational interaction, and speech-act relations directly reflect social, interpersonal concerns.

3.2 Limited Context Hypothesis

In addition to the recognition of interactional functions, research has also shown that linguistic forms are acquired in specific discourse and social environments (Budwig, 1989; Peters & Boggs, 1986; Watson-Gegeo & Gegeo, 1986). The limited context hypothesis predicts that children acquire linguistic forms in highly constrained environments, such as adjacency pair discourse formats (question-answer), speech events (narratives), and social routines (gaining access to play). Limited contexts become less characteristic over the course of acquisition, indicating that a decontextualization process is occurring. It is presently unclear how to describe this decontextualization process; it may be attributed to children's discourse development, or it may reflect changes in the

pragmatic properties of individual linguistic constructions. If discourse development is the effective factor in this developmental pattern, it would indicate that the functions of a particular linguistic form occur in limited discourse contexts; as the functions spread to new discourse contexts, so would the linguistic form. This would essentially be a functional development. However, it is also possible that the functions marked by a particular form are present in several discourse contexts, but the particular form is limited to a sub-set of these discourse contexts. For example, a temporal relation between two clauses may be produced in both verbal disputes and narratives, but the temporal relation is marked by and then only in narratives. The developmental pattern predicted by this hypothesis would then reflect characteristics of the form-function relation constructed by children rather than just a spreading of functions across discourse contexts.

Again, previous research has uncovered this pattern by inductive means after intensive analysis of the contexts of children's linguistic forms; the present research proposes to test this pattern's applicability to connectives, thereby taking this direction of research one step further. In the present studies, limited contexts are described in terms of speech event contexts such as conversational narratives and verbal disputes.

The two general hypotheses are concerned with the developmental patterns of linguistic use; the question they propose to test is one of the applicability of descriptive techniques developed in the analysis of certain linguistic sub-systems to other sub-systems, especially in terms of the role of interactional functions. The developmental patterns are neutral to the kinds of mechanisms which give rise to them, as the above discussions indicated. If the predictions concerning developmental patterns are upheld, the next step would be examining the mechanisms which give rise to the developmental patterns.

Specific predictions about children's use of connectives derived from these two general hypotheses are detailed in Chapters Four and Five.

The methods used in the present studies are all the same: videotaped and transcribed spontaneous, child-directed interactions. It is important to start with naturalistic data when exploring the social, discursive, and pragmatic functions of linguistic forms because these factors are so sensitive to context. As these factors are understood, researchers will be better able to design studies which control and disentangle interactional factors over the course of development.

4. Comparing Narratives and Verbal Disputes

This chapter examines the discourse marking functions of connectives, the limited contexts of connectives and clause combinations, and the importance of interactional functions in the first stages of acquisition. Conversational narratives and verbal disputes are contrasted in order to see contextual effects; these two speech events were chosen because narratives seem to rely mostly on the ideational level of discourse for coherence and verbal disputes mostly on the interactional level of discourse for coherence.

4.1 Introduction

Connectives and clause combinations are intimately tied to discourse organization. Connectives indicate relations between larger units of talk, not just clauses and phrases; connected units include global discourse units such as episodes of a narrative or different lines of argument in a dispute as well as local units such as a matrix clause and a subordinate clause or coordinate clauses (Peterson & McCabe, 1991a; Schiffrin, 1987; Sprott, 1992a). Several linguists have proposed a structural similarity between the local connections of clauses and the global connections of larger discourse units (Matthiessen & Thompson, 1988; Polyani & Scha, 1983).

Connective meanings are polysemous as well as multi-levelled in function; they can encode relations on the speech-act level as well as on the level of semantic content (Kyratzis, Guo & Ervin-Tripp, 1990; Sweetser, 1990). The distinction between speech-act level and content level captures the fact that clausal relations sometimes rely on the speech act or illocutionary characteristics of the individual clauses rather than their semantic content. For instance, the

causal relation marked with because in example (1) has more to do with explaining the act of agreement than explaining a real-world cause:

(1) HE and CO are arguing about the direction of their pretend play with the one doll between them:

CO: I want to sleep with her.
HE: Her says, I don't want to sleep with you now. [baby voice]
CO: No she's *dead.
--> HE: Yeah, 'cause I buried the head.
A cut. A cut for her, a cut, a big giant cut her, and (her) dead.
CO: She'll come back to life in a minute, mom.

In the utterance before the causal connective, CO protests HE's use of the baby's voice by giving a reason why the doll cannot talk. HE agrees with CO, which sets up a need to explain the unusual act of agreement. HE's assertion that she has buried the head is the first mention of such an action or state; it has not been part of their pretend play scheme and there were no nonverbal actions which could be interpreted as "burying." The reason in the because clause explains why the speaker uttered an agreement; "burying the head" is not a real-world cause of her being dead (which is elucidated in the subsequent reference to the giant). Instead, the because signals a reason for agreeing, an unusual move in an argument which needs an explanation. This is different from the causal connection in example (2):

(2) No, I'm not going to your house 'cause I'm going to Julie's house.

The reason in the subordinate because clause explains the real-world cause of the negative state mentioned in the matrix clause.

Another type of relation, more common in older children and adults, is the relation between conclusion and evidence in causal and conditional clauses; one

clause presents a proposition, and another clause presents evidence to support its conclusion, which is not necessarily the real-world cause or condition:

(3) This one's the daddy? Oh, 'cause this one's bigger, right?

The evidence presented in the because clause does not present a real-world cause for one of the toy's being a daddy, but provides a reason for the conclusion that it should be called a daddy.

The distinctions between content, speech-act, and epistemic clause relations are important for the analysis of discourse, since speech-act relations are more directly related to discourse and interactional concerns than are content or epistemic clause relations. The meanings of relations on the speech-act level are grounded in discursive interaction. Speech-acts derive their characteristics from interactional concerns, and the relations between speech-acts involve a pragmatic coherence derived from discourse patterns which is not always reflected in the semantic content of the utterances. For instance, giving a reason for uttering a directive or for agreeing in a dispute makes sense only by taking into consideration the needs of the hearer and the expectations of the social interaction. Therefore discourse organization not only affects the types of units connected, but also the types of meaningful relations between clauses.

Acknowledgement of different types of units and relations is beginning to influence studies of the acquisition of connectives (Kyratzis, 1991; Peterson & McCabe, 1991a, 1991b). Examining elicited narratives of personal experience from 96 children (3;6 - 9;6), Peterson and McCabe (1991a, 1991b) analyzed pragmatic factors in the use of connectives and, but, so, because, then, and and then. In their study, they identified the children's uses of connectives that were not fulfilling the canonical semantic function and analyzed them in terms of

pragmatic factors. These included marking the global organization of the narrative (beginnings and endings of narratives) and distinguishing plotline from other components of the narrative. They found that but and so were used for these pragmatic purposes 22% and 31% of the time in narratives, while because, then, and and then were used for these pragmatic purposes 9%, 3%, and 5% of the time in narratives. They found significant age-related increases in semantic functions for but, but no developmental changes in functions for so. Because, but, and so were pragmatically used to begin narrative discourse units and to mark departures from the plotline, whereas the pragmatic uses of then and and then were used to mark returns to the plotline. Others have also found that connectives mark shifts in episodes of a narrative (Bamberg & Marchman, 1990). Marking pragmatic distinctions and discourse macrostructure were also recognized as the functions of connectives by Schiffrin (1987) when she classified connectives as discourse markers along with other markers such as well and I mean. Discourse markers are words or phrases which index the organization of large stretches of talk and orient the speaker and listener to the ongoing discursive interaction. The pragmatic uses identified by these studies were concerned with marking linguistic units larger than clauses; some connectives seem to have distinctive functions related to the larger discourse units and discourse structural properties of narratives.

In her work on causal constructions, Kyratzis (Kyratzis, Guo, & Ervin-Tripp, 1990, Kyratzis, 1991) has examined how the semantic and pragmatic meanings of because and so affect the acquisition of subordinate and coordinate clauses. Using the 1976 Ervin-Tripp family corpus, the studies identified all causal expressions produced by children 2;7 to 11;1, whether expressed with causal connectives or unmarked. The level of causal constructions were also coded: content, speech-act, or epistemic (Sweetser, 1990). Kyratzis et al. found

that before 3;6 children seldom produced a complete causal construction with two clauses (22.2% of the causals); additionally, all the complete causal constructions before 3;6 encoded relations on the speech-act level. Between 3;6 and 11;1, the number of causal constructions on the content level increased relative to speech-act level constructions, and incomplete constructions decreased relative to two-clause constructions (Kyratzis et al., 1990).

Kyratzis (1991) also examined the interaction between type of unit and type of relation for because and so. Making a distinction between continuous combinations (both main and subordinate clauses are in the same intonational unit), comma combinations (the main and subordinate clauses are in two different intonational units), and independent clauses, Kyratzis found that causal constructions at the speech-act level were either independent (67%) or in comma combinations (33%), while constructions at the content-level were in either comma combinations (63%) or continuous combinations (22%). She interpreted the construction types as reflecting the force with which the reason was asserted. The more strongly a proposition is asserted, the more likely it will be encoded as an independent clause. The more a proposition is backgrounded, the more likely it will be encoded as a dependent clause. Speech-act relations tend to be expressed by forcefully asserting both clauses, while content relations are usually expressed by asserting one clause and backgrounding the other. The degree of assertion, then, interacts with the type of relation encoded by the causal construction (Kyratzis, 1991).

Type of unit and type of relation are characteristics of connectives which relate directly to discourse organization. Current understanding of children's discourse organization and the functions of connectives is a result of intensive investigation predominantly into two different speech events: narratives and verbal disputes.

4.1.1 Children's narratives

Research on children's narratives has investigated the development of stories as a genre in its own right, at the discourse structure level. By the age of 3, children are telling personal narratives and reporting events which are familiar and general with very little support from adults (Hudson & Shapiro, 1991). The different structural aspects of narratives also develop in the preschool years; 3-year-old children are using introducers and abstracts in their personal narratives (Preece, 1987) and evaluations occur in the personal narratives of 2-year-olds, often communicated by nonverbal or paralinguistic means (Miller & Sperry, 1988). Between the ages of 2 and 5, children's narrative plotlines develop from chains of unrelated events to narratives that focus around a climax (Kemper, 1984). There are significant differences between ages 3, 4 and 5 in the number of narrative components which advance the plotline (Berman, 1988). In addition, Bamberg has shown that children use linguistic features to mark the structure of narratives at the local level first, then to mark the structure of narratives at a global level (Bamberg, 1987; Bamberg & Marchman, 1990). A complete narrative which includes all aspects of a story grammar (Stein & Glenn, 1979), such as a preface, an orientation, complicating actions, resolutions, evaluations and a coda, appear to develop between ages 4 and 5 (Benson, 1993; Stein, 1988)

Recently, researchers of the development of narrative structure are realizing a difference between "story-telling" and creating narratives as part of sociodramatic play (Benson, 1993; Garvey, 1990). The studies cited above investigate either elicited narratives, which involve "story-telling" from pictures, or spontaneously produced narratives apart from sociodramatic play, usually in conversational interaction with caretakers. The difference between "story-telling"

and the narratives produced for sociodramatic play appears to be critical when examining narrative structure. Benson (1993) examined the structure of narratives in both settings. 19 four-year-olds and 21 five-year-olds participated in two tasks with an adult interviewer: a play task which involved props, and a storytelling task which involved pictures of the props. The children were asked to "pretend something about (the characters) and tell me about it" in the play task. In the storytelling task, the children were asked, "Can you make up a story about (the characters)." The results found a significant difference between ages 4 and 5 in the structure of narratives; the difference in structure by age was especially evident in the storytelling setting. The narratives produced in the storytelling task were more complicated in structure, coming closer to the criteria of story grammars. The narratives produced in the play task contained mostly chains of actions, with no reference to a central complicating action or conflict which needed to be resolved. However, the pretend play task may not have captured the competencies of the children in this setting due to its artificial nature (Benson, 1993). What is clear from recent research is that narrative genre and activity context greatly impact the discourse structure of narratives.

4.1.2 Children's verbal disputes

The organization of children's verbal disputes begins very simply; a cycle of repetitious protests and rejections (Dunn & Munn, 1987; Lein & Brenneis, 1978; Phinney, 1986; Sprott, 1992b). The protests and rejections usually take the form of either a simple negative or prohibition ("No!" or "Don't!"), or the negation of the previous assertion, which involves repeating elements of the previous assertion (A: I have a pink one. B: It's not pink!). The protests and rejections are considered simple moves, and they tend to occur in an extended sequence (Phinney, 1986). The first sign of a more complex structure is the use

of justifications or explanations to support protests or rejections. Another type of elaborated move is to query the previous assertion ("why?"), which establishes an adjacency pair structure in which a justification or explanation is the second part (Phinney, 1986). As children develop dispute skills, other types of elaborated moves appear, such as yes, but formats, which provide token agreements before disagreements (Levinson, 1983; Pomerantz, 1975).

Dunn and Munn (1987) provided one of the first studies of children's initial uses of justifications in spontaneous verbal disputes. In a longitudinal study of 43 children observed at home at 18, 24, and 36 months, they found that justifications were present but very rare at 18 months, occurring in only 4% of all the disputes with mothers. They noted a significant increase in the use of the justifications between 24 and 36 months. The justifications were most likely to occur in disputes over object rights or control. In a study of 4-year-olds' conflicts with their mothers, Eisenberg (1992) found that the children used justifications in 36% of their disputes. The study also found that the initiator of the conflict, whether child or adult, was more likely to use justifications, and each participant was more likely to use justifications if the other did so previously. This finding corroborates the analyses of Phinney (1986), who found that complicating moves such as justifications were more likely to be produced if the other person used them, and were more likely to be used by children as they developed from age 3 to 5.

The function of connectives in verbal disputes are associated with the elaborated moves of justifications, explanations, and certain kinds of challenges (yes, but formats). These moves occur in a range of different types of local discourse units, such as across-turns or within-turns. Justifications expressed in within-turn units can be either subordinate clauses or independent clauses. Justifications and challenges can also change the topic or argumentative tactic during a verbal dispute, which are expressed in global discourse units.

(4) The following example is from a dispute between a 2;11 year-old boy, S, and his 4;2 year-old sister, M. They have been reading a picture book with an adult, G.

M: And that's my brother and that's a nice lion.
S: That's a ... no, he's a scary lion.
G: A scary lion or a friendly lion?
M: A friendly lion.
S: A scary one.
M: No. It's a friendly lion.
S: A ... a scary one.
G: Why is it scary?
S: Because he is.
M: He's not scary.
G: But he's smiling.
S: No, he's ... he's roaring.
G: Oh. [Sprott, 1992a, p.431]

The dispute continues for another 16 lines, at which point the activity changes and another dispute ensues. The connectives but and because mark across-turn discourse units. The connective because marks the second part of an adjacency pair initiated by the adult, G. But also marks a global discourse unit since it marks a shift in argumentative tactic; the adult introduces the matter of evidence. After this point, M and S continue to dispute whether the lion is roaring or smiling.

In a previous study of children's disputes (Sprott, 1992a), I examined children's use of connectives to mark different types of units. 128 verbal disputes between peers, siblings, and adults while playing at home were analyzed for the functions of connectives; the children ranged in age from 1;8 to 9;6. The youngest children used the connectives to indicate discourse relations only across speaker turns; they did not indicate relations between clauses within a turn. By age 3;6, the children were beginning to use the connectives to indicate clausal relations within turns, and to mark global discourse units within disputes, such as shifts in argumentative tactic or topic. The connectives most commonly

appearing in children's verbal disputes are because and but; these connectives were also the first to mark global discourse units in verbal disputes. Other connectives showed different histories in the functions they marked, depending upon their semantic and syntactic characteristics.

4.1.3 Comparing speech events

Some recent studies have directly compared speech events and found significant contextual differences in the use of connectives (Laubitz, 1987, 1988; Peterson & McCabe, 1988). In a study of personal and picture-elicited narratives, explanations of game rules, and casual conversation in preschoolers 2 to 5 years old, Laubitz (1987, 1988) found that narratives contained significantly more connectives than the other contexts for the 3-5 year-olds. The 2-year-olds hardly ever used connectives in any context. The speech context also affects the type of connectives used, not just the frequency; 80% of the clause relations in narratives were temporal, and the most common connectives were and, and then, and then. In casual conversation, only 20% of the clause relations were temporal; the most common connectives were and, but and because. Laubitz (1988) concluded that the preschool children were acquiring the concept of narrative as a text type, having a particular linguistic form as well as a distinguishing content and function. In other words, linguistic forms may index speech events and other aspects of social interaction in addition to symbolically encoding information.

Studies of discourse development in narratives and disputes are an important first step in examining the discourse functions of connectives. Researchers need to understand the larger units which comprise narrative and dispute speech events and the different ways in which coherence is created on the content level and the speech-act level.

4.1.4 Theoretical perspectives on acquisition of connectives

Recent work which analyzes form-function relations in child language development has consistently found that many linguistic forms serve communicative, interactional functions in addition to semantic, ideational functions when they are first acquired (Budwig, 1989; Escalera, 1989; Gerhardt, 1988, 1990; Pak, 1989; Slobin, 1989; Sprott, 1992a). Specifically, the functions of children's forms are more sensitive to the immediate discourse context, activities, and purposes in speaking than are the functions for adults' forms, and less characterized solely by ideational or structural features which are constant across discourse contexts, activities, and purposes in speaking. The sensitivity to interactional as well as ideational factors may reflect a proposed "early fusion of undifferentiated 'action' and 'representation' ... out of which particular (language specific) functions and forms are increasingly differentiated and hierarchically integrated." (Bamberg, Budwig & Kaplan, 1991; p. 126). As linguistic forms and their functions are differentiated and integrated, interactional functions will become associated with part of the linguistic system instead of the whole system, and interactional functions will be used more selectively. Based on this research, researchers affiliated with the Berkeley Child Language Laboratory have proposed the interactional functions hypothesis: the first uses of children's linguistic forms will be more sensitive to interactional functions than later uses, and as children develop linguistically they will exhibit a clearer distinction between interactional and ideational functions (see Bamberg, Budwig & Kaplan, 1991 and Gerhardt, 1990 for further explication).

The same recent work has also found that forms are acquired in highly defined contexts organized by discourse and speech act functions (Ervin-Tripp, 1989). Acquisition is marked by the spread of forms into new contexts so that

flexibility in use becomes a hallmark of linguistic skill. These studies lead us to propose a limited context hypothesis: in the initial stages of acquisition of new linguistic forms, these forms will occur in highly constrained environments, such as adjacency pair discourse formats (question-answer), speech events (narratives), and social routines (gaining access to play). In later stages these forms will spread to new contexts. There are two possible causes for limited contexts: (a) limited contexts reflect children's developing discourse abilities, in that certain functions fulfilled by linguistic forms occur in a smaller set of contexts for children than for adults, and as children develop on the discourse level the forms and functions spread to new contexts; or (b) the form-function mappings constructed by children include context-indexical properties in the initial stages of acquisition, and even though functions may occur in a variety of contexts, forms will be limited to a subset of these contexts. The stronger hypothesis (b) would corroborate the interactional functions hypothesis.

In the present study, the interactional functions hypothesis would predict that younger children's connectives would encode speech-act level meanings more often than older children's connectives, since speech-act meanings are more sensitive to the purposes of speaking. Additionally, the hypothesis would predict that older children's connectives would have a wider range of functions and that interactional functions would be used more selectively than before. The limited context hypothesis would predict that younger children's connectives would appear in particular speech events, such as narratives, before appearing in others, such as verbal disputes.

This study examines the functional acquisition of connectives in two ways: focusing on the differentiation between interactional and ideational functions between ages 3 and 4, and comparing different types of speech events, conversational narratives vs. verbal disputes. These two speech events were

chosen because narratives depend on the representative nature of language for coherence (ideational functions) and verbal disputes depend on the effective nature of language for coherence (interactional functions). The two directions of fit between the world and language have been explored in philosophy and linguistics for many years (Austin, 1962, Searle, 1983). Comparing conversational narratives and verbal disputes would maximize the difference between ideational and interactional functions.

4.2 Methods

The conversations of 10 three-year-old and 13 four-year-old children in a university nursery school were video- and audio-recorded during normal, unstructured activity over a period of several weeks. The activities included pretend play in a "playhouse" and construction activities with blocks or sand. The children were predominantly from middle-class, highly-educated families with a range of racial and ethnic heritages. The 3-year-old class met in the morning, and the 4-year-old class met in the afternoon, both using the same classroom. Due to the naturalistic observational method, the length of time that each child appeared on the tapes was not controlled. The time ranged from 20 minutes to 5 hours. A total of 15 hours were taped in the 3-year-old class, and 10 hours in the 4-year-old class.

The recordings were completely transcribed from the video and audio tapes, and the transcriptions analyzed for conversational narratives and verbal disputes. Verbal disputes are defined by a three-move criterion: an utterance, followed by a challenge, and the challenge followed by a counter-challenge (Maynard, 1985). The dispute continues until formally resolved or the speakers change activity or speech event. Conversational narratives are harder to define, because they don't always conform to a "prototypical" narrative structure, such as

monologic speech and descriptions of past events or fantasies (Ervin-Tripp, personal communication). I have decided to use a broadly-defining criterion: a narrative is a description of at least two connected events or actions which cannot be enacted immediately. This is a slight modification of Labov's definition of narrative (Labov, 1972). At least two events are used in order to exclude references to a single event from being considered a narrative, such as "He did it!" The prohibition against the actions or events being enacted immediately excludes a chain of directives from being considered a narrative, such as "Do this; now do this; and do this." This criterion allows for the inclusion of planning talk, descriptions of past events, and the description of hypothetical or fantastic chains of events. Here is an example of a conversational narrative from the data:

(5) KE, CO, JO and SI have been acting out Sleeping Beauty. After the boys, JO and SI, have kissed the two girls and awakened them a couple of times, the children stand around and look at each other in silence for a minute.

SI: Now, here comes the little tiny little *fairies?
And they go. [makes swooping motion with hand]
But now we need- a book and a wand.
And then you two got born a baby but don't worry.
The baby is *not going to be dead.
*We're going to come and *kiss you two.
And then the baby will be *free.

(6) AN and KE are playing with dolls in the playhouse when LA calls out as she approaches the girls.

LA: Hey AN! AN! um, are you play with the baby when I come home?
AN: Yeah, I think so.
KE: [to LA] Well, you need to carry the baby, okay?
LA: Okay. When I come home, um, are you going to read and give the baby some milk and give her a bottle?

LA's turns contain a narrative sequence in the form of a question. These were included as well as the types of narratives exemplified by (5).

Once these speech events were identified, connectives and subordinate/coordinate clauses were coded for functional and contextual characteristics. The following connectives were identified for analyses: and, and then, then, because, so, but, and when . These connectives were chosen because they were the only clause connectives used by both the 3- and 4-year-olds, allowing for a comparison between the age groups.

The functional codes for the connectives were designed to capture two dimensions: the type of units connected, and the type of relation encoded by the connectives.

The code for the types of units is presented in Table 4.1. The connected units can be speaker turns, conversational particles like well, yeah or oh, independent clauses within speaker turns, matrix/subordinate and coordinate clauses, or larger units such as speech events or topics. An example of connectives marking a relation between a conversational particle and a clause is presented in example (1), reproduced here:

(1) HE and CO are arguing about the direction of their pretend play:

CO: No she's *dead.
--> HE: Yeah, 'cause I buried the head.

Conversational particles represent an interesting structural unit because of their role in discourse coherence; the yeah, well, no, or oh discourse markers allow the speaker to respond to previous discourse in an elliptical manner. Clauses attached to these discourse markers allow the speaker to initiate further discourse by adding information and initiating a new conversational move. Connecting these two types of units allows the speaker to simultaneously respond and initiate discourse within the same turn (McTear, 1985).

Syntactic uses of connectives were coded if the connective combined clauses within one intonational contour or if clauses had a minimal pause between them. If two clauses had a significant pause and a definite falling intonational contour between them, they were not coded as combining clauses (Chafe, 1988; Kyratzis, 1991). Instead, they were considered to be marking independent clauses.

The coding for type of units is divided into two levels, the local level and the global level. A particular connective may be functioning to mark the coherence between turns at the local level as well as between speech events and their subunits at the global level. The local units, which are mutually exclusive among themselves, include turn exchanges, conversational particles, independent clauses, and clause combinations. The global units, which are also mutually exclusive among themselves, include changes in speech events or activities and changes in topic or subunit of a speech event. A particular instance can mark both local units and global units, as exemplified in (7):

(7) KE and CO are enacting the story of Sleeping Beauty:

KE: And then she *opens her eyes and saw the prince.
[1 second of silence]
KE: Here, what happened. [something in environment]
A *very pretty movie- Sleeping Beauty is a very pretty movie, *isn't it.
[no answer from CO]
KE: My daddy loves Sleeping Beauty.
CO: Sleeping Beauty is the *best movie.
--> KE: So first I'm gonna fall asleep.
[3 seconds of giggling and nonverbal play]

KE's use of so marks both a turn exchange at the local level and a return to acting out the story after discussing the merits of the Disney movie, which is a

change at the Global Action level as speech events change from an evaluative conversational exchange to enacting the story.

The type of relations between units was also coded. Table 4.2 presents the codes for the type of relation between clauses, taken from Kyratzis et al. (1990) and from Sweetser (1990).

Ten percent of the database was recoded by an assistant to measure intercoder agreement for the type of unit and type of relation marked by connectives. Intercoder agreement for the type of units reached: turn exchange, 95%; conversational particles, 100%; independent clauses, 95%; clause combinations, 95%; global ideational units, 90% global action units, 90%. For the type of relation: speech-act, 95%; content, 83%. The lower agreement on the local content coding was caused by one particular 3-year-old narrative event, where one researcher coded a series of connectives as local speech-act and the other researcher as local content. Both coders re-examined this particular speech event and resolved the coding differences before analysis. There was only one utterance coded as epistemic in the database, produced by a 4-year-old in a verbal dispute, which does not allow for a meaningful measure of inter-coder reliability.

Because the characteristics of this database do not meet the assumptions of parametric statistical tests, the Chi Square Goodness of Fit statistic was used in all the analyses, when the expected frequencies were not too low.

Table 4.1: Code for type of units connected

Code	Definition	Example
Turn Exchange	connective marks a turn change - begins a new speaker's turn or resumes a speaker's turn after a significant moment of silence	**Adult:** the downstairs is for playing office. **Child:** but we need it.
Conversational Particles	connective marks a relation between a conversational particle, mostly particles of agreement or rejection, and a clause	**Child:** Well, then you can go out and use the other dollhouse.
Independent Clauses	connective marks a connection between two clauses which are separated by a pause of interturn length and a falling intonation pattern	**Child:** You have to help me make it. Because these things are heavy.
Clause Combinations	marks a connection between two clauses which have a minimal pause or no pause, and no falling intonation between them	**Child:** (she's) pretending to sleep and then she's hearing footsteps coming down the hall.
Global Ideational Units	marks the beginning of a new topic or subunit of a speech event	**Child:** Now, here comes the tiny little fairies, and they go. [makes swooping motion with hand] But now we need a book and a wand. And then you two got born a baby.
Global Action Units	marks a new speech event or a return to a prior speech event	**Child 1:** Sleeping Beauty is a very pretty movie, isnt' it. **Child 2:** Sleeping Beauty is the best movie. **Child 1:** So first I'm gonna fall asleep.

Table 4.2: Type of relations between clauses

Type of Relation	Definition	Example
Speech-Act Relation	The connective indicates a relation between speech-act aspects of units rather than the content of units	**Child**: Don't say I didn't, and I gonna get another doll.
Content Relation	The connective indicates a relation between the content of the units rather than the speech-act aspects of the units	Child: It is the daddy really, but I'm pretending its the mommy.
Epistemic Relation	The connective indicates a relation between a conclusion presented in one unit and evidence presented in another unit	Child: This one's the daddy? Oh, because its bigger.

4.3 Results

A total of 86 connectives were identified from the 3-year-old narratives and disputes; these came from 28 narratives and 30 disputes in 15 hours of taping. For the 4-year-old narratives and disputes, a total of 67 connectives were identified; there were 15 narratives and 23 disputes in 10 hours of taping.

The majority of the narratives produced by the children were narratives produced in planning sociodramatic play, relying mostly on scripts learned from Disney movies or scripts based on every-day family life; only a small number were personal narratives, and none of the narratives were of the fictional "storytelling" genre. The distinction between planning narratives and other kinds of narratives is an important qualifier of the results reported here.

Table 4.3 presents the average turns and clauses for each speech event at each age. Ranges are presented in Table 4.4.

Table 4.3: Average turns and clauses for each speech event at each age.

Speech Event	Age			
	Three		Four	
	Turns	Clauses	Turns	Clauses
Narrative	4.64	7.82	1.53	4.47
Dispute	9.90	11.63	9.60	11.26

Table 4.4: Range of turns and clauses for each speech event at each age.

Speech Event	Age			
	Three		Four	
	Turns	Clauses	Turns	Clauses
Narrative	1-12	3-15	1-4	2-9
Dispute	3-25	2-30	4-22	2-24

Tables 4.3 and 4.4 and the rate of each speech event per hour of taping all show that there is little difference between 3- and 4-year-olds in the rate of disputes (2/hr for each age), the average number of dispute turns and clauses, and the range of dispute turns and clauses. There is a difference, though, between 3- and 4-year-olds in the rate of narratives (1.87/hr for 3-year-olds; 1.5/hr for 4-year-olds), the average number of narrative turns and clauses, and the range of narrative turns and clauses. Chi square tests on the average number of turns and clauses finds that the 4-year-olds took significantly fewer turns in narratives than 3-year-olds, and there is a trend for fewer clauses (TURNS: X^2=9.579, df=1, p<.01; CLAUSES: X^2=5.343, df=1, p=.0208, n.s.).

Conversational narratives are becoming relatively less frequent, shorter, and more monologic with age; for the 3-year-olds, conversational narratives are more co-constructed or more apt to be interrupted, as presented in examples (8) and (9).

(8) LA enters the playhouse area where CO and JS have been playing.

LA: I get to go to Peter Pan and Chip and Dale, to the ice skates. Remember those guys? =And= Wendy's in it too.
JS: =Yeah=
JS: And Tinkerbell?
LA: Yeah.
JS: [gasps]
LA: I think so.
JS: Oh!
LA: I hope so.

JS offers another Disney character who might be at the ice show, and then both JS and LA offer evaluations of the future event. The 3-year-olds' narratives in planning also involve joint construction to a greater degree; many of the narratives are produced as ways to negotiate and set up pretend play.

(9) AM, SI and NI are building with blocks, with some guidance from a teacher (TA).

AM: [to TA] *He can make a house, [points to SI] and then *I can make a house, and then *he can make a house. [points to NI]
TA: Hey! That's a good idea. We can make a path between your two houses, then you can move house to house. Then there won't be any fighting, huh?
SI: You know what? We could put NI's house over here, and we could put my house over here, and then when we want to visit our neighbors, we can go through the doorways.
TA: Hey!
NI: *And these are the pieces for that.

For the 4-year-olds, very little time is used to set up pretend play or construction activities because they share scripts for play to a greater degree than 3-year-olds. They may need fewer linguistic cues to reach agreement or plan the play than the 3-year-olds (Pak, personal communication). This change in the social function of planning narratives may lead to changes in the textual properties of planning narratives.

Table 4.5 presents the number of each connective type produced by the children in the study.

Table 4.5 Number and percentage of connectives produced by the children

Connective	Age	
	Three	Four
and	37 (43%)	37 (55%)
and then	13 (15)	4 (6)
then	1 (1)	4 (6)
but	11 (13)	10 (15)
because	12 (14)	7 (10)
so	5 (6)	4 (6)
when	7 (8)	1 (1)
Total:	**86 (100)**	**67 (100)**

Chi square test shows that there are no significant differences in the use of particular connectives between 3- and 4-year-olds (X^2=10.339, df=6, p=.1111, n.s.). Table 4.6 presents the connectives by speech event for each age.

Table 4.6: Context of connective use between 3- and 4-year-olds

	Three		Four	
Connective	**Narrative**	**Dispute**	**Narrative**	**Dispute**
and	28 (48%)	9 (32%)	19 (58%)	18 (53%)
and then	13 (22)	-	4 (12)	-
then	-	1 (4)	2 (6)	2 (6)
but	3 (5)	8 (28)	2 (6)	8 (23)
because	3 (5)	9 (32)	2 (6)	5 (15)
so	4 (7)	1 (4)	3 (9)	1 (3)
when	7 (12)	-	1 (3)	-
Total:	**58 (100)**	**28 (100)**	**33 (100)**	**34 (100)**

The numbers for the connectives then, so, and when are too low to test statistically, although there is a possible trend for so and when to be used mostly in conversational narratives than in verbal disputes. The other connectives were examined using chi square analyses, and the results found a significant difference in use of connectives depending upon age and context (X^2=35.925, df=7, p<.01). Further tests revealed that the contextual effect on connective use was significant for the 3-year-olds, but not for the 4-year-olds (THREE: X^2=24.417, df=3, p<.01; FOUR: X^2=8.678, df=3, p=.0339, n.s.). Comparing the observed frequencies with the expected frequencies showed that and then appeared significantly more often in narratives (X^2=9.869, df=1, p<.01), and there was a trend for and to appear more often in narratives (X^2=5.889, df=1, p=.0152, n.s.) and for because to appear more often in disputes (X^2=4.957, df=1, p=.026, n.s.).

Table 4.7 presents the average number of connectives for each speech event at each age. Chi-square test on the averages show no significant differences between 3- and 4-year-olds (X^2=1.748, df=1, p=.1862, n.s.).

Table 4.7 Average number of connectives for each speech event at each age.

Speech Event	Age	
	Three	Four
Narrative	2.07	2.20
Dispute	.93	1.48

Although the number of cases of and then and when is too low to test statistically, the 4-year-olds seem to produce and then and when at a much lower rate than 3-year-olds. These connectives are restricted to the narrative context for both 3- and 4-year-olds. If future studies of conversational narratives find a significant decline in the use of these connectives, the lower production of and then and when may be related to changes in the nature of conversational narratives. However, at the same time that and then and when seem to be produced less often, the average number of connectives in conversational narratives has not changed between ages 3 and 4.

Although statistically untestable, the higher rate of connectives in conversational narratives than in disputes for both 3- and 4-year-olds is a trend in the same direction as found in experimental studies of contextual effects on use of connectives (Laubitz, 1988). Narratives seem to be a privileged context for at least some connectives, and it is certainly a context which demands more connective use than many other contexts.

4.3.1 Types of units

Table 4.8 presents the types of local units marked by connectives in conversational narratives and verbal disputes for both 3- and 4-year-olds.

Table 4.8 Frequency and percentage of different types of local units by speech event and age.

Age	Speech Event	Turn Exchanges	Conversational Particles	Independent Clauses	Clause Combinations
3	Narrative	8 (14%)	3 (5%)	22 (37%)	26 (44%)
3	Dispute	9 (33)	2 (7)	4 (15)	12 (44)
4	Narrative	7 (21)	-	12 (36)	14 (42)
4	Dispute	14 (41)	5 (15)	3 (9)	12 (35)

Figure 4.1 presents the percentage of connectives marking each kind of local unit for the 3-year-olds. Figure 4.2 presents the percentage of connectives marking different types of units in each speech event for the 4-year-olds. Chi square analysis of Table 4.8 finds significant differences in the types of units marked by connectives depending on speech event and age (X^2=23.046, df=9, p<.01). Further tests show that the contextual differences in types of units is significant for the 4-year-olds, but not for the 3-year-olds (THREE: X^2=6.931, df=3, p=.0741, n.s.; FOUR: X^2=12.875, df=3, p<.01). Four-year-olds are using connectives to mark relations between clause combinations more often in narratives than in disputes, and using connectives to mark relations between conversational particles and clauses more often in disputes than in narratives. Three-year-olds do not show these contextual differences for clause combinations and conversational particles. Both 3- and 4-year-olds use connectives to mark relations between independent clauses more in narratives than in disputes, and to mark relations between speaker turns more in disputes than in narratives.

Figure 4.1 Percentage of different types of units marked by 3-year-olds in each speech event.

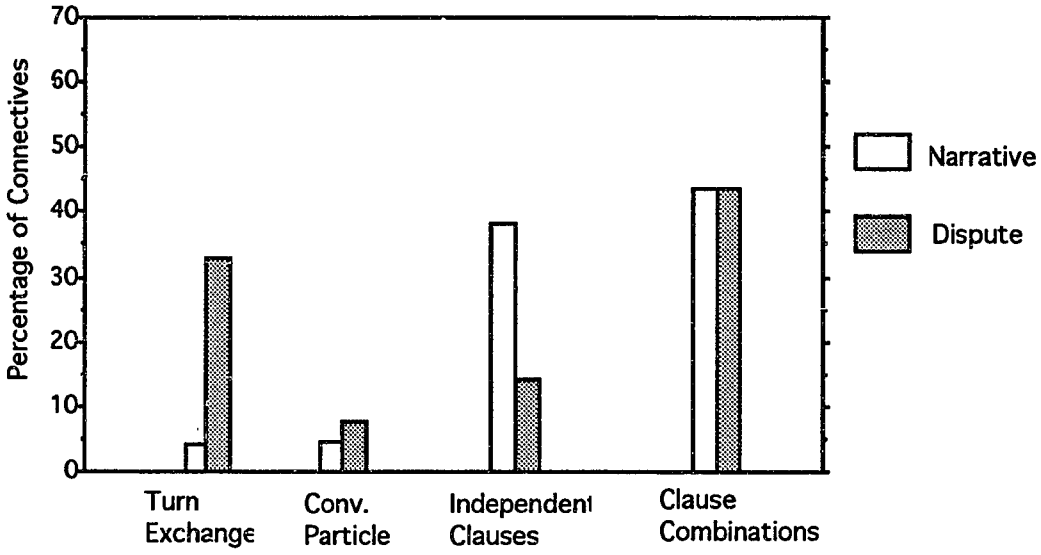
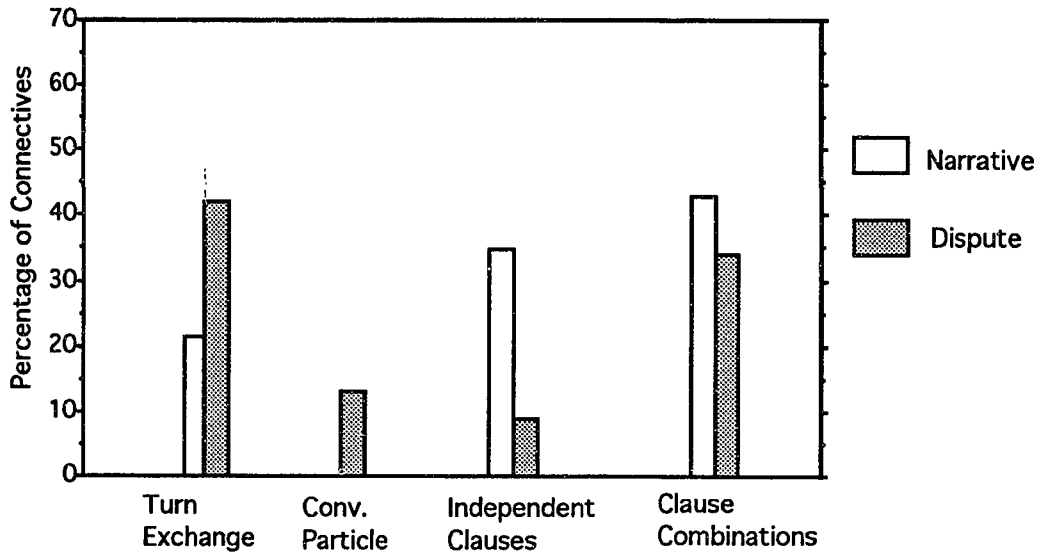


Figure 4.2 Percentage of different types of units marked by 4-year-olds in each speech event.



The contextual differences in types of local units marked by connectives may be related to changes in the characteristics of conversational narratives, as noted above. A development to more monologic narratives decreases the need for conversational particles for the 4-year-olds. Simultaneously, 4-year-olds seem to use connectives for discursive units like turn exchanges and conversational particles even more in verbal disputes than 3-year-olds. These trends suggest that narratives become more distinguished as speech events based on units which lend themselves to representation in monologues, such as independent clauses and clause combinations, while disputes become more distinguished as speech events based on units which lend themselves to dialogic interaction, such as turn exchanges and conversational particles. The contextual differences are present at age 3 to some extent, but become more pronounced at age 4.

Table 4.9 presents the number of connectives used to indicate global units of discourse in both speech events for the 3- and 4-year-olds.

Table 4.9 Types of global units marked by connectives by speech event and age.

Global Unit	Three		Four	
	Narrative	Dispute	Narrative	Dispute
Ideational	6	5	1	7
Action	2	1	1	0

The number of cases is too low to test statistically, but there are certain trends in the marking of global units which mirrors the differences found in the marking of local units. There is little difference between 3- and 4-year-olds in disputes. In

narratives, however, 4-year-olds have fewer marked global ideational units than 3-year-olds. Again, this could be related to changes in the nature of conversational narratives between 3- and 4-year-olds; not only do narratives become less frequent, shorter and more monologic, but their functions in planning and managing pretend play and joint block construction change as well. Instead of planning out a series of episodes or actions all at once like 3-year-olds, 4-year-olds can rely on unspoken, commonly shared pretend play and block construction schemas, and use narratives only to discuss the present episode or action. Compare the 3-year-olds' narratives in examples (5) and (9) with the 4-year-olds' narratives in examples (10) and (11) below.

(5) KE, CO, JO and SI (all 3-year-olds) have been acting out Sleeping Beauty. After the boys, JO and SI, have kissed the two girls awakened them a couple of times, the children stand around and other in silence for a minute. and look at each

SI: Now, here comes the little tiny little *fairies?
And they go. [makes swooping motion with hand]
But now we need- a book and a wand.
And then you two got born a baby but don't worry.
The baby is *not going to be dead.
*We're going to come and *kiss you two.
And then the baby will be *free.

(9) AM, SI and NI (all 3-year-olds) are building with blocks, with some guidance from a teacher (TA).

AM: [to TA] *He can make a house, [points to SI]
and then *I can make a house, and then *he can
make a house. [points to NI]
TA: Hey! That's a good idea. We can make a path between your two houses, then you can move house to house. Then there won't be any fighting, huh?
SI: You know what? We could put NI's house over here, and we could put my house over here, and then when we want to visit our neighbors, we can go through the doorways.
TA: Hey!
NI: *And these are the pieces for that.

(10) JD and ZO, two 4-year-old girls, are playing house; there has been an interruption of the play.

JD: Are we going on with the game?
ZO: Yeah.
JD: You're supposed to be at work, though.
--> ZO: Okay, if she wakes up, here's the number where I am. If she wakes up and she starts to really cry bad, call me okay?

(11) JS and PL, two 4-year-old boys, are building forts with blocks.

JS: Those were mine, you know. Put 'em back so I build this, kay.
--> You could- you could use them for that but I want them back and then I'll use them, kay?
PL: Um, which way were they.

The changes in the social functions of conversational narratives emphasize the difference between the management and planning of immediate episodes and the description and negotiation of a whole series of episodes which would demand the marking of global discourse units.

In summary, the proportion of the types of units marked by connectives changed between 3 and 4, with conversational narratives exhibiting more developmental changes than verbal disputes. The 3-year-olds tended to use connectives to mark relations between independent clauses in narratives and turn exchanges in disputes. In addition to these contextual differences, the 4-year-olds tended to use connectives to mark relations between clause combinations in narratives more often and between conversational particles and clauses in disputes more often, differences between narratives and disputes which the 3-year-olds did not exhibit. The 3-year-olds' narratives had more marked global ideational units than the 4-year-olds' narratives, but this decline may be due to changes in the functions of conversational narratives and development of social play skills.

4.3.2 Type of relations between units

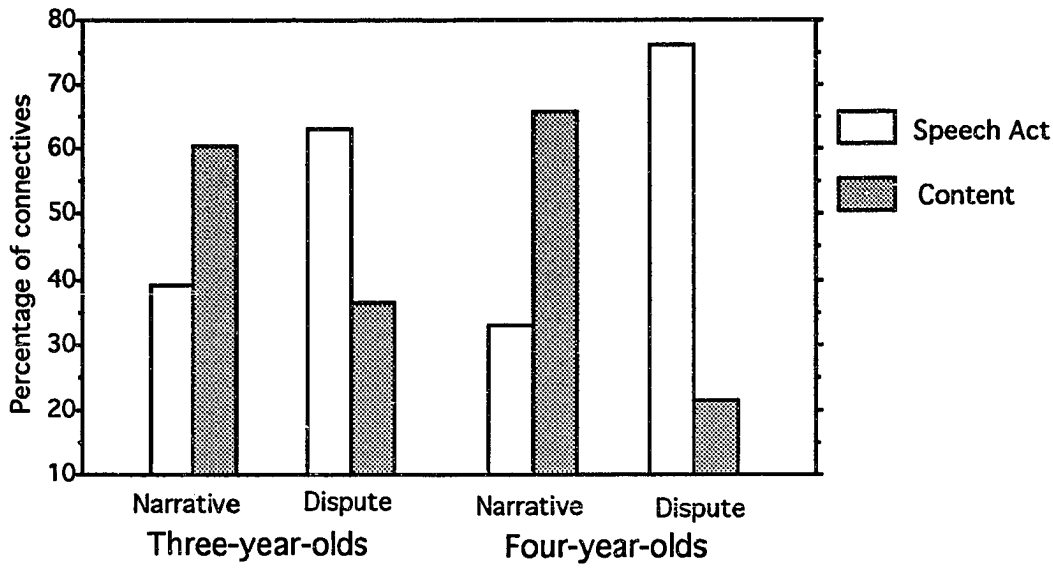
The types of relations between units may also change depending on age and context. Table 4.10 presents the number of all connected units whose relation is either on the speech-act or content levels. There was only one identified epistemic relation found; it was in the 4-year-olds' disputes. It was excluded from analyses and tables presented in this section.

Table 4.10 Types of relations between units by speech event and age

Type of relation	Three		Four	
	Narrative	Dispute	Narrative	Dispute
Speech-Act	23	17	11	26
Content	36	10	21	7

Chi square analysis of the type of relations by speech event and age finds a significant difference (X^2=19.262, df=3, p<.01). Further analyses finds that there is a difference in type of relation depending on context for the 4-year-olds (THREE: X^2=3.372, df=1, p=.0663, n.s.; FOUR: X^2=12.056, df=1, p<.01). For the 4-year-olds, there are more content relations in narratives and more speech-act relations in disputes than expected. Figure 4.3 presents the percentages of speech-act and content relations marked by connectives by speech event and age.

Figure 4.3 Percentage of all connectives marking speech-act and content relations by speech event and age.



The 3-year-olds tend to mark speech-act relations in disputes and content relations in narratives, but this contrast becomes more pronounced for the 4-year-olds. Compare the 3-year-old dispute in example (12) with the 4-year-old dispute in example (13).

(12) 3-year-olds JE, EL, QU and SC are in the upstairs playhouse; NI wants to join, enters area.

JE: Will you get out of the house.
EL: Get out of the house. [pushes NI out]
QU: Yeah, get out of the house.
EL: Get out of our house, you can't come in. It is our house.
[SC leaves house and joins NI]
EL: [to SC] Come back here.
[SC and NI come back]
QU: [to SC] You can come up, you can come up into our house,
[to NI] but you can't come up.
SC: We can come up.
EL: You can't come up.
QU: You can't come up.
EL: JE will cut you to pieces.

(13) 4-year-olds JO, CO and PL are in the playhouse; CO and PL are fighting with JO.

JO: I hate you, CO.
CO: No, I hate you too dumb JO.
JO: Yes you (x x).
CO: And get out of my house.
JO: This is not your house. You are not staying here forever.
PL: Oh yeah! [picks up pillow as if to hit JO]
JO: [to PL] Can't do that. [to CO] CO be nice to everybody. You just have to do that. [to PL] And you too. And let everybody go and do *ever- whatever they want, okay.
CO: No.
JO: You *have to.
CO: I don't want you to play with us.
[a teacher intervenes; the dispute continues for another 10 turns]

The 4-year-olds' disputes seem to have more explicit verbal disagreement and more different kinds of reasons than the 3-year-olds' disputes. Although there is no difference in average number of turns or clauses between the 3- and 4-year-olds in verbal disputes, the 4-year-olds' disputes are more complicated and have less repetition. This more complex dispute structure may demand that connectives signal relations on the speech-act level more often. A similar development in terms of content level relations occurs in the narratives of the 4-year-olds: changes in the functions and structure of conversational narratives demand that connectives signal relations on the content level more often.

The interactional functions hypothesis predicts that younger children would encode more speech-act relations with connectives than older children, but Table 4.10 does not show the expected pattern. However, closer examination of the 3-year-olds' connective use does find the predicted pattern. Kyratzis et al. (1990) found that age 3;6 was a significant point of development; before this age, all uses of <u>because</u> and <u>so</u> encoded speech-act meanings, and after this age content meanings became more frequent. Dividing the 3-year-olds into two

groups based on age (4 children age 3;0 - 3;6; 6 children age 3;7 - 4;0) finds the pattern presented in Table 4.11.

Table 4.11 Speech-act vs. content relations for the younger and older groups of 3-year-olds

Type of Relation	Age	
	3;0 - 3;6	3;7 - 4;0
Speech-Act	20 (61%)	20 (38%)
Content	13 (39%)	33 (62%)
Total	33 (100%)	53 (100%)

Table 4.11 corroborates the findings of Kyratzis et al (1990) that content level meanings encoded by connectives increase after age 3;6. When younger children did encode content level meanings, they predominantly used and and and then.

4.3.3 Interaction between type of units and type of relations

Kyratzis (1991) examined the interaction between type of unit and type of relation in causal constructions. She divided the type of unit into three categories: unmarked, comma intonation, and continuous intonation. The comma and continous intonation categories correspond to the clause combination category in the present study. The unmarked category does not have a corresponding category in the present study, since only marked constructions were analyzed in the present study. She categorized the relations into speech-act and content level relations, which are the same in the present study. Her findings found evidence for an interaction between type of relation and the construction or unit type. Content level causal relations were significantly related to comma and continuous intonation constructions (clause combinations).

Table 4.12 presents the type of units having content vs speech-act relations by age.

Table 4.12 Type of unit and type of relation at each age.

Age	Relation	Turn Exchange	Conversational Particle	Independent Clause	Clause Combination
3	Speech Act	11	4	14	11
3	Content	6	1	12	27
4	Speech Act	18	4	9	6
4	Content	3	1	6	20

Chi square analysis of Table 4.12 finds a significant difference in type of relation for each type of unit (X^2=34.308, df=9, p<.01). Further tests find that 4-year-olds have a significantly different pattern of unit-and-relation than expected (THREE: X^2=9.79, df=3, p=.0204, n.s.; FOUR: X^2=20.141, df=3, p<.01). For the 4-year-olds, clause combinations are more likely to involve content relations (X^2=10.871, df=1, p<.01) and turn exchanges have more speech act relations (X^2=7.888, df=1, p<.01). Figures 4.4 and 4.5 present the units-by-relations interaction for the 3-year-olds and the 4-year-olds.

These findings corroborate the findings of Kyratzis (1991). Matrix/ subordinate clauses and coordinate clauses encode relations on the content level significantly more than other types of units. The interaction becomes stronger at 4 years of age than at 3.

Figure 4.4 Type of unit and type of relation for 3-year-olds.

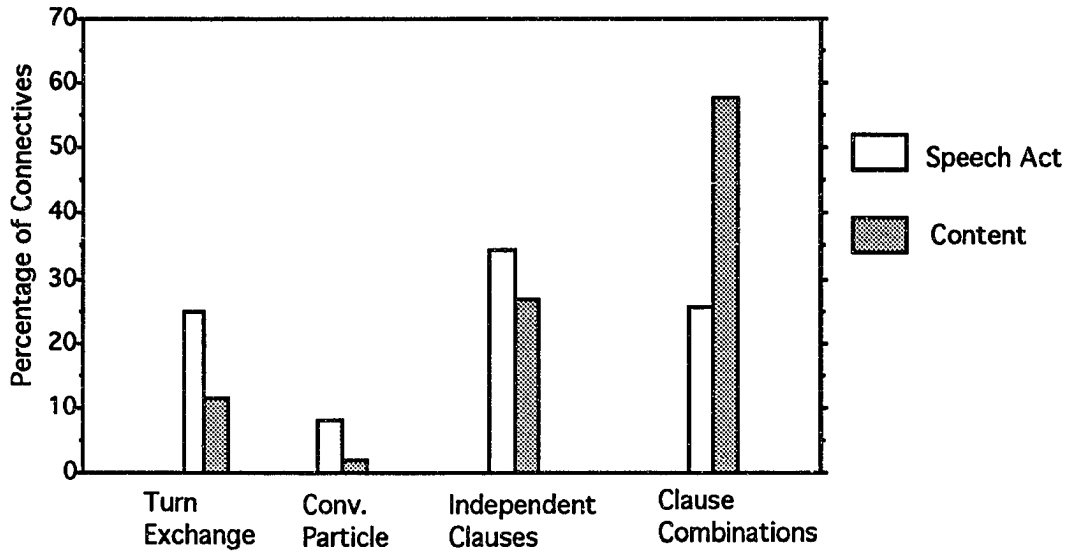
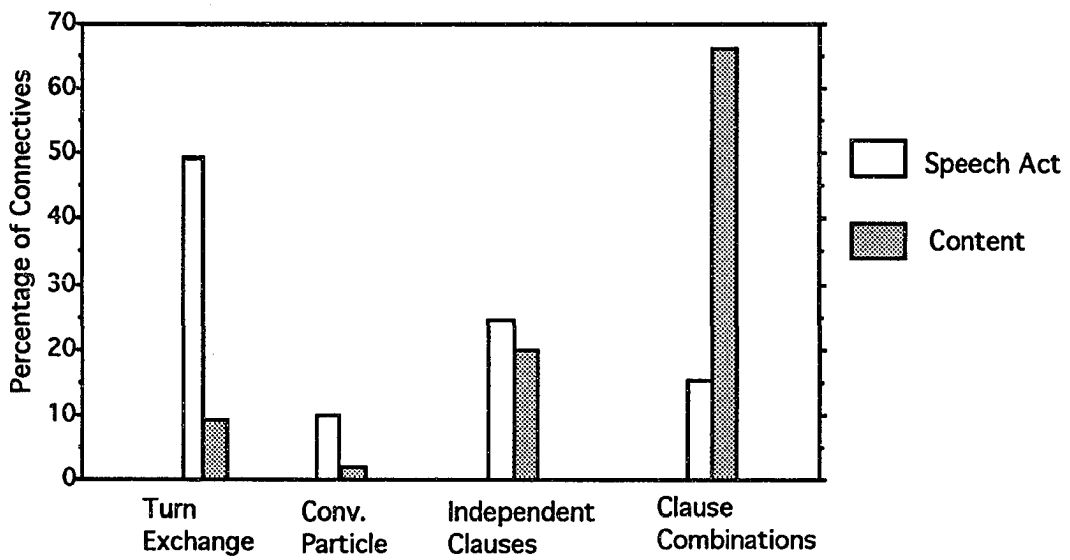


Figure 4.5 Type of unit and type of relation for 4-year-olds.



4.4 Discussion

The number of cases in the present study is too low to do the statistical test that is needed: is there a three-way interaction between context, type of unit, and type of relation encoded by connectives? We do know that there is an interaction between type of unit and type of relation, and we do know that context affects type of unit and it affects type of relation. What we don't know is if context affects the interaction of unit and relation. The data presented here suggest that if there is one, it is a developmental shift that necessarily involves several dimensions of linguistic knowledge simultaneously. These dimensions would include the semantic, pragmatic, and syntactic characteristics of connectives, the interactions of these characteristics, and the appropriate use of connectives among different speech event contexts.

This study does present evidence for the interaction between the type of unit marked and the type of relation encoded by connectives, which corroborates the findings of Kyratzis (1991): if a connective marks a relation between matrix/subordinate or coordinate clauses, the relation it encodes will most likely be on the content level. If a connective marks a relation between a clause and some other kind of unit, the relation it encodes will most likely be on the speech-act level. The pragmatic and semantic characteristics of a connective interact with its syntactic characteristics.

This study also presents evidence that context has an effect on type of unit marked by connectives. Connectives in planning narratives mostly mark relations between independent clauses or clause combinations. Connectives in verbal disputes mostly mark relations between speaker turns or between conversational particles and clauses. Context also has an effect on the type of relation encoded by connectives. Connectives in narratives mostly encode

relations on the content level. Connectives in disputes mostly encode relations on the speech-act level.

Kyratzis (1991) explained the interaction between type of relation and type of unit through the pragmatic notions of asserting and grounding. "In general, grounding is essentially a background task, as opposed to asserting. That is, a grounding clause does not assert in the usual sense of that term, but merely locates the referent in conversational space." (Fox & Thompson, 1990, p. 301). Speech-act relations tend to assert both units, while content relations tend to assert one unit and background the other. The pragmatic force interacts with the syntactic characteristics of clause combinations. The more likely a proposition is asserted, the more likely it will be encoded as an independent clause. The more likely a proposition is backgrounded, the more likely it will be encoded as a dependent clause. This hypothesis is based upon the proposed iconic relation between the formal and the functional characteristics of a subordinate clause (Fox & Thompson, 1990; Givón, 1987; Tomlin, 1985). The structure of the subordinate clause is considered iconic with the degree of assertion; the more a clause is asserted, the more likely that it will be separate in order to focus attention on it. The more a clause is backgrounded, the more likely will it be incorporated with the main asserted clause which it supports. Kyratzis (1991) concludes that the interaction between pragmatic characteristics and syntactic characteristics of causal clauses is part of the acquisition of <u>because</u> and <u>so</u>. The present findings would add another factor to the acquisition question: certain contexts, such as narratives, emphasize content relations more than speech-act relations between units, while other contexts, such as disputes, emphasize speech-act relations over content relations. Discourse contextual factors influence the pragmatic factors involved in the connectives' syntactic characteristics.

The results of this study provide support for the limited context hypothesis: the 3-year-olds' use of connectives tends to be limited to particular speech event contexts. Because and but occur in verbal disputes more often than in narratives, while and, and then, so and when occur in narratives more often than in verbal disputes. These contextual differences are significantly stronger for the 3-year-olds than for the 4-year-olds. This study, however, did not address the deeper question of cause for the limited contexts. Future studies should examine more closely the relation between discourse context and the semantic and pragmatic functions of connectives, to find out if the functions precede connectives in spreading to new contexts (in which case context-indexical properties would constrain the spread of connectives) or if the functions and connectives spread at the same time to new contexts (in which case the limited contexts are due to development of discourse abilities).

This study also provides support for the interactional functions hypothesis: the younger group of 3-year-olds (age 3;0 to 3;6) produced more speech-act connectives than content connectives, and the older group of 3-year-olds (age 3;7 to 4;0) produced more content connectives. Another development may also provide support for the interactional functions hypothesis: the 4-year-olds differentiate the type of relations and type of units marked by connectives dependent on the context more strongly than the 3-year-olds. The differentiation by context can be characterized as older children more clearly distinguishing interactional functions from ideational functions, and using interactional functions more selectively. For instance, the 4-year-olds use connectives to mark turn exchanges and conversational particles, and to mark speech-act relations, more in disputes than in narratives. These characteristics can be considered to indicate indirectly interactional functions, since they index discourse structure and function. The converse development also occurs: the 4-year-olds use

connectives to mark independent clauses and clause combinations, and content level relations, more in narratives than in disputes. These characteristics can be considered to indicate indirectly ideational functions, since they emphasize the use of language to represent propositions symbolically. The 3-year-olds make some distinction between interactional and ideational functions dependent on context, but not as strongly as the 4-year-olds. The developmental difference may be due to the proposed fusion of action and representation in linguistic form-function relations in the earlier stages of acquisition. In other words, perhaps the 3-year-olds do not make clear distinctions between speech-act and content relations dependent on the context because the distinction between interactional and ideational functions is not clear or meaningful for them yet. The present study cannot discern, however, if the change in the magnitude of the contextual differences is related to changes in how children construct form-function relations during acquisition, or related to changes in the functions of planning narratives. Future studies should examine the relation between the function of planning narratives and their discourse structural properties. The relation between social function and discourse structure may affect the development of linguistic functions and forms within particular speech event contexts.

This study indicates that many changes occur between 3 and 4 in terms of discourse organization and connectives. Regardless if the changes found in this study are due to changes in the nature of children's construction of linguistic form-function relations or due to changes in the functions of speech events, this study has shown that discourse development and pragmatic factors directly affect the acquisitional history of connectives.

5. The Functions and Contexts of Connectives and Clause Combinations

In Chapter Four I examined the contexts, the type of relations and type of units marked by connectives. In the present chapter I explore in more detail the functional bases of clause combinations and connective use. This study is a longitudinal study of 3-year-olds in a preschool setting. The analysis is designed to examine the subordinate and coordinate clauses and connectives produced by the children for their contextual and functional characteristics over the course of several months during the school year.

5.1 Introduction

There is a growing awareness in linguistics and psychology of an incommensurability between formalist theories of language and functionalist theories of language; the debate between the two types of theories has yielded little knowledge because their metatheories, their basic starting assumptions, are not the same (Tomasello, 1992a). In contrast to formalist linguistic theories, some linguists have constructed functional or cognitive theories of linguistic structure which incorporate psychological theories of cognition and communication as a starting point (Fillmore, 1988; Fillmore, Kay, & O'Connor, 1988; Foley & Van Valin, 1984; Givón, 1989; Lakoff, 1987; Langacker, 1987). Consequently, theories of language acquisition also highlight the incommensurability of starting assumptions and methods of analysis. By assuming the importance of cognitive and social factors in language acquisition, researchers using functionalist theories consistently have found that the early stages of the acquisition of linguistic forms are characterized and limited by semantic and pragmatic functions that are not predicted by formalist theories, but which also do not unequivocably invalidate formalist predictions of the early stages of acquisition (Bamberg, Budwig, & Kaplan, 1991; Gerhardt, 1988;

Kyratzis, Guo & Ervin-Tripp, 1990; Pak, Sprott, & Escalera, in press; Slobin, 1985). The difference in basic starting points cannot be solved through theory-internal predictions and testings. Ultimately the progress of linguistics and psychology will favor one over the other; until then, it is critical that each kind of theory be developed and explored to its fullest potential.

Currently one of the most dynamic areas of research in functional studies of language acquisition is the relation between discourse and syntax. The present study is an attempt to examine the relation between discourse and the acquisition of subordinate and coordinate clauses. Previous research has found several factors which are critical to understanding the developmental history of clause combinations.

5.1.1 Functions of Coordinate and Subordinate Clauses

Linguists have discovered a high correlation between the use of subordinate clauses and the degree to which the information they contain is backgrounded or considered less important in reference to the discourse context (Fox & Thompson, 1990; Givón, 1987, 1989; Tomlin, 1985). This fact, along with similar evidence in other areas of syntax, provides indirect evidence for a proposed iconicity in syntax: the structure of clause combinations mirrors the status of the information (as given or new), the strength of the assertion (foregrounding or backgrounding), and the complexity of the semantic content or propositional information (Givón, 1985, 1987). Linguists have also found differences between coordinate clauses and two juxtaposed independent clauses in terms of the information or implications afforded (Blakemore, 1987). The coordinate clause guides the hearer to generate information or implications such as the simultaneity of the events mentioned in the clauses; for instance, in "John cooked and Mary took out the garbage", and allows the hearer to infer the

events occurred at the same time in a joint effort, whereas this implication is harder to infer from "John cooked. Mary took out the garbage" which lends itself to the inference that the events occurred successively with no conscious joint effort by John and Mary. While different inferences may be cued by the use of coordinate clause structure, the status of the information in both clauses is considered to be the same, and similar to independent clauses. In other words, coordinate clauses have more functional characteristics in common with independent clauses than with subordinate clauses. Both the status of the information encoded by clauses and the types of inferences primed by syntactic structures demonstrate a connection between communicative purposes and the linguistic structure of clause combinations.

The relations between the structure of clause combinations and the manipulation of information for communicative purposes has led several researchers to posit a process of syntacticization: ontogenetically and diachronically, humans codify recurrent patterns of communication into symbols which can be more automatically and efficiently processed (Givón, 1985; Matthiessen & Thompson, 1988; Mithun, 1988). Subordinate and coordinate clauses are syntactic symbols which codify discourse structures and functions. Some theories posit an underlying similarity of structure between discursive interaction and clause-combining syntax (Mann & Thompson, 1988; Polyani, 1988).

Another important factor in clause combinations is the type of semantic and pragmatic relation encoded by the connective. In a study of the polysemy of connectives, Sweetser (1990) discovered that the relations between two clauses can exist in three different domains. For example, the following three statements function at different levels:

(1) John came back because he loved her.

(2) John loved her, because he came back.

(3) What are you doing tonight, because there's a good movie on.

[Sweetser, 1990, p. 77]

In example (1) the causal connective indicates a causal relation in the sociophysical domain of knowledge, and thus marks a relation at the content level. The causal connective in example (2) indicates a reason for the conclusion in the main clause, marking a relation at the epistemic level. The causal connective in example (3) indicates a reason for the act of questioning in the main clause; the reason addresses the felicity conditions of the speech-act of questioning. Sweetser proposed that the use of language to indicate causation in the epistemic and speech-act domains is a metaphorical extension of the use of language to represent causation in the sociophysical domain. The domains and their related levels of linguistic expression explain the polysemy of connectives in a principled way.

Others have found that the type of relation interacts with the degree of assertion and the syntactic form of the clause (Chafe, 1987, 1988; Kyratzis, 1991). Both propositions tend to be asserted strongly in a speech-act level or epistemic level relation, while one proposition is backgrounded to the other in a content relation. It is proposed that content relations increase the cognitive and communicative need to incorporate both clauses into one intonational unit which requires subordinate or coordinate clause structure.

The examination of force of assertion and clause structure highlights the fact that connectives can mark other types of units than coordinate and subordinate clauses. It is important to note the plurifunctionality of connectives when investigating clause-combining syntax. Connectives have been discovered

to indicate relations between discourse units larger than clauses and to indicate coherence at different levels of the organization of linguistic interaction (McCabe & Peterson, 1991a; Schiffrin, 1987; Sprott, 1992a). Connectives can be used to tie a speaker's turn to the previous turn, to indicate how one large unit of talk is related to another large unit of talk, such as episodes in a narrative, and to indicate the semantic relations between independent clauses which are not under one intonational unit. None of these functions can be conveyed by subordinate and coordinate clauses within one intonational unit. I will refer to the connecting of higher units as DISCOURSE MARKING, in contrast to the syntactic marking of coordination or subordination, which will be called CLAUSE COMBINING.

5.1.2 Acquisition of Clause Combinations

Linguistic research has thus uncovered two important functional factors underlying the structure of clause combinations: the degree of assertion and the type of clausal relation (e.g., speech act, content). In her work on causal constructions, Amy Kyratzis (Kyratzis, Guo & Ervin-Tripp, 1990; Kyratzis, 1991, in press) has examined how these factors affect the acquisition of causal clauses. Using the 1976 Ervin-Tripp family corpus, the studies identified all causal expressions produced by children 2;7 to 11;1, whether expressed with causal connectives or unmarked. The causal constructions were also coded according to their level of discourse: content, speech-act, or epistemic (Sweetser, 1990). She found that before 3;6 children seldom produced a complete causal construction with two clauses (only 22.2% of the time); the connectives indicated the coherent relations of reasons by marking discourse structures such as speaker turns rather than syntactic structures such as subordinate clauses. Additionally, all the complete causal constructions before 3;6 encoded relations on the speech-act level. Between 3;6 and 11;1, the number of causal

constructions on the content level increased and incomplete constructions decreased (Kyratzis et al., 1990).

The degree of assertion for causal clauses was also investigated (Kyratzis, 1991). Making a distinction between continuous combinations (both main and subordinate clauses are in the same intonational unit), comma combinations (the main and subordinate clauses are in two different intonational units, but with minimal pause between them), and independent clauses, Kyratzis (1991) found that causal constructions at the speech-act level were predominantly independent (67%) or in comma combinations (33%), while constructions at the content-level were mostly in comma combinations (63%) or continuous combinations (22%). She interpreted these construction types as reflecting the force with which the reason was asserted. The more a reason is asserted, the more likely it will be encoded as an independent clause. The more a reason is backgrounded, the more likely it will be encoded as a dependent clause. Speech-act relations tend to be expressed by forceful assertion of both acts, while content relations lead to the assertion of one proposition and the backgrounding of the other. The degree of assertion, then, interacts with the type of relation encoded by the causal construction (Kyratzis, 1991).

In a third study of causal connectives, Kyratzis (in press) examined the relation between the speech event context and the production of <u>because</u> and <u>so</u> clauses. Ten pairs of children at each of two ages, 4 and 7 years, were videotaped across two activities, pretend play with dolls and retelling a book narrative to a friend, yielding negotiation speech events and narrative speech events. Both age groups differentiated the speech events in terms of their production of subordination and coordination: negotiations had more causal subordinate clauses than narratives, while narratives had more causal coordinate

clauses than negotiations. The interaction between speech event and syntactic production was stronger for the older children than for the younger children.

These studies demonstrate that the pragmatic factors are important in the acquisition of subordinate and coordinate clauses. Other studies also indicate that children do not acquire different forms of clause combining as a purely formal characteristic independent from semantic or pragmatic characteristics of linguistic constructions. Studies of the early stages of acquisition between 1;6 and 3;0 find no evidence of sudden insight or across the board learning of subordination, coordination, or complementation as a syntactic phenomenon (Bloom et al., 1980; Bloom, Rispoli, Gartner & Hafitz, 1989; Tomasello, 1992b). These studies note that newly acquired clause combinations are associated with a restricted set of verbs, such as want , look, or come for complementation. From this evidence, Tomasello (1992b) put forth the Verb Island hypothesis: "in the beginning syntactic devices are lexically specific...and only later are linguistically decontextualized to other predicate terms." (p. 23). In a similar vein, Rispoli argued for a "mosaic" pattern of acquisition, describing the child's grammatical development as a process of slowly constructing isolated areas of grammatical organization which are then later related to each other in a more systematic manner reminiscent of the adult linguistic system (Rispoli, 1991).

5.1.3 Hypotheses

Recent work which analyzes form-function relations in child language development (Berman & Slobin, 1994; Budwig, 1989; Ervin-Tripp & Bocaz, 1989; Escalera, 1989; Gerhardt, 1988, 1990; Pak, 1989; Slobin, 1989; Sprott, 1992a) has consistently found that many linguistic forms are acquired in highly defined pragmatic contexts. Acquisition is marked by the spread of forms into new contexts so that flexibility in use becomes a distinguishing characteristic of

linguistic skill. These studies led the Berkeley child pragmatics group to propose a limited context hypothesis: in the initial stages of acquisition of new linguistic forms, these forms will occur in highly constrained environments, such as adjacency pair discourse formats (question-answer), speech events (narratives), and social routines (gaining access to play). In later stages these forms will spread to new pragmatic and discourse contexts. The research by Tomasello (1992b), Bloom et al. (1980, 1989) and Rispoli (1991), and the theoretical work of Slobin (1985), would add that the limited contexts are constrained by semantic and structural properties, not just pragmatic factors. If linguistic forms exhibit limited contexts, this may indicate an interdependence or covariation between pragmatic, semantic, and syntactic features of linguistic forms in the early stages of acquisition. The interdependence of pragmatic, semantic and syntactic features of linguistic units and the process of decontextualization are hallmarks of cognitive linguistics and functionalist theories of language acquisition.

The limited context of linguistic forms in their initial stages of acquisition may be related to another aspect of children's form-function relations uncovered by the same research: many linguistic forms serve distinctive communicative, interactional functions in addition to semantic, ideational functions when they are first acquired. Specifically, the functions of children's forms are more sensitive to the immediate discourse context, activities, and purposes in speaking than are the functions for adults' forms, and less characterized solely by ideational or structural features which are constant across discourse contexts, activities, and purposes in speaking. The sensitivity to interactional as well as ideational factors may reflect a proposed "early fusion of undifferentiated 'action' and 'representation' ... out of which particular (language specific) functions and forms are increasingly differentiated and hierarchically integrated." (Bamberg, Budwig, & Kaplan, 1991, p. 126). As linguistic forms and their functions are differentiated

and integrated, interactional functions will become associated with part of the linguistic system instead of the whole system, and interactional functions will be used more selectively. For instance, compare the development of discourse markers, which never loose their distinctive interactional functions (Sprott, 1992a), with the development of parts of the English pronoun system, which start off with distinctive interactional functions but then become increasingly characterized by semantic and syntactic features which are constant across discourse contexts (Budwig, 1989). Based on this research, some researchers have proposed an interactional functions hypothesis: the first uses of children's linguistic forms will be more sensitive to interactional functions than later uses, and as children develop linguistically they will exhibit a clearer distinction between interactional and ideational functions and use the semantic and pragmatic characteristics of forms more selectively (see Bamberg, Budwig, & Kaplan, 1991, and Gerhardt, 1990, for further explication).

The distinction between ideational vs. interactional functions reflects the fact that language can be related to the world in two directions of fit: language can be used to represent the state of the world, and language can be used to change the state of the world (Austin, 1962; Searle, 1983). Other functionalist theories of language have also recognized this fundamental distinction. Halliday (1973, 1975) proposed that the functions of language can be classified into three categories: the ideational, reflecting the content or idea of an utterance; the interpersonal, reflecting the relationships among speakers; and the textual, reflecting the management of information during discourse. The limited context hypothesis and the interactional functions hypothesis both attempt to characterize the role of this fundamental distinction between action and representation in the acquisition process.

A full functional analysis of the acquisition of coordinate and subordinate clauses should attend to the following factors: the type of relation between the clauses, described in terms of the level of discourse of the relation and the semantic class of the relation; the context of use; and the type of unit marked by connectives, which allows clause combinations to be contrasted with other kinds of discourse units and is considered an indicator of the degree of assertion of the information contained in the unit.

Using the limited context and interactional functions hypotheses to predict aspects of acquisition, it is hypothesized that connectives and clause combinations will be restricted to specific contexts at first, defined in this study by the speech event context such as verbal disputes, narratives, and directing talk; it is further hypothesized that the relations encoded by the connectives will at first be more pragmatic than semantic, defined in this study by speech-act relations versus content relations. Previous research has also predicted an interaction between type of unit and type of relation, indicating that clause combinations have particular functional attributes (Chafe, 1988; Kyratzis, 1991). In this study it is predicted that type of unit and type of relation will interact, so that connectives marking subordinate and coordinate clauses will encode content relations and connectives marking other types of units will encode speech-act relations. It is further predicted from previous research that connectives will increase their functions as children develop, and that children will begin to use interactional versus ideational functions more selectively (Bamberg, Budwig, & Kaplan, 1991).

5.2 Methods

Children in a 3-year-old preschool class were videotaped and audiotaped for one hour every week for six months, when the school schedule or the children's activities allowed. This yielded a total of 24 hours of taped interaction.

The taping focused on two areas of the classroom: a playhouse area and a block area. The activities included pretend play, block construction, and play with marbles and puzzles. Most of the activities were child-initiated; approximately half involved the guidance or participation of an adult, either teacher or parent.

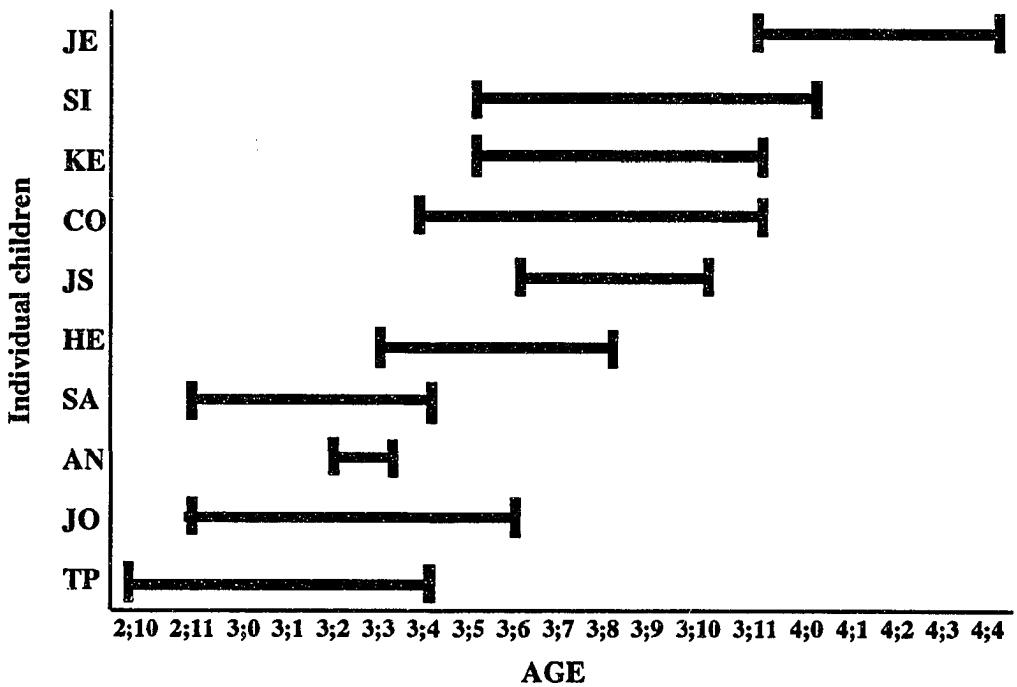
The video and audiotapes were transcribed and placed into computer files for ease of analysis. From these data, ten children were chosen for closer analysis: four were chosen because they were the youngest in the classroom and six were chosen because they had significant time on camera throughout the study. There were five boys and five girls. Figure 5.1 shows the ages of the children over the course of the study.

Once these children were identified, their utterances were coded for use of the following connectives: because, so, and, and then, then, but, if, and when. These were chosen in order to compare connectives within similar semantic categories but which have different times of acquisition. The functions and contexts of the connectives were coded, including their use in subordinate and coordinate clauses.[1] Syntactic uses of connectives were coded to distinguish whether if the connective combined clauses within one intonational contour or if clauses had a minimal pause between them. If two clauses had a significant pause and a definite falling intonational contour between them, they were not coded as combining clauses (Chafe, 1988; Kyratzis, 1991). Instead, they were considered to be marking independent clauses, classified in this study as discourse units along with other types of units. Table 5.1 presents the number of turns, connectives and clause combinations for each child in the database. Table 5.2 and 5.3 summarize the functional codes, which are discussed in detail below.

[1]Some connectives, most notably and, can connect words and phrases, not just clauses. Only the connectives which combined clauses were coded for analysis in this study.

The functions of connectives described in Table 5.2 and 5.3 come from two sources in the literature. The categories for types of units combined by connectives come from the study of discourse markers (Schiffrin, 1987). Some types of units are related directly to the organization of discourse in face-to-face interaction. There are two levels, a local clausal or turn level and a global level. The local level includes turn exchanges, conversational particles, independent clauses and dependent clauses. The global level includes shifts in topic or in argumentative tactic, episodes within a narrative, or changes in speech events or activities. Examples of different types of units are presented in examples (4) through (6).

Figure 5.1 Children's ages over course of study



The types of relations come from the studies of the semantics and pragmatics of clause combinations that have shown that connections between

individual clauses can exist on either the speech-act level or the content level (Kyratzis, Guo, & Ervin-Tripp, 1990; Mann & Thompson, 1988; Redeker, 1990; Sweetser, 1990).

Here are some examples of the type of relations and types of units:

(4) HE and CO are in a dispute; HE wants to be the only one with a doll, but CO wants to go down from the upper room in the playhouse to the doll area to get herself a doll.

HE: No! All those down there is dead too. Don't say I didn't, and I gonna get a doll. [HE starts to go down to doll area]
CO: Don't get my doll, mom.
HE: You can't have all those (dolls). Okay?

HE's use of and in the first line marks a joint relation between the directive and the plan for her own action. There is no semantic connection between the directive and the plan; the and marks a connection between the acts themselves rather than between the propositional information contained in the acts. There is a minimal pause between the clauses. This occurrence of and was flagged as marking coordinate clauses. The coordinate clause encodes a local speech-act relation. Here is an example of local content relations and of connectives marking discourse structures:

(5) KE and CO are in a dispute about visiting each other's house after school.

KE: No, I'm not going to your house 'cause I'm going to JS's house.
CO: You *always go to JS's house. [angry tone]
KE: But you're going to my house (tomorrow).
CO: No I'm not.

In the first line KE offers a reason for her refusal. The causal relation marked by because is on the content level; the propositional information in the reason clause is connected to the information in the refusal clause, providing the real-

world cause for the negative state contained in the refusal clause. There is no pause between the clauses and both clauses were within one intonational contour; this because was flagged as marking a relation between a matrix clause and a subordinate clause. The use of but in the third turn was coded as marking a turn exchange and as marking a local speech-act relation; the propositional information contained in KE's turn does not contradict the information contained in CO's turn, but her announcement does mark a contradiction with CO's turn on the speech-act level. The contradiction exists between the felicity conditions of CO's angry statement and KE's announcement; how can CO make an angry statement when tomorrow she will get to do what she wants to do? In addition, the but marks a change in KE's argumentative tactic, indicating a global ideational shift in the course of the dispute as she reverses the visiting arrangements and talks for the first time about future visiting.

An example of connectives marking a speech-act relation between a conversational particle and a clause is presented in example (6).

(6) HE and CO are arguing about the direction of their pretend play:

CO: No she's *dead.
--> HE: Yeah, 'cause I buried the head.

Conversational particles represent an interesting structural unit because of their role in discourse coherence; the yeah, well, no or oh discourse markers allow the speaker to respond to previous discourse in an elliptical manner. Clauses attached to these discourse markers allow the speaker to initiate further discourse by adding information and initiating a new conversational move. In this example, HE's use of because marks a reason why she is agreeing with CO; agreement in the middle of a dispute is an unusual speech act, which increases the need for an explanation. If one attempts to examine HE's reason only on the

content level, HE's reason seems to state a result of being dead as the cause of death. However, if the reason is examined in terms of explaining speech acts rather than propositional content, "burying the head" becomes a felicitous explanation of HE's act of agreeing because "burying the head" grants HE adequate license to agree with CO's observation.

Table 5.1: Number of turns, connectives and combinations for each child in the database

Child	Number of Turns	Number of Connectives	Number of Clause Combinations
JE	240	20	6
SI	437	100	54
KE	392	94	19
CO	393	35	16
JS	305	51	14
HE	225	30	13
SA	60	8	2
AN	93	22	15
JO	115	8	4
TP	223	6	5

Table 5.2 Type of relations between clauses

Type of Relation	Definition	Example
Speech-Act Relation	The connective indicates a relation between speech-act aspects of clauses rather than the content of clauses	**Child:** I got to go to Peter Pan and Chip and Dale, to the ice skates. Remember those guys? And Wendy's in it too.
Content Relation	The connective indicates a relation between the content of the clauses rather than the speech-act aspects of the clauses	Child: It is the daddy really, but I'm pretending its the mommy.

Table 5.3: Coding for types of units for connectives

Code	Definition	Example
Turn Exchange	connective marks a turn change - begins a new speaker's turn or resumes a speaker's turn after a significant moment of silence	**Adult:** The downstairs is for playing office. **Child:** But we need it.
Conversational Particles	connective marks a relation between a conversational particle, mostly particles of agreement or rejection, and a clause	**Child:** Well, then you can go out and use the other dollhouse.
Independent Clauses	connective marks a connection between two clauses which are separated by a pause of interturn length and a falling intonation pattern	**Child:** You have to help me make it. Because these things are heavy.
Clause Combinations	marks a connection between two clauses which have a minimal pause or no pause, and no falling intonation between them	**Child:** (She's) pretending to sleep and then she's hearing footsteps coming down the hall.
Global Ideational Units	marks the beginning of a new topic or subunit of a speech event	**Child:** Now, here comes the tiny little fairies, and they go. [makes swooping motion with hand] But now we need a book and a wand. And then you two got born a baby.
Global Action Units	marks a new speech event or a return to a prior speech event	**Child 1:** Sleeping Beauty is a very pretty movie, isnt' it. **Child 2:** Sleeping Beauty is the best movie. **Child 1:** So first I'm gonna fall asleep.

The contexts of the connectives and clause combinations were coded at the speech event level of discourse. Speech events are global discourse units, comprised of a distinguishing set of speech-acts and routines. These include negotiations, narratives, disputes, directing talk, and chit-chat talk. Negotiations are speech events when children are deciding what to play or how to play something, as in example (7).

(7) AN and QU enter the playhouse area; they have not been playing together before AN speaks:

AN: I'm a real big sister now. You know what, I'm a real big sister now.
<3 seconds of silence>
AN: I'm a real big sister now, 'cause- um, I'm a real big sister, do you know why?
QU: Why?
AN: 'Cause, for the baby doctor, and the doctor needs a sister. So I'm a *sister now.
QU: This is for big sisters. [holds up backpack]

Verbal disputes are different from negotiations because verbal disputes are explicit and continuing disagreements carried through at least three turns, as in example (8).

(8) SI and JO are showing each other different ways to exercise:

SI: You go back and forth, back and forth. Now you try.
JO: Kay, I have a different way I have to try.
SI: Well, well, but *this is a *better exercise.
JO: I got a *different exercise. I got a *drop exercise.
SI: Well, I have a better exercise.

Narratives are descriptions of at least two events in a sequence which can be either in the past or future and refer to experience, plans or fantasies.

(9) KE, CO, JO, and SI have been acting out Sleeping Beauty. After the boys, JO and SI, have kissed the two girls and awakened them a couple of

times, the children stand around and look at each other in silence for a minute.

SI: Now, here comes the little tiny little *fairies?
And they go. [makes swooping motion with hand]
But now we need- a book and a wand.
And then you two got born a baby but don't worry.
The baby is *not going to be dead.
*We're going to come and *kiss you two.
And then the baby will be *free.

Directing talk involves organizing play, either setting up a play scenario after children have negotiated an agreement about it or maintaining a play scenario through different phases or through interruptions.

(10) KE, AN, and AM are in the playhouse; AM starts banging dishes on the table.

KE: Hey, stop that!
AN: Stop that, AM! It's not time for dinner! [AM stops]
KE: It's not time for dinner yet!
AN: It's not time for dinner.
[KE takes pot away from AM and puts it away]

Chit-chat talk involves sharing information and describing ongoing activities; its main focus is building relationships, with no attempt to directly control another's behavior.

(11) AM enters the playhouse where KE and AN are playing:

AN: You know what my name tag is, AM?
You know what my name tag is, AM? [taps AM on shoulder]
AM? It's pink, AM, you know what my name tag is?
[shows AM her name tag which is on her back; KE watches]
I put this right here, 'cause-
KE: 'Cause you wanna play back- you wanna make back, didn't you.
AN: Yeah.

To test for reliability, 38 connectives (10%) were randomly selected from the database and recoded by a trained assistant. Inter-coder agreement for type of unit was very high: turn exchange, 100%; conversational particle, 100%; independent clause, 95%; clause combination, 95%; global ideational discourse unit, 85%; global action discourse unit, 90%. Inter-coder agreement for type of relation was a little lower: speech-act, 90%; content, 85%. Inter-coder agreement for speech event was high: negotiation, 85%; dispute, 95%; directing talk, 90%; narrative, 95%; chit-chat, 95%. There were several cases of one coder identifying a speech event as negotiation and the other as directing talk. The cases were discussed by both coders and they reached agreement before analyses were conducted. The same process of discussion and agreement was conducted for the type of relation coding, before analyses were conducted.

5.3 Results

The results will be presented in two sections. The first section will focus on each connective, summing across the ten children in this study. The second section will focus on developmental questions regarding the children and their use of connectives and clause combinations; the children will be divided into two age groups, 2;10 - 3;6 and 3;7 - 4;4..

5.3.1 Analysis of Connectives

5.3.1.1 Type of units marked by connectives

Table 5.4 presents a comparison of the types of units marked by connectives. These numbers are summed over the whole length of the study and across all the children:

Table 5.4: Types of units for each connective

Connective	Turn Exchange	Conversational Particles	Independent Clauses	Clause Combinations	Total Number
and	56	4	50	68	178
and then	12	2	12	8	34
then	2	3	3	4	12
because	8	8	7	31	54
so	5	1	7	8	21
but	26	7	10	12	55
if	-	-	3	6	9
when	-	-	-	10	10

After then, if, and when are eliminated because of their low numbers, a chi-square test finds significant differences in the types of units marked by different connectives (X^2=41.987, df=12, p<.01). Some connectives are used predominantly for marking discourse units, while others are used predominantly with clause-combining syntax. Chi-squares were used to detect significant differences from the expected values for each connective. But was used significantly more for discourse units (but: X^2=12.404, df=3, p<.01), especially turn exchanges and conversational particles. Because was used significantly more for clause combinations (because: X^2=19.761, df=3, p<.01). Although the numbers are too low, both when and if show a possible high correlation with clause-combining syntax. It is interesting to note that all three connectives which mark subordinate clause structure are highly correlated with the clause-combining function, whereas the connectives which mark coordinate clause structure are correlated with both clause-combining and discourse marking functions. If there is a similarity in structure between clause combinations and the organization of larger discourse units (Matthiessen & Thompson, 1988), it would appear that between 3;0 and 4;0 this similarity only extends to

coordination, not subordination. Coordinate clause structure may have communicative features in common with other types of units, such as independent clauses and turn exchanges, and therefore the connectives which syntactically mark coordinate clauses will also be more likely to mark other types of units. There are two possible explanations of this difference in syntactic class: (a) at this age the functional characteristics of subordination are not reflected in discourse organization, but the functional characteristics of coordination are present in discourse organization at this age. The development of particular types of discourse organization allows the extension of connectives from marking clausal units to larger discourse units with the same underlying structural relation (coordination vs. subordination); or (b) there are syntactic aspects of subordination which cannot be reflected in discourse organization, and children recognize this structural difference between the clausal level and the discourse level at an early age.

A similar difference between coordination and subordination and the use of connectives for discourse units can be seen when examining the use of connectives to mark global discourse units. Table 5.5 presents the data.

Table 5.5 Connectives and global discourse units

Connective	Global Ideational Units	Global Action Units	Percentage Marking Global Units
and	16	13	16% (178)
and then	4	7	32% (34)
then	2	1	25% (12)
because	1	1	4% (54)
so	3	5	38% (21)
but	11	5	29% (55)
if	-	-	0% (9)
when	-	-	0% (10)

The connectives used for subordinate clauses are not used to mark global discourse units, whereas the connectives used for coordinate clauses are also used to mark global discourse units at a relatively high rate.

Tables 5.4 and 5.5 demonstrate that connectives as a grammatical class contains a high degree of variation of the type of units marked, and that certain connectives correlate with certain kinds of units.

5.3.1.2 Type of relation marked by connectives

The clause combinations were further analyzed for the type of relation encoded, whether speech-act level or content-level. Table 5.6 presents the number for each type of relation for each connective:

Table 5.6: Number of each type of relation for connectives

	Speech-Act	Content	Total (n)
and	54 (30%)	124 (70%)	178
and then	10 (29)	24 (71)	34
then	5 (42)	7 (58)	12
because	36 (67)	18 (33)	54
so	14 (67)	7 (33)	21
but	41 (75)	14 (25)	55
if	9 (100)	-	9
when	-	10 (100)	10

A chi-square analysis finds a significant difference between clause combinations in which kind of relation they encode (X^2=62.565, df=7, p<.01). Further analyses show that when subordinate clauses and the connectives and and and then are significantly more likely to encode content-level relations than the other connectives (when: X^2=8.797, df=1, p<.01; and: X^2=13.147, df=1, p<.01; and then: X^2=4.14, df=1, p<.05; all tested with continuity correction). Because, but, and if are significantly more likely to encode speech-act level relations than

expected, with so demonstrating a trend in this direction (because: X^2=8.547, df=1, p<.01; but: X^2=16.982, df=1, p<.01; if: X^2=7.496, df=1, p<.01; so: X^2=3.326, df=1, p=.0682; all tested with continuity correction).

There is a pattern of additive and temporal connectives denoting mostly content-level relations and the adversative, causal, and conditional connectives denoting mostly speech-act level relations for this set of speech events. This pattern may reflect how the semantic classes of connectives interact with the representational and interactional functions of language. The additive and especially the temporal meanings encoded by connectives lend themselves to describing some particular state, while adversative, causal and conditional meanings may be derived from children's use of language to affect and manage interaction. If this interaction between the semantic classes and the functions of language holds, we should see that additive and temporal connectives are more likely to show up in speech events like narratives which focus on the function of language to represent ideas, whereas causal, adversative and conditional connectives would show up in speech events like disputes and directing talk which focus on the function of language to affect people's actions.

5.3.1.3 Interaction between type of unit and type of relation

Table 5.7 represents the interaction between the type of units marked by connectives and the type of relations encoded by connectives, summed across all children and all connectives. Previous research has found that content-level relations are correlated with subordinate clause structure (Kyratzis, 1991).

Table 5.7 Interaction between type of unit and type of relation for connectives

Type of Relation	Type of Unit			
	Turn Exchanges	Conversational Particles	Independent Clauses	Clause Combinations
Speech-Act	66	19	39	45
Content	41	6	53	105

A chi-square analysis of Table 5.7 finds a significant interaction between type of unit and type of relation marked by connectives (X^2=31.652, df=3, p<.01). Speech-act relations are expressed in turn exchanges and conversational particles more than expected by chance (X^2=16.839, df=3, p<.01), and content relations are expressed in clause combinations more than expected by chance (X^2=14.818, df=3, p<.01).

5.3.1.4 Interaction of context and type of relation

A direct test of the type of relations marked by connectives and the context of connectives is needed, in order to test the possibility that context affects the pragmatic factors underlying connectives and clause combinations. Table 5.8 presents the type of relations by context, summed across all the children.

Table 5.8 Type of relation and context of relation

Type of Relation	Speech Event Context				
	Negotiation	Dispute	Directing Talk	Narrative	Chit-chat
Speech Act	17	32	46	21	13
Content	15	16	35	45	34

A chi-square test finds a significant interaction between context and type of relation marked by connectives (X^2=24.211, df=4, p<.01). Disputes and directing talk heavily rely on speech-act relations while narratives and chit-chat rely heavily on content relations. Negotiations are in the middle of the continuum.

5.3.1.5 The contexts of connectives

The contexts of connectives were coded. Table 5.9 presents the contexts for each connective; the most common context is printed in bold:

Table 5.9: The contexts of connectives

	Negotiation	Dispute	Directing Talk	Narrative	Chit-chat
and	21	23	**56**	36	38
and then	3	-	7	**24**	-
then	1	3	3	**4**	1
because	9	**19**	14	2	7
so	1	2	**13**	4	1
but	13	9	**14**	5	11
if	2	1	**3**	-	2
when	-	1	3	**5**	1

The number of cases for then, so, if, and when becomes too small to test statistically, but an examination of the other connectives in Table 5.9 finds a significant interaction between connective and context (X^2=84.528, df=12, p<.01). If we use and as a standard for comparison, since it is the most frequent and the earliest connective ontogenetically, we can see that other connectives have particular contexts where they are more likely to occur. Over the whole database, the children spend most of their time in directing talk, while the other speech event contexts are about equally likely to occur. The use of and reflects this; its most common context is directing talk. In contrast are the contexts of and then, then, and when: by far the most common context is the narrative context (and then: X^2=51.402, df=4, p<.01). Because is most likely to appear in disputes (X^2=21.753, df=4, p<.01), while so is most likely to appear in directing talk. If subordinate clauses, like so clauses, are most likely to appear in directing talk. But is likely to appear in directing talk and negotiation speech events.

As predicted by the limited context hypothesis, connectives are acquired in highly defined pragmatic contexts. Temporal connectives are predominantly limited to narrative and planning contexts in their initial stages of acquisition, while causal, conditional, and adversative connectives are more likely in disputes, negotiations, and directing talk. The interaction between semantic class and speech event context was also predicted from the analysis of the type of relation encoded by connectives: temporal and additive connectives were mostly on the content level and mostly in narrative and chit-chat contexts, while adversative, causal, and conditional connectives were mostly on the speech-act level and mostly in negotiation, dispute and directing talk contexts. The semantic and pragmatic factors of connectives are affected by context, and these factors are implicated in the acquisition of clause combinations. This analysis has found

it useful to understand semantic, pragmatic, and contextual factors in terms of the general functions of language to represent vs. to affect interaction.

5.3.2 Developmental Analysis and Individual Differences

In order to statistically test for developmental differences in connectives, the children were placed into two groups by age: 2;10 to 3;6 and 3;7 to 4;4. The first group contained six children; the second group contained four children. In the first group, JS and HE were included with the four youngest children because at least half of their production of turns and connectives occurred before 3;7. Only the data which reflect their production before 3;7 were included. In the second group, SI, KE, and CO's data were included only if produced after 3;6. This ensured that the two groups were completely separated by age and had no overlap in subjects. Table 5.9 presents the number of turns and number of connectives produced by the children in each age group.

Table 5.9 Number of turns and connectives for each age group

	2;10 - 3;6	3;7 - 4;4
Turns	734	1160
Connectives	94	211

The children in the older age group are producing a higher rate of connectives, approximately one connective in every 5.5 turns, as compared to the younger children's rate of production, approximately one connective in every 7.8 turns. As we shall see in the analyses below, the increase in connective use is mostly associated with an increase in the use of temporal connectives.

5.3.2.1 Connective use by age

Table 5.10 presents the use of connectives for children in each age group.

5.10 Use of connectives by age group

Connective	**2;10 - 3;6**	**3;7 - 4;4**
and	40 (43%)	97 (46%)
and then	1 (1)	28 (13)
then	-	9 (4)
because	23 (24)	23 (11)
so	4 (4)	16 (8)
but	18 (19)	28 (13)
if	6 (6)	4 (2)
when	2 (2)	6 (3)
Total:	94 (100)	211 (100)

A chi-square analysis finds a significant interaction between age and the use of particular connectives (X^2=29.015, df=7, p<.01). Closer analyses finds a significant interaction for and then (X^2=5.848, df=1, p<.02, tested with continuity correction). Overall, the increase seems to be associated with temporal connectives (and then, then, when) and connectives which semantically indicate results (then, so). The temporal connectives are associated with content level relations and narrative contexts. Yet, the older children's production of because and if has not increased above the levels of the younger children; these connectives are associated with speech-act relations and dispute/directing talk contexts.

5.3.2.2 Type of unit

Tables 5.10 and 5.11 present the number of local units and global discourse units marked by connectives for both age groups.

Table 5.10 Type of local unit by age group

Age Group	Type of Unit			
	Turn Exchanges	Conversational Particles	Independent Clauses	Clause Combinations
2;10 - 3;6	28 (30%)	6 (6)	18 (19)	42 (45)
3;7 - 4;2	60 (28%)	13 (6)	52 (24)	88 (41)

Table 5.11 Global discourse units by age group.

	Global Ideational Units	Global Action Units
2;10 - 3;6	7 (44%)	9 (56)
3;7 - 4;2	16 (44%)	20 (56)

Controlling for the number of connectives produced by each age group, there is no difference in the percentage of connectives used to mark global discourse units: 17% for both the younger and older children. Closer examination of the children in the younger age group, however, finds that only three of the six children mark global discourse units, and the three were the older children in that group. The children began marking global discourse units between age 3;3 and 3;6. All of the children in the older age group marked global discourse units. There is also no significant interaction with age in the type of local unit marked by connectives (X^2=1.035, df=3, p=.7928, n.s.), just an across-the-board increase for all types of units.

The lack of an interaction between age and type of unit marked by connectives, when there is an interaction between age and type of connective, is due to the simultaneous increase in use of connectives associated with clause-combining (when) and those associated with marking discourse units (and then, so). The association between coordinating connectives and discourse units, and between subordinating connectives and dependent clauses, is preserved as children acquire new connectives.

Table 5.12 presents a comparison of the proportion of connectives used for marking the different types of units for each child. These numbers are summed over the whole length of the study:

Table 5.12: The types of units for connectives for each child

Child	Turn Exchanges	Conversational Particles	Independent Clauses	Clause Combinations	Total Connectives
JE	.55	-	.15	.30	20
SI	.13	.05	.28	.54	100
KE	.36	.11	.33	.20	94
CO	.40	.06	.09	.45	35
JS	.43	.04	.26	.27	51
HE	.20	.10	.27	.43	30
SA	.63	-	.12	.25	8
AN	.14	.14	.04	.68	22
JO	.12	-	.38	.50	8
TP	-	-	.17	.83	6

Table 5.12 shows that children can demonstrate three different preferred patterns of form-function relations for connectives: for some of the children (JE, KE, JS, and SA) connectives predominantly mark discourse units, especially turn exchanges; for some of the children, connectives mark discourse units and clause combinations about equally (CO, SI, HE, and JO); finally, two children favor using connectives for clause combinations (AN and TP). A chi-square

analysis, excluding SA, TP, and JO because their production of connectives is too low, finds a significant difference between children in the types of units they mark with connectives (X^2=61.743, df=18, p<.01). Chi-squares were used to analyze the size of the differences between expected and observed frequencies; this test found that KE used connectives to mark discourse units significantly more than expected (X^2=14.236, df=1, p<.01) and that SI and AN used connectives to mark clause combinations significantly more than expected (SI: X^2=15.935, df=1, p<.01; AN: X^2=11.636, df=1, p<.01). The impact of individual differences in acquiring the functional characteristics of connectives and the associated development of discourse abilities is a powerful factor which should be accommodated in future studies.

5.3.2.3 Type of relation

Table 5.13 presents the number of each type of relation for the two age groups.

5.13 Type of relation for each age group.

	Speech-Act	Content
2;10 - 3;6	54 (57%)	40 (43)
3;7 - 4;2	87 (41%)	124 (59)

A chi-square analysis finds a significant interaction in the type of relation by age (X^2=6.241, df=1, p<.02). The younger children produce more speech-act relations, while the older children produce more content relations. This replicates the findings of Kyratzis, et al. (1990) for causal connectives and expands the findings to include other semantic classes of connectives.

A comparison of the interaction between type of unit and type of relation for each age group finds that both the younger children and the older children exhibit the same interaction between content relations and clause combinations.

5.3.2.4 Context of connectives by age

Table 5.14 presents the total count of connectives in each speech event context for each age group. Two changes with age should be noted: the decrease in the use of connectives in negotiation contexts, and the sharp increase in the use of connectives in the narrative contexts. This reflects similar developments in the social and discursive characteristics of children's peer play; children spend less time negotiating what to play as they get older and spend more time using narratives to organize pretend play (Pak, personal communication).

Table 5.14 Use of connectives in each speech event context for each age group

Age	Speech Event Context				
	Negotiations	Disputes	Directing Talk	Narratives	Chit-chat
2;10 - 3;6	24 (28%)	19 (22)	20 (23)	3 (4)	19 (22)
3;7 - 4;4	9 (5%)	29 (15)	67 (34)	64 (32)	31 (16)

Chi-square analyses of Table 5.14 finds a significant interaction between age and context for the use of connectives (X^2=55.312, df=4, p<.01). Chi-square tests of the differences between observed and expected frequencies finds that the older children produce fewer connectives in negotiation contexts than expected (X^2=10.503, df=1, p<.01, with continuity correction) and more connectives in narrative contexts than expected (X^2=13.412, df=1, p<.01, with continuity correction).

Most of the increase in the narrative context is due to the additive/temporal connectives, whereas the decrease in the negotiation context involves a decrease in all types of connectives.

5.3.2.5 Individual connectives

A brief overview of each connective will highlight individual differences and developmental patterns:

AND

The four youngest children used and predominantly for marking coordinate clauses rather than discourse units. The relations between clauses were predominantly joint relations, as opposed to encoding a temporal sequence (Bloom et al., 1980; Matthiessen & Thompson, 1988). All the younger children favored joint relations on the content level:

(12) TP interrupts a teacher (TA) and another child (SI) to show progress on a puzzle:
SI: See this one, this one needs to be colored, and this one needs to be stickered.
TA: Oh I get it.
TP: I got it. I did this one, and I did this one.

The older children used and to encode sequence relations more often than the younger children. The older children's use of and reflected the development of discourse abilities; their use of and marked relations between discourse units as well as coordinate clauses. Example (13) presents an instance which marks a global discourse unit, the beginning of a narrative:

(13) SI has just built a house out of blocks for his horse figurines.
SI: Now. I'm going to get in *mine with my little ponies. And when either of mine goes to a next door neighbors, to have a little camp out, and have a little (xx), in the *house, we can

fire marshmellows on the fireplace, and eat all the sandwiches and stuff like that, and (x x x x).

The older children also marked speech-act relations with and more often than the younger children:

(14) JS and CO are pretending to be Cinderella and the stepmother, in a pretend dispute:
CO: I'm just cooking food, (x x x x). I'm gonna get some more, and what can you do?
JS: What can *you do, you ugly fish.
CO: *Yes! I can do it, (x x x), and what can you do?

CO seems to use the routinized question "what can you do" to enact exasperation as the stepmother to JS's Cinderella.

We see very little individual variation in the production of and. The connective is first used with coordinate clauses on the content level. As children develop, and begins to mark relations between discourse units rather than just marking coordinate clauses only.

AND THEN

The three youngest children did not produce and then. SA produced one instance, marking a sequence relation on the content level with coordinate clauses. The older children all produced and then to mark relations between discourse units, almost all of them in the narrative context:

(15) CO and HE have just agreed to let SI join their pretend play with figurines; they want to enact Peter Pan:
HE: =Here's my doggy! = Okay, girl.
CO: =Here's Michael!=
HE: And then =after-=
SI: =here's= John, here's John, here's John.

HE attempts to start a storyline but is interrupted by SI. She uses and then to mark a turn exchange at the local level and the initiation of a narrative on the global level.

There were very few instances of coordinate clauses with and then. Overall, the children showed remarkable similarities in the functions and contexts for this connective. It is also interesting to note that the two children, KE and SI, who produced the most cases of and then were also the organizers and leaders of pretend play, a role which was highly correlated with narrative speech events.

THEN

Only the four oldest children produced then, and only the two oldest produced coordinate clauses with then. This connective demonstrated the most variability in context and semantics, encoding both sequence and result relations in negotiations, directing talk, narratives and chit-chat talk. Only SI produced then relations on the content level of discourse.

(16) JS and CO are in a verbal dispute:
JS: You want me to tell on you?
CO: No.
JS: Well then, no playing for you in the afternoon.
CO: No.
JS: You to be liked.

JS's use of then marks a result relation on the speech-act level, since CO's response does not "cause" or "result" in JS's punishing statement marked by then.

(17) SI is explaining his drawing activity book he brought from home to the teacher (TA):
SI: You need a color this box- you need a color this box all the way down to *here, then we can- then Frosty the Snowman can find his black hat.
TA: Oh, I see. Yeah, so you can find the way for him, huh. That's a good game.

In general, this connective marked discourse structures before coordinate clauses. This may be related to the fact that children have already acquired and and and then for sequence relations in coordinate clauses, and so for result relations in coordinate clauses. Then, which shares semantic and syntactic characteristics with these connectives, is acquired later and pragmatically specialized for marking discourse units rather than clause combinations. Its initial stages are affected by the development of discourse abilities in a way in which connectives acquired earlier are not affected.

BECAUSE

All of the children except the youngest produced because, and for each child it was more likely to mark subordinate clauses than discourse structures:

(18) KE and AN (3;2) are playing with marbles.
KE: We want to bring them home.
AN: Yeah. We want to bring them home. If we want to we can bring them home, right?
KE: We want to bring all these home. Hey, give it to me, it's mine. [an gives a marble to ke]
-> AN: We can share them cuz they're a lot.
KE: Yeah, we can share.
[they collect more marbles]
KE: We can have some more. [gets some more]

-> AN: We can share them cuz they're a lot, right?
KE: Yeah, we can share all these.
-> AN: If we want to we can all share cuz I have some.

All the instances of because in this example encode a speech-act causal relation with a subordinate clause structure: the reason marked by because refers to a fact about the situation which doesn't cause them to share marbles but enables them to share, and thus gives a reason for uttering the proposition in the matrix clause.

JO, AN, and SA produced because causals in negotiation events only; older children started using because in disputes, directing talk, and chit-chat. Only SI produced a because in a narrative context. In terms of speech-act versus content relations, only JO and KE produced content level causals marked by because. All others were overwhelmingly speech-act level. Overall, there was a remarkable similarity in function and context across all the children for this connective.

SO

The children showed the most individual variation in the functions of so. AN, CO and SI produced so coordinate clauses, while SA and KE only produced so to mark relations between discourse units:

(19) SA and a teacher (TA) are gathering block pieces to build a road.
TA: Do you want this gray one too?
SA: Yeah.
TA: Okay. [puts it on the ground]
SA: So, now we have to make the road. [puts pieces together]
TA: Okay.

SA's use of so in (19) marks the turn exchange and the shift from gathering blocks to the construction phase of the activity.

CO used so to mark speech-act causals, while both AN and SI mainly used so to mark content level causal relations. However, all the children tended to produce so in directing talk, with the older children beginning to use it in disputes and narratives as well.

BUT

All of the children except TP and HE produced the connective but. The younger children only used but to mark discourse structures, while four of the five older children also marked coordinate clauses:

(20) JO (3;1) and SI have been comparing their coats.
SI: Let's put 'em in our cloaks room. Let's put them in our cloaks room.
JO: But, I need to wear mine. I need to put my sweatshirt on 'cause I'm gonna be cold.
SI: Okay.

(21) CO has been playing with figurines when JS approaches.
JS: Can I play with you.
CO: Yes- you can play with *this one, but don't play with *that one.

Most of the relations were on the speech-act level. Like and, but was produced in many contexts, tending to appear in dispute speech events but it was certainly not limited to them.

IF

Of all the connectives studied, if was the hardest to analyze because the children produced instances which were anomalous semantically and syntactically. Like so, if proved to have the most individual variation, with no clear developmental progression seen in the database. JO and KE produced if subordinate clauses with no matrix clause; these were coded as discourse marking rather than clause-combining because of the anomaly:

(22) JO (3;6) and SI are building a house with blocks; JO begins singing and dancing.
JO: If you mighty might, if you wanna bitey bite. [singing]

The connective is contained in a particular social routine and seems to be unanalyzed.

(23) KE and CO have just had a dispute, in which KE threatened to leave the play area. CO pleaded with her not to leave, and KE came back, trying to re-establish a play scene. However, CO is still angry.
CO: I'm gonna call my mother, you're being so mean. [dials play phone]
KE: If you have to be nice to (me).
CO: I'm not, I'm gonna call my mother, she's-
I'm gonna call my mother so you be nice to me, okay? Be nice.
KE: Okay.

JS produced one instance which had a subordinate/matrix clause structure, but the semantic relation was bizarre:

(24) SI has disrupted JS and LA's pretend play scene, and then left because of a teacher's intervention:
JS: If we *never see him *again, he will be (arrgh) anymore.
<silence 2 seconds>

Only AN and SI produced if clauses which were similar to adult usage; however, AN produced them only with the verb want, in a semi-routinized fashion. All of the if clauses produced by AN and SI encoded conditional relations on the speech-act level:

(25) SI stands outside playhouse, holding a plush animal, growling at KE and CO
SI: If you're scared, *hide under the bed. [to CO] If you're scared, *hide under the bed.

The if clause responds to the felicity conditions of the directive speech-act in the main clause; it refers to the appropriate conditions under which the directive makes sense.

If clauses occurred mostly in directing talk.

WHEN

Of the five youngest children, only JO produced a when subordinate clause. Four of the five oldest children produced when subordinate clauses. All when clauses were on the content level. They tended to occur in chit-chat contexts for the younger children and narrative contexts for the older children. SI produced the most instances, and all of them were in narrative speech events:

(26) SI has just built a house out of blocks for his horse figurines.
SI: Now. I'm going to get in *mine with my little ponies. And
--> when either of mine goes to a next door neighbors, to have a little camp out, and have a little (xx), in the *house, we can fire marshmellows on the fireplace, and eat all the sandwiches and stuff like that, and (x x x x).

5.4 Discussion

Summing across all children over the course of the year, we find that 3-year-olds' connectives and clause combinations reflect pragmatic and discourse functions to a great degree, and that each connective has its own set of syntactic, semantic, and pragmatic characteristics which distinguish it from other connectives, even when compared with other connectives in the same semantic or syntactic class.

5.4.1 Syntactic, semantic, pragmatic, and contextual characteristics of connectives

There is an interaction between the semantic class of connectives and whether they indicate relations on the content vs. the speech-act level. For the children in this study, additive and temporal connectives mostly mark relations on the content level, while causal, conditional, and adversative connectives mark relations on the speech-act level. This indicates an interaction between semantic and pragmatic factors, which has implications for the syntactic characteristics of connectives. Content level relations tend to be expressed in clause combinations, while speech-act relations tend to be expressed between turn exchanges, conversational particles, and independent clauses.

There are contextual factors which influence the semantic and pragmatic characteristics of connectives. Some speech event contexts, like narratives and chit-chat, are the most common contexts for content relations and additive/temporal relations, while other speech event contexts, like disputes and directing talk, are the most common contexts for speech-act relations and causal, conditional, and adversative relations. Due to the interaction between the type of relation and type of unit marked by connectives, narratives and chit-chat contexts become a privileged context for coordinate and subordinate clauses, with the notable exception of because and if subordinate clauses. It is helpful to view the interaction between the semantics, pragmatics, and the limited contexts of connectives through the more general functions of language to represent (ideational) vs. to manage interaction (interactional).

The connectives because and if indicate that the relation between content level relations and clause combinations is not absolute: these connectives are highly associated with subordinate clauses, but the causal and conditional relations are predominantly on the speech-act level and occur mostly in disputes

and directing talk. This exception points to the fact that the syntactic characteristics of connectives (whether it marks subordinate vs. coordinate clauses) has an influence above and beyond the semantic and pragmatic characteristics examined in this study. The connectives associated with subordinate clause structure tend to mark this type of unit only, while connectives associated with coordinate clause structure tend to mark discourse units, including global discourse units, as well as coordinate clauses. The relation between syntactic class and types of units cannot be predicted strictly from the semantic and pragmatic characteristics of connectives. Yet the syntactic characteristics are not completely modular from the semantic and pragmatic characteristics: it is interesting to note that because and if, associated with speech-act relations and disputes/directing talk contexts, are also the subordinating connectives which marked turn exchanges or independent clauses, while the subordinating connective when, associated with content relations and narrative contexts, marked subordinate clauses only. The difference in types of units that are marked by these subordinating connectives has also been noted by research of earlier stages of acquisition (Bloom, et al., 1980; Ervin-Tripp, 1978).

5.4.2 Developmental factors

The interactions between type of unit, type of relation, and the context of connectives is complicated by developments in children's discourse abilities and the acquisition of new connectives. The younger children, age 2;10 to 3;6, predominantly used and, but, and because, with and and because used predominantly for clause combining, although the relation marked by and tended to be content level and the relation marked by because tended to be speech-act level. Consequently, and tended to occur in chit-chat and negotiation contexts while because tended to occur in disputes. The younger children's pattern of

form and function demonstrates the influence of content level relations on coordinate clause combinations and the influence of subordination as a syntactic characteristic for the causal connective, which seems to override the interaction between type of unit and type of relation.

As children develop, they begin marking global discourse units, and coordinating connectives which are acquired later tend to mark discourse units in addition to clause combinations (and then, then, so). Children also begin marking relations on the content level more, and this development seeems to be related to the increase in narrative speech events. The confluence of syntactic, semantic, pragmatic, and contextual factors over the course of development would predict that when subordinate clauses would be acquired last; the developmental increase in narrative events, content relations, temporal connectives, and the limited range of units marked by subordinating connectives (as compared to coordinating connectives) are exemplified by the acquisition of when clauses.

5.5 Conclusion

This study has shown the importance of discourse functions and pragmatic factors in the acquisition of connectives and subordinate/ coordinate clauses. There is evidence of context specificity, the developmental priority of the speech-act level over the content level in relations between clauses, the interaction between type of units and type of relations marked by connectives, and an increase in functions which are used more selectively as children develop.

The limited context hypothesis predicts that connectives would be acquired in highly defined pragmatic contexts and spread to new contexts over the course of development. There is clear evidence in this study that connectives

are acquired in particular speech events. The present study, however, was only able to hint at the spread of connectives to new contexts because of the short length of the longitudinal study. Future research will need to examine particular connectives over a longer span of development.

The interactional functions hypothesis predicted that children's first uses of connectives would be more sensitive to interactional functions, and that as they developed they would exhibit a clearer distinction between interactional and ideational functions in their linguistic system. The present study did find that the younger children's connectives indicated more speech-act level relations than content level relations, while the older children's connectives indicated more content level relations than speech-act relations. The priority of speech-act relations is more clearly seen if we examine just the subordinating connectives: because and if clauses, which predominantly marked speech-act relations, are produced often by the younger children , whereas when clauses, which marked content relations, are produced often only by the older children.

In terms of the differentiation between interactional and ideational functions, the older children's speech events seemed to exhibit a wider range of pragmatic, semantic, and syntactic characteristics when compared to each other than the younger children's speech events. This finding corroborates Kyratzis' (in press) finding that older children use subordination vs. coordination more selectively than younger children depending on the speech event context. It is unclear in the present study, however, if the wider range of characteristics is related to a process of differentiation of interactional vs. ideational functions in their linguistic system, or if it is related to the development of discourse abilities (especially narrative abilities) which allow for a wider range of expression of ideational functions. In order to test the differentiation part of the hypothesis, more data need to be collected which will allow an examination of particular

connectives across a variety of contexts over a period of development. If the differentiation part of the hypothesis is true, that examination should show that connectives' functions are different in different contexts for older children, but not for younger children. Of course, the examination is complicated by the limited contexts of children's linguistic forms when they are first acquired.

The present study also replicated the findings of Kyratzis (1991) that there is an interaction between type of relation and type of unit marked by connectives. This interaction is interpreted as an indication that syntactic structures reflect pragmatic characteristics. Content level relations tend to assert forcefully only one clause, while backgrounding the other clause; speech-act relations tend to assert forcefully both clauses. Consequently, content level relations tend to be expressed in clause combinations and speech-act level relations tend to be expressed in discourse units such as turn exchanges, conversational particles, and independent clauses. While there is clear evidence of this interaction between pragmatic and syntactic characteristics, there is no one-to-one relation between force of assertion and syntactic structure, as the cases of because and if demonstrate in this study. A closer examination of this interaction is needed to understand the relation between syntax, force of assertion, and level of relation between clauses.

Describing the role of pragmatic factors in acquisition is complicated by developments in global discourse structure between 3;0 and 4;0. Between 3;3 and 3;6 children begin to use connectives to mark relations on the global level of discourse. This new function becomes an important factor in accounting for some connectives, like and then, but, and so. The importance of development at the level of discourse is also seen in the use of and. For the four youngest children, and is highly associated with coordinate clauses. For the older children, however, and begins to mark discourse relations in addition to marking

coordinate clauses. As discourse structures become more complex and extended between 3;0 and 4;0, connectives begin to mark the relations between them.

A full functional analysis uncovers the richness and complexity of linguistic constructions. Future functional studies of language acquisition will need to continue taking each level of linguistic analysis seriously, examining syntactic, semantic, pragmatic, and contextual factors and empirically testing whether they interact or not. As we learn the facts of language acquisition from a functional perspective, we will be able to develop more comprehensive functional theories, which may one day enable a resolution of the incommensurability of theories which marks the field of language acquisition today.

6. General Discussion and Conclusion

According to functional theories of language acquisition, linguistic forms are not autonomous from their semantic and pragmatic characteristics during the course of acquisition. Some theories predict a process of decontextualization, wherein pragmatic and contextual factors become less important and semantic and formal factors become more important in characterizing the use of the linguistic form (Bamberg, Budwig, & Kaplan, 1991; Gerhardt, 1990; Guo, in press; Langacker, 1987). It is only in the later stages of acquisition that linguistic forms are categorized by the child at a level "that can be characterized as more abstract in that the motivations need not be based on functional considerations." (Bamberg, Budwig, & Kaplan, 1991, p. 130). It is at this more abstract level of categorization that autonomous syntactic characteristics may become prevalent or characteristic of parts of the linguistic system.

Most of the theoretical and empirical work, however, has examined parts of the linguistic system in which pragmatic and contextual functions have not usually been thought to play a dominant role in the adult linguistic system, such as tense, pronoun and modal auxiliary systems. It is important to keep in mind that the linguistic system includes some elements which serve to manage discursive interaction, even for adults, as well as elements which serve to represent propositions symbolically. As a class, connectives seem to possess both kinds of functions. Ideational functions of connectives are reflected most clearly in certain types of relations (content relations) and in certain types of units (clause combinations). Interactional functions are reflected most clearly in other types of relations (speech-act relations) and in other types of units (turn exchanges and conversational particles). Unlike the personal pronoun system or the tense system, which in the adult grammar reflects ideational functions

primarily (Bamberg, Budwig, & Kaplan, 1991), the connective system continues to have interactional functions, and therefore contextual and pragmatic factors do not become less important over the course of development. In the connective system, children come to differentiate interactional functions from ideational functions dependent on speech event context, whereas in the pronoun or tense system children come to rely primarily on the ideational functions across a variety of contexts.

From previous studies and theoretical work, it was predicted that the acquisition process would demonstrate two characteristics: the initial stages of the use of connectives will be in limited contexts (limited context hypothesis), and connectives would reflect interactional factors more than ideational factors (interactional functions hypothesis). The developmental increase in flexibility, in both contexts and functions, may reflect an underlying decontextualization of the connective and differentiation of its functions as its ideational functions become more important in later stages of the child's linguistic development.

6.1 Summary of Results

The first study, comparing 3- and 4-year-olds' use of connectives in disputes and narratives, found evidence for the limited context hypothesis: the use of connectives and clause combinations were significantly limited to particular speech event contexts for 3-year-olds, but not for 4-year-olds. For 3-year-olds, because and but occurred in verbal disputes significantly more often than in narratives, while and, and then, so, and when occurred in narratives significantly more often than in verbal disputes. These contextual differences were weaker for 4-year-olds. The second study replicated the limited contexts for connectives for the 3-year-olds, reviewing other speech event contexts in addition to conversational narratives and disputes. In that study, all connectives

except and tended to occur in specific contexts: when, then, and and then in narratives, but and because in disputes, and if and so in directing talk.

Both studies also support the interactional functions hypothesis. The younger group of 3-year-olds (age 3;0 to 3;6) produced more speech-act relations than content relations, whereas the older group of 3-year-olds (age 3;7 to 4;0) and the group of 4-year-olds produced more content relations than speech-act relations. Speech-act relations indirectly indicate interactional concerns, because the pragmatic coherence marked by the connectives in speech-act relations derives from discourse patterns rather than from the semantic content of the utterances. The second study, however, found that the semantic class of the connective interacted with the type of relation, such that additive/temporal connectives were more likely to encode content relations, even for the youngest children in the study, while causal, conditional, and adversative connectives were more likely to encode speech-act relations. If the additive/temporal connectives begin by marking content relations, it would signal that children do not always start from interactional functions for connectives, but that certain parts of the child's connective system begin with ideational functions reflecting basic grammaticizable notions which are referential-propositional rather than social-conversational (Slobin, 1985). Studies of earlier stages of acquisition have noted that and and because do mark turn exchanges, with because predominantly marking this type of unit but and predominantly marking clause combinations (Bloom et al., 1980; Ervin-Tripp, 1978). If we interpret these types of units as reflecting interactional vs. ideational functions, we can see again that the additive/temporal connective aligns with ideational functions and the causal connective aligns with interactional functions as early as 2;0. Future studies will need to examine the interaction between type of relation and the

additive/temporal class of connectives at an earlier age, to see if the interactional functions hypothesis can still be supported.

In addition to linguistic forms being more sensitive to interactional functions early in the acquisition process, the hypothesis also predicted a differentiation process, such that some linguistic forms will begin to mark interactional vs. ideational functions dependent on the context. The first study found that the 4-year-olds' connectives marked different types of units and types of relations dependent on the speech event context more clearly than the 3-year-olds' connectives. Specifically, in the first study the 4-year-olds' connectives marked turn exchanges and conversational particles, and speech-act relations, more in disputes than in narratives, and the connectives marked independent clauses and clause combinations, and content relations, more in narratives than in disputes. The 3-year-olds did not distinguish the speech event contexts in this way as strongly, although there was a trend in this direction of differentiation. The differentiation by context can be characterized as older children more clearly distinguishing interactional functions from ideational functions, and using interactional functions more selectively. The second study found that the older group of children (3;7 to 4;4) produced different types of units and types of relations dependent on the speech event context more clearly than the younger group of children (2;10 to 3;6). Both studies indicate developments in conversational narratives as the predominant contextual factor in the differentiation of interactional vs. ideational functions of connectives.

The present studies also investigated two aspects of connectives and clause combinations which were not addressed by the limited context and interactional functions hypotheses: the impact of the development of discourse abilities and the interaction between type of relation and type of unit.

The development of discourse abilities impacts the acquisition of connectives differently depending on time of acquisition. Connectives which are acquired later, like so, but, and then, are used significantly more for marking local discourse units between 3;0 and 4;0 than connectives acquired earlier, like because and and. In addition, the development of global discourse units between 3;3 and 3;6 provided a function for these connectives which those acquired earlier did not have. Connectives which are acquired later, such as so and and then, are the most common connectives to mark global discourse units. These findings demonstrate the importance of discourse abilities in providing the functions which underlie the use of connectives and their subsequent development.

The present studies also examined the interaction between type of unit and type of relation, which other studies first examined in an attempt to understand the pragmatic principles underlying subordinate and coordinate clauses (Chafe, 1987, 1988; Kyratzis, 1991, in press). The pragmatic principles examined in this work are not the discursive or contextual factors which are constitutive of speech events, but reflect the management of information for discourse purposes:

> The pragmatic notion of backgroundedness entails that the speaker expects that the hearer will not challenge the information. In the stronger case of presupposed old information, no challenge is expected because of presumed shared knowledge. In the weaker case of backgrounded new information, the speaker invites the hearer not to challenge the information by coding it as subsidiary, non-central, less important. (Givón , 1989, p. 147, emphasis in original)

The two basic cognitive/communicative acts in the management of information are asserting and grounding: "In general, grounding is essentially a background task, as opposed to asserting. That is, a grounding clause does not assert in the usual sense of that term, but merely locates the referent in conversational space." (Fox & Thompson, 1990, p. 301). The structure of the subordinate clause is considered iconic with the degree of assertion; the more a clause is asserted, the more likely that it will be separate in order to focus attention on it. The more a clause is backgrounded, the more likely will it be incorporated with the main asserted clause which it supports.

Kyratzis (1991) found that content relations in causal expressions tend to be expressed in clause combinations within one intonational contour, while speech-act relations tend to be expressed in independent clauses or between clauses which have "comma" intonation patterns. Chafe (1987) has interpreted the patterns of intonation and pause between clausal units as either asserting or grounding the information contained in the clausal units; Kyratzis (1991) has consequently argued that content relations tend to background one clause to the other, while speech-act relations tend to assert both clauses. The present studies have replicated the finding that type of relation interacts with type of unit: content relations tend to be expressed in clause combinations, while speech-act relations tend to be expressed in discourse units like turn exchanges and conversational particles. This was found to be true at all ages examined, with the 4-year-old children having a stronger interaction between type of unit and type of relation than the 3-year-old children. The present studies have also extended this finding by examining other semantic classes of connectives in addition to causal connectives. There does seem to be an interaction between syntactic form and semantic and pragmatic aspects of the relation between constituent units.

Finally, the second study has uncovered a fact which indicates an effect of syntactic characteristics above and beyond the functional characteristics examined so far: subordinating connectives predominantly mark dependent clauses, while coordinating connectives mark clause combinations and discourse units equally, and are the types of connectives which mark global discourse units between 3;0 and 4;0. The effect of syntactic class cannot be predicted from knowing the type of relation, semantic class, or the interaction between type of unit and type of relation which is present for all connectives. For example, in the second study it was found that the younger group of 3-year-olds produced because and if subordinate clauses as frequently as the older group of 3-year-olds. The because and if clauses predominantly encoded speech-act relations, as expected from the interactional functions hypothesis, but the interaction between type of unit and type of relation would have predicted that the because and if connectives would mark discourse units, not clause combinations. However, at this age because and if overwhelmingly marked clause combinations. This indicates that the relation between syntactic class and types of units cannot be predicted strictly from the semantic and pragmatic characteristics of connectives. Yet the syntactic characteristics are not completely independent of the semantic and pragmatic characteristics: because and if, associated with speech-act relations and dispute/directing talk contexts, are also the subordinating connectives which did occasionally mark turn exchanges or independent clauses, while the subordinating connective when, associated with content relations and narrative contexts, marked subordinate clauses only.

6.2 Implications and Conclusions

This investigation of connectives and clause combinations has brought into focus three aspects of language acquisition from a functionalist perspective: (a) children seem to be sensitive to both ideational (or referential-propositional) functions and interactional (or social-conversational) functions from very early in the acquisition process, and both kinds of functions can serve as starting points or grammaticizable notions in the child's construction of grammar (Slobin, 1985); (b) children's forms begin in limited contexts, and those contexts can reflect either ideational functions (for instance, the use of a limited set of matrix verbs in the initial stages of complement clauses, as reported by Bloom et al. (1989) and Tomasello (1992)), or interactional functions (for instance, the limited pragmatic and discursive contexts in the initial stages of modal auxiliaries, as reported by Gerhardt (1990) and Guo (in press)); and (c) social and conversational development impacts language development by providing new interactional functions, as in the case of marking global discourse units, or by motivating new ideational functions, as in the case of dramatic changes in conversational narratives between 3;0 and 4;0. Each of these three aspects of language acquisition are discussed below.

Linguists and philosophers have noted for many years that language is a system for both representing states of the world and affecting states of the world, especially the social world (Austin, 1962; Halliday, 1973, 1975; Searle, 1983). In studies of linguistic acquisition, there has been a bias towards the referential-propositional function of language (Ervin-Tripp, 1989), but recently it has become clear that "a full understanding of grammatical development requires attention to both referential-propositional and social-conversational meanings of utterances." (Slobin, 1985, p. 1185). Attention to interactional functions has been aided by

advances in discourse analysis, especially the study of discourse markers (Fraser, 1990; Redeker, 1990; Schiffrin, 1987) and by advances in the study of the speech-act, speech event and activity contexts of grammatical development (Ervin-Tripp & Bocaz, 1989; Gerhardt, 1990; Guo, in press; Pak, Sprott, & Escalera, in press). There is now clear evidence that the linguistic system for both child and adult possesses structural aspects which serve ideational and interactional functions, and some recent theoretical work in functional linguistics accommodates this dual aspect of language (Langacker, 1987; Van Valin, 1993).

The characteristics of the limited contexts in which forms are first acquired appear to indicate that this dual function is fundamental for children, and that there are two kinds of privileged notions around which children organize their grammar, referential-propositional and social-conversational (Slobin, 1985). For instance, researchers have noted that dependent clauses occur with a limited range of matrix verbs with particular semantic characeristics, such as verbs of notice ("look") or modality ("want" or "go"), in the initial stages (Bloom, et al. 1989; Bloom, Tackeff & Lahey, 1984; Tomasello, 1992). Based on other research which also demonstrates this characteristic of child language, Slobin (1981, 1985) has proposed that children begin with a privileged set of grammaticizable Notions organized into a Semantic Space. The Semantic Space reflects ideational functions, and certain aspects of grammatical development such as tense, aspect and transitivity are acquired in limited contexts which reflect this Semantic Space. Other aspects of grammatical development, however, are acquired in limited contexts which reflect pragmatic Notions; the acquisition of modal auxiliaries (Guo, in press), passive voice (Demuth, 1989), linguistic particles (Clancy, 1985) and discourse markers (Pak, Sprott, & Escalera, in press) all reflect functions which serve the social, conversational needs of speakers. The study of the connective system, which possesses both

ideational and interactional functions, seems to show the same distinction in kinds of starting points: additive/temporal connectives appear to reflect ideational functions in the beginning, while causal, conditional, and adversative connectives appear to reflect interactional functions in the beginning.

What is unclear is how to characterize either the developmental process or the nature of the language making capacity vis-à-vis the distinction between ideational and interactional aspects of language. On one hand, there appears to be a complex interaction between semantics and pragmatics in the initial stages of acquiring grammatical systems such as the pronoun or modal system, such that a process of semanticization or differentiation could explain the observed development. On the other hand, the acquisition of complement clauses appears to be dominated by semantic characteristics while the acquisition of linguistic particles appears to be dominated by pragmatic characteristics, with no clear interaction between semantic and pragmatic factors over the course of development. The presence of both clear cases of ideational vs. interactional starting points and cases with undifferentiated ideational/interactional starting points would seem to indicate that both the linguistic system and the language making capacity are prototypically structured, with the "fundamental" distinction between ideation and interaction representing opposite ends of a cline. If this is the case, then acquisition of grammatical elements which have clear ideational or interactional starting points should be relatively easier than acquisition of grammatical elements with undifferentiated ideational/interactional starting points. In the connective system, and is acquired more quickly and efficiently than because, which has a longer period of development; perhaps the difference in acquisitional history reflects that and is clearly ideational while because is not clearly either ideational or interactional. Previous research has shown that children acquire grammatical elements which encode semantic or pragmatic

distinctions independently more easily than grammatical elements which conflate semantic and pragmatic distinctions (Rispoli, 1991). It is also possible that children start out with conflated (or undifferentiated) interactional and ideational functions in certain cases (Bamberg, Budwig & Kaplan, 1991).

In terms of interactional functions, the limited contexts of connectives indicate that connectives index their context in the initial stages of acquisition; for the child there is a direct association between linguistic forms and the immediate discourse context, activities, and purposes in speaking when the form is first acquired. The indexical properties become less characteristic over the course of acquisition, indicating that a decontextualization process is occurring. It is presently unclear how to describe this decontextualization process; it may be attributed to children's discourse development, or it may reflect changes in the pragmatic properties of individual linguistic constructions. Future studies will need to examine both possibilities. For example, if the decontextualization were caused by discourse development, then as children learn to give reasons in narratives as well as in disputes, the causal connective because should appear in narratives with no delay. In other words, there should be no period of unmarked reasons or reasons marked by a different construction in narratives at the same time because is used to mark reasons in disputes. If there is no delay between use of a form and the appearance of its functions in a particular context, we can attribute the decontextualization process to development of discourse abilities. However, if functions and discourse patterns are present in several contexts but the forms only appear in a limited subset of these contexts, it may reflect an indexical property specific to particular linguistic constructions. The decontextualization process could reflect a cognitive process of schematization: "If a property (e.g. the relative social status of speaker and hearer) is constant to the context whenever an expression is used, the property may survive the

decontextualization process and remain a semantic specification of the resultant unit." (Langacker, 1987, p. 63). Properties which may not survive the decontextualization process include the indexical properties tying particular forms to particular contexts.

The third aspect of language acquisition is the impact of discourse development on language acquisition. The present studies indicate that developments in discourse abilities do have an impact on language acquisition, especially on the parts of the linguistic system which have interactional functions. The impact is in the form of new interactional functions, such as marking global discourse units, and in the form of new discourse contexts with distinctive structural and functional properties, such as the narrative speech event context.

It is through discourse abilities as well as interactional functions that social development has a role in language acquisition (Ervin-Tripp, 1989). Recent research in children's discourse analysis finds two factors which impact the structural and functional properties of speech events: the social function of the speech event and the level of social development of the child. For example, the purpose or social function of a narrative has an impact on its structural and functional properties; personal narratives and scripts emerge at about the same age, between 2 and 3, while fictional stories emerge later, during the elementary school years (Hudson & Shapiro, 1991). These genre differences directly affect the style and the organization of the narrative speech event (Hicks, 1991). Social development has an impact on the structural and functional properties of speech events, even those which have the same purpose or social function. Conversational narratives which plan pretend play schemes are more complicated and contain more global discourse units in younger children than older children because younger children have difficulty coordinating pretend play

together and do not share common knowledge of pretend play schemes; they must therefore be more explicit.

All of these findings demonstrate the richness of a functional analysis of language. It enables researchers to bring together research in cognitive processes and social development to understand the acquisition of language; it allows for researchers to explore on an empirical basis the connection between linguistic ability and other cognitive and social abilities rather than assuming a modularity and ignoring possible connections. It also allows for researchers to discover if there are linguistic-specific processes in acquisition rather than assuming them on a logical basis. Ultimately the study of language acquisition will be at the heart of how we understand the human mind and human nature, the aim of Skinner, Chomsky, and many researchers since before the cognitive revolution and the founding of cognitive science.

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Appendix

Transcription Conventions and Symbols

Intonational Contour Symbols

\	falling intonation with full pause; also signified by period
,	falling intonation with minimal pause
-	steady intonation, sudden stop
?	rising intonation with full pause

Paratactic and Stress Symbols

*	primary stress in intonational unit
:	vowel lengthening

Transcription Conventions

( )	unclear production/recording
(and)	unclear production/recording; transcribers' approximation
(xx)	unclear production/recording; x signifies number of syllables
[ ]	contextual, nonverbal notes by transcriber
<#>	number of seconds of silence
==word	latching, no interturn pause
=word=	overlapping speech