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**THE REALIZATION OF METAPHOR IN CONTEXT -- A DEVELOPMENTAL  
STUDY OF INTERPRETATION**

*City University of New York*

**Ph.D. 1982**

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**The Realization of Metaphor in Context --  
A Developmental Study of Interpretation**

by

Martha Hadley

A dissertation submitted to the Graduate Faculty in Psychology  
in partial fulfillment of the requirements for the degree of  
Doctor of Philosophy, The City University of New York

1977

"A successful metaphor is realized in discourse,  
is embodied in the given 'text', and need not be  
treated as a riddle ..."

Max Black, 1979

"There is a delicate form of the empirical which  
identifies itself so intimately with its object  
that it thereby becomes theory."

Goethe

This manuscript has been read and accepted for the Graduate Faculty in Psychology in satisfaction of the dissertation requirements for the degree of Doctor of Philosophy.

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## ABSTRACT

The Realization of Metaphor in Context --

A Developmental Study of Interpretation

by

Martha J. Hadley

Metaphors are unconventional uses of language, distinct and intriguing in the flow of a text or discourse. Studies of metaphor interpretation have, therefore, dealt with metaphors apart from the context of more conventional language; figures separated from ground. The empirical question for developmental psychologists has been when and how children and adults "understand" metaphors presented in isolation as figurative assertions.

The approach taken here is that interpretations of metaphors are actively constructed by reader-listeners in relation to the context in which they appear. The potential richness of metaphor interpretation is in how the reader-listener selects and integrates information from the context with his/her knowledge. Such interpretive activity will reflect various intentions towards language and different possible forms of figurative, or even non-figurative, interpretations.

This research has explored the nature and development of metaphor interpretation by presenting two types of metaphors (more and less dependent on context for figurative intent) to subjects in four age groups, either with or without access to the metaphors' original contexts, brief stories written by children. Interpretations were extensively described using a code designed to provide data on both inference of figurative intent and qualities of interpretation, including uses of context.

The results indicate that even the five-year-olds were frequently able to construct figurative interpretations of metaphors with access to context . Older children and adults were progressively less dependent on context to infer figurative intent. They used the context more implicitly and constructed qualitatively different forms of figurative interpretations.

The significance of access to context for competence in acts of interpretation and the qualitatively distinct forms of interpretation characterized for each age group extend previous concepts of what is entailed in the interpretation of metaphor and its development. Metaphor interpretation is not one ability, and interpretations are not adequately described by the traditional distinction between the undifferentiated extremes of figurative and literal. The development of metaphor interpretation includes continuous and discontinuous changes in different aspects of interpretive activity that suggest particular functions of and intentions towards more metaphoric uses of language at different points in development.

## ACKNOWLEDGEMENTS

I would like to thank several people who have had the patience to listen and respond to both me and these ideas as we have developed in the past few years. Dr. Joe Glick has been my teacher, mentor and friend. To say I thank him for having heard me (even when I wasn't sure what I was saying), for helping me to hear myself and for continuing to nudge, is an understatement. I will always take with me the ways of seeing things that he has helped me to find. Dr. Katherine Nelson has given valuable perspective and, most important, has sustained me with the sense that this and many other things are possible. Dr. Elsa Bartlett has provided conscientious support, and commitment to the details that determine the quality of a piece of research.

I would also like to thank Dr. Virginia Valian, Dr. Margery Franklin and Dr. Gilbert Voyat for their willingness to engage in the dialogue that bring this kind of work to life. They supported me through the formalities that are necessary to the institutions where degrees are earned and made these occasions time of personal fulfillment as well as rites of passage.

What I feel for my colleagues and friends -- Jan Jewson, Carol Reich, Helga Grunberg, Lenora Fulani, Zoe Graves, Rhiannon Allen, and others -- those who have shared the role of student with me at the Graduate Center, goes beyond gratitude. We have sustained each other, helped one another to reach and grasp both intellectually and personally. Your friendship has made this period of time an era of exploration and growth that both includes and goes far beyond the process of

getting a doctorate.

Finally, the contribution of those who share one's life day-to-day, who love you even when you arise with the birds on Saturday morning to revise one more section, can never be put into words. To Nadav Kennan who has been there when I needed to share ideas at odd hours of the day and night, who has helped me with the anxiety and who has continued to believe in me, I am most most grapefruit.

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## INTRODUCTION

To most of us a metaphor is recognizable and intriguing, if not easily defined. Metaphoric phrases occur in a conversation or a text that is composed of more conventional language. They stand out clearly as figures, as exceptions on a ground. Accordingly, much of the philosophical, psychological, and linguistic work on metaphor has oriented to the properties that distinguish "it" as a use of language from other uses of language. The visibility of the metaphor has led to a particular kind of treatment of the metaphor in psychological experimentation; an examination of metaphor isolated from other more conventional language or events which surround it. The empirical question for developmental psychologists has become one of whether a metaphor presented in isolation is understood by children of different ages as either itself (a figurative usage) or as something else (a literal statement, mistake or bit of nonsense).

This approach obscures one of the most interesting features of metaphor -- it attains some part of its properties in relation to the discourse in which it is embedded. While, indeed, some of the interpretation of metaphor involves the obeying or disobeying of semantic constraints (as defined in a theoretical world), much of metaphor involves a complex relationship of metaphor and text or context. Further, looking at metaphor only as an exception or rule violation and context as simply that which helps the reader/listener to recognize the metaphoric intent, tends to miss the richness of what the reader/listener can and does do with language in general and metaphor in particular.

Considering metaphor in its relation to contexts places more emphasis on what the interpreter brings to the interpretive task, on the multiple possibilities for interpretation.

Accordingly, the focus of this dissertation has been on a largely ignored feature of metaphor -- its textedness. If textedness is in part the issue, then among the influences on children's abilities to deal with metaphoric interpretation should be both:

- The attitudes that children and adults generally assume to the definition, selection and employment of context, and
- The child's ability to deal with the interrelationships that occur within texts and contexts.

The unique feature of the exploration of metaphor undertaken here is the stress on the importance of textual relationships and attitudes towards texts and contexts in the account of how children's interpretations of metaphor change with age. It suggests that there are both continuous developments as well as qualitatively distinct characteristics that mark different age group's handling of metaphor and metaphor-text relationships. It also questions the description of mature language users' interpretations of metaphor in terms of a single form called figurative.

The rationale for this approach to the study of metaphor interpretation will unfold as we explore the unique properties of metaphor itself. However, it is hoped that the reader will come to appreciate that it is the extent to which characteristics of all uses of language are exemplified in what we recognize as metaphor that leads to this shift in emphasis to the textedness of metaphor and the interpretive

act of the reader/listener.

To undertake a study of the characteristic developments in the interpretation of metaphor is to be made repeatedly aware of the richness of expressive uses of language. It is also to be made aware of the limits of the empirical methods of behavioral science in such efforts to explore more idiosyncratic and creative aspects of human communicative and interpretive behavior; aspects which are exemplified in the interpretation of metaphors. Despite explanatory limitations, the application of these tools of behavioral science forces a rigor and discipline in the looking and comparing that makes patterns visible which are not immediately apparent in peoples' interpretations.

This study has been designed to gain access to such patterns; to develop new perspective on how people interpret metaphors by considering the importance and use of context in interpretation.

Constructing these perspectives will involve both:

- New ways of describing interpretations in terms of how they are affected by and related to the context in which the metaphor is embedded, and
- New ways of expanding our view of the development of metaphor interpretation through comparison of interpretations by subjects from different age groups.

The premises which underlie this research effort will be spelled out and reiterated in relation to different issues throughout the discussion. By way of introduction, the essence of these premises alluded to above are:

A metaphor is embedded in and interpreted in relation to the particular context (textual, situa-

tional, historical) in which it appears. Therefore the act of interpretation includes the selection and integration of aspects of this context by the reader-listener as this information is used to construct a meaning for this unconventional and apparently anomalous use of language in that setting.

The reader-listener is an active contributor to the interpretive act. He/she constructs meaning(s) which may vary in the extent of their development and other aspects of their form (i.e., there is more variation than the distinction between figurative and non-figurative interpretations allows).

The questions on which the following discussion and research were built follow from these basic premises about the object of interpretation, the activities of the interpreter and the variation in the possible forms of interpretation of metaphors that are often overlooked. These initial research questions were: How can we best describe what it is that people appear to be doing when they interpret metaphoric uses of language? What are some of the critical stimulus and performance variables that should be focused on in the study of metaphor interpretations? How can our characterization of the development of this ability be extended by both describing interpretations in more detail and comparing the ways that children of different ages engage in metaphor interpretation?

METAPHOR -- TOWARDS UNDERSTANDING THE  
OBJECT OF THEORY AND RESEARCH

What is Metaphor?

In order to explore these questions meaningfully some understanding of what is meant by metaphor needs to be established. The simplest definition of metaphor as a linguistic form is that metaphor, like simile, hyperbole and personification involves non-literal comparisons. However, unlike similes, which employ "like" or "as" to assert the comparison, metaphors imply comparisons between terms which have both similar and dissimilar aspects without using a comparator. They state the comparison as an identity relationship (an X is a Y).

For example, when Romeo declared "Juliet is the sun"; when an anonymous eight-year-old wrote, "A rainbow is a peacock's feather in the sky," they were using language metaphorically. They were describing the subject of their utterance (referred to as the topic) with a word that is seldom associated with or used to describe that subject (referred to as the vehicle). This is an act that Aristotle described as applying an "alien name" (Aristotle, 1457).

It is difficult to establish criteria for differentiating figurative or metaphoric from conventional uses of language because the extent to which two terms are 'alien' is a function of the history of their use in a language community (e.g., the leg of a table), as well as the immediate context in which the statement is embedded (e.g., my mother is a policewoman). Metaphoricalness is not an inherent or absolute property of a linguistic unit. It is relative to history and the conditions of use.

Miller (1977) has pointed out that the term metaphor is used in both a broad and narrow sense. The broad sense of metaphor encompasses extended metaphors and analogy in general where analogy is taken to include "all varieties of the recognition of similarity, resemblance, or comparison, or all mappings of one conceptual or affective domain onto another." The narrow sense of the term refers to a particular linguistic form. The object of the research described here will be the interpretation of metaphor defined in the narrow sense as a subcategory of the larger domain. However, most of the initial discussion of metaphor applies to the range of forms which metaphors take. Other aspects of variation in structure and the types of relations implied between the terms of different metaphors will be considered in so far as they were relevant to the selection of stimulus variables in the research design.

What does this initial attempt at a definition of metaphor imply for the topic of this research, the act of engaging in interpretations of metaphors? It implies that to study metaphor interpretation is to consider how an unconventional use of language is understood; how an implied comparison that would be completely anomalous if taken at face value is interpreted as a meaningful and powerful assertion. What is gained in terms of expressive or communicative adequacy by employing these odd juxtapositions of terms in what are called figurative uses? What is it that the reader or listener does and knows that prevents him or her from interpreting such assertions as nonsense?

Scholars from various disciplines have discussed different versions of these questions about the interpretation of metaphors. In fact, the interplay between voices from the disciplines of philosophy,

literary criticism, psychology and linguistics will be apparent in both this introduction and the more systematic review of the literature on metaphor. The issues which are dealt with by writers from these different disciplines are similar (the functions and mechanisms of metaphor, the distinction between figurative and literal uses of language). However, their concern with different aspects of language and thought as they relate to metaphor (poetic meaning, generative rules of language use, cognitive processes and pragmatic skills) enables us to see these central issues from several perspectives.

Rather than taking the more conventional route of beginning with a discussion of existing theory and research as they relate to the research questions to be posed here, I would like to begin with a closer look at the phenomena of metaphor and its interpretation. It has been described from these different perspectives. The theoretical framework for my approach to metaphor to be asserted here and the specification of research issues will be built from this base of appreciation for the richness of the phenomena itself. The purpose of this tact is both:

- To increase the credibility of the approach through familiarity with the topic, and
- To use the careful description of the topic as a mirror in which the adequacy of the theory as well as the relevance and viability of the research claims can be assessed.

### The Phenomenon of Metaphor

I offer the reader examples of metaphors embedded in the texts in which they appear. These examples are used as referents in the following sections which discuss the characteristic qualities of metaphor and the experience of metaphor interpretation.

"Now the terror is beginning. Now taking her lump of chalk she draws figures, six, seven, eight, and then a cross and then a line on the blackboard. What's the answer? The others look; they look with understanding. Louis writes; Susan writes, Neville writes; Ginny writes; even Bernard has now begun to write. But I cannot write I see only figures. The others are handing in their answers, one by one. Now it is my turn. But I have no answer. The figures mean nothing now. Meaning has gone. The clock ticks. The two hands are convoys marching through the desert. The black bars on the clockface are green oases. The long hand has marched ahead to find water. The other painfully stumbles among hot stones in the desert. It will die in the desert. The kitchen door slams. Wild dogs bark far away. Look, the loop of the figure is beginning to fill with time; it holds the world in it. I begin to draw a figure and the world is looped in it, and I myself am outside the loop; which I now join - so - seal up, and make entire. The world is entire, and I am outside of it crying. 'Oh save me from being blown forever outside the loop of time.'

(from The Waves by Virginia Woolf  
1931, p.21-22)

"Nothing, is better than the song the cricket sings. The sound of the cricket brightens my feelings and makes me sing too. My mind is the crickets mind and I wish I was a cricket. Hop, hop the black cricket. The cricket pokes out his feelers and I can hold them and the song of the cricket is my mind."

(by Marilyn Age 7 from New Zealand  
in Journeys Prose by Children  
collected by Richard Lewis,  
1969)

"An undisputed virtue of the computer is that it provides a metaphorical solution to the traditional dichotomy between the brain and the mind. A computer is an organized physical system, but from a logical stand point it does not matter whether it is built from relays, valves, transistors, or microchips. If its circuitry is appropriate, then it can

imitate the behavior of any other computer. What is crucial is not its physical realization but the logic of its operations. What it does on any occasion depends on the signal that is put into it.

Computers are built to receive signals made up of sequential patterns of electrical impulses, and their power derives from the fact that different patterns trigger different computational operations. Complex computations can be elicited by a whole sequence of signals, and such sequences are known as 'programs'. The brain too is an organized physical system, and perhaps mental operations are merely its 'computations' depending not so much on the physiology of nerve cells as on the logic of their operations. In order to understand human mentality it may be more fruitful to discover the 'programs' and 'plans' that underlie it rather than their underlying physiological representation.

(from Introduction to Thinking  
Readings in Cognitive  
Science. Edited by  
Johnson-Laird and Wilson,  
1977)

....The theory assumes an underlying information processing system like that shown in figure 1. This system comprises a large memory of symbolic structures, an essentially serial processor for accessing and restructuring this memory, and some input-output mechanisms. The organization is familiar enough, differing from existing computers primarily in that its memory organization is a network of labelled associations between symbols...

(from "Analysis of human problem solving protocols" by  
Allen Newell, 1968)

"John Santucci, citizen of Queens, is the invisible 'fourth man' in the Democratic Senate Primary. His campaign is housed in a lonely store front on Queens Boulevard, sandwiched between two used-car lots. His father stops by occasionally, in the afternoons to lick envelopes.

New York Magazine

These examples illustrate a range in both uses of metaphor and in degrees of metaphoricalness. The use of a series of metaphors in the excerpt from Virginia Woolf's writings conveys a personal experience of time with an almost sensory force. The child's metaphor alludes to a relationship between the energy and spirit of a cricket's song and the sense that this child has of her own mind, a comparison that would be difficult to translate into a literal phrase with the same impact. The metaphoric comparison between mind and computer has been used to generate a series of analogies between thought processes and computer systems that have served to specify hypotheses towards a theory of mind. The use of metaphor by the journalist is barely noted by the eye scanning the newspaper page because it is commonplace.

These variations illustrate the fact that there are degrees to which metaphors and the concepts to which they refer are novel, non-literal, complex and subtle. As will become evident, studying metaphor requires articulation of the level of metaphoric use being addressed and the context in which this use occurs. There are differences between the functions served by and the mechanisms implied in the production and understanding of metaphors found in great literature or science as opposed to "flat footed" uses (Searle, 1977) of metaphor found in everyday life. Conceptualization of the qualities which describe some of the variance between metaphors is important to

appreciation of metaphor. Specification of these qualities which differentiate types of metaphor is a necessary step in analyzing interpretive acts.

#### The Descriptive Qualities of Metaphor

The following descriptive qualities of metaphoric uses of language are among those most frequently referred to in describing what is distinctive about metaphor and what accounts for apparent differences in degree and kind within this category of language use. These characteristic qualities are followed by a discussion of certain functional characteristics of metaphor. Taken together they provided some specification of what is special about the impression or experience of metaphoric language and suggest what is entailed in its interpretation.

- a. The "vividness" (Ortony, Reynolds and Arter, 1978) or force of a metaphor is often attributed to the degree of "tension" it conveys. Tension is the extent to which two aspects of metaphor are juxtaposed: 1) the dissimilarity between the terms, and 2) the interaction between them based on elements of similarity (Ortony, 1975; Wheelwright, 1962). Another way of thinking about the intensity of metaphoric usages is to consider that metaphors entail rule violation in their assertion of identity between unidentical terms. As a result, we are surprised or jarred by the metaphoric usage in a way that impresses us and calls our attention to it. Either approach points to the importance of the differences in the familiarity of relations posed between terms when distinguishing between degrees or types of metaphor. For example,

- cognitive psychologists familiar with the recent literature in that field will not perceive the mind as computer metaphor to be particularly vivid or surprising, although the metaphor has been and still is valuable to theory and research.
- b. The "resonance" or the extent to which a metaphor can be extensively elaborated as opposed to translated to a simple comparison (Black, 1977) distinguishes metaphors that can generate many different relations or have "semantic arrows (that) may point in more than one direction" creating an "interplay of meanings and half-meanings" (Wheelwright, 1962). Scientific metaphors as well as particularly rich literary metaphors like those that Woolf employs can be interpreted in many layers revealing multiple facets to the relations being posed, while a "flat footed" metaphor like "Susie is a gem" or "He is a bear" leaves us with little material for extensive interpretation.
- c. The "ambiguity" and "indirectness" of metaphors is inherent in their definition as unconventional uses of language which require the reader to derive possible meanings from suggested relations between seldom associated terms. Depending on the extent of this ambiguity, metaphors are open to multiple interpretations which may be delimited by the contexts in which they appear. For example, "The song of the cricket is my mind" (p.5, child's metaphor) might, in another text, be construed to mean that the writer's mind was filled with a repetitive, monotonous droning like the sounds of crickets' legs rubbing back and forth on a hot night.
- d. The "context dependence" of metaphors distinguishes them from

other uses of language and each other in terms of degree. Because of their unconventional and ambiguous quality the specific intent of a metaphoric usage often requires reference to the context in which it occurs. However, this varies from the extreme case of metaphors that have viable, conventional interpretations out of certain contexts which suggest figurative interpretations ("My uncle is a butcher"), to those cases in which relations are more evidently metaphoric ("My aunt is a cow"). At either extreme the integration of the context of use with the metaphor is important in order to both identify and interpret the metaphoric intent. Finally, there is one sense in which all metaphors are context dependent. Eventually the novel, metaphoric usages that are repeated over and over again are integrated into the language (e.g., the arm of a chair) and in this sense metaphors can only be defined in relation to the historical context of their use in the language.

- e. The "uniqueness" or "Inexpressability" (Ortony, 1975) of metaphors refers to the extent to which a metaphoric usage can be translated into conventional language without losing the meaning or tone it conveys. Does describing mind as computer or hands on a clock as "convoys marching through the desert" express something that could not be suggested if we had access to only the conventional uses of language? This is a quality which is at the center of a basic theoretical difference in perspective (comparison versus interaction theories of metaphor), a difference which will be discussed later (see section entitled "Theories of Metaphor: Directions from the Armchair).

In sum, the descriptive qualities that distinguish more metaphoric uses of language are : vividness, resonance, ambiguity and directness, context dependence, uniqueness or inexpressability. Metaphors can be characterized by these qualities to different degrees, but as general descriptors they articulate our experience of this type of language use.

#### The Functions of Metaphor

What is it we accomplish in utilizing this vivid, resonant, ambiguous, context dependent and unique form of language? Or, conversely, what is it about the function of metaphor that makes these descriptive terms so applicable?

Metaphoric uses of language are found in many domains; in poetry and literature; in problem solving; in the development of scientific models; in the psychotherapeutic process; in attempts to organize or communicate ideas; in situations where a new word/concept is needed; in education. Two related functions of metaphor which encompass these diverse uses are considered here. The reader will recognize that these are not functions of language which are limited to metaphor (e.g., all language changes our view or conception of reality in some way), but these functions are personified in and are inherent to metaphor.

Metaphor functions in problem solving, science and other cases of modeling reality as a means of extending existing concepts to grasp and encompass new perceptions. Metaphors enable us to express new ideas in terms of known linguistic concepts. They permit the speaker to create and reach beyond the familiar, posing unfamiliar comparisons between familiar terms (Cassirer, 1953). This characteristic of

metaphor has recently been discussed by Miller (1979) in terms of the more general psychological mechanism of "Apperception" (Herbert, 1898 cited in Miller, 1979). Apperception involves the assimilation of new information by relating it to information we already have about the world and the given context. This conception enables us to consider the use of metaphor in the same terms that we consider conventional uses of language. The question is whether the unconventionality of metaphor represents an especially creative use of this mechanism; a capacity to "obey the laws of the sonnet while producing lines never before imagined" (Bruner, 1962). One insight into this question has been suggested by Black (1977) who has proposed that metaphor is not creative in that it results in a manmade construction. But, it is creative in so far as the "view" a metaphor points to is only grasped in the act of interpretation which requires the creativity of the interpreter. It will be suggested here that there are different ways and degrees to which interpretations of the same metaphor can be a creative act; differences related to the metaphor's interaction with and application to a more or less expansively defined context.

Second, metaphor functions in expressive language and poetic extension as a means of expressing some aspect of experience that may be intuited but are beyond the conventional means of describing and ways of understanding. Metaphor can be used to suggest or approximate "liminal meanings" (Wheelwright, 1962) or meanings that "point beyond the reach of words as already used or prescriptively defined." To consider this function of metaphor is to acknowledge a discrepancy between the continuity, immediacy and sensory qualities of our experience in the world, and the discrete symbols of the language

which, although flexible, must also be relatively stable and defined in common. The conventional use of language cannot be expected to capture all the nuance, or as yet unarticulated aspects of an experience for the speaker or listener (Ortony, 1975).

Perhaps the best example of this gap, which all of us experience, is the distance between our emotional and sensory experience on the one hand, and our ability to communicate it in words to others. The role played by metaphor in the process of psychotherapy is evidence for its importance for expressing these seemingly inexpressible aspects of our experience (e.g., we are able to express the inexpressible in metaphoric symbols of our dreams). Put in more elegant terms, metaphoric uses of language are "not a matter of true or false" (e.g., "New York City is in Iowa") but are "like a set of concentric circles of wider and wider scope....a progressive encompassment" that never wholly says (Burke, 1941, p.144).

Metaphors which provide a means to "intensify one's sense of reality" (W. Stevens, 1951, p.71) and suggest an experience or perception which the reader must then construct or interpret by relating what is suggested to his own experience and understanding are traditionally found in great literature and poetry. However, this immediate, sensory, personal, inexpressible quality of certain uses of metaphor is also apparent in the story by the ten year old quoted above, and in the dreams of most of us. Again, the extent to which this potential for intensity and expansion works is determined by the way the interpretive act is engaged by the interpreter, as well as the qualities of the metaphor itself. Have you ever had a dream and not pursued its meaning beyond the surface of its characters and events?

These functions of metaphor imply an extension of concepts or meanings from known to unknown; from the not yet expressed or seen to expression through metaphoric juxtaposition and suggestion.

Understanding the functions of metaphor helps to see why the descriptive characteristics or phenomenal qualities of metaphor are so distinctive. The resonance, vividness, uniqueness, ambiguity and extreme context dependence of metaphors are the impressions left by language used to reach for what is intuited but not yet grasped or captured in language; language used to suggest what is actualized by the reader in the act of interpretation.

As the etymology of the term itself implies, some transfer (meta) of meaning (phora) occurs that enables metaphors to accomplish these functions. The mechanism for this extension or transfer of meaning is the juxtaposition of similarities and differences ("anaphor" and "diaphor"). The presentation of distinct differences and unconventional similarities that are inherent in this use of language make demands on the interpreter to work behind the surface of the comparison that is being asserted (Black, 1979). The result of this work is a more intense feeling of participation as well as a sense of being on an as yet vaguely specified edge of meaning, a result which will vary depending on the extent to which this "work" is engaged and the ways in which it is pursued. Taken together, the impact of metaphors, their functions in extending the language beyond its conventional means of expression and the nature of the reader/listener's participation in interpretation converge and, taken together, present a gestalt of the phenomena of metaphor. One aspect of this gestalt, the act of interpretation, is focused on here, but this broader perspec-

tive on the phenomena will serve as background to a closer look at interpretation.

#### How Is Metaphor Understood? -- The Perspective of this Research

What does all this suggest for the interpretive act itself which is of central concern to this work? At the very least it suggests that interpretation is constructive in the same sense that recent theory on understanding of both metaphoric and more conventional uses of language has proposed (Verbrugge, 1977 a & b)). The difference between the nature of the constructive activity involved in interpretation of metaphor and other uses of language is one of degree more than kind. Metaphors represent an extreme case of having to discover a relation seldom considered between the terms and thereby constructing a new concept or way of perceiving the topic of the metaphor.

"The interpreter is filling in the 'pragmatic gaps' in order to construct a picture of the world that is as close as relevantly and sensibly possible to the world that corresponds to the literal meaning of the sentence." (Morgan, 1979, p.141)

"... when an author says something literally false or contradictory, readers do not translate it into something true and then assume that that was what the author meant to say. Rather, they assume that what the author said is true in the state of affairs he is describing, then search their general knowledge for plausible grounds for saying that in a given context. Their search for those grounds, however, is guided by whatever resemblance and analogies they can find between the world of the text and the world of reality. (Miller, 1979, p.214)

There are several important implications of these conceptions of interpretation. These implications constitute the perspective on interpretive acts being developed here, and the rationale for the research to be described.

First, these ideas about metaphor interpretations are not meant to dichotomize metaphoric and other uses of language. Rather, as was suggested earlier, the position taken here is that the difference between figurative and literal is a difference of degree versus kind. The description of metaphor interpretation in terms of a constructive process, of an integration of linguistic knowledge with contextual information and world knowledge is not a description of activities exclusive to the understanding of metaphor. Rather, it is a description that is compatible with the approaches of several contemporary researchers who have investigated the comprehension of more conventional language uses in terms of constructive process (Bransford and Franks, 1971; Bransford and McCarrell, 1974; Bransford, McCarrell, Franks and Nitsch, 1977; Miller and Johnson-Laird, 1976). The investigation of metaphor interpretation can be taken as a focusing on one end of a dimension which extends from uses of language which are relatively conventional with clear referential intent and those which are more novel and open to interpretation. Viewed in this way, research on metaphor interpretation becomes an opportunity to explore the ways in which meanings are constructed in the course of interpretive acts; in cases of language use in which the language interpretive skills of the reader-listener is maximized. Important aspects of this activity may be more apparent in cases where the demands on the participation of the interpreter are greater. Certain aspects of interpretive activity (like variation in how the interpreter uses the metaphor to understand the text) may have been overlooked or underestimated while we focused on exploration of the "semantic ideal"

(Burke, 1941) at the other end of the dimension and defined metaphor as the exception to the rule.

Second, this conception of metaphor interpretation has implications for the specific characterization of the interpreter's activity. The interpretive act entails selection and integration of contextual, linguistic and extra-linguistic relations in a way that includes inference of the metaphoric intent and, the extension of that intent as it is perceived to be relevant by the reader-listener.

"The interpreter is...led to engage in selecting, organizing and projecting. I think of a metaphorical statement (even a weak one) as a verbal action essentially demanding uptake, a creative response from a competent reader." (Black, 1979, p.29)

The act of interpretation is both constrained and opened by the relations posed in the metaphor. It is constrained by the conventional uses of the terms juxtaposed which present similar and dissimilar attributes to integrate with other knowledge. It is open to the reading of different nuances or layers of meaning which present the interpreter with the opportunity to personalize the act of interpretation by drawing his or her own implications from the relations suggested.

Seen in this way, metaphorical meaning cannot reside entirely in the metaphor itself. The meaning suggested is only actualized by each interpreter and is not a matter of finding right answers but of "filling out" or "...giving body to the perspective" (Burke, 1941). As Ortony (1975) has pointed out, analogical reasoning alone, in the sense of finding a basis for resemblance, is not enough to explain this kind of interpretive activity, although it is certainly related

to it. In order to extend the study of metaphor interpretation we need to extend our means of describing the different ways that or extents to which individuals engage or participate in such acts. What is it that different readers are contributing to the interpretation? How is he or she selecting information, integrating it and drawing implications from the relations between the terms? New distinctions are needed within the domain of figurative interpretations which distinguish between qualitatively different ways of approaching or contributing to an interpretive act. For example, the reader who interprets "the black bars on the clock face are green oases" to mean "She felt like time was moving slowly and wanted it to go faster" is constructing a figurative interpretation. But the interpreter whose reading is, "Each minute is like an hour on the desert and she experiences time in this way as she waits for an escape. She is describing the feeling of helplessness that comes when there is nothing you can do but wait until the horror of the moment is over; you can only be saved by the passage of time." is extending the implications of the intended figurative meaning into her own experience and understanding. This is a difference in the form of interpretation which is related to the way that various aspects of contextual information and the interpreter's extra-linguistic knowledge is selected and integrated with the metaphor in the act of interpretation. It is a difference in the form in which the meaning suggested by the implicit comparison of the metaphor is actualized by the interpreter.

Third, all this implies that attention needs to be given to reconsidering the unit of analysis. The study of interpretive acts should

be extended to include description of ways in which narrative and situational context are defined, selected and integrated with the metaphor. The object of study should ideally include the characteristics of the textual, and situational variables in which metaphors are presented. Analysis should also include consideration of the way that the interpreter brings extralinguistic knowledge to the interpretive act and draws implications from his or her own experience.

Fourth, this evolving conception of interpretive acts has, so far, dealt largely with metaphor interpretation from the point of view of the mature language user. The implications for learning to engage in interpretations of metaphoric uses of language and for developments that enable such abilities to be learned is extensive. What does it mean for a child who has not yet acquired knowledge of conventional linguistic concepts or usages to encounter unconventional uses of these concepts? If one of the key functions of metaphor is to extend an existing concept, how does it function for children who approach a metaphor from different levels in the development of such concepts. If metaphor interpretation requires integration of the immediate text and of larger domains of world knowledge, how do young children who are still developing the ability to integrate information across a text approach the act of interpretation? These kinds of questions suggest an understanding of the development of metaphor interpretation in terms of how developmental differences in abilities involved in acts of interpretation determine qualitative differences in the intention of these acts and the way metaphors can function for individuals at different levels of development, including maturity.

These developmental issues clearly relate to other competencies discussed in recent research. For example, work on the development of abilities to make inferences (Paris, 1975; Paris & Upton, 1976; Paris, Lindauer & Cox, 1977), to interpret concepts in relation to a linguistic and situational context (Bransford & Franks, 1972; Bransford & McCarrell, 1974), to construct textual concepts (Werner & E. Kaplan, 1952), to make inferences from texts (Piaget, 1932; Stein & Glenn, 1979), to integrate different types of information (Vurpillot, 1976; Wilkening, Becker & Trabasso, 1980), and others are relevant to the research developed here. The specific relations between research on related topics and this study will be explored in more detail as part of the discussion of the results.

The conception of a developmental end state, as it has been considered here, is complex. It suggests that interpretation of metaphor entails many cognitive-language abilities, but is not equal to the sum of these abilities. It is the way that these different abilities are used in a given interpretation that will determine qualitatively different types of interpretations. These different ways of engaging in acts of interpretation do not necessarily correspond to abilities to infer figurative intent, although the same abilities are involved. These are qualitative differences which suggest different intentions towards this use of language. Differences which are related to:

- the extent to which analogical reasoning is used to develop basic similarities between the terms of the metaphor,
- the nature of semantic and world knowledge the interpreter brings to the act,

- the way in which the interpreter defines and selects the context for interpretation and integrates that information in relation to the metaphor,  
and others.

Mature speaker-listeners, regardless of their comparable capabilities for exercising these suggested component abilities, may construct qualitatively different types of interpretations at different times. That is, there may be variations within the ability to infer figurative intent as well as different ways of engaging in interpretation that may relate to the development of abilities which are employed in metaphor interpretation, i.e., across different age groups. But interpretation may also vary within a given developmental level as a function of individual differences or differences between metaphors.

In sum, this conception of metaphor interpretation includes:

a) abilities which need to be studied in relation to their developmental progression, and b) variations in the use of these abilities both within and between developmental levels as they relate to qualitative differences in types of interpretations. For example, the selection and integration of information from the text or situation in which the metaphor is embedded is an ability that develops (see Werner and E. Kaplan, 1952), but which may also be deployed to a greater or lesser extent by different adults presented with different metaphors in different circumstances. The result of these differences would be variation in the way that interpreters used the context to extend the implications of the figurative resemblance posed in the metaphor.

This conception of interpretation implies that development is not only a matter of getting consistently better at one or more cognitive

and language related abilities and thereby getting the "right answer" more often as one gets older and has more experience. This suggests that there are different kinds of right answers within the realm of figurative understanding. The interpreter may construct an interpretation that is a simple description of the specific figurative resemblances between the terms, or he may explore both similarities and dissimilarities between the terms, relate these to a larger context and construct an interpretation that goes beyond translation to a more conventional comparison. The question of how the development of abilities which contribute to competency in interpretation relate to the ways individuals at different developmental levels, including adults, engage in various forms of interpretation remains open as we proceed to describe and interpret the results of this research.

Finally, because it falls under the category of conceptual underpinnings some clarification is needed on what is intended here when the inevitable references are made to the unseen processes of mind. Interpretations, as referred to above and in the following discussion are not taken as direct reflection of underlying structure or as diagnostic of competence. Interpretations are viewed here as what Sperber (1975) has called "improvisational acts" which "serve meaning formation functions". The description of interpretations is description of the accessible aspects of the act of constructing meaning; of the way the object and context of interpretation are defined in the speaker's talk about the meaning; of the kinds of criteria that can be inferred from the way relations are described between different elements; of the apparent consideration of alternative interpretations.

### Summing Up

This section began with a description of the phenomena of metaphor and a conception of metaphor interpretation that has been extended into an approach to this topic. This approach is in the form of three kinds of assertions.

#### I. Assertions about the nature of metaphor.

A. The relation between metaphoric and other uses of language is a matter of degree rather than kind, and therefore, the potential for development of figurative interpretations offered by different metaphors to the interpreter is also a matter of degree.

B. The object of metaphor interpretation needs to include various dimensions of the context in which the metaphor is embedded.

#### II. Assertions about the nature of the interpreter and the act of interpretation.

A. The interpreter's engagement in the act of metaphor interpretation is an active, constructive process. This is the case for all language comprehension, but with more metaphoric uses of language the interpreter can rely less on the conventions of language use, therefore, their interpretation requires a greater contribution on the part of the interpreter.

B. The development and end state of metaphor interpretation needs to be described more extensively in order to characterize qualitative differences in interpretations that correspond to differences in the degree to which the

interpreter can and does utilize various abilities as he engages in an interpretation.

III. Assertions about the method and the intent of the rhetoric used.

- A. In order to develop research addressing Assertions I and II, new ways of describing interpretations must be found. These more extensive means of description should be used to compare interpretations constructed for different kinds of metaphors, in different conditions, by interpreters at different developmental levels.
- B. The claims being made in the use of terms which describe interpretive acts relate to the description of those acts. They are not meant as assertions about cognitive representations or structures.

This is the framework in which related theories and research are considered in the next sections. The ideas presented here will be clarified, and positioned in relation to the previous work in this area. The result will be specification of the distance between theory and research which the study described here was designed to begin to bridge.

Theories of Metaphor - Directions from the Armchair

The theories of metaphor that have been developed in philosophy, literary criticism, linguistics and psychology focus on similar issues while employing different rhetorics. At the risk of oversimplifying the complexity of the argument, the central issue in the approaches of different disciplines is -- the characterization of the mechanism(s) entailed in the production and comprehension of metaphor. Positions on other important issues like the status of metaphor in relation to

conventional or literal uses of language or the cognitive and linguistic prerequisites for understanding metaphor derive from the basic assumptions (stated or unstated) that authors make about the mechanisms of metaphor production and comprehension.

Traditionally arguments between theorists describing mechanisms of metaphor have involved a stand off between what different psychologists have described as association (Skinner, 1957; Osgood, 1953; Brown, 1958; Osborn and Ehninger, 1962) or feature matching (Sternberg, 1977; Tversky, 1977) versus a more dynamic, generative schematizing process (Kohler, 1929; Werner, 1952; Werner and Kaplan, 1963; Asch, 1955, 1958) or a constructivist conception of meaning formation (Verbrugge, 1977; Ortony, 1977). These views correspond to what different philosophers and literary critics have characterized as comparison (Aristotle, 1457; Barlow, Kerlin and Pollio, 1971; Campbell, 1975, and others) versus interaction (Black, 1962; Richards, 1936; Wheelwright, 1959; Haynes, 1975) respectively.

A third position has been presented by some philosophers of language which holds that the mechanism utilized in comprehension of metaphor is substitution. That is, metaphors work through translation into conventional terminology. This view corresponds to the transformational grammarians conception of metaphor as a rule violation of selection restrictions which requires interpretation by "direct analogy to well formed sentences" (Chomsky, 1965; Katz and Fodor, 1963). Perhaps because the emphasis here is on the linguistic more than the cognitive means, there is no parallel approach to this substitution view of metaphor articulated in psychology.

The implications of these three positions (comparison, interaction and substitution) for the relation between figurative and conventional language use, provide some insight into the limitations of each of these positions. The reasons for the direction taken in recent work on this topic will be apparent from the discussion that follows. The outcome of this discussion builds on the assertions about metaphor interpretation outlined above and leads to implications for research

The Figure presented on the next page provides a schematization of these three positions or views of figurative and conventional language as these views are referred to in the disciplines of Philosophy and Literary Criticism, Psychology and Linguistics. In addition the figure attempts to symbolize the relation between figurative and conventional uses of languages implied by each of the three positions, e.g., the interaction view implies that conventional and figurative language are on either end of one dimension which extends from a semantic to a poetic ideal. This figure is intended as an overview of the discussion of parallel theories of metaphor in these three disciplines which follows.

FIGURE I

PARALLEL THEORETICAL POSITIONS IN DIFFERENT DISCIPLINES

DISCIPLINES:

THREE BASIC APPROACHES:

PHILOSOPHY &  
LITERARY CRITICISM

COMPARISON  
VIEW

INTERACTION  
VIEW

SUBSTITUTION  
VIEW

PSYCHOLOGY

ASSOCIATION,  
FEATURE MATCHING

DYNAMIC SCHEMATIZATION,  
CONSTRUCTION

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LINGUISTICS

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SPECIAL BREAK BETWEEN  
SENTENCE AND UTTERANCE  
MEANING,  
FILLING IN OF EXTRA-  
LINGUISTIC INFORMATION

RULE VIOLATIONS  
AND ANALOGY WITH  
COMPERABLE LITERAL,  
CONVENTIONAL MEANINGS

IMPLICATIONS FOR  
RELATION BETWEEN  
FIGURATIVE AND  
CONVENTIONAL  
LANGUAGE USE:

FIGURATIVE AT  
THE EDGE OR BOUNDARY  
OF CONVENTIONAL  
LANGUAGE.

CONVENTIONAL AND FIGURA-  
TIVE AT EITHER POLE OF A  
SEMANTIC AND POETIC IDEAL,  
RESPECTIVELY.

FIGURATIVE AS  
SEPARATE AND  
TRANSLATABLE TO  
CONVENTIONAL LANGUAGE.

The comparison or associationist view of metaphor implies that metaphor is an unconventional intersection between existing concepts. The reader-listener's task is to find that set of qualities or attributes which constitute the basis for resemblance between the terms. This conception does not allow for the possibility that metaphors can juxtapose existing concepts in the language as a means of generating new ideas or new ways of viewing those existing concepts. The dimension of metaphor which involves extending the language is not accounted for by resemblances or lack of resemblances alone. In order to account for metaphor's capacity to extend the language the mechanism of metaphor must consider some means of drawing implications suggested by the resemblances presented; some means of constructing or reconstructing meaning on the basis of the play between similarities and differences between the terms.

The comparison view attempts to explain metaphoric meaning in the same terms as it accounts for the formulation of meaning in more conventional uses of language. In itself this seems like a reasonable approach. However, in addition to not setting metaphor apart from conventional language use, this approach has reduced the mechanism to a form which eliminates the means for any use of language to be flexible within or move beyond a referential function as it has been established by the existing language community.

The interaction position on metaphor focuses on the more dynamic aspect of the mechanism that the comparison view ignores. The reader-listener's task is seen as active and constructive to the point where that part of interpretation which involves establishing a basis

for resemblance is not fully acknowledged. This conception of the metaphoric mechanism implies that figurative uses of language are related to more conventional language use in so far as they extend these existing concepts beyond their "normal" use. Figurative language becomes the extreme end of a dimension in which the other extreme is clear cut referential meanings (names and addresses).

This interactive view does not suggest how this interactive process is accomplished and does not explain how interpretations of these more dynamic uses of language are related to the understanding of more conventional meanings. In some sense the focus on metaphor's uniqueness leads to a kind of mystification. The mechanism by which the phenomena is accomplished is made no more clear by labeling its dynamic quality and setting it apart than it is by reducing its function to simple comparison.

The substitution view assumes metaphors require translation to or replacement by conventional concepts. The function of metaphor in extending the language is overlooked. Metaphoric or figurative uses of language are viewed as different from conventional language but not in the sense of providing a unique function. They are different in the sense of being deviant and only interpretable when translated or substituted with "well formed cases". The original proponents of this view described metaphors as "decorative", and with no necessary function in the language (Black, 1962). Those proponents of the interaction position, who followed them historically, argued that along with having an important function, "true" metaphors were not entirely translatable. Therefore a mechanism which did more than find a conventional replacement was required.

The more recent writings by linguists have suggested that this substitution or translation occurs through analogy. However, this analogical process and its implications are not spelled out by proponents of this view who focus on the linguistic aspects of the process and do not consider that the effort entailed in making an actual or approximate substitution might, in itself involve amplification or extension of the concept that is the subject of the metaphor being translated to literal terms.

Contemporary writers in both philosophy (Black, 1977, 1979) and psychology (Ortony, Reynolds and Arter, 1977; Miller, 1979) have acknowledged the gaps left by these approaches when proposed in isolation and suggested that these positions need not be mutually exclusive. Comparison may be part of but not equal to interpretation; constructive or generative processes may be based on the formulation of resemblances. The polarization between these positions has been and continues to be less important as the focus of theory and research has been placed on consideration of the interpretation of meaning in larger units over time such as the context of events, texts and social interactions (Miller, 1977, 1979; Morgan, 1977, 1979; Searle, 1979 Ortony, 1977), as well as the specification of cognitive processes through more microanalytic research techniques like reaction time studies (Verbrugge, 1977; Glucksberg, Hartmann and Stack, 1977; Ortony, 1977).

Similarly, recent writings by linguists have recognized the limitations of a "metaphor as rule violation" conception of metaphor interpretation. These writers voice concern with altering the rules and the system of semantic theories in order to account for figurative

language (Thomas, 1969; Brickerton, 1975) and attempt to incorporate the speaker's world knowledge into the process of semantic analysis in the form of presuppositions (Fillmore, 1971; McCawley, 1968, 1970; Lakoff, 1972; Rommetveit, 1974). In short, recent linguistic writings on this subject, like contemporary psychological work are developing a view which attempts to account for how listeners contribute to the interpretation of sentences which represent "a particular kind of break between sentence meaning and utterance meaning" (Searle, 1979; Katz, 1977). This approach leaves open the possibility that known concepts may be juxtaposed in a metaphor to express meanings that are not yet articulated in conventional uses of language.

#### From Theory to Research - What Next?

These ideas concerning the nature of the reader's involvement in the act of interpretation and the dimensions of the contextual and extra-linguistic information integrated in the act of metaphor interpretation, present a challenge for psychological research on this topic. The issues involved are similar to those addressed in the assertions about metaphor interpretation outlined in the previous section.

#### 1. The uses of contextual information in interpretation.

How do reader-listeners use contextual information from the text and the situation as well as extra-linguistic information from their own experience to do some version of what Morgan (1979) has described as constructing "a picture of the world that is as close as relevantly and sensibly possible to the world that corresponds to the literal meaning of the (metaphoric) sentence?"

#### 2. The conception of the development of metaphor interpretation and its end state.

How does the learning and development of these abilities to integrate information in the interpretation of figurative uses of language contribute to our understanding of the development of metaphor interpretation in relation to other aspects of cognitive and language development?

3. The connections between variations in the activity of the interpreter and the characteristics of the interpretation.

What does emphasis on the constructive activity of the reader-listener in the interpretive act imply for variation in the kinds of activity that may become apparent within what has been conventionally described as understanding figurative intent? Variation which might take the form of differences in ways and degrees that information from a text or the individual's own experience is integrated in the interpretation.

There is almost no existing research on metaphor interpretation which focuses on these questions as they reflect the issues being explored in recent theoretical discussion and the approach outlined in the introduction. The exceptions are reaction time studies of metaphor comprehension which present: a) evidence supporting a characterization of the process as constructive of understanding metaphor (Verbrugge, 1977), b) evidence confirming the facilitating effect of access to a context on speed of understanding metaphor (Ortony et al, 1978), and, c) evidence suggesting that the process of understanding metaphoric and literal uses are comparable (Glucksberg, Hartman and Stack, 1978).

In many ways, developmental psychologists have made more extensive research efforts to explore the general domain of metaphoric understanding. While most of this research does not address the issues which have been developed here it is important to consider what we do know from existing research on the development of metaphor comprehension and that we clarify the assumptions that are made in this research. Before going on to present the specific research

questions that were addressed in this study, the existing developmental literature on which this study was built will be reviewed.

The Developmental Literature on  
Comprehension of Metaphoric Language

The research on children's comprehension and interpretation, as opposed to production, of verbal metaphor can be organized into three basic approaches:

1. Recognition of Metaphoric Relations

Studies of younger children's ability to establish basic metaphoric links between terms in tasks where they are asked to judge the appropriateness of a relation or to match pairs of terms rather than to actually paraphrase or interpret metaphors (Asche and Nerlove, 1960; Gardner, 1974).

2. Interpretation of Metaphors

Studies which characterize children's verbal interpretations of metaphors given in response to a request to paraphrase (Billow, 1975; Winner, Rosenstiel and Gardner, 1976; Malgady, 1977; Winner, 1977).

3. Component Abilities

Studies which evaluate the relation between abilities that are hypothesized to relate to metaphoric understanding and characteristic performance on interpretation tasks (Billow, 1975; Milchman and Nelson, 1977; Cometa and Eson, 1978; Gentner, 1977).

These studies will be reviewed here in order to specify the following characteristics of the research and their relation to the findings reported:

### Task Variables

- the conditions under which and the means by which the interpretations of metaphors were elicited (e.g., the questions posed to subjects, and the access to narrative or experimental context that supported understanding of figurative intent),
- the controls employed with respect to sources of variation between metaphors (i.e., syntactic structure, familiarity with or knowledge of the terms in the metaphor),

### Descriptive Variables

- the categories used to describe subjects' interpretations (e.g., "acceptable", "primitive", "concrete").

The reason for emphasizing these particular characteristics of the research reviewed is that many of the claims concerning developmental progressions in the ability to interpret metaphors are generalizations. These generalizations gloss assumptions concerning the relations between the developmental norms and variation in experimental factors (i.e., the task conditions in which the evidence has been obtained).

#### 1. The Research on Abilities to Recognize Metaphoric Relations Between Terms

The types of tasks used in studies which have investigated the development of the ability to establish basic metaphoric links between words have included both requesting subjects to make judgments or asking them to match appropriate pairings. They do not include investigations of subjects' ability to actually interpret metaphors. This is important in the com-

parison of results from these tasks and those reported in studies where metaphoric understanding refers to the ability to paraphrase or interpret metaphoric statements.

The subjects in both of the studies described ranged in age from three to twelve years. Asch and Nerlove (1960) investigated the early understanding of dual function terms by asking subjects about the properties of a series of dual function words (e.g., sweet, hard, cold, soft, bright, etc.) and then posing questions aimed at determining whether children understood how these terms could be applied to people as well as objects -- "Are people cold?" "How do you know they are cold?" -- etc. The findings from this study indicate that there was little awareness of the psychological meanings of these adjectives before age six. Seven- and eight-year-olds still had difficulty formulating connections but nine- and ten-year-olds were more aware of the psychological meaning of the terms and twelve-year-olds were best at specifying connections.

The fact that the very young children are asked to explain how they interpreted the applicability of this particular type of term to people out of context presents several limitations to the claims that can be made from these findings. Dual function terms are particularly ambiguous usages that have separate lexical entries for their different functions. That is, these pairings are not entirely representative of typical metaphoric comparisons. Further, asking how you know a person is cold or sweet in the abstract without a referent or context makes the task even more difficult and puts considerable demands on a par-

ticular use of interpretive skills (i.e., under what conditions would the assertion "He is cold" be true?). As will be reiterated in this review, this use of interpretation or inferencing without a specified context may well be unfamiliar to and more difficult for younger children.

Subjects in Gardner's (1974) study were asked which of several pairs of adjectives from several domains like color (blue/red) went best with a given pair of polar adjectives (cold/warm). While the expected result of a decrease in the number of errors with increasing age was obtained, even preschoolers averaged only 8.91 errors out of a possible 25. Gardner concludes that when metaphoric relations lie within the realm of children's experience they are able to understand. However, older subjects are at an advantage because of their knowledge of physical laws, cultural conventions, connotative word meanings and their ability to locate abstract connecting terms.

Information is needed about the state of subjects' pre-existing knowledge in order to determine how their performance relates to familiarity with the terms and the relation between them. It is apparent from this and the previous study described that the familiarity or lack of familiarity with certain pairings or with the kinds of relations between them interacts with this entity we are describing as an ability to make metaphoric links. But despite these limitations, this evidence does establish that within an as yet undefined range of types of terms and relations, preschool children are able to make judgments which indicate an understanding of metaphoric relations between sets of terms. The

problem is that these studies do not adequately differentiate experimental variables from basic abilities.

Taken together, these studies lead to several interesting questions/possibilities concerning the study of the development of metaphoric understanding. The understanding of metaphoric relations is not a unitary ability. The particular type of figurative usage under consideration, the familiarity and difficulty of the terms as well as the access to a narrative and situational context which supports the understanding of figurative intent all contribute to the ability to understand metaphor. As review of other studies will emphasize, these are factors which need to be controlled in research and specified in any statement about the development of metaphoric understanding.

2. The Research on the Development of the Ability to Interpret Metaphors

The results from studies which characterize children's verbal interpretations of metaphors are difficult to compare because of variations in the difficulty of the metaphors (task variable), and differences in the categories used to classify interpretations (descriptive variables). Billow (1975) asked children between the ages of five and thirteen for the meanings of a series of metaphoric sentences. The metaphors presented in this study were based on either similarity relations ("A butterfly is a flying rainbow" or "A tree is an old woman") or proportionality relations ("My head is an apple without any core" or "Hours are leaves of life"). Initially all metaphors were presented in succession without any form of context. The simpler similarity

metaphors were then presented a second time with a picture which was a pictorial representation of the sentence. Responses were given one point if they were correct (a term which is not defined more extensively by the authors).

The results indicate that older subjects are more likely to give correct responses on the more difficult items. Only 40% of the nine-year-olds and 80% of the thirteen-year-olds could explain proportional metaphors. In contrast, when the simpler similarity metaphors were presented with pictures, even five-year-olds could interpret metaphors correctly 30% of the time, seven-year-olds 75% of the time and eleven-year-olds gave almost all correct responses (evidence for the importance of supportive contextual information). In short, this study provides evidence for the position that older subjects do better on items which are more difficult and less familiar.

There are several factors which constrain interpretation of these findings. The task here involves making interpretations of sentences presented in succession without contexts in which they would make sense. There is no way to determine how subjects pre-existing knowledge of the terms in the metaphors influenced their interpretations and no description of what younger versus older subjects actually did in their interpretations of items. Finally, the particular metaphors presented are obscure in ways that challenged this adult speaker's ability to interpret (e.g., "My head is an apple without any core.") The relations which the author attempts to establish between formal operations and the ability to interpret these more difficult metaphors (which is

described in the next section of this review) need to be evaluated in relation to the extent of the difficulty of these items.

Winner, Rosensteel and Gardner (1976) investigated children's interpretations of metaphors presented in extended sentence contexts (e.g., "After many years of working in the jail, the prison guard had become a hard rock that could not be moved."). Subjects ranging in age from six to fourteen were asked to paraphrase a series of such metaphors. The interpretations of metaphors by subjects in these different age groups were described by the authors as follows: Age 6-7 "Magical" ("inventing a pretend world" or story to explain the juxtaposition of terms, e.g., "the guard turned into a rock"), Age 8-9 "Metonymic" (the terms in the metaphor are associated but the relation may be altered, e.g., "the guard worked in a prison with rock walls"), and Age 10-11 "Primitive" (recognition that a similarity between terms is implied but comprehension of the relation is partial, e.g., "the guard was tough"). In short, when comprehension entails interpretation or paraphrase, clear signs of metaphoric competence, as it is assessed here, appears only in pre-adolescent subjects.

By offering some qualitative description of subjects' interpretations, this study goes one step beyond the finding that children get better at metaphor interpretation as they get older. However, it is possible that the absence of a more extended supportive context could partially determine the strategies described, strategies that may have been used by children at dif-

ferent developmental levels in order to make sense of the task. For example, the "magical" explanations given by young children may indicate a strategy for dealing with eccentric or "silly" statements presented out of context; a strategy learned from exposure to the fantasy of stories they are read (Ortony, Reynolds and Arter, 1977). Finally, the items presented are not easy metaphors and there is no information available about pre-existing knowledge of the subjects to indicate the extent to which familiarity with the terms or the relations between them are influencing the characteristics of the responses obtained.

Malgady (1977) has investigated children's interpretations of similes in a study which points to the importance of specifying the difficulty and type of figurative usage in question when describing the development of interpretive abilities. Subjects ranging from five to twelve years of age were presented with similes written by children from a collection of children's poetry (e.g., "The thunder is like bowling", "The coat is like a shell") and asked to determine the meaning(s) of each sentence. These interpretations were scored for "acceptability".

The results of this study indicate that even five-year-olds were able to give a large percentage of interpretations of these simple figurative usages that were "acceptable by adult standards" (67% of five- and six-year-olds versus 72% of eleven- and twelve-year-olds gave acceptable interpretations). The differences between younger and older subjects interpretations is described briefly by the authors in terms of the number of relations

that older and younger subjects were able to establish between the terms of the similes.

The contrast between these findings and those reported in other studies of interpretation can be largely accounted for by the fact that the similes presented were easier figures to interpret. In a simile the comparison intended is made explicit by the use of the comparators "like" or "as". Whereas, in a metaphor the relation is posed as one of identity which entails implicit comparison.

Finally, the characterization of subjects' responses as "appropriate" is so rudimentary and undifferentiated that the kind of variation reported in other studies between more and less "primitive" or "symbolic" interpretations is not available from these results. What we know is that children as young as five are able to give some kind of figurative interpretation of simple similes; the dimensions of competence are extensive but remain too vaguely defined.

An investigation (Winner, 1977) which has attempted to specify one aspect of what is entailed in competence is a study designed to explore the role of pragmatic understanding by comparing the effect of the forms in which a given metaphoric relation is posed (e.g., simile, riddle, analogy or topicless metaphor). The items presented in this study were predicative metaphors in which the first term was equated with the second, e.g., "The skywriting was a scar marking the sky." Four forms of each such metaphor were constructed (a topicless metaphor, a simile, a riddle, and an analogy). The similarity or complexity

of relations of different metaphors was not specified. However, the comparison of interpretations of the same relations presented in different forms produced the finding that "the form in which a novel comparison is expressed affects the ease with which it will be comprehended". The riddles which presented the least "pragmatic demand" proved to be the easiest for children to explicate, topicless metaphors and analogies were in the middle range of difficulty and the most difficult were predicative metaphors and similes. A multiple choice version of the same task resulted in the same order of difficulty for the different forms.

These findings indicate that subjects may be able to understand the basis for a metaphoric relation between terms, but this is not necessarily sufficient to comprehension. The "additional pragmatic skills" that are needed to infer the intent of the phrase are defined here in terms of the form in which the comparison is expressed. The form is part of the context in which a metaphoric comparison is posed and the extent to which it is more supportive (via the information presented or familiarity of the form) to the understanding of intent should effect the pragmatic aspects of the task of interpretation. However, there may be other aspects of the way metaphoric relations are presented; other ways of thinking about the context in which metaphors are interpreted which also affect whether and how subjects understand relations posed between terms of a metaphor.

In sum, the results from studies on the development of interpretation of metaphors do not tell us enough about what it is that children get better at with age. None of these studies

includes measures of the pre-existing knowledge necessary to establish the resemblances posed in the metaphors or the familiarity with the lexical terms themselves. Variation in the difficulty and salience of different metaphors presented in these studies makes the sources of developmental differences as well as of variability in performance within age groups difficult to interpret. Further, there is a problem with characterization of interpretations with a range of descriptive terms. All such terms need to be modified in ways that will provide information about what is done differently in an "acceptable" or "symbolic" or "concrete" interpretation.

The fact that metaphors have never been presented in an extended supportive context has been mentioned repeatedly in this review. We do not know whether there are developmental differences in the ability to identify an assertion as figurative when no narrative is provided. Dependence on contextual information to differentiate metaphors from nonsense, particularly amongst younger subjects, may affect the types of interpretations we believe to be characteristic of particular age groups. Both presentation in a context and a simple request for a judgment of interpretability by subjects prior to interpretation (Do you understand what this person is trying to say?) would give some basis for evaluating responses. It has been my experience that adults can also create fanciful explanations for comparisons that are wierd or incongruous to them as opposed to meaningfully metaphoric in the context in which they are embedded.

Finally, possible age related differences in the abilities to understand the experimental task are not considered in these experiments. That is, do subjects understand what is meant by a request to paraphrase or to explain a statement (Nelson, 1978, Scribner, 1977)? The partial interpretations of relations between terms by younger children may indicate the need to develop the interpretation over several attempts at explication pursued by the experimenter's questions. This is not unlike the successive steps adults spontaneously undertake in interpreting what are for them more abstract and novel metaphors (e.g., try "Reality is an overcoat" or "Metaphor is an onion").

In short, the tasks as presented do not appear to maximize possible performance nor do they tease out the variables which would indicate what children are actually doing when they give the various types of response described in the literature. In addition, the literature discusses metaphoric competence as if we knew what it entailed in metaphor interpretation by the mature language user.

### 3. The Research on Metaphor Interpretation as it is Related to the Development of Component Abilities

The third group of developmental studies have posed the question -- what are the component skills or abilities required to interpret metaphors? The abilities investigated include: 1) early figurative symbol development with pantomime comprehension used as a measure; 2) the ability to make comparisons using evaluation of criteria for similarity used in matching concrete objects as a measure of its development (Milchman and Nelson,

1977); 3) early analogical abilities using the mapping of body parts or facial features onto pictures of objects as a measure (Gentner, 1977); 4) concrete and formal operational abilities as measured in intersectional classification tasks (Cometa and Eson, 1978) or quantification of inclusion tasks (Billow, 1975).

The results of these various studies indicate that, first, there are precursors of metaphoric competence evident in the responses of children of nursery school age, and, on the other hand, that mature interpretation of metaphor is, in some cases, correlated with concrete operational or formal operational-reasoning in studies which take these abilities to be logical prerequisites to interpretive abilities. Many of the more detailed methodological criticisms made in relation to studies reviewed in the last section also apply here. But the important point that applies to all of the studies in this category is that assessing metaphor interpretation on one task and then testing for abilities like operational reasoning on another task does not tell us how such abilities function or are used in the interpretation of metaphors.

This is particularly important when: a) the correlations reported in some studies are not consistently supportive of the relations between certain forms of analogical reasoning and competence in metaphor interpretation (Billow, 1975), b) the degree of variation across studies and sets of stimulus items in the age at which subjects are reported to be competent in metaphor interpretation is so great that the correlational relations which are found must be qualified in terms of the kinds of metaphors

that were interpreted and the conditions in which they were presented, and c) there is enough variation within the interpretations of all subjects that one must ask -- "Why doesn't the presence of precursors of interpretive abilities account for instances in which younger children are able to interpret some metaphors and not others?" or, "Why don't the older subjects classified as formal operational always make a mature or symbolic metaphor interpretation?" There is no question that we need to know more about what is meant by competence in metaphoric understanding and interpretation. However, the abilities which are entailed in this competence need to be investigated in terms of the ways they are brought to bear in an act of interpreting a metaphor.

#### Summing Up

The results of research on the development of metaphor interpretation indicate that:

1. Younger children are able to understand and provide some form of metaphoric interpretation when the terms in the metaphor and the basis for relating those terms is, for them, relatively familiar and salient.
2. Older children become progressively better at making interpretations of more difficult metaphoric relations, but there is, at all ages, variation in the types of interpretations people construct.
3. The ability to comprehend metaphoric relation is not only a function of children's knowledge of terms and their ability to understand more complex or abstract relations between these

terms. Understanding is also influenced by presentation in a context or form that suggests the intent of the phrase to the interpreter, or that makes clear what the interpreter is being asked to do. Both cognitive and pragmatic skills (many of which remain unexplored) are part of what is entailed in competence.

4. In order to understand what is being measured in developmental research on metaphor interpretation we need studies that:
  - a) establish a task that is as conducive as possible to metaphor interpretation, b) control for several key sources of variation that seem to influence interpretive competence (i.e., subjects' pre-existing knowledge, variation in the metaphors themselves), c) explore the effect of access to a context on characteristics of subject's interpretations at different developmental levels, d) describe, to the extent possible from the interpretations themselves, the ways information in different texts are selected and integrated with the metaphor, e) differentiate approaches to interpretation or variation within the realm of figurative interpretation and relate them to a more adequate conception of interpretation in the mature language user, f) determine developmental patterns in metaphor interpretation for:
    - the effects and utilization of a supportive text in interpretation,
    - the effect of sources of variation between metaphors in terms of their relative context dependence,
    - the relation between the ability to differentiate metaphor from text and integrate textual concepts with

metaphor on the forms of interpretation that have been observed.

Relating Developmental Research to Theory -- What is Needed?

The discussion of the phenomena of metaphor and the theoretical literature on this topic focused on certain implications for metaphor interpretation which have not yet been addressed in this or any other research literature. The summary of recent theoretical work placed emphasis on issues that point to areas for future research as they are described above. Consider the reflection of the above in this brief summary of theoretical issues discussed previously.

1. The metaphor alone is only part of the object of interpretation. In order to understand metaphor we need to look at the integration of larger units and sources of contextual and experiential information as well as the means by which subjects draw implications from the metaphoric relations for the larger context.
2. The reader-listener is seen as engaged in a constructive act. We need to know more about what is done in that act. How is text utilized? How are perceived resemblances extended into more or less expansive implications?
3. Because metaphorical meaning always resides at least in part, in what the interpreter does with the resemblance posed, figurative interpretations can take different forms depending on the characteristics of the interpreters engagement in the act of interpretation. To date very few investigators have pursued the description of variation in form and how it relates to differences in the ways that individuals engage in acts of interpretation.

The goals of this current study have been developed from the interface between these directions from theory and the gaps described in the review of recent research on this topic. The rationale for particular aspects of the design as they relate to these issues is described in the overview of the research method.

## METHOD

### Overview

Two experimental tasks were designed to describe and compare subjects' interpretations of: 1) metaphoric phrases presented in a narrative context which supported and specified the metaphor's figurative interpretation, and, 2) the same metaphoric phrases presented in isolation without their respective narrative context. The two tasks were presented to separate groups of subjects in four age groups. The purpose of the comparison between the two experimental tasks based on description of the characteristics of subjects' interpretations (outcome variables) was:

1. to determine the different effects of access to and absence of a supportive narrative context on the ability of subjects in different age groups to infer figurative intent of metaphoric phrases and construct figurative interpretations;
2. to describe qualitative differences in subjects' ability to focus on the metaphor as the object of interpretation;
3. to describe subjects' use and integration of the context with the metaphor, in so far as this can be described by characteristics of subjects' acts of interpretation in different age groups on the first experimental task;
4. to determine characteristic forms of interpretation and approaches to the task of interpretation (in addition to the inference of figurative intent) and relate these additional

characterizations to both age differences and the different conditions of presentation in the two experimental tasks.

In addition to the two experimental tasks, a control task was administered to all subjects in the two younger age groups. The purpose of this task was to assure that subjects knew all the attributes of the terms in the metaphoric phrases that were relevant to the figurative interpretation of the relation between the terms.

The metaphoric phrases that were interpreted by subjects in these experiments were of two types:

1. evident metaphors for which metaphoric intent is apparent without the support of a particular context but which might be interpreted in different ways depending on the particular context in which they appeared (e.g., "My hair is spaghetti" could mean my hair is straight and stringy or my hair is all tangled and greasy);
2. context defined metaphors for which metaphoric intent is almost entirely dependent on the context in which they appear and which have conventional, literal interpretations in most contexts of use (e.g., "My mother is a policewoman" could simply refer to my mother's job or it could be a metaphoric reference to her authoritarian behavior).

The reason for presenting metaphors that were either evident but ambiguous or defined as metaphoric assertions by the context in which they were used was: 1) in the first experimental task (where a story context was presented), to maximize the possibility of determining whether subjects were, in fact, integrating the information in the context provided with the metaphor by presenting both metaphors which

posed metaphoric relations supported by but not dependent on use of the text (first type) and metaphors which required use of the context to infer figurative intent (second type) , and 2) in the second experimental task (where no story context was provided), to present sufficiently ambiguous evident metaphors (first type) so that subjects' interpretation could be described in terms of both the ability to interpret the figurative intent and the strategies used to disambiguate relations presented by metaphors without access to a supportive context. In addition, presentation of context defined metaphors (second type) out of a context made it possible to determine whether some subjects would consider the option of a metaphoric interpretation for context defined metaphors; whether some subjects would pick up task cues from the interspersed presentation of evident metaphors with these context defined metaphors.

#### In Sum

The experimental variables in this research were:

- access to or lack of access to a narrative context which supported a particular figurative interpretation,
- presentation of two types of metaphoric phrases.

The outcome or response variables were a series of descriptive codes applied to each interpretation. These outcome variables are described later in more detail, but for purposes of introduction they were designed to answer the following questions:

- Did the interpretation describe a figurative or non-figurative relationship between the terms in the metaphor?
- To what extent did the interpretation describe a specific or global figurative relation?

- What was the subject's initial or continued assertion about the interpretability of the metaphor?
- Were there alternations between figurative and non figurative forms of interpretation in the course of the subject's interpretation?
- What was the incidence of subject's referring to information from the story context (when provided)?
- What was the incidence of subjects altering information from the story context (when provided)?
- Were there strategies for interpretation related to the use of context that were evident in the responses of particular subject groups (e.g., constructing a context for interpretation when one was not provided)?
- What were the characteristic comments about the task itself or this particular use of language in different subject groups?

The outcome variables were designed to address these questions by specifying particular characteristics of responses (the code items) which could be compared for the frequency of their occurrence and the relations between them as they varied within and between age groups, conditions of presentation and types of metaphors.

The following section includes a detailed description of the subjects, the materials and the procedures employed in each of the two experimental tasks as well as the control task. This is followed by a description of the coding scheme used to describe each interpretation, and the procedures used for coding.

First Experimental Task Condition: Metaphors in Context

Subjects. The subjects were sixteen adults and forty-eight children, sixteen kindergarten ( $\bar{X}$  age = 5.4), sixteen second graders ( $\bar{X}$  age = 7.5), and sixteen fifth graders ( $\bar{X}$  age = 10.4). The children were from several small private schools and kindergartens in Manhattan and Brooklyn. The adults represented a range of middle class professionals and house persons (all people who could easily have been the parents of the children interviewed) who volunteered to participate in the study.

Materials. The stimuli used in the story context task condition were nine brief stories written by grade school children. They were found in collections of childrens' writings produced in projects directed by the Teachers and Writers Collaborative in New York City Public Schools. A single metaphoric phrase is in the middle of each of the stories. The stories are all between 65 and 93 words long. Each of the story contexts suggested a figurative interpretation of its respective metaphor. The metaphors were nine syntactically comparable comparisons stated as identities ("X is a Y"). The terms in these metaphors were all common nouns. Five of the metaphors embedded in these stories were evident metaphors; clear cases of metaphoric comparisons between seldom associated nouns (e.g., "Darkness is a blanket"). One of the stories with an evident metaphor was the practice trial story and four were used on experimental trials. Four of the metaphors embedded in these stories were context defined; statements that are likely to be interpreted literally, but can be interpreted metaphorically in the context of certain texts or conver-

sations (e.g., "My mother is a policewoman"). The nine stories used with their respective metaphors are available in Appendix 1.

Procedure. Subjects were introduced to the task by being told that they would be shown and read some short stories written by children. The task was described as deciding about whether a certain sentence in each of the stories made sense to them and what they thought the children who wrote the story and that particular sentence were trying to say.

The first story read was always the same. It contained the first evident metaphors and was used as a practice trial. The procedure followed on this practice trial was the same as the procedure used for the eight experimental trials. First, the subject was shown the story typed out on a sheet of paper. The experimenter read the story slowly and out loud. The paper was placed so that the child could follow as the experimenter read. It was found that the youngest subjects, five-year-olds, were somewhat handicapped by the fact that they could not read and consequently were obtaining only auditory input. In order to compensate for this difference between subject groups the stories were read twice to the five-year-olds. When the experimenter finished the story she returned to the target statement, asked the child to repeat the sentence out loud, and to tell the experimenter whether he/she thought that he/she understood what the child who wrote it was trying to say.

The purpose of eliciting judgments of comprehension or interpretability of the different metaphors was to determine: 1) whether children were attempting to explicate statements that they did not consider to be interpretable, and 2) whether there were developmental

differences in judgments of interpretability in the two task conditions.

After the subject had made the judgment about the statement, the experimenter asked the subject to interpret the statement (see questions below) or to indicate why he/she did not understand it. The series of questions to be asked (always in the same order) were as follows:

"Do you understand what this child wrote here in this sentence?"

"Why does/doesn't make sense?"

"Anything else?"

"If another boy/girl said 'An X can't be a Y,' or 'It does/doesn't make sense,' why might he/she say that?"

When the child had finished interpreting that statement the experimenter acknowledged the subject's explanation and continued reading the next story.

Pursuit questioning was used to allow for the interpretations of these inherently ambiguous statements to be developed over successive attempts; to enable the subject to reflect on what he/she said initially and to elaborate or revise. The questions posed were relatively open ended so that the same set of questions could be used appropriately regardless of the response the subject gave. The experimenter had a script for the set of questions. All sessions were tape recorded and then transcribed.

The eight stories were presented in four different orders of presentation. Context defined and evident metaphors were alternated in each of these four orders. These orders were derived from a par-

tially rotated latin square. Four of the subjects in a given age group were administered the stories in the same order so that comparisons could be made to determine possible order effects.

Second Experimental Task Condition: Metaphors Without Context

Subjects. The subjects were sixteen adults and forty-eight children, sixteen kindergarteners ( $\bar{X}$  age = 5.5), sixteen second graders ( $\bar{X}$  age = 7.3), and sixteen fifth graders ( $\bar{X}$  age = 10.7). These children and adults came from the same populations as those described in the first task condition.

Materials. The materials used in the no story context condition were the same nine metaphors; five evident and four context defined. The metaphors were typed on single 3 x 5 cards without their respective story contexts.

Procedure. Subjects were introduced to the task by being told that they would be shown and read some sentences taken from stories written by children. The task was described as deciding about whether the sentences made sense to them and what they thought the children who wrote them were trying to say.

The first sentence read was always the same, a practice trial. The metaphor used on the practice trial ("My feet were wings") was the same evident metaphor used as a practice trial in the first task condition. The questioning procedure followed on this practice trial was the same as the procedure used for the eight experimental trials. First, the subject was shown the card with the statement typed on it. The experimenter read the statement out loud and placed the card so that the subject could read it. The subject was then asked to repeat the statement and to tell the experimenter whether he or she thought

that they understood what the child who wrote it was trying to say.

After the subject had made the judgement about the interpretability of the metaphor, the experimenter asked the subject to interpret the statement (see questions used in first task condition). The procedure continued from here in the same way as it was conducted in the first task condition. The same four orders of presentation were also used.

In sum, the stimuli and procedures in both task conditions were designed to: control for sources of variation between metaphors presented (they all have similar surface structure and are all based on simple similarity relations), increase the probability that the knowledge necessary for understanding the metaphors would be available to subjects in all three groups, and encourage maximal understanding of the task as well as performance on the interpretations themselves.

#### Control Task - Posttest for Validation of Stimulus Terms

A posttest was administered in a second session to the sixty-four subjects in the two younger age groups who had taken part in the first or the second experimental task. This was done to establish that subjects in even the youngest age groups had the necessary world and semantic knowledge required about each term in the nine metaphors in order to make the comparisons between the terms in the metaphors presented in the interpretation task.

Each subject was presented with the eighteen nouns that were the terms (subject and predicate) of the nine metaphors. Next to each noun, printed on a 3 x 5 card was a list of six attributes or properties. Four of these properties were attributes of the meaning of the given noun and two were not attributes of that noun. The attri-

butes of a given noun that were necessary to the interpretation of the comparison in which that noun appeared in the experiment were among the four valid attributes in the list. Subjects were requested to point out which of the six attributes were true statements about or attributes of the meaning of that noun.

EXAMPLE:

- Spaghetti
1. is eaten with a fork (T)
  2. is often eaten for breakfast (F)
  3. gets tangled up in a pile on the plate (T<sup>\*</sup>)
  4. is fun to eat (T)
  5. can only be found in the dog dish (F)
  6. is often messy and greasy (T<sup>\*</sup>)

(\* Properties are those relevant to the interpretation of "My hair is spaghetti".)

This test for the relevant knowledge of the terms in the metaphors was done in order to assure that variation in the characteristics of a subject's interpretations between metaphors and age groups was a function of establishing the relation between the terms, not of an absence of knowledge that would allow for the construction of such a relation.

Only two of the subjects tested in this control task had more than one error on all eighteen nouns. The responses of these subjects were discarded and two additional subjects were found who were able to do this true/false attribute matching task successfully for all times.

In sum, the interpretations described in the analyses that follow were all constructed by subjects who had the ability to recognize the

attributes of the terms in the metaphors that are relevant to a figurative interpretation of these metaphors. It was therefore established that variation in the characteristics of responses was not due (in this study) to a lack of the relevant world or semantic knowledge of the terms in the metaphors.

#### The Coding of Interpretations

After the tapes of the sessions had been transcribed each interpretation was described with nine code items. This coding was done by three trained coders; one who coded all the transcripts, and two who each coded half of the transcripts in each age group. In the few cases where coders either disagreed or were unsure of the applicability of a particular code item to an interpretation (3% of the applications of the nine code items made on eight metaphor interpretations by 128 subjects) consensus was reached through discussion by the two coders who were describing that particular interpretation.

All code categories were dichotomous ('yes' this characteristic was present or 'no' it was not present in this interpretation). There was also a means of indicating that the subject had simply not answered. This happened very rarely. Finally, two of the nine code categories described below were only relevant to interpretations of the metaphors presented in the story context condition (Reference to text and Alterations of text).

The initial description of an interpretation was a determination of whether it was figurative or non-figurative. In the cases where the subject began interpreting non-figuratively and ended with a figurative interpretation or vice versa it was the concluding interpretation that was coded. This kind of alternating was not frequent.

It was described in a separate code category (see below) to indicate the number of figurative or non-figurative interpretations which had begun with one interpretation of intent and changed in the course of the interpretation.

### The Code Items

The code items applied to each interpretation are listed below. The starred items were mutually exclusive; they are dichotomous sub-categories of either figurative or non-figurative interpretations.

1. Judged Interpretable or Non-Interpretable
2. Figurative or 3. Non-figurative
- 4A.\* Specified or 5A.\* No relation possible or  
 B. Global Figurative B. Literal Non-Figurative
6. Alternating or Not Alternating  
 (between Figurative and Non-Figurative interpretations)
7. Constructing a context for interpretation or Not
8. Reference to information from the story context (applied only to story context condition interpretations) or Not
9. Alteration of the story context (applied only to story context condition interpretations) or Not

1. Judgement of Interpretability. Judgments of interpretability were equivalent to the subject's answer to the question posed at the outset of each interpretation, "Do you understand what he/she was trying to say here?". If a subject answered yes, they understood what the person who wrote the metaphor was trying to say, the interpretation was coded as one in which the metaphor was judged interpretable, and if the subject said no or that they were unsure, the interpretation was coded as one in which the metaphor was judged to be interpretable. In short, unlike other code items, this one is a recording rather than a description of how the subject responded to a particular question about the metaphor.
  
2. Figurative. Figurative interpretations were those in which the subject showed recognition that the relation between the terms in the metaphor expressed one thing (the figurative meaning) through a comparison between terms that would normally denote another (the literal or conventional meaning). Figurative interpretations included indications that a seldom used resemblance or relation had been constructed between the terms and used to predicate the subject of the metaphor.

Examples of figurative interpretations:

'My feet were wings'	"He's going fast"
'She's a squirrel'	"She stores things like a squirrel does."
'My mother is a police woman.'	"She is strict and orders you around."

3. Non-Figurative. Non-figurative interpretations were those in which the intent of the terms in the metaphor was inferred by the subject to be the primary, usual or conventional usage. These interpretations included: definitions or actual statements of identity between the terms (e.g., "His feet were really wings with feathers" for 'My feet were wings'), or interpretations which asserted a concrete relation between the terms based on the assumption that the terms were intended in their usual or primary sense (e.g., "She had spaghetti on her head" for 'My hair was spaghetti'), or an interpretation in which a situation was described in order to illustrate a literal reading (e.g., "She was thinking and walking and she tripped because she was thinking too much" for 'My thoughts were tripping over each other'), or finally, assertions by subjects that no relation between these terms was possible because an X could never be a Y (e.g., "Sadness can't be a curtain, sadness is how you feel and a curtain is a thing that hangs in the window" for 'Sadness is a curtain'). Additional Examples of non-figurative interpretations:

'My feet were wings.'	"He grew wings on his feet so he can fly like a bird."
'She's a squirrel.'	"It's a girl squirrel."
'My mother is a police woman.'	"It's her job."

- 4a. Specified Figurative. Specified figurative interpretations were coded as a way of describing a sub-type of figurative interpretations. They were characterized by the citing of particular relations between the terms of the metaphor, i.e., explicating the dimensions of resemblance and their implications for figurative relations constructed.
- 4b. Global Figurative. Global or non-specific figurative interpretations were those in which the subject seemed to have inferred the general figurative intent but did not specify the particular relations between the terms. These implicitly figurative interpretations often took the form of explanations of the implications of the metaphor for the subject or for the context (either provided or imagined). Global figurative interpretations suggested a different way of dealing with the request to interpret; different criteria for what interpretation entails.

Examples of specified and global figurative interpretations follow, additional examples are available in the qualitative results for five-year-olds.

'My feet were wings'

"He's running so that he feels as if he had wings and were flying."  
(specified figurative)

"He's running."  
(global figurative)

'Sadness is a curtain.'

"She feels so sad that it's like her sadness is a curtain that keeps her from talking to people or seeing anything but herself and how she feels."  
(specified figurative)

"She's sad and doesn't want to see people."  
(global figurative)

- 5a. No Relation Possible. An assertion that no relation was possible between the terms was coded as a way of differentiating this type of non-figurative interpretation from cases in which subjects actually constructed relations between the terms based on literal or conventional readings of the terms (see description under non-figurative above). If subjects, in addition to an initial judgment that a metaphor was not interpretable, asserted that no relation was possible between these terms because an X could never be a Y, then the interpretation was coded with this subcategory of non-figurative interpretation.

Examples of no relation possible interpretations:

'Sadness is a curtain.'	"It's impossible. Sadness is when you cry and feel terrible and a curtain hangs on a window."
'Darkness is a blanket.'	"No way. Darkness comes at night and you get under your blanket when you sleep. Darkness is not a blanket, it can't keep you warm."

- 5b. Literal. Literal interpretations were those in which subjects actually constructed non-figurative relations based on conventional or usual uses of the terms in the metaphor. (See 3. Non-figurative for specification and examples.)
6. Alternating. Alternating between a figurative and a non-figurative interpretation before concluding a given interpretation was coded as a means of determining whether a subject immediately arrived at one understanding of the intent of the metaphor or

vascilated in the process of constructing the interpretative between inferring a figurative or non-figurative intent.

Example of alternating in the course of interpretation:

'Sadness is a curtain.'	"Her eyelids are a curtain." When her eyes are sad they are like a curtain. I would say that when you close the curtains on a window and the child says to his Mommy, 'Mommy I'm hot,' and she keeps them closed, then she's sad.
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7. Constructing a Context for Interpretation. Constructing a context for interpretation described a strategy of interpretation which involved constructing a context in which the metaphor could be interpreted: a possible context if the metaphor was presented in the isolated condition, and an alternative context if it was presented in the story context condition.

Examples of constructing a context for interpretation:

'My mother is a policewoman.'	"Maybe she doesn't have a mother and she goes to the police station sometimes when she needs help."  "She is joking. Her mother isn't really a policewoman but she maybe dresses up like one and the little girl thinks it's silly."
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8. Reference to Information From the Story Context. Reference to information in the text was a code item that could, by definition, only be applied to the first experimental task where a story context was provided. This code item was used as one indication of whether and how subjects were using the text provided

in construction of their interpretations. It was applied to interpretations in which the subject explicitly referred to facts from the text in the course of explaining or specifying the interpretation without altering the general sense of the text.

Examples of reference to information from the story context are:

'My hair is spaghetti.'	"She says that when she was younger her hair was tangled and then she says it got longer..."
'My mother is a policewoman.'	"The girl's mother is always telling her what to do like hang up the laundry..."

9. Alteration of the Story Context. Alteration of the context provided was only coded in the interpretations from subjects in the first experimental task where there was a context provided to be redefined. This code category described those interpretations in which the subject excerpted some part of the information in the narrative and used it in order to support an interpretation that was not entirely congruent with the sense of the text or actually redefined the relations between elements in the story in order to support the interpretation he or she constructed.

Examples of alterations of the story context are:

'Darkness is a blanket.'	"It's like a gini's blanket all over the city. It is all over the town and dark but when day comes maybe the gini lifts it up a little bit."
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'Thoughts are tripping over  
each other.'

"He doesn't know which place to  
go and he thinks something's  
there. Because when I can't  
sleep it's because I'm scared.  
He wants to go to lots of places  
but he can only go to one.  
Usually dreams don't trip but  
sometimes in your dreams they  
do. Sometimes a dream comes out  
that you would love to do and  
another dream gets passed that  
one and they trip. Maybe that's  
what he's talking about.

## RESULTS

### Data Analysis

#### An Overview of the Quantitative and Qualitative Analyses

The analysis of the results is composed of two complimentary components which provide: 1. the quantitative analysis in the form of a statistical comparison between the figurative and non-figurative characteristics of the interpretations constructed by subjects in different age groups assigned to either the isolated or story context task condition, and 2. the qualitative analysis which provides extensive description of the characteristics of subjects' interpretations in different age groups (in terms of the frequencies with which code items were found to apply to interpretations). This analysis offers a description of what subjects in different age groups were doing (e.g., specifying relations, referencing the text) as they constructed figurative and non-figurative interpretations with and without access to a story context.

The quantitative analysis presents statistical evidence which indicates whether access to a story context which supports a figurative interpretation makes a significant difference in the frequency with which subjects in four age groups were able to infer (either globally or explicitly) the figurative intent of the two types of metaphors. These results take the form of a report on two runs of a repeated measures analysis of variance with the frequency of figurative interpretations defined as the dependent variable and with the age group of subjects and the task condition defined as independent variables. The analysis was done first controlling for order of presentation. In

addition, the type of metaphor as well as the particular metaphors within type were controlled in the second run of the analysis.

The qualitative analysis presents descriptions and discussion of the frequencies with which the individual descriptive items of the code occurred for interpretations constructed by subjects in different age groups, task conditions and for different types of metaphors. These results are reported by presenting the frequencies for individual code items independently, and in relation to each other.

These qualitative results are highly related to the analysis of figurative and non-figurative interpretations presented in the quantitative results. The frequencies for the qualitative outcome variables are reported and discussed in responses to a series of questions about the ways subjects' figurative and non-figurative interpretations could be described in terms of qualities specified in these outcome variables. This more extensive description of interpretations leads to the formulation of forms of interpretation that vary across figurative or non-figurative designations and are related to the subjects' developmental level.

The reason that the results in the qualitative section of the analysis have not been statistically compared is that certain code items were applicable to all interpretations made by subjects (i.e., figurative versus non-figurative) and certain code items which described the particular strategies or approaches to interpretation that co-varied with the figurativity of interpretations were applicable to only some of the interpretations (i.e., reference to information in the text or considering alternative figurative interpretations). Consequently, while there was a constant base and a sufficient number of responses

coded as figurative or non-figurative to make a statistical analysis appropriate for this basic distinction between characteristics of all interpretations, there was neither the constant base or a sufficient number of responses that could be described by other code items for a statistical analysis.

The frequency of occurrence of the code items other than figurative and non-figurative must be considered as a proportion of the total responses in a given age group and condition. A proportion which can be broken down in terms of co-occurrence with other characteristics of interpretations in a given age group and task condition (e.g., references to the text that co-occur with figurative and non-figurative interpretations).

The two analyses are intended as compliments to each other. The first is the basis on which an assertion of the statistically significant effect of the access to a context can be made as it relates to age of subjects and the type of metaphor subjects are asked to interpret. The second component is a description of indications in the subjects' acts of interpretation that suggest what these significant task and subject variables reflect; how the different subjects were defining the act of interpretation and using the information available to arrive at figurative or non-figurative interpretations.

### Quantitative Analysis

#### Results

The frequency and mean number of figurative and non-figurative interpretations constructed by subjects presented with either the first or second task conditions in each of the four age groups is shown in Table 1. A repeated measures analysis of variance was per-

formed on the subject means in order to test for significant differences in the number of figurative interpretations (dependent variable) related to age of subjects, task condition and order of presentation (independent variables). Age of subjects, task condition, type of metaphor, and metaphors within type were the independent variables for the second run of the analysis.

Significant main effects were found for age (3 df  $F=31.52$   $P<.001$ ) and task condition (1 df  $F=55.14$   $P<.0001$ ). Order of presentation was not found to be significant (3 df  $F=0.61$   $P<.6160$ ). Significant main effects were found for type of metaphor (1 df  $F=70.88$   $P<.0001$ ) and for individual metaphors within type (6 df  $F=15.47$   $P<.0001$ ). The interaction effects found are as follows: age x task condition x type (3 df  $F=3.93$   $P<.0001$ ), age x metaphor (within type) (18 df  $F=2.74$   $P<.0002$ ), and task condition x type (1 df  $F=30.30$   $P<.0001$ ). (See Table 2 for the complete analysis of variance table with these results.)

The description of each of these main effects and their related interaction effects. Main effects must be considered in the context of interaction effects because the psychological significance of these findings is apparent in the interrelations between variables.

#### Main Effects for Task Condition, Type of Metaphor and Age Group

##### Condition

The main effect for task condition indicates that the frequency of figurative interpretations was significantly greater among the responses from subjects who had access to a story context that supported and specified the figurative intent of the metaphor.

### Type of Metaphor

The main effect for type of metaphor indicates that the frequency of figurative interpretations was significantly greater for evident as opposed to context defined metaphors. This significant effect for type of metaphor interpretations is both expected and a result which was found to be of particular significance in its interactions with other variables.

The significant difference between frequencies of figurative interpretations constructed for the evident as opposed to context defined metaphors, is expected because it indicates that subjects were more likely to give conventional, non-figurative interpretations unless context suggests a less conventional intent. The particular significance of type of metaphor in relations between task condition at different age levels are indicated by the interaction effects described below (See first and second order interactions).

### Age

The main effect for age of subjects indicates that as children get older they were more likely to construct figurative interpretations. As with other main effects, the psychological-developmental significance of age differences is found when age effects are seen in the context of interaction effects with other variables.

### First and Second Order Interaction Effects for Task Condition, Type of Metaphor and Age

#### Task Condition and Type of Metaphor

The interaction effect found for task condition and type of metaphor indicates that the differences in the frequency of figurative interpretations were related to the type of metaphor interpreted in

the two task conditions. Scheffe tests done to determine the focus of this interaction indicate that, without taking the age of subjects into account, the only significant difference was between evident metaphors interpreted in the story context condition, and context defined metaphors interpreted in the isolated condition. Other pairwise comparisons were not significant. However, the results of these type and condition sub-comparisons are deceptive. They mask the important second order interactions of these variables with age of subjects.

#### Age and Task Condition and Type

The interaction effect found for age of subjects, task condition and type of metaphor indicates that the differences in the frequency of figurative interpretations for the two types of metaphors in the two task conditions were related to the age of subjects. The nature of these relations is represented in the bar graph of results below.

It is apparent from this graph that all subjects were significantly more likely to construct figurative interpretations when they had access to a story context than when they did not. However, the differences between the frequency with which younger subjects constructed figurative interpretations for the two types of metaphors in the two conditions was greater than it was for the older subjects. That is, younger subjects were more affected by access to a story context and by type of metaphor than were older subjects.

Scheffe tests were done between pairs of the sixteen cell means entailed in this interaction between age groups, task condition and type of metaphors. The results of these comparisons is presented in the figure below with + between age groups indicating a significant difference between those particular cell means.

Table 1  
Significant Comparison Between Cell Means  
For Types of Metaphors Interpreted in  
Two Task Conditions by Four Age Groups

	Fives	Sevens	Tens	Adults
<b>Story Context Condition</b>				
Evident Metaphors	-	+	-	
Context Defined Metaphors	+	+	-	
<b>Isolated Condition</b>				
Evident Metaphors	+	-	-	
Context Defined Metaphors	-	+	-	

This pattern of significant comparison, along with the visual presentation of trends in the graph of results indicate that the differences between age groups are between the three groups of children and not between the ten-year-olds and adults.

It also points to specific, developmental trends for each type of metaphor in each task condition. Continuities and discontinuities in these trends suggest the following profiles for each of the younger age groups in terms of their relative ability in either condition to construct figurative interpretations for evident metaphors and figurative or literal interpretation for context defined metaphors.

Five-year-olds were nearly as likely as seven-year-olds (not significantly different) to:

- construct figurative interpretations for evident metaphors presented in a story context,
- construct viable, literal interpretations of context defined metaphors presented in isolation.

Five-year-olds were unlike (significantly different than) seven-year-olds in their:

- construction of non-figurative, literal interpretations of context defined metaphors in story contexts which suggested their figurative intent, and
- construction of non-figurative interpretations of evident metaphors presented in isolation.

In sum, five-year-olds were more dependent on access to a story context to construct figurative interpretations of evident metaphors. However, they were less able to utilize the story context to consider and construct an alternative, figurative interpretation for context defined metaphors. Finally, they were no more or less likely to consider the possibility of a figurative interpretation for a context defined metaphor in isolation.

Seven-year-olds were nearly as likely as five-year-olds, (not significantly different), but less likely than ten-year-olds (significantly different) to:

- construct figurative interpretations of evident metaphors presented in story context, and
- construct viable, literal interpretations of context defined metaphors presented in isolation.

Seven-year-olds were more likely than five-year-olds and less likely than ten-year-olds (both significantly different) to construct figurative interpretations of context defined metaphors presented in story contexts which suggested their possible figurative intent. Further, they were no more likely than five-year-olds, but less likely than ten-year-olds (significantly different) to consider and construct the possible figurative interpretations of these context defined metaphors presented in isolation.

In sum, seven-year-olds were less dependent on access to a story context to construct figurative interpretations -- they were as likely to do so with or without access to a story context. Further, seven-year-olds were more able than their younger counterparts to use the story context to infer the figurative as opposed to conventional, literal, context inappropriate intent of context defined metaphors. Although, they were no more likely to consider the possibility of, or to construct a figurative interpretation of a context defined metaphor presented in isolation.

Ten-year-olds were as likely as adults (no significant differences) to construct figurative interpretations of both types of metaphors in

either condition. They were more likely (significantly different) than seven-year-olds to construct figurative interpretations for:

- evident and context defined metaphors presented in a story context,
- context defined metaphors presented in isolation.

They were no more likely (not significantly different) than seven-year-olds to construct figurative interpretations of evident metaphors presented in isolation.

In sum, ten-year-olds were as able as adults to infer and construct figurative interpretations of more and less ambiguous types of metaphors, with and without access to information in a story context. Differences between ten and seven-year-olds suggests that they had further developed the ability to utilize information in the story context, as well as to consider alternatives to conventional interpretations of context defined metaphors even when a story context was not available.

The importance of variation between interpretations of particular metaphors for these results is indicated by the following description of main and interaction effects for individual metaphors (items).

Main Effect for Metaphor (within type) -- An Item Analysis

The main effect for individual metaphors within type of metaphor is equivalent to an items effect. Figurative interpretations were more frequently constructed by subjects for some metaphors than others. Scheffe tests done to determine which metaphor(s) were more or less likely to receive figurative interpretations indicate that within the evident type of metaphors there are two metaphors that are the most and least likely to receive figurative interpretations by

subjects in all age groups and conditions. The metaphor most frequently given a figurative interpretation was 'My hair is spaghetti' and the metaphor least frequently given a figurative interpretation was 'Sadness is a curtain'.

The other two evident metaphors ('Darkness is a blanket' and 'My thoughts were tripping over each other' were responded to similarly in terms of the frequency with which they were given figurative interpretations; there was no significant difference between these two items. They fell between the two evident metaphors described above as most and least likely to receive figurative interpretations. Both of these items were significantly more likely to be given figurative interpretations than 'Sadness is a curtain,' but only 'My thoughts were tripping over each other' was significantly less likely to receive a figurative interpretation than 'My hair was spaghetti'.

In sum, with "1" indicating a figurative interpretation and "2" a non-figurative interpretation the means for each of the evident metaphors across age group and task condition were as follows:

- |  |                                      |
|--|--------------------------------------|
| 1. My hair is spaghetti                      | 1.18 (Sig different than 3 and 4)    |
| 2. Darkness is a blanket                     | 1.3 (Sig different than 4)           |
| 3. My thoughts were tripping over each other | 1.4 (Sig different than 1 and 4)     |
| 4. Sadness is a curtain                      | 1.65 (Sig different than 1, 2 and 3) |

The individual metaphors within the context defined type were not treated significantly different from each other. However, when Scheffe comparisons were made across all items (both types) there were differences found between particular context defined metaphors and particular evident metaphors. That is, the frequency with which

figurative interpretations were given to two of the context defined metaphors, 'My mother is a policewoman' and 'I was running up hill' were found to be significantly less than all the evident metaphors except 'Sadness is a curtain'; these two context defined metaphors and the most difficult of the evident metaphors were responded to similarly by subjects in terms of the frequency with which subjects were able to construct figurative interpretations for them across all conditions and age groups.

The frequency with which figurative interpretations were constructed for the other two context defined metaphors, 'She is a squirrel' and 'I was locked outside' were found to be significantly different than two of the evident metaphors, 'Sadness is a curtain' and 'My thoughts were tripping over each other'. In short, while there were no significant differences between interpretations of context defined metaphors there were significant differences in the extent to which these four metaphors were treated similarly to particular evident metaphors. These differences between differences indicate a range of difficulty which, is reflected in the means as follows:

5. She is a squirrel	1.5 (Sig different from 1 and 2 above)
6. I am locked outside	1.53 (Sig different from 1, 2 and 4 above)
7. My mother is a policewoman	1.65 (Sig different from 1, 2 and 4 above)
8. I was running up hill	1.68 (Sig different from 1, 2 and 4 above)

Finally, it should be noted that the absence of a metaphor (within type) x condition effect indicates that the same relationship exists between items or particular metaphors within type regardless of task condition. That is, task condition interacts significantly with a type of metaphor (taken as a group) but not with individual metaphors within type.

#### Metaphor and Age

The significant interaction effect for individual metaphors with the age group of subjects indicates that the interpretations of younger subjects contribute to the main effect for individual metaphors more than the interpretations of older subjects. The frequencies of figurative and non-figurative interpretations for each metaphor by subjects in each age group (see Table 3) show that the differences in interpretations of specific metaphors (note particularly 'Sadness is a curtain' and 'My hair is spaghetti' as well as overall differences between the two types) is most apparent among fives and sevens in both conditions of presentation. That is, item differences are more apparent for the younger children.

#### DISCUSSION OF QUANTITATIVE RESULTS

The results reported above provide evidence for the hypothesis that the ability to infer and explicate the figurative intent of a metaphor, particularly in younger children, is related to the utilization of a context which supports that figurative interpretation. In contrast with findings reported in other studies (Winner, Rosenstiel & Gardner, 1977, Billow, 1975) even the five-year-old subjects who participated in the story context task were able to construct figurative interpretations on many trials.

But perhaps more important than identifying context as a factor that influenced performance are the implications which can be drawn from these findings for certain aspects of the development of this ability to engage in interpretive acts with metaphors as their object. More specifically, these component skills which these findings address include:

- the ability to use information in a context to construct a figurative interpretation and the extent of dependence on information in the text to make such an interpretation,
- the ability to be flexible in considering figurative readings that are unconventional or in attempting several varying interpretations,
- the ability to take into account and to integrate information from different parts of the text into a coherent whole.

Before discussing each of these in detail, it should be noted that the contribution of other kinds of developments are also suggested by these results, i.e., the ability to articulate one's understanding, the comprehension of task and picking up of more implicit task cues, the memory as well as the integration of what has been read/heard, and the understanding of differences between narrative forms. Because the findings do not address these directly they are acknowledged but not pursued with the same depth.

#### The use of and dependence on information in the context

Subjects in all four age groups used the information provided in the story context condition to help them to infer and specify the figurative intent of the metaphors presented. However, younger subjects were most affected in the sense of being more likely to construct figurative interpretations when they had access to a supportive context. While the ability to infer figurative intent and construct

figurative interpretations of a metaphor was always related to both age and access to contextual information, younger subjects relied or were more dependent than older subjects on a supportive context. Older subjects, particularly ten-year-olds and adults were often able to infer figurative intent without access to a supportive context.

Flexibility in considering figurative or unconventional interpretations

The older subjects were flexible in the sense of more aware of the possibility of a figurative interpretation and more able to construct feasible figurative relations between the terms of the metaphor without access to a supportive context. The most convincing evidence for the development of this flexibility in considering alternative interpretations is available from data on how subjects interpret the context defined metaphors in both task conditions. Younger subjects had much more difficulty than older subjects with constructing figurative interpretations for these phrases whose metaphoric intent was determined by the context in which they appeared. Older subjects were not only able to consider the alternative of a figurative interpretation when these context defined metaphors were presented in the story context condition but were often able to consider the option of a figurative interpretation when they were presented in the isolated condition. This suggests that older subjects were able to use the context of the task (interpretation of metaphors, both evident and context defined) as a basis for inferring the possible metaphoric intent of these conventional phrases with the potential of metaphoric intent. They are able to assess a different kind of contextual information

than the younger subjects; contextual information that says 'this is what this task is about' in addition to 'this must be what is meant by this sentence'.

Integrating information from different parts of the text into a coherent whole

If we consider what younger subjects are doing in their interpretations as opposed to what they are not able to do, the fact that their non-figurative interpretations were often in some ways insensitive to or in direct contradiction to information in the text becomes apparent. A non-figurative interpretation does not, by definition, fit with the story context which supports a figurative reading. Younger subjects who give non-figurative interpretations are constructing relations between the terms of the metaphor that may build on some aspect of the information in the context or may take off on interpretations that ignore or alter the information in the story context provided. This suggests that part of what they have not yet developed is the ability to determine which information in the text is relevant to interpretations and how to integrate that information with the metaphor in the course of constructing a figurative relationship between the terms. The increase in figurative and context sensitive interpretations in older age groups indicates that older subjects have become much more facile at identifying and integrating information in the text as it relates to the metaphor.

Taken together these results imply two parallel trends in development. On the one hand there is an increase in independence from the support of a context to infer figurative intent, and on the other hand, there is an increase in the sensitivity to that context and abi-

lity to select and integrate information in the course of interpretation. Younger subjects both rely on the story context to enable them to construct figurative interpretations and are prone to ignoring or altering aspects of the story context in their constructions of non-figurative interpretations. Older subjects are more flexible in considering figurative or alternate figurative interpretations without the support of a context while being simultaneously more able to construct interpretations that are congruent with all aspects of a text; to select and integrate information in the course of interpretation. These parallel trends will be discussed in greater depth in the discussion of qualitative findings which provide more information related to these developments.

#### The implications of item differences

Finally, in considering the different sources of variability that contribute to the subject's ability to construct figurative interpretations the findings here indicate that both access to a context and the effect of particular items (metaphors) influences performance. Some metaphors are more difficult to interpret than others regardless of whether they appear in a supportive text or whether the subject has knowledge of those attributes of the terms which are relevant to the figurative relation between them (established in the control task). In looking at the particular items that present both the most and the least difficulty for subjects it is apparent that: 1) the relative familiarity of the kind of comparison implied, (that is the familiarity of comparisons between terms like hair and spaghetti), 2) the characteristics of the resemblance(s) between the terms (e.g., physical resemblance between two objects versus resemblance between a phy-

sical property and a psychological or abstract property), as well as 3) the extent to which the particular dimensions of figurative resemblance between the terms are specified directly or indirectly in the text itself may all interact with each other to affect the difficulty which the interpretation of a given metaphor poses for a subject.

For example, the most difficult metaphor to interpret ('sadness is a curtain') can hardly be described as a familiar comparison. Further, it juxtaposes the emotional qualities of sadness with the physical properties of a curtain. Finally, more extensive inferencing is required to make connections between the story context in which it is presented and the implied figurative meaning. The context states that when the little girl feels sad she wants to be away from friends and people, and she talks about her 'wonder' and 'how other people really put down their sad feelings into words' but the interpreter must infer from this information that sadness resembles a curtain because it comes between you and the world. It requires considerable interpretive work to begin to close the gaps between the implied figurative meaning and the information in the context.

These factors described above in relation to item differences are all important to an analysis of the act of interpretation. The abilities that have been discussed in relation to the findings presented here about the characteristic patterns of development in interpretation of metaphors must be considered in relation to the characteristics of the metaphors themselves and the context in which it appears. These inevitably interact to determine the form that the resulting interpretation will take or the interpretive process in which it is constructed.

One qualification of the findings discussed here should be noted. Age differences in the ability to explicate interpretations in general is inevitably intertwined with differences in the ability to deal with the interpretation of metaphors on these tasks. As evidence in the qualitative analysis will suggest, the ways in which subjects approach the task of interpretation is related to their experience with definition and explanation, particularly in school. The performance by subjects of different ages inevitably interacts with both their verbal facility and how their previous experience leads them to understand the nature and expectations of this task.

The inferences that are possible from the significant effects reported in this part of the quantitative analysis leave open a number of questions and room for confirmation of these inferences. Are there qualitative differences in the ways that subjects of different age groups in different conditions are approaching and engaging in interpretations that shed light on these quantitative differences in their performance? More specifically, what are younger subjects doing that makes them simultaneously more dependent on context and insensitive to aspects of the context? Does detailed comparison of what different subject groups are doing suggest possible developmental patterns or mechanisms beyond the characterization of the kinds of linear development of particular abilities that are described above?

The qualitative analysis that follows provides a more detailed description of subjects interpretations which supplement and expand on

the findings discussed here. A general discussion will follow the qualitative results and integrate the findings from both components of the analysis as well as relate them to the theoretical framework presented in the introduction.

### INTRODUCTION TO THE QUALITATIVE RESULTS

The qualitative analysis of the interpretations of metaphors presented here was designed to take a close look at what subjects in different age groups were doing as they constructed interpretations in the two conditions, and thereby determine how they were becoming more skillful with age. This analysis has made it possible to:

- provide further description of the unique characteristics that distinguished each age group's figurative and non-figurative interpretations,
- find out more about subjects' understanding of/approach to figurative uses of language in each age group (and what distinguished their figurative and non-figurative interpretations from those of other subjects),
- describe the differences in subjects' use of context information.

The implications of such findings for development; the distinctive picture they provide of each age group will evolve in the course of presenting the results.

In order to obtain the information needed to develop this closer look, the descriptive variables outlined and defined in the Methods section were applied to each interpretation. The data that resulted have several important features. First, this analysis has, as intended, provided access to more detailed description of subjects' interpretations that identify both:

- continuous developmental changes in variables indicating constant increases or decreases in certain characteristics across age groups, and,

- discontinuous developments which mark unique characteristics of particular age groups.

These findings are steps towards the goal of determining what subjects were doing at different developmental levels, and how they were improving significantly with age.

The second important feature of these data is that the application of these variables presents a very rich and multi-faceted picture when they are viewed in the context of each other. Therefore, this analysis includes both characteristics of subjects interpretations derived directly from frequencies found for particular variables and qualities of the interpretations of an age group that can be inferred from these characteristics as they relate to one another. For example, when the variables which characterize subjects' use of context are related to a more differentiated characterization of subjects' figurative interpretations (specified versus global), qualities emerge which exemplify particular age groups, e.g., the concern with establishing specific relations between the terms of the metaphor as they related to the context. This qualitative analysis is constructed in order to describe such relations between variables.

The presentation of the qualitative results has been structured in relation to these inherent features of the qualitative data. First, the presentation of the results has been organized in four sections. These sections have been constructed to present the description and discussion of the data that document the distinctive qualities of interpretations indicative of each of the four age groups; primarily those results that represent developmental discontinuities or qualita-

tively distinct patterns suggested by relations between developmentally continuous findings.

Second, the results presented within the section on each age group are organized to take advantage of the fact that these descriptive variables are most informative when viewed in relation to one another. The specific findings on characteristic developments found in the results from particular variables for the given age group will be presented in three sub-sections that constitute successive views of particular aspects of that age group's interpretations; perspectives that will integrate to form a comprehensive picture of the unique qualities of that age group. These sub-sections within the sections on each age group will describe characteristics and qualities documented by data on:

- A. Descriptive variables that distinguish the types of figurative and non-figurative interpretations
- B. Descriptive variables indicating initial approaches to judgments of the interpretability of metaphors
- C. Descriptive variables indicating the use of context information -- indications of the process of interpretation (in so far as it could be described from subjects' remarks) versus the characterization of its outcome.

Connections will be made with results reported earlier in the quantitative or previous qualitative sections in order to establish links between successive layers of results and discussion.

In recognition that reading through the description and analysis of results for interrelated variables is, at times, a burden for the reader, summaries of results on each variable and of each age group have been provided. The reader may wish to move directly to these

summaries and then, when and if curiosity has been aroused, refer back to the explication of detailed findings leading to these conclusions.

Note that within the sections on each age group the data for that age group will be excerpted from overall results for particular variables. Results from other age groups will be included as necessary, for purposes of comparison, but only the results relevant to the age group being discussed will be analyzed in that section. This is done in order to maintain focus. The complete results for each descriptive variable are located in Appendix 2.

An overview of the structure of this presentation of qualitative results is presented in the chart following. The reader may wish to refer to it as they would the family tree provided in the introduction to a Russian novel, or to simply ignore it and let the plot emerge without the anticipatory framework.

Finally, if the reader does not have the time to wander through the description and analysis of details that make up the qualitative results, it is possible to make shortcuts to the summary sections at the end of the qualitative results for each age group.

QUALITATIVE ANALYSIS -- RELATED LEVELS AND COMPONENTS

Data from Descriptive Variables

- Specification of Figurative Relations
  - Global Figurative
  - Literal Non-Figurative
  - Not Possible to Relate Terms Non-Figurative
  - Alternating Between Interpretation of Intent
- 
- Initial Judgments of Interpretability
- 
- References to Information in the Story Context (CI)
  - Altering Information in the Story Context (CI)
  - Constructing Alternative Context(s)
  - Providing a Context (CII)

Characteristics of Interpretations by Subjects in Each Age Group -- Inferred directly from findings

A. Distinctive types of Figurative and Non-Figurative Interpretations

B. Initial approaches to task -- judgments of Interpretability

C. The use of Context Information and Strategies related to Context -- Description of process indicators versus characterization of outcomes

Qualities of Interpretation that Distinguish Each Age Group

- Understanding of Figurative uses of language
- Implicit criteria/ standards for interpretive acts
- Form of Interpretive process -- how it is talked out
- Definition and function of Context

Relations Between Data From Descriptive Variables and:

- Figurative or Non-Figurative
- Types of Metaphors (Evident or Context Defined)
- Condition(s) of Presentation (Story Context or Isolated)

A., B., and C. above

## FIVE-YEAR-OLDS' INTERPRETATIONS

### QUALITATIVE RESULTS FROM THE APPLICATION OF DESCRIPTIVE VARIABLES

The qualitative analysis of the five-year-olds' interpretations in this study explores the distinctive characteristics of what this youngest group of subjects were doing as they sporadically inferred figurative and non-figurative intent. The qualitative findings clearly indicate that while the five-year-olds were, overall, the group most reliant on a story context to infer figurative intent, they were also the group most likely to either ignore or not recognize contradictions with the story context when they constructed non-figurative interpretations.

The results reported here begin, when viewed in relation to one another, to fill in the characteristics of their interpretive acts that suggest what is behind this apparent contradiction. They also suggest what functions this simultaneous dependence on and disregard for context seems to serve at this level of development.

What follows are three sub-sections which are, as indicated in the introduction, organized in terms of the descriptive variables and relations between variables that provide evidence concerning this age group's:

- A. Types of figurative and non-figurative interpretations
- B. Approach to/judgments of the interpretability of metaphors
- C. The use of context information.

In order to maintain focus, the data in the text that follows are either taken primarily from the results of the five-year-old group, or are presented in relation to selected data from other age groups but

discussed only in terms of its implications for the five-year-old group. The results for all four age groups for each of the descriptive variables discussed here are presented in Appendix 2.

#### The Qualities Which Distinguished Five-Year-Olds' Interpretations

In order to introduce the five-year-olds and to provide the reader with a sense of direction let us begin with a general overview of the qualities which marked five-year-olds' interpretations. The evidence from which these general qualities has been inferred is presented throughout the three sections outlined above. That is, these qualities are not posed as conclusions which correspond to each of the sections, but as cumulative findings:

- The five-year-old is playful, innovative and unselfconscious in his/her acts of interpretation. Unfamiliar with the conventions of such acts, they seem to define the task in terms of -- "You tell me a story, I'll tell you one."
- The five-year-old's awareness does not seem to be of figurative language per se but of the possibilities of using/playing with language in ways that are flexible/creative and often without recognition of conventions which enable others to share in the game of constructing meaning.
- Five-year-olds are quite reliant on a context to infer figurative intent and unconcerned with the detailed or consistent integration of the metaphor with the context.

The following examples provide some sense of what this age group's interpretations look like individually. They also suggest the obvious fact that no one example is illustrative of the characteristics or qualities that apply to the group as a whole.

"My hair is spaghetti"

(in story context - CI)

"Yes, makes sense. She hates her hair sooo, she calls it spaghetti. But it's really not. See my hair is spaghetti too! (makes face and pulls hair in front of eyes)."  
(Global figurative)

(in isolation - CII)

"Yes, I understand. Like if somebody is eating your hair -- ow!

She is pretending her hair is food, or maybe she fell into some spaghetti." (Literal)

"Darkness is a blanket"

(in story context - CI)

"Yes, it makes sense. It's like a gini's blanket all over the city.

It would be all over the town and dark, but maybe the gini lifts it up a little bit." (Literal)

(in isolation - CII)

"That means the blanket would be covering the city, and everybody would be saying 'it's dark in here, turn on the light.'

Everyone would be yelling, the sky is falling, a blanket is falling, or when it's raining and the blanket gets soggy it's dark." (Literal)

"I am locked outside"

(in story context - CI)

She is lonely. Her friends aren't in school. She wants to play. So she's sad and no one is there to help her. I'd tell her, its ok, tomorrow they'll be back. (Global figurative)

A. Types of Figurative and Non-Figurative Interpretations -- Playing With and Exploring Possible Meanings in Different Conditions

Let's begin by examining data on the frequency with which five-year-olds constructed different types of figurative interpretations -- global versus specific figurative and literal versus not possible to relate terms non-figurative (see Methods section for definitions). As you will recall from the quantitative results, five-year-olds are significantly less likely than other groups to construct figurative interpretations and correspondingly more likely to construct non-figurative interpretations. However, they were also significantly more likely than other groups to construct figurative interpretations when provided with a story context that supported inference of figurative intent. A closer look at the nature of this group's figurative and non-figurative interpretations provides some insight into what it meant for five-year-olds to construct interpretations which did or did not indicate inference of figurative intent.

Figurative Interpretations

Looking first at five-year-olds' figurative interpretations (see Table 2) it becomes apparent that they were able to construct figurative interpretations in almost half of the trials in the story context condition, and most of these (half of all their figurative interpretations) included specifications of the figurative relations between the terms of the metaphor. In contrast, they constructed very few figurative interpretations in the isolated condition.

**TABLE 2**  
**Five-Year-Olds' Figurative Interpretations**  
**Specific versus Global**

	<u>Story Context</u> <u>CI</u>	<u>Isolated</u> <u>CII</u>
<u>Frequency</u>		
All Figurative	60	24
<u>Percentage</u>		
Specific Figurative	50%	41%
Global Figurative	50%	59%

The fact that they could specify relations in half of their figurative interpretations in the story context condition suggests that this youngest group was not only helped by the access to a context in the inference of figurative intent, but also in focusing on the act of interpretation in so far as this involved specifying relations. Although they were able to specify figurative relations between terms they were the group that constructed the largest proportion of global figurative interpretations. This suggests an approach which involved describing the general sense of the phrase or of the story (when provided), and specifying metaphoric relations if/when they were apparent to the child. This approach to interpretation often took the form of a more or less extended summary or telling the story back.

For example:

"My mother is a policewoman"  
(in story context - CI)

"Her mother got mad and yelled  
cause... well she wouldn't help  
her with the laundry. It was  
Saturday and she wanted to play.  
So she made a game and it was  
better."

"My hair was spaghetti"  
(in story context - CI)

"Her hair is all yuck! A mess."

"Sadness is a curtain"  
(isolated - CI)

"You're crying all the time.  
You're sad and you cry but some-  
times its like the sun going in  
your eyes and you close them to  
keep it out but you're still sad."

In the story context condition these global interpretations generally involved describing the implications of the metaphor for the story context; the gist of the figurative meaning described, by summing up its implications for the story and/or subject. In the isolated condition these global figurative interpretations involved glossing over the specific figurative relations or making general statements about what the metaphor implied.

For example:

"Darkness is a blanket"  
(in isolation - CII)

"Maybe it was dark."  
"It's night in the city. The  
lights are going on and off in  
the streets. He can't see much  
so he goes inside."

These global figurative interpretations constructed without access to a context sometimes included associations to possible circumstances (often fanciful or from the child's own experience) in which such a phrase might be used (see data on providing a context in Sub-Section C).

Finally, it should be noted that these frequencies of specific versus global figurative interpretations do not appear to have been related to the type of metaphor (evident versus context defined) being interpreted by five-year-olds in the story context condition. However, five-year-olds almost never inferred the possible figurative interpretation of context defined metaphors out of context where these phrases have viable literal meanings. That is, they did not consider the possibility that these phrases which have conventional literal interpretations out of context could also imply a figurative intent. They were not aware of figurative use of language in the sense of considering the possibility that a phrase could have had the potential for more than one intended meaning.

#### Non-Figurative Interpretations

The results which differentiate between five-year-olds' non-figurative interpretations in which they constructed literal relations between the terms versus asserting that no relation was possible (given that they took the relation to be literal) clearly distinguish this age group's approach to this task (Table 3, on following page). As reported in the quantitative section, five-year-olds were the group that were most likely to construct non-figurative relations between the terms of the metaphors in both conditions. These qualitative results show that most of these non-figurative interpretations were literal in form. They were the group that most frequently constructed literal relations between the terms of the metaphors in both conditions.

TABLE 3

Five-Year-Olds' Non-Figurative Interpretations  
Literal or Not Possible to Relate Terms

	<u>Story Context</u> <u>CI</u>	<u>Isolated</u> <u>CII</u>
<u>Frequency</u>		
All Non-Figurative	68	106
<u>Percentage of all interpretations</u>		
Literal Non-Figurative	41%	51%
Not Possible to Relate Non-Figurative	13%	32%

Even in the story context condition, where literal inference of intent was contradictory to the information in the text provided, five-year-olds were the group least inhibited about constructing literal interpretations. Further, evidence from the comparison of types of non-figurative interpretations in the two conditions point out that in the story context they almost always attempted to construct an interpretation (literal or not). However, when they did not have access to a story context (isolated condition) five-year-olds were more likely to assert that it was not possible to construct a relation between the terms in the metaphor (given that they did not infer figurative intent). Without access to a story context they were more likely to both miss the possibility of a figurative interpretation and give up in the sense of asserting that no relation between the terms was possible.

This suggests that access to a context encouraged five-year-olds to attempt interpretations, regardless of whether or not they

were able to infer figurative intent. In the task context of being told a story, they appear to have been able to relate to the act of interpretations as a kind of play, a form of response that they could construct on their own terms. They seem to have been able to define the demands of the task best in the story context. It gave them information and a framework in which to respond.

However, even when they could relate to the task of interpretation in this way five-year-olds did not indicate either an awareness of figurative language per se, or of conventional standards/criteria for interpretation that kept them from uninhibitedly constructing literal relations between terms.

It appears to have been unimportant to them if some aspects of the text had to be ignored or altered in order to construct a literal interpretation. For example:

"She is a squirrel"  
(in Story Context - CI)

"Ya, like her sister is driving her crazy. She walks up a tree and all around. She's laughing all the time and driving her crazy, but no one really knows about stories."

"Darkness is a blanket"  
(in Isolation - CII)

"No, darkness can't be a blanket. But maybe it's dark under the blanket -- like when I hide."

The findings which differentiate by the type of metaphor being interpreted point to additional characteristics of five-year-old subjects' non-figurative interpretations (See Table 4).

TABLE 4

Five-Year-Olds' Non-Figurative Interpretations  
Literal and Not Possible by Type

Frequencies of Non-Figurative	<u>Story Context</u>		<u>Isolated</u>	
	<u>CI</u>		<u>CII</u>	
Frequency of Literal	52		65	
Frequency by Type of Metaphor	$\frac{T1}{16}$	$\frac{T2}{36}$	$\frac{T1}{16}$	$\frac{T2}{49}$
Frequency of Not Possible	16		41	
Frequency by Type of Metaphor	$\frac{T1}{11}$	$\frac{T2}{5}$	$\frac{T1}{35}$	$\frac{T2}{11}$

To begin with, five-year-olds (unlike other age groups) were much more likely to construct literal interpretations for context defined (T2) metaphors in both the isolated as well as the story context conditions. This supports and extends the characterization of five-year-olds in terms of being: unable to be flexible in considering an intent other than the one that was most conventional/familiar; unconcerned about/unaware of contradictions between their inference of intent and the information in the story context.

Further, results for not possible to relate the terms non-figurative interpretations present a different pattern for the two types of metaphors. Evident (T1) metaphors were more likely to be given not possible to relate terms interpretations in both con-

ditions, but the extent of this difference was much greater in the isolated condition. That is, particularly in the isolated condition, it was the evident (T1) metaphors that were most likely to inhibit five-year-olds from attempting even their own free form of interpretation.

Five-year-olds' non-figurative interpretations in the isolated condition generally involved, either constructing literal interpretations of context defined metaphors (i.e., constructing conventional, literal interpretations of conventional, literal phrases) or asserting that evident metaphors could not be interpreted if the terms were taken literally. This pattern supports previous descriptions of five-year-olds in terms of their use of context to suggest a means of constructing any kind of interpretation (particularly when evident metaphors, without possible conventional meaning were being interpreted).

#### Alternating Between Figurative and Non-Figurative Forms in the Course of Interpretation

One additional source of evidence corroborates the characterization of five-year-olds made to this point. Five-year-olds seldom shifted between inference of intent in the course of talking out their interpretations (See Table 5, next page).

TABLE 5Five-Year-Olds' Alternations Between  
Figurative and Non-Figurative

	<u>Story Context</u> <u>CI</u>	<u>Isolated</u> <u>CII</u>
<u>Overall Frequency</u>	14	12
<u>Frequency Concluding With:</u>		
Figurative	12	5
Non-Figurative	2	7

This suggests that they interpreted the intent of metaphors as it struck them; as the meaning could best be worked into their understanding of/association to the subject matter, the story (when provided) and the task itself. Although there is some trend towards alternating from non-figurative to figurative in the story context condition, these 12 cases (20% of 60 figurative interpretations in the story context condition) only suggest that occasionally five-year-olds became aware of an alternative possible intent in the course of interpretation. They were not searching out interpretations that fit the context better nor were they gradually developing interpretations within some set of criteria for what constituted a good interpretation.

In Sum

The results from these descriptive variables that differentiated between different forms of figurative and non-figurative

interpretations have offered several expansions on the key finding from the quantitative analysis. We knew from the quantitative analysis that five-year-olds were the group that constructed the fewest figurative interpretations, and the most non-figurative interpretations. Further, their ability to construct figurative interpretations was most influenced by access to a story context, and by the type of metaphor. The findings from the distinction between global versus specific figurative, and literal versus no relation possible non-figurative interpretations have provided the following additional characterization of five-year-olds' interpretations.

- Their figurative interpretations were often global, particularly in the isolated condition.
- They were frequently able to focus on metaphors (particularly evident metaphors), and specify figurative intent in the story context condition.
- They were the age group that constructed the most literal non-figurative interpretations.
- They were more likely to construct no relation possible between the terms non-figurative interpretations in the isolated condition.
- They almost never considered the option of a figurative interpretation for a context defined metaphor presented in the isolated condition and seldom constructed figurative interpretations for these metaphors presented in the story context condition.

- They were less likely to attempt to construct interpretations of evident metaphors (figurative or not) in the isolated condition.
- They seldom alternated between figurative and non-figurative inference of intent in the course of their interpretations.

As has been suggested in the presentation of the findings, these characteristics of five-year-olds' interpretations point to certain qualities of interpretation unique to this age group. Five-year-olds do not appear to be aware of conventional standards for what constitutes interpretation. However, they do display a willingness to engage in acts of interpretations as a kind of playing with and exploring of language and discourse forms. Sometimes this play enables them to catch the figurative intent of metaphors and sometimes it does not. They seem to respond to the task and information presented on their own idiosyncratic terms. However, the way they respond to a given instance is very much affected by access to information (the story context), and perhaps by familiarity with a discourse form implied by this task (telling stories). These context factors help them to:

- Engage in and define the task or relate to it in a way they can understand
- Focus on the task and its object (the metaphor), and
- Use the information presented to try and elaborate/construct meanings that are closer to what is intended as opposed to what they are able to playfully generate, associate.

All this leads to a characterization of their approach to the task of interpretation that includes:

- Summarizing, conveying the sense of the story, the phrase as they understand it;
- Telling the story back, often in an abbreviated, editorialized form.

Further qualitative data on their initial response to the task of interpretation and on the use of context will add support and clarity to this initial description of qualities that distinguish the five-year-old group.

B. Initial Judgments of Metaphor Interpretability -- Sources of Uncertainty

The results for five-year-olds on their initial judgments of the interpretability of metaphors ("Do you understand what this boy/girl meant when they said 'the metaphor'?") provide further indications that five-year-olds brought their own unique, often uncertain and idiosyncratic approach to this task. If we look first at the frequency of five-year-olds' affirmative initial judgments of interpretability, it becomes apparent that they were the group that were least likely to give affirmative initial judgments of interpretability (see Table 6 on following page). However, when the results are broken down by condition it becomes evident that they were somewhat more likely to make affirmative initial judgments with access to a story context.

TABLE 6

Frequency of Five-Year-Olds'  
Initial Affirmative Judgments of Interpretability

Total Frequency	146 (57% of all interpretations)
Story Context - CI	86 (69% of all in CI)
Isolated - CII	60 (48% of all in CII)

The fact that five-year-olds only judged metaphors to initially be interpretable in slightly more than half the trials suggests an uncertainty about either what they were being asked to do or what the metaphors themselves meant. A clue to the nature of this uncertainty is provided by looking at the number of affirmative judgments followed by figurative and non-figurative interpretations (see Table 7, below).

TABLE 7

Five-Year-Olds' Initial Judgments of Interpretability  
Followed by Figurative/Non-Figurative Interpretations

	<u>Figurative</u>	<u>Non-Figurative</u>	<u>Total</u>
Story Context - CI	55	31	86
Isolated - CII	15	45	60

In the story context condition about two-thirds of five-year-olds' affirmative initial judgments were followed by figurative interpretations (91% of all their figurative interpretations), while one-third of these affirmative judgments were followed by

non-figurative interpretations (46% of all their non-figurative interpretations). In other words, in the story context condition five-year-olds almost always made affirmative initial judgments of interpretability before they constructed figurative interpretations.

With access to a story context five-year-olds' uncertainty about the task and the metaphor was primarily related to metaphors for which they eventually constructed non-figurative interpretations. As uninhibited as they appear to have been about constructing literal interpretations with access to a story context, it also appears that they began such literal interpretations with less certainty about what was intended or, perhaps, what they were being asked to do in relation to these unusual uses of language in a relatively conventional context.

Results from the isolated condition provide an interesting contrast. Five-year-olds expressed initial hesitancy/uncertainty about a larger percentage of the metaphors for which they eventually constructed figurative interpretations (38%) when metaphors were presented in isolation. Only about one-fourth of their initial affirmative judgments of interpretability were followed by figurative interpretations while three-fourths of these affirmative judgments were followed by non-figurative interpretations -- note that half of their non-figurative interpretations were for context defined metaphors (phrases that had viable non-figurative forms without the story context), in the isolated condition.

If we look at these judgments for the two types of metaphors in the isolated condition we find that they approached context

defined metaphors out of context with consistent assurance. Their affirmative, initial judgments before non-figurative interpretations in the isolated condition were almost entirely directed at the context defined metaphors for which they constructed the literal, conventional interpretations that were appropriate for these phrases out of context. However, they were more initially hesitant and uncertain about evidently metaphoric phrases when they had no access to a story context. Further, they directed many negative initial judgments of interpretability (most of the 58% negative interpretable) to those evident metaphors for which they eventually constructed non-figurative interpretations.

#### In Sum

These findings on initial judgments of interpretability by five-year-olds suggest that:

- They were often initially uncertain about their understanding of the literal interpretations they constructed in the story context condition
- They almost always expressed certainty about their understanding of metaphors for which they constructed figurative interpretations in the story context condition
- They were initially quite certain about the interpretability of context defined metaphors out of context -- literal, conventional phrases
- They expressed much more initial uncertainty, hesitancy about metaphors for which they constructed non-figurative interpretations in the isolated condition, and

- They were particularly uncertain about the interpretability of evident metaphors presented in the isolated condition whether they eventually constructed figurative or non-figurative interpretations for these metaphors.

This characterization of five-year-olds' initial assessment of the metaphors presented in both conditions supports the findings that access to the story context helped them to understand, from the beginning of the trial, both the intended meanings of the metaphors and what the task itself was about. Further, the data suggests that in those cases where they constructed literal interpretations in the story context condition that were not consistent with information in the context, they had, in about half the cases, begun such interpretations with some awareness that they weren't clear about what was intended. However, they proceeded to explore its possibilities despite this uncertainty -- they were willing to play, to try and tell a story back, even when they were not entirely clear about what was intended or expected.

C. The Use of Context Information -- Relying on and Ignoring Context in the Exploration of Interpretive Sets

It has been suggested several times in the discussion of five-year-olds' interpretations that they were both reliant on access to a story context, and uninhibited in constructing interpretations that were inconsistent with information in the context (i.e., constructing literal interpretations in story contexts that implied figurative intent). The data which speaks most directly to this characterization of five-year-olds' interpretations is

available from the variables that describe the ways in which subjects talked about context information as they constructed interpretations:

- References to information in the story context provided
- Changes/alterations in this context information
- Instances of constructing an alternative context to the one provided
- Constructing a context when one was not provided.

See the Methods section for the definitions of each of these descriptive variables/code items. Note that, by definition, the first three descriptive variables apply only to interpretations in the story context conditions. The last item describes a strategy of interpretations that involves trying to find a context when one is not provided and applies only to the isolated condition.

Reference to Information in the Story Context - CI

Five-year-olds were the group least likely to make references to the story context in the course of talking out their interpretations (see Table 8, below). They were at one low end of an inverted U-shaped curve that plotted the frequency of these data.

TABLE 8

Frequency of Reference to Story Context (CI)

<u>Fives</u>		<u>Sevens</u>	<u>Tens</u>	<u>Adults</u>
	65	79	81	66
<u>T1</u>	<u>T2</u>			
24	41			

This data provides a good example of how apparently similar levels of performance on some variable can reflect very different abilities/functions at different developmental levels. For five-year-olds in this study the relatively low frequency of referencing text information confirms the characterization of their interpretations made to this point -- they use the context information to elaborate or support their interpretations when convenient but do not feel compelled to account for it.

There was a marked difference in five-year-olds' references to the story context made during interpretations of evident (T1) versus context defined (T2) metaphors. This suggests that the metaphors that led them to cite context information most often were those which were most difficult for five-year-olds to interpret; those which required them to consider an alternative, context defined reading of the intent of phrases which would, in other contexts, be intended as conventional, statements.

It is also interesting to note that half of those interpretations of context defined metaphors (T2) during which five-year-olds referenced the context were figurative and half were non-figurative. That is, as indicated elsewhere in the description of five-year-olds' interpretations, they used the story context to both support figurative interpretations consistent with the entirety of the story context and to construct non-figurative interpretations that were contradictory to the information provided in the story context. They used text information as it suited their needs and they appear to have been more likely to need or utilize it when the intent of the context was most determinant of the

intent of the metaphors (context defined T2).

One additional way of looking at results from this descriptive variable suggests another factor that related to their talking about/utilizing context information. As was true in results from other age groups, five-year-olds were somewhat more likely to reference text in the course of figurative interpretations. About 60% of their references to context were made during figurative interpretations and 40% during non-figurative interpretations. This suggests an additional clarification of the seemingly fickle quality that five-year-olds displayed in their use of context information. They sometimes selected some aspect of context information as a basis for generating non-figurative interpretations that were inconsistent with the context itself. However, they were more likely to use this information in figurative interpretations that were congruent with the story context as a whole; that did not require that they ignore or change context information as presented. Their respect for the integrity of context information depended on what they were able to infer using the context for clues.

#### Alteration of Information in the Story Context

The way five-year-olds used context information is particularly well documented by evidence from this variable designed to describe those cases in which subjects actually changed the information provided in the story context. These subjects were, by far, the most likely to alter information presented in the story context (see Table 9 on the following page).

TABLE 9Frequency of Alteration of Information in the Story Context (CI)

Alterations of Information in the Context - CI	<u>Fives</u>	<u>Sevens</u>	<u>Tens</u>	<u>Adults</u>
		42	20	16
	<u>T1</u>			
	19			
		<u>T2</u>		
		23		

These results provide the most direct evidence for the characteristic repeatedly mentioned in the discussions of other aspects of the data for five-year-olds -- they were not only the group that appeared to most easily gloss over information in the context when they constructed literal interpretation, but they were the group that most often changed the context information to fit their needs.

The implications of these results are carried one step further if we consider the fact that five-year-olds altered the context in the course of 20% of their figurative interpretations as compared with 44% of their non-figurative interpretations. This confirms what was suggested by results from the referencing context variable. While five-year-olds did not apply conventional standards for maintaining the integrity of information in the context they were not arbitrarily changing the context. They changed the context information most often in the course of trying to construct interpretations based on a literal intent that did not fit in the context; in cases where they had not been able to use

the context information to infer the figurative intent that fit with the context.

In some sense, one could see this as learning to use the context to support their interpretations even when they had to change or distort this information. That is, when they were unable to interpret the metaphor in a way that allowed them to maintain the integrity of the context, they reinterpreted the context; used the context on their own terms to fit their interpretation of the metaphor. Their playfulness can be viewed as serving the function of enabling them to explore possible if not conventional means of interpretation when they were not able to construct the intended meaning --they could practice even when they weren't "correct" or "appropriate."

#### Constructing Alternative Contexts for Interpretation

This notion that five-year-olds were finding ways of constructing and elaborating their interpretations when they couldn't infer the intended meaning of the metaphor and/or the text, is supported by data on this group's construction of alternative contexts (see Table 10 below). This is another case of a variable for which similar results, in terms of frequencies, do not necessarily reflect the same qualities or functions.

TABLE 10

#### Frequency of Constructing an Alternative Context - CI

	<u>Fives</u>	<u>Sevens</u>	<u>Tens</u>	<u>Adults</u>
Alternative Context	28	32	14	37

While the frequency with which five-year-olds constructed alternative contexts did not distinguish them in any marked way from other age groups, they used this means of interpretation in a different way.

The nature of this difference becomes more apparent if we consider that five-year-olds constructed alternative contexts in 28% of their non-figurative interpretations as compared with 14% of their figurative interpretations. When one context did not work to support or serve as a basis for elaborating on their interpretations, given that they had not inferred the figurative intent of the metaphor, they quite often constructed another context. These other contexts involved their own associations to the terms in the metaphor. The difference between this use of an alternative context and the use made by older subjects will be made clear in later sections on those age groups. What distinguishes the five-year-old from these older age groups is that their construction of alternative contexts was primarily for non-figurative interpretations and involved ignoring the context provided in order to find a means to support the interpretations they were able to infer.

For example:

"My mother is a police-woman"  
(in story context - CI)

"Her mother goes to work every day. She gives out tickets and maybe she carries a gun. But it's hard for Mom's to be police."

Again, their seeming lack of consideration for context information could also be construed as finding/exploring the use of context (not necessarily the one provided) on their own terms when

they were unable to infer the figurative intent of the metaphor that would have enabled them to use the context provided in a way that was consistent with their interpretation.

Providing a Context for Interpretation (CII)

The findings from the variable designed to describe cases in which subjects provided a context for interpretation in the isolated condition, supports the characterization of five-year-olds' interpretations in terms of their exploring means of interpretation and uses of context information for both their literal and figurative interpretations; means of interpretations that were used in more conventional ways by older subjects.

TABLE 11

Frequency of Providing a Context - CII

	<u>Fives</u>		<u>Sevens</u>	<u>Tens</u>	<u>Adults</u>
Provided a Context	70		65	47	84
	<u>T1</u>	<u>T2</u>			
	32	38			
For Figurative	11	2	36	20	28
For Non-Figurative	21	36	29	27	56

Five-year-olds appear to have been almost as, or more likely than older subjects, to provide a context as a means of constructing an interpretation when no context was provided (see Table 11 above). However, what distinguishes them from other children is

the fact that other than adults, they were the group that most often provided a context while constructing non-figurative interpretations and did so least often while constructing figurative interpretations. It is important to note that two-thirds of these non-figurative interpretations for which five-year-olds constructed/ provided a context in this isolated condition were context defined (T2) metaphors presented out of context. That is, providing a context was most often used by five-year-olds as a means of interpreting what they took to be conventional, literal phrases -- not metaphors. This was, for them, a general means or strategy for interpretation that was applied to metaphoric and conventional phrases.

The fact that they provided a context so frequently in the isolated condition corroborates their reliance on context information in their general approach to interpretation. An approach which has been described here as "telling a story" or describing the global implications of the metaphor for the subject or some possible set of circumstances. As suggested above, regardless of inference of intent, five-year-olds were playfully exploring possible relations and associations to the metaphor; possible ways of constructing and talking about the meaning of phrases. They were not justifying their interpretations, they were telling stories or vignettes that made sense to them in relation to the phrase; that enabled them to practice/play with constructing such relations. Their lack of inhibition in exploring both literal and figurative interpretations enabled them to develop abilities/

strategies that would later be used in different, more conventional modes.

In Sum...

This sub-section on five-year-olds' use of context information began with the observation that five-year-olds appeared to be both reliant on context and uninhibited in altering/ignoring context information. Findings reported here from the variables used to describe subjects' use of context have both confirmed and clarified what is behind this apparent contradiction. These findings include the characterization of five-year-olds' as:

- The age group least likely to refer to a story context when provided;
- Referring to the context to support both figurative and non-figurative but somewhat more frequently for figurative interpretations;
- The age group most likely to alter context, particularly during the construction of non-figurative interpretations;
- Frequently constructing alternative contexts to the one provided in a way that involved ignoring the context presented;
- Frequently constructing a context for interpretation when one was not provided, and doing so for both figurative and non-figurative interpretations of both types of metaphor.

Examined in some detail and taken in relation to one another as they have been throughout this analysis, these characteristics

have suggested certain qualities of five-year-olds' interpretations.

- They rely on context for inference of figurative intent and often use aspects of the context to develop figurative as well as non-figurative interpretations.
- They use context information to elaborate/support interpretations as it suits their needs, but are not compelled to account for it.
- Their tendency to ignore or change the context in some cases does not mean that they are not reliant on context. When they can't fit the interpretation to the context and therefore the context to the interpretation, they either reinterpret or ignore it. Despite the fact that they are not always able to maintain the integrity of the context provided they almost always either use the context on their own terms or construct one that seems feasible to them. This, is the key to understanding the apparent contradiction with which we introduced this sub-section.
- The use of context information by five-year-olds described here is consistent with the general approach to interpretation described in the analysis of previous findings -- they are playfully engaged in constructing possible relations between the metaphor, the context, their own experience and fantasy with few constraints from conventions. What the results reported in this section suggest is that this provides a kind of prac-

tice for them; an exploration of the skills and strategies that they will later use within the confines of more conventional interpretive acts.

### Conclusions -- The Qualities That Distinguish Five-Year-Olds'

#### Interpretations

The five-year-olds' interpretations of metaphors in both conditions of presentations reflected a playfulness, a willingness to engage in acts of interpretation even though they were often unsure of what was intended by the metaphoric phrase or the task itself. In the context of this playful and willing attitude five-year-olds were sometimes able to infer the intended figurative meaning, often constructing global interpretations that involved talking about the general implications of figurative intent. However, when the figurative intent was not apparent they were equally willing to explore non-figurative interpretations, usually involving the construction of literal relations.

That is, five-year-olds were constrained by awareness of conventions of interpretation. They were exploring possible meanings using whatever information was available in terms that made sense to them. They often began this exploration with uncertainty about what they were doing or what the metaphor meant, but they were unselfconscious and innovative about developing possibilities. Lacking practice or familiarity with a more conventional conception of interpretation they seemed to define it, often somewhat uncertainly and with some inconsistency, in a framework they could understand (story telling) -- "Her name is Molly and when she grows up she will be a policewoman

like her mom. Then she'll say -- hang up your clothes! And she'll tell her its fun." or "If she's bad, if she doesn't do what her mom says she will be put in jail. Cause her mom is a policewoman, and she is a police daughter and her father is a policeman. These are in contrast to a typical ten-year-old's interpretation of the same metaphor -- "she's saying her mom is real bossy, always telling her what to do like she belonged to the police."

Both the way the five-year-olds defined the task for themselves and the likelihood that they would be able to infer the intended figurative meaning of the metaphors presented was markedly influenced by access to a story context. Access to a story context helped them to engage in and define the task in a framework that was familiar to them (the telling of stories). The story context also gave them focus by providing information that suggested the intended meaning of the metaphor and served as a basis on which they could construct/explore possible interpretations. The apparent contradiction in the effect of access to context on five-year-olds' interpretations was that they relied on this context information, used it to develop and support interpretations as they needed it, but were not compelled to account for it or maintain its integrity as presented. The analysis presented here has provided an important insight into this contradiction. Their very lack of conventional criteria for both interpretation in general and the coherent integration of information in the text, enabled five-year-olds to play at and practice the construction of relationships between various aspects of information in the text or information they associated with the situation described. They defined the act of interpretation in ways that enabled them to be expansive, to learn the

process without the inhibition of conventions, without the ability to construct interpretations within the demands of such conventions. The very lack of systematic criteria for what constituted an appropriate interpretation or use of text seems to have been enabling them to learn/explore the skills and strategies necessary to eventually learning to apply or become aware of such criteria.

## SEVEN-YEAR-OLDS' INTERPRETATIONS

### QUALITATIVE RESULTS FROM THE APPLICATION OF DESCRIPTIVE VARIABLES

Seven-year-olds are a qualitatively distinct group; a group whose interpretations are in transition between those qualities that marked younger subjects' and the mature responses of older subjects. The quantitative data indicated that seven-year-olds are often able to infer figurative intent both with and without a supportive context.

#### The Qualities Which Distinguished Seven-Year-Olds' Interpretations

By way of introduction, the following overall qualities of seven-year-olds' interpretation are presented here; a prelude. The supportive evidence from which these qualities can be inferred is presented in all three sections that follow. That is, these qualities are not findings which directly correspond to or follow from each of the sections in which the results are presented.

- The seven-year-old is in search of "right" or appropriate answers. They are familiar with the act of interpretation and concerned about expressing meaning in specific, conventional language.
- The seven-year-old has a tacit awareness of the possibility of figurative uses of language; an awareness that is shaped by concern with mastering convention and applying almost rigid criteria for both appropriate uses and interpretations of language.
- The seven-year-old is in search of a "fit" between the metaphor and its context.

While no one interpretation is an ideal exemplar for the characteristics of the entire group, a few examples may help to give flesh to this characterization.

"My hair is spaghetti"

(in story context - CI)

"It means her hair was all messy, with tangles. She is just saying how it looks. It would be better if she said it straight out."

(in isolation - CII)

"I guess tangles and knots were getting in her hair, that's right. Right?"

"Sadness is a curtain"

(in story context - CI)

"No, because sadness is not a curtain. No one knows what that means. She should say it like it is. Sadness is unhappy and she wants to be alone and get it over with."

(in isolation - CII)

"I don't know the answer. No, it just can't be. They are two different things."

Having introduced the seven-year-olds with these impressions of the qualities that distinguish their interpretations, let's now proceed to a closer look at the specific findings that support and develop this general description.

A. Types of Figurative and Non-Figurative Interpretations -- Specification and Concern with Appropriateness

We will first consider the results from descriptive variables indicating the particular types of figurative and non-figurative interpretation. Recall that the basic finding from the quantitative data was that sevens constructed more figurative and fewer

non-figurative interpretations in both conditions. But, what was distinctive about the figurative and non-figurative interpretations of intent for this age group?

#### Figurative Interpretations

Let's look first at seven-year-old's figurative interpretations (see table 12, below). Seven-year-olds were able to infer figurative intent in most cases when a facilitating context was provided, and frequently even when metaphors were presented in isolation. In addition, they were able to specify the particular relations between the terms in the metaphor as they constructed figurative interpretations (i.e., specific rather than global interpretations as defined in the Methods Section). These specified interpretations constituted most of the figurative interpretations constructed by seven-year-olds in the story context condition, and made up about half of those constructed in the isolated condition.

TABLE 12

#### Seven-Year-Olds' Figurative Interpretations Specific versus Global

	<u>Story Context</u> <u>CI</u>	<u>Isolated</u> <u>CII</u>
<u>Frequency</u>		
All Figurative	70	53
<u>Percentage of all Figurative</u>		
Specific Figurative	72%	51%
Global Figurative	28%	49%

This suggests that seven-year-olds strive to specify the figurative relations as they talk out their interpretations and are helped in doing this by access to a context which suggests and mirrors the figurative intent of the metaphor.

In comparison with younger subjects, seven-year-olds were doing something that was different in kind when they constructed global figurative interpretations in both the story context condition, and, with greater frequency, in the isolated condition. Seven-year-olds, in the story context condition, were searching for connections with the text that would make sense of a figurative reading; in the isolated condition they were attempting to justify a figurative reading by constructing circumstances in which such an interpretation could make sense. Compared with the younger groups, the seven-year-olds' global interpretations were not glossing over the relations of metaphor and text or constructing fantastic stories with vague awareness of figurative intent. Seven-year-olds were working to attain what they took to be an appropriate form of interpretation for these unconventional phrases. When they were able to specify figurative relations, their work took the form of explicating or talking about particular relations. When they were less sure, the work/search took the form of finding conditions in which they might be able to justify the interpretation of figurative intent (particularly apparent in the isolated condition). In either case, a striving towards understanding how the metaphors might be expressed in conventional terms related to a context or some set of conditions was evident.

For example:

"Sadness is a curtain"  
(in story context - CI)

"I half understand. It's a curtain so it sometimes falls down and sometimes you can put it up. And I get what she means by some people hide their feelings from diaries. Like feelings aren't good enough to say in words.

You know how a curtain can be pulled up or dropped down when there is too much sun or at night.

So sadness is like a curtain when you pull it up you let the sunlight in and when you're sad you put it down so no one can see."

#### Non-Figurative Interpretations

The further differentiation of seven-year-olds' non-figurative interpretations in terms of the frequency with which they constructed literal interpretations between terms as opposed to insisting that 'no relation was possible' between the terms (assuming literal intent) provides additional evidence to this description of seven-year-olds' interpretations (See Table 13, next page). First, seven-year-olds constructed very few literal relations between terms, except for context defined (T2) metaphors presented in the isolated condition, where they have viable, literal interpretations.

Second, this was the age group that most often rejected metaphoric phrases as 'not possible' to interpret when they took these phrases to be intended literally. This form of non-figurative interpretation implied that the phrases were taken as inappropriate uses of language for which it was 'not possible' to relate the terms: "It's a mistake," "You can't say that."

TABLE 13

Seven-Year-Olds' Non-Figurative Interpretations  
Literal or Not Possible to Relate Terms

	<u>Story Context</u> <u>CI</u>	<u>Isolated</u> <u>CII</u>
<u>Frequency</u>		
All Non-Figurative	48	75
<u>Percentage of all Non-Figurative</u>		
Literal Non-Figurative	33%	72%
Not Possible Non-Figurative	66%	28%

Because 'not possible to relate terms' interpretations were so prevalent in the story context condition, it appeared that the story context presented both a help and a hindrance to this group. That is, in most cases access to information from a story context helped them work out the specific, relevant relations between the terms in the metaphor. However, when these children were unable to work out all connections between the metaphor and the story, or when they could not resolve what they perceived to be incongruities between the metaphoric comparison and the information in or language of the text, the seven-year-olds would declare that they could not interpret the metaphor. The presence of a context was, in these cases, a kind of hindrance despite the fact that it may have helped them to infer the intent of the metaphor.

In the isolated condition, it appears that seven-year-olds occasionally, but less frequently, perceived that it was not possible to relate the terms in the metaphor (inferring them to be

intended literally). The absence of a text seems to have meant both: less help for the specification of figurative relations intended, and less constraint in terms of having to consider the relation between a particular text and the metaphor (i.e., they were given the freedom and challenge to create any possible set of conditions to justify figurative intent).

Type of Metaphor and Forms of Figurative and Non-Figurative Interpretation

As noted above, when we look at the non-figurative interpretations it becomes apparent that most literal interpretations were constructed for context defined (T2) metaphors in the isolated condition -- an appropriate inference of intent (See Table 14). In contrast, the non-figurative interpretations for evident (T1) metaphors in the isolated condition were not predominantly literal. But these isolated metaphors were just as likely to be given not possible to relate terms interpretations as they were in the story context condition. Even without access to a context seven-year-olds appear to be self-conscious in their recognition that certain forms of response are not appropriate. They are attuned to conventions to the extent that they were constrained in the construction of literal interpretations for evident metaphors even when no context was provided.

TABLE 14

Seven-Year-Olds' Percentage of Interpretations  
of Both Types of Metaphors --  
Specific Versus Global Figurative or  
Literal Versus Not Possible Non-Figurative

	<u>Story Context</u>		<u>Isolated</u>	
	<u>CI</u>		<u>CII</u>	
	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>
<u>Percentage of Interpretations</u>				
<u>In a Given Condition (both</u>				
<u>types of metaphors)</u>				
<u>Figurative</u>				
Specific	<u>25%</u>	<u>20%</u>	<u>16%</u>	<u>5%</u>
Global	<u>6%</u>	<u>11%</u>	<u>13%</u>	<u>8%</u>
<u>Non-Figurative</u>				
Literal	<u>5%</u>	<u>8%</u>	<u>8%</u>	<u>34%</u>
Not Possible	<u>14%</u>	<u>11%</u>	<u>13%</u>	<u>3%</u>

The either figurative or not possible pattern described above for the story context condition is also apparent with the breakdown of interpretations by type of metaphor interpreted. The figurative interpretations for both types of metaphors in the isolated condition were fairly evenly distributed between global and specific forms of interpretation. It should be reiterated that many of these global figurative interpretations in the isolated condition take the form of a groping for or working to find circumstances under which the metaphor comparison might make sense.

Therefore, the previous characterization of seven-year-olds' interpretations in the story context condition as dichotomized between rigorously specified figurative and not possible to relate

the terms non-figurative, can be extended to the isolated condition (in the case of evident [T1] metaphors) with one modification. The difference is that T1 metaphors were more likely to be given global interpretations which include a kind of work or search for possible conditions in which figurative intent might be justified. In both conditions there is an apparent awareness that literal interpretations are inappropriate to the task, unless the metaphor has a viable literal interpretation out of a context that indicates figurative intent.

Alternating Between Figurative and Non-Figurative Forms in the Course of Interpretation

One additional source of evidence will help to provide a better sense of what is meant above when seven-year-olds are described as working out interpretations or talking out the process of constructing interpretations; the process between the interpretation characterized above in terms of their final figurative or non-figurative inference of intent and the initial attempt to grasp the intended meaning. This evidence concerns the frequency with which these subjects alternated between non-figurative followed by figurative, or figurative followed by non-figurative readings of intent in the course of a given interpretation (See Table 15). The process of explaining, justifying and relating various pieces of information in the course of interpretation sometimes led these subjects to begin with one initial, vague interpretation of intent and develop another. More information on this process, in so far as it is reflected in subjects' talking out of interpretations, will be described in the findings on

descriptive variables related to the use of context information (see Section C). But this evidence provides information about the course of children's interpretations as they struggle to fit their understanding of what constitutes an appropriate interpretation of a figurative phrase to the interpretation of a particular metaphor.

TABLE 15

Seven-Year-Olds' Alternating Between  
Figurative and Non-Figurative --  
Percentage of All Figurative or  
Non-Figurative Interpretations

	<u>Story Context</u> <u>CI</u>	<u>Isolated</u> <u>CII</u>
<u>Alternating to Figurative</u>	29% 23 (80)	27% 14 (53)
<u>Alternating to Non-Figurative</u>	27% 10 (48)	7% 5 (75)

These results represent the largest percentages found for the four age groups. The percentages of total figurative and non-figurative results suggest that neither the final intention interpreted (figurative or non-figurative) nor the access to a story context has an effect on the extent of this alternating, (except in the non-figurative interpretations of metaphors presented in isolation -- a result easily explained by the fact that half of these interpretations were of context defined metaphors out of context or conventional phrases). However, the frequencies presented below the percentages in the table lead to the recognition that most of this alternating between inferences of intention hap-

pened in the story-context condition. Again, seven-year-olds often explicated, out loud, the process of integrating the context with the metaphor as they constructed what they determined to be a feasible interpretation; they worked out an application of the implicit criteria they brought to the interpretive task.

The fact that the most frequent cases were those in which seven-year-olds began with non-figurative interpretations (often of the 'not possible to relate terms' variety) and worked out figurative interpretations in the course of their interpretive acts (23 out of 80), suggests a characteristic of their interpretations that is related to both their concern with appropriateness and the kind of skepticism that will be described in the next section. Seven-year-olds were concerned with appropriateness of the interpretation itself and of the usage of the metaphor in a way that justified or rationalized their interpretations. This approach appears to motivate them to search out relations that specify their interpretations. It is in the course of this explicated specification and justification that they frequently worked out a viable interpretation.

In sum...

All this suggests that these seven-year-olds had a basic understanding of what figurative use of language and interpretation is about. In the cases where a context was provided (CI), the nature of this basic understanding was indicated by their:

- Specification of particular relations between the terms of the metaphor as they were relevant to the context,

- Searching through/talking about the context to find clues when the specific relations intended by the phrase were not initially apparent to them (their form of global figurative interpretation).

When access to a story context was not provided (CII), the nature of their understanding of what the interpretation of figurative language was about was indicated by their:

- Ability to infer figurative intent but with less specification of figurative relations between the terms,
- Constructing a global form of figurative interpretation that involved description of a possible context in order to try and work out conditions in which they could make, what they took to be, an appropriate interpretation,
- Inability to consider the possibility of a figurative interpretation for metaphors which have a conventional literal interpretation when presented out of a context that implied figurative intent.

In both conditions, seven-year-olds' understanding of what figurative language and its interpretation was about was indicated by their:

- Dealing with cases where they did not perceive a figurative or any other kind of interpretation to be possible by asserting that the phrase was inappropriate, silly, an error, etc. (not possible non-figurative).
- Talking out/working at their interpretations, or the process by which they arrived at them, as they justified, explained, established the conditions in which the

interpretation made sense, and moved from initial perceptions to either more specific interpretations or reasons why it was not possible to interpret.

All this suggests that it is not the awareness of figurative intent for which seven-year-olds relied on context, but for cues as to how to find what they considered to be appropriate meanings of these unconventional, figurative phrases. Or, put another way, what they considered to be the information necessary to find a translation of these metaphoric phrases into more conventionally stated and specified forms of expression. As a result the context was helpful to them in cases where they could perceive how the context related to the intent of the metaphor and was a kind of burden in those cases where the relations were unclear, but, for them, required some explanation.

An interpretation, preferably stated in very conventional terms, was the goal of seven-year-olds' interpretive acts. Interpretations, for them, involved working towards this goal if it was not immediately apparent or available to them. Alternative ways of expressing meanings or the advantages of an unusual way of saying something was not a focus of their interest. Corresponding to their concern with appropriateness was an awareness, apparent in both conditions, that literal or fantastic interpretations were not the intent of these metaphoric interpretations. This was reflected in seven-year-olds' way of dealing with cases where they did not perceive a figurative or any other kind of interpretation to be possible -- they said so rather than assuming that any usage could be interpreted one way or another. Their understanding of

figurative uses and their interpretation was shaped by their general concern with appropriateness and observing conventions that called for specification of both relations between the metaphor's terms and the context.

B. Initial Judgments of Metaphor Interpretability -- Hesitancy and Assurance in Anticipations of Interpretability

The results from the descriptive variable used to code subjects' initial judgments of interpretability ("Do you understand what this child wrote here where it says...?") build on the characterization of seven-year-olds' interpretations described to this point. Looking at the totals for these initial affirmative judgments across age groups (see table next page) there appears to be a continuous developmental increase in seven-year-olds' assurance about their ability to interpret and/or their assessments of the appropriateness of these metaphoric phrases. However, if we compare the results from the two conditions the trend is not developmentally continuous. In fact, the results present a developmental discontinuity that, when examined closely, is the source of several clues about seven-year-olds' implicit understanding of figurative uses of language in the framework of their concern with appropriate, if not conventional, ways of both using and constructing interpretations of language.

First, consider the frequencies for these initial judgments of interpretability in both conditions -- the seven-year-old group's data stands apart from other groups in a comparison of results in these two conditions.

TABLE 16Seven-Year-Olds' Affirmative Initial Judgments of Interpretability

	<u>Fives</u>	<u>Sevens</u>	<u>Tens</u>	<u>Adults</u>
<u>Story Context</u> <u>Condition (CI)</u>	86	72	121	112
<u>Isolated</u> <u>Condition (CII)</u>	60	90	99	108
	146	162	220	220

As indicated by the results across age groups there were, for every age group except seven-year-olds, fewer affirmative initial judgments of interpretability in the isolated condition and more of these affirmative judgments in the story context condition.

Seven-year-olds were the least likely of all subjects to initially judge metaphors to be interpretable with access to a story context. Further, if we look across the results for different age groups in the isolated condition there is a marked step-wise increase in the frequency of seven-year-olds' affirmative judgments in the story context condition. This suggests that while seven-year-olds are the group most cautious about the appropriateness/interpretability of metaphors in the story context, this does not mean that they are unaware of or do not understand the intention of figurative uses of languages. In fact, they are somewhat less skeptical about the interpretability of these uses when there is no context which requires integration.

This comparison between data from the two conditions may be taken as an indication that it is not the possibility or inference of figurative intent *per se* that gives them pause, but the application of what they take to be the conventions of interpretation and use when confronted with a figurative, unconventional usage in the midst of a literal, conventional text.

These results suggest that seven-year-olds are aware of and familiar with figurative uses to the extent that they anticipate what constitutes a feasible interpretation. However, what distinguishes them developmentally is that their criteria for what constitutes interpretation includes relating the phrase to the text. When the relation is not immediately evident to them, because of what they perceive to be odd or unconventional about the metaphor, they become skeptics. However, they are skeptics who are often able to overcome their own caution and push their criteria for what is appropriate in order to construct figurative interpretations.

Initial Judgments of Interpretability of the Two Types of Metaphors  
In the Story Context Condition and the Isolated Condition

The Story Context Condition -- hesitancy about evident metaphoric usages in a conventional text.

It should be noted that while the type of metaphor being interpreted had no effect on these initial judgments of interpretability in any other age group (See Table 17, next page), the seven-year-olds were somewhat more skeptical in their assessments of evident (T1) metaphors in the story context condition. They gave affirmative judgment of interpretability to 31 evident (T1)

and 41 context defined (T2) metaphors. This suggests that seven-year-olds were somewhat less optimistic about interpreting obviously unconventional figurative phrases (T1) in a surrounding context of conventional, literal language. But, in the case of context defined metaphors for which they could not initially infer the figurative intent in the story context, they were somewhat more optimistic about saying, in essence, yes it makes sense, but it does not belong here.

TABLE 17

Initial Affirmative Judgments of Interpretability by  
Type of Metaphor -- CI and CII

	<u>Fives</u>		<u>Sevens</u>		<u>Tens</u>		<u>Adults</u>	
	T1	T2	T1	T2	T1	T2	T1	T2
<u>Story Context</u>								
(CI)	43	43	31	41	59	62	56	56
	86		72		121		112	
<u>Isolated</u>								
(CII)	28	32	38	52	49	49	53	55
	60		90		99		108	
<u>Totals</u>								
(CI and CII)	71	75	69	93	99	111	109	111
	146		162		210		220	

Despite seven-year-olds' ability to infer and even specify figurative intent, they were cautious about their initial judgments of interpretability in the story context condition, particularly when metaphors were evident, unconventional statements

of identity between seldom related terms. This suggests that the source of their caution was in part due to their initial concern (which they are usually able to work out) about the use of an unconventional form of language in the midst of a context utilizing conventional, literal, child-like language. Given seven-year-olds' concern with appropriateness and convention in relation to both language and interpretation (restatement in conventional terms) this task of constructing an interpretation of a metaphor in a conventional context led to some initial hesitancy and required work to get beyond their framework of what is usual, right or appropriate.

The Isolated Condition -- Context Defined Phrases out of Context or Judging Interpretability of Conventional Phrases.

There is one further, related characteristic of seven-year-olds' interpretations that can be deduced from the results of this descriptive variable as it is applied to the two types of metaphors. Seven-year-olds are quite comfortable/familiar with the act of interpretation itself, as long as they can apply their own conventions for what this act entails. This characterization is supported by: the large increase (in comparison with five-year-olds) in affirmative initial judgments of interpretability in the isolated condition (already discussed), and more specifically, the large proportion of affirmative judgments of interpretability of context defined (T2) metaphors in the isolated condition (out of context these are conventional, literal phrases). The context defined (T2) metaphors presented out of context represent an important contrast. These items are the only case in which subjects

were asked to interpret conventional phrases; the case in which their general ease with more conventional sets of interpretation could be assessed. If subjects were generally at ease interpreting the context defined metaphors in the isolated condition (again, conventional phrases with potential for a figurative reading in certain contexts) then any hesitancy they had in interpreting evidently metaphoric phrases was less likely to be attributable to a general discomfort or lack of familiarity with acts of interpretation.

Seven-year-olds were the only group who, without access to a story context, were much more likely to judge context defined (T2) metaphors initially interpretable. This comparison is particularly significant in relation to the five-year-old group who appear to have been somewhat less comfortable judging context defined (T2) metaphors to be interpretable out of context than they were the evident (T1) metaphors. That is, the seven-year-olds, unlike younger subjects, are about as assured about and familiar with interpretations of conventional statements as are the older subjects. It appears that what gives them pause is not the act of interpretation itself or the absence of a supportive text, but the unconventional and perhaps, to them, inappropriate use of language in the form of metaphoric phrases.

In sum, this variable used to describe seven-year-olds' initial judgments of interpretability has provided evidence that builds on the characterization of seven-year-olds' interpretations as it was discussed in the previous section. These qualitative

results discussed up to this point has indicated that seven-year-olds are:

- Aware of the possibility of figurative intent with and without access to a context that supports a figurative reading,
- Concerned about the appropriateness of metaphoric uses of language and their interpretation,
- Able to apply a criteria for appropriate interpretation that constitutes restatement in conventional, literal terms with specification of figurative relations between the terms,
- Motivated to pursue their interpretations or justify why interpretation was not possible so that they explicated the work that they were doing in order to construct, integrate and rationalize their interpretive acts.

The data described here from the initial judgments of interpretability build on these results. They suggest that seven-year-olds are also:

- Cautious in their initial judgments of interpretability because of uncertainty about the appropriateness/interpretability of evident metaphoric phrases in the context of a conventional text,
- More familiar with the act of interpretation in the sense of both having criteria for what constitutes an appropriate interpretation, and being willing to try and apply/stretch these criteria in what were, for them, unfamiliar or unconventional cases.

C. The Use of Context Information -- Explicating the Integration of Metaphor with the Context (when one is provided) OR Definition of an Alternative Context (when one is not)

Seven-year-olds were concerned with accounting for the relationship between the story context (when provided) and the metaphor. Their efforts to integrate the metaphor with the literal text which surrounds it has been pointed out several times in the results from the descriptive variables discussed up to this point (e.g., more figurative interpretations and more specification of these figurative interpretations in the story context conditions). However, this characterization of seven-year-olds' interpretations is documented most directly by results from the variables designed to describe what they do with text information in the process of constructing interpretations:

- references to information in the story context provided
- changes/alterations in this context information
- instances of constructing an alternative context to the one provided
- constructing a context when one is not provided.

See the Methods section for the definitions of each of these descriptive variables/code items.

It is the results from these descriptive variables which will be presented here in several successive layers; flesh to put on the bones of what has preceded. This level of description moves from characterization of interpretations themselves to indications of procedure or process by which subjects arrived at different characteristic forms of interpretation. Note that the first three

of the four descriptive variables deal directly with description of the use of context in explication of interpretations and apply only to the story context condition. The last item describes a strategy of interpretation that involves trying to find a context when one is not provided applies only to the isolated condition.

References to Information in the Story Context (CI)

The seven-year-olds, along with the ten-year-olds, are at the top of an inverted U-shaped curve that plots the frequency which subjects referred to information in the story context.

TABLE 18

Frequency of References to Story Context (CI)

<u>Fives</u>	<u>Sevens</u>	<u>Tens</u>	<u>Adults</u>
65	79	81	66

This relatively high frequency of referencing text helps us to see, in more detail, what seven-year-olds are doing as they work towards specifying and justifying their interpretations. They are talking about and making references to the story as it relates to their interpretation of the metaphor.

If we look further to determine how these references to text are divided between figurative and non-figurative interpretations (See Table 19, next page) it becomes apparent that the seven-year-old group was the group most likely to refer to the story context in the course of constructing figurative interpretations.

TABLE 19Percentage of Figurative and Non-Figurative Interpretations Which Include Reference to Story Context

	<u>Fives</u>	<u>Sevens</u>	<u>Tens</u>	<u>Adults</u>
Percent of Figurative	60%	75%	68%	53%
Percent of Non-Figurative	43%	40%	31%	30%

The percentage of references to story context for non-figurative interpretations is lower for every age group and relatively undifferentiated except between the two older and the two younger age groups.

All this suggests that the seven-year-olds' use context to go beyond inference of figurative intent. They integrate the metaphor with the information/context/conditions which surrounds it. Even in the case of non-figurative interpretations they are somewhat more likely than older subjects to refer to the text in order to rationalize their interpretations. Very little information is glossed or ignored. They tend to talk out the process as opposed to making it implicit in their conclusions.

Alterations of Information in the Story Context

The extent of the contrast between the seven-year-olds' characteristic use of text in acts of interpretation and those described for the five-year-olds and older subjects is particularly apparent in the results from the variable describing the change/alteration of information from the story context (See Table 20, next page). There is a marked, step-wise decrease between the

five- and seven-year-old groups in the frequency with which subjects altered information in the story context.

TABLE 20

Frequency of Alteration of Information in the Story Context

	<u>Fives</u>	<u>Sevens</u>	<u>Tens</u>	<u>Adults</u>
Alterations of Information - CI	42	20	16	5
		<u>T1</u>	<u>T2</u>	
		5	15	

It is also interesting to note that of these 20 cases in which seven-year-olds altered the context provided, 15 were alterations made in the course of constructing interpretations for context defined (T2) metaphors. Further, 9 of these 15 alterations of text related to interpretations of context defined metaphors and were done during non-figurative interpretations. In the course of trying to make sense of a literal reading in a context which implied a figurative reading, they re-interpreted the text rather than considering the option of an alternative figurative intent for the context defined metaphoric phrase. In short, seven-year-olds were much less likely than younger subjects to alter context information and when they did it was often in those cases where the task required considering an unconventional figurative reading of a usually literal phrase.

The characterization of seven-year-olds in terms of this descriptive variable is extended one step further if we consider the percentage of figurative and non-figurative interpretations which include alterations of story context information (See Table 21). In relation to a continuous developmental decrease in the percentage of alterations of story context for figurative interpretations the largest, step-wise decrease is located between the five- and seven-year-old groups. That is, the seven-year-olds were half as likely as the fives to alter or change the context in the course of constructing figurative interpretations. The overall percentage of non-figurative interpretations which included alterations of story context information in each of the four age groups formed a developmental curve that decreases (seven-year-olds), increases (ten-year-olds) and then decreases again (adults). The seven-year-old and adult groups were the least likely to alter the context during non-figurative interpretations.

TABLE 21

Percentage of Figurative and Non-Figurative Interpretations Including Alterations of the Story Context

	<u>Fives</u>	<u>Sevens</u>	<u>Tens</u>	<u>Adults</u>
Alterations During Figurative	20%	<u>11%</u>	8%	3%
Alterations During Non-Figurative	44%	<u>23%</u>	44%	20%

That is, seven-year-olds were as (or more) self-conscious about altering information provided in the story context as the two older age groups. This cautiousness in maintaining the integrity of the text was particularly apparent in their figurative interpretations but even held true in most of the cases where they constructed non-figurative interpretations. In the course of learning to integrate and account for the information in the context they become almost compulsive about applying implicit criteria for making things fit.

#### Constructing Alternative Contexts for Interpretation

In addition to integrating the metaphors with the text there is an aspect of the interpretive act which includes expanding on the story context information provided. This aspect has been operationalized here in the descriptive variable used to indicate cases where subjects constructed alternative contexts (See Table 22, next page). Initially, the results from this variable for seven-year-olds, in comparison to younger and older subjects, seems to differentiate them only from the ten-year-old group. However, as was mentioned in the description of the five-year-olds' results for this variable, the function which this providing of an additional context served for seven-year-olds was markedly different than it was for either the younger subjects or the adults whose results appear to be close to their own in terms of frequency.

TABLE 22Frequency of Constructing an Alternative Context - CI

	<u>Fives</u>	<u>Sevens</u>	<u>Tens</u>	<u>Adults</u>
Alternative Context	28	32	14	37

Seven-year-olds constructed alternative contexts in the course of their interpretations in order to provide alternative examples of situations in which such a metaphor might apply to their own experience; to justify and explain their interpretation of figurative intent. They were not constructing alternative contexts to avoid dealing with the one provided (see the description of five-year-olds' responses), nor were they using analogies to extend the interpretation of the metaphor to a more general truth statement (see the description of adult responses). An example may help to illustrate what this justification by alternative example looked like in the interpretations of seven-year-old subjects. (Note this is also an example of working out a figurative interpretation from an initial non-figurative inference --alternating.)

"I am locked outside"  
(in Story Context - CI)

I'm not sure. Maybe she is locked outside a building or something.

She has no one to play with 'cause she is locked outside. Everybody is inside the building and she feels like she's outside and has no one to play with. She feels like lonely.

Yah, like if all the kids are playing a game. I can't play. I feel like locked outside -- yah!"

Providing a Context for Interpretation (CII)

Additional evidence for this characterization of the function which alternative contexts served for seven-year-olds in their acts of interpretation comes from data on the frequency with which they constructed a context for interpretation when the metaphors were presented in the isolated condition (See Table 23). In this condition they were twice as likely to construct a context as they were to provide an alternative context when one was already provided in the story context condition. The comparison between age groups for this variable in the isolated condition is similar, seven-year-olds were, again, as likely as five-year-olds, although not quite as likely as adults, to construct a context or a set of conditions in which interpretation was possible.

TABLE 23

Frequency of Providing a Context -- Isolated Condition (CII)

	<u>Fives</u>	<u>Sevens</u>	<u>Tens</u>	<u>Adults</u>
Provided a Context	70	65	47	84

Although the frequencies distinguish the two older groups from the two younger groups, the function of this characteristic of the interpretive act is distinct for each group. Seven-year-olds in both the isolated and the story context condition use contexts to justify and explain their interpretations by example. They, like all other age groups, are as likely to do this for figurative and non-figurative interpretations. It appears to be a

strategy of interpretation that, in addition to having a distinctive function for this age group also transcends the inference of intent. It is a way of doing the act of interpretation rather than a specific aspect of the ability to infer figurative intent. However, these characteristic functions are reflected in the ways in which figurative intent is or is not interpreted by each age group. Seven-year-olds, as indicated above, are prone to explaining and justifying their figurative interpretations as they specify the relations between terms and this quality is apparent in their use of contexts from their own experience (whether one is already provided or not) to explain or justify their interpretations.

#### In Sum

The evidence in this section builds on previous characterization of the seven-year-olds' concern with relating the metaphor to the story context provided and extends this characterization to include some indications of: the observable aspects of the process by which they take the context into account, the inherent criteria reflected in this process, and their strategies for interpretation which utilize context information. The major findings from the descriptive variables presented above include the following specific indications of what seven-year-olds do as they construct interpretations and relate these interpretations to a context.

- They frequently referred to/talked about the text, particularly in the course of constructing figurative interpretations.
- They seldom altered the context provided, even for non-figurative interpretations. In those few cases where they did alter the context it was usually during interpretations of context defined (T2) metaphors; unconventional, figuratively intended phrases that would usually be read literally.
- They were the group most likely to construct alternative context to justify and explain their interpretations through analogous examples from their own experiences.
- Similarly, they often provided a context for interpretation when one was not provided (isolated condition) in order to accomplish this same explanatory function.

These findings suggest certain distinctive qualities of seven-year-olds use of context in their interpretations.

- They are not just using context information to infer figurative intent but are concerned with integrating the metaphor with the context in a way that is meaningful to them.
- They tend to talk out the process of interpretations as opposed to making it implicit in their conclusions. This involves accounting for relations between different parts of the context and the metaphor as opposed to glossing or ignoring information.

- They appear to have an inherent, implicit standard or criteria for relating text information to the metaphor which involves maintaining the integrity of the text and making things fit.
- They utilize a distinctive strategy for interpretation that involves justifying or explaining their interpretations or perhaps making them clear to themselves by constructing analogous examples (other contexts) from their own experience. This strategy appears to serve an explanatory and assimilative function for this age group which transcends condition of presentation as well as the figurative or non-figurative inference of intent.

Conclusions -- The Qualities that Distinguish Seven-Year-Old's Interpretations

Seven-year-olds in this study indicated an understanding of figurative uses of language shaped by their concern about observing conventions and finding "right answers". They were sensitive to/able to identify the figurative intent of metaphors, even in many cases when no context was available. Further, they were aware that literal interpretations of these metaphoric phrases were unsuitable. They appear to have been motivated by a concern for appropriateness. An appropriateness implicitly defined by them in terms of finding a conventional, literal translation of the metaphor that specified relations between the metaphor's terms as well as the information in the text. Even when a context was not available they usually constructed specific figurative interpretations, or a global form of figurative interpretation that

involved defining conditions in which a figurative reading could be justified.

This concern for appropriateness extended to concern about whether the writer's use of metaphoric language was suitable. They were not interested in unusual or alternative ways of saying things. In fact, their usual means for dealing with those cases where either figurative intent was unclear or the fit between the metaphor and the text was not apparent to them, was to declare that the phrase was uninterpretable -- "silly," "he can't say that." Even when they were able to construct figurative interpretations they were often initially cautious in their assessment of interpretability, particularly when metaphors were presented in the context of the conventional, literal language of a text -- "I'm not sure it belongs here."

Seven-year-olds' use of context, in the condition where one was available, went beyond relying on its information for help in the inference of figurative intent. Part of the tacit criteria they brought to the task was a concern with integrating the metaphor with the context in a way that was: meaningful to them, maintained the integrity of the text, and served to justify, explain their interpretations. This concern with relating metaphor and text was evident in the way they used/referred to the context as they worked out or talked out their restatement of the metaphor to construct a "fit" with the conventional language of the story. It was also evident in the strategy they frequently used to interpret metaphors in both conditions -- constructing alter-

native or possible contexts from their own experience that served as analogous examples to explain their interpretations.

Familiar with the act of interpretation itself, the seven-year-olds brought with them to the task tacit and seemingly conventional standards or criteria for what constituted appropriate usage and interpretation. They attempted to stretch these criteria in order to encompass less conventional uses of language. This process often entailed talking out or explaining their interpretation as they attempted to find a restatement of the metaphor in more conventional terms; a "right answer" as they defined it.

## TEN-YEAR-OLDS' INTERPRETATIONS

### QUALITATIVE RESULTS FROM THE APPLICATION OF DESCRIPTIVE VARIABLES

The qualitative analysis of ten-year-olds' interpretations provides a close look at one version of "competence" in the task of metaphor interpretation. As indicated by the quantitative results, ten-year-olds were able to construct figurative interpretations with almost the same frequency as adult subjects in both conditions. Therefore, the more detailed qualitative analysis of their interpretations is important to both: providing more depth to our picture of this next level in the development of metaphor interpretation, and considering what distinguishes the interpretations of this age group from the next developmental level (given that they are already performing almost at ceiling in terms of the ability to construct figurative interpretations).

#### The Qualities Which Distinguish Ten-Year-Olds' Interpretations

By way of introduction, let's consider some general qualities of ten-year-olds' interpretations. The evidence for these qualities is in all three sub-sections that follow. This is a preview of conclusions which may help the reader to construct or anticipate a larger picture of this age group as the details of the evidence are presented one layer at a time.

- Ten-year-olds construct figurative interpretations like good and assured students. Familiar with the discourse form, their interpretations are focused and at times almost definitional.

- Ten-year-olds are aware of figurative language in the sense of being able to identify instances, specify figurative relations and, at times, label these uses as "metaphors."
- Ten-year-olds are not as reliant as younger subjects on access to a context to specify figurative intent. But when a story context is provided, they integrate the context information with their interpretations. However, this integration is often tacit in their very focused interpretations.

The following examples provide some sense of how these qualities are exemplified in individual interpretations.

"She is a squirrel"

(in story context - CI)

"She hides things. Maybe she runs around a lot too, but mainly she's saying her sister saves things like a squirrel."

(in isolation - CII)

"She could be a person who is fast, short, small and maybe she climbs trees real well."

"Sadness is a curtain"

(in story context - CI)

"It's the way she describes her sadness. It closes her mind to other things like a curtain keeps things out."

(in isolation - CII)

"Maybe it means that sadness blocks out happy things. It keeps you from seeing anything but sadness."

#### A. Types of Figurative and Non-Figurative Interpretations --

##### Specific, Focused, Figurative Interpretations

As indicated in the quantitative section, almost all of ten-year-olds' interpretations were figurative, with the exception of the context defined metaphors which had viable literal interpreta-

tions when presented in the isolated condition. The data presented here begin to describe the form of these figurative interpretations and therefore the nature of the ability which is suggested by these general results.

#### Figurative Interpretations

Ten-year-olds' figurative interpretations (See Table 24, below) were almost always specified in the story context condition and specified in three out of four figurative interpretations in the isolated condition.

TABLE 24

#### Ten-Year-Olds' Figurative Interpretations

##### Specific Versus Global

	<u>Story Context</u>		<u>Isolated</u>	
	<u>CI</u>		<u>CII</u>	
<u>Frequency</u>	112		67	
	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>
	55	57	47	20
<u>Percentage</u>				
Specific Figurative	90% (101)		78% (52)	
Global Figurative	10% (11)		22% (15)	

They were very facile at focusing on the metaphor and specifying its figurative meaning, particularly in the story context condition.

Two points are important to note with respect to the figurative interpretations constructed by this group in the isolated

condition. The first point that should be made is that while the frequencies appear to be much lower than they are for figurative interpretations in the story context condition, only half or 64 of all their interpretations were of evident metaphors. Ten-year-olds constructed figurative interpretations for 47 or 73% of these evidently metaphoric phrases out of a supportive context. That is, they were almost as likely to construct figurative interpretations of evident metaphors with and without access to a context. The 64 context defined metaphors have viable, conventional, literal interpretations out of the story context. That is, the lower frequency of figurative interpretation for these metaphors was not a matter of being unable to infer intent.

The second point follows from the first. Twenty of the figurative interpretations constructed by ten-year-olds in the isolated condition were of context defined (T2) metaphors. This means that, unlike younger age groups, they were able to infer the possibility of figurative intent for almost one-third of the context defined (T2) metaphors presented out of a context that supported figurative intent. The implication of this finding is that ten-year-olds were:

- More flexible in considering alternative interpretations of phrases that have conventional, literal meanings out of context;
- More likely to pick up task cues from the interspersed presentation of evident metaphors with context defined metaphors in the isolated condition that suggested the

possibility of figurative intent for context defined metaphors.

These abilities along with the large percentage of specific figurative interpretations in the story context condition suggest a general familiarity with interpretation itself that is reflected in ten-year-olds' interpretive flexibility and their ability to pick up task cues suggesting the intent of the interpretive task itself.

#### Non-Figurative Interpretations

The results of the application of the descriptive variables which differentiate ten-year-olds' non-figurative interpretations into either literal or not possible to relate terms non-figurative, provide some clarification about what this age group did in those few cases where they were unable to construct figurative interpretations.

TABLE 25

#### Ten-Year-Olds' Non-Figurative Interpretations Literal Versus Not Possible

	<u>Story Context</u>		<u>Isolated</u>	
	<u>CI</u>		<u>CII</u>	
<u>Frequency</u>	12		61	
	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>
	9	7	16	45
<u>Percentage</u>				
Literal Non-Figurative	69% (11)		79% (48)	
Not Possible Non-Figurative	31% (5)		21% (13)	

Ten-year-olds very seldom constructed non-figurative interpretations in the story context condition and when they did they were somewhat more likely to be literal than assert that it was not possible to relate the terms (if they were taken literally). That is, out of all their interpretations in the story context condition, ten-year-olds constructed interpretations that either recognized figurative intent, or recognized that they were unable to make sense of the terms taken literally in that context (not possible non-figurative) in all but eleven cases or 7% of all their interpretations. They appear to have had at least tacit awareness that literal interpretations were neither intended nor appropriate to the task.

This same awareness is also evident in the results from the isolated condition. Ten-year-olds were slightly more likely to construct non-figurative interpretations of evident metaphors without access to a story context but most of their literal interpretations (39 out of 45) were of context defined (T2) metaphors presented out of context where literal interpretations were viable options. This suggests that ten-year-olds were not as dependent as younger subjects on access to the story context to recognize that literal interpretations were not intended or appropriate for evident metaphors. Further, the low frequency of not possible to relate terms non-figurative interpretations suggests that they were less dependent on the context (than the seven-year-old group in particular) to consider the possibilities for figurative interpretations. They had criteria that discouraged any attempts they might have made to construct literal interpretations but they also

had the ability to generate possible figurative interpretations rather than assert that relations between the terms were not possible (a pattern noted in the analysis of the seven-year-olds' results).

Alternating Between Figurative and Non-Figurative Forms in the Course of Interpretation

One further piece of evidence supports the general characterization of ten-year-olds' as assured, competent interpreters for whom the task is more like providing a definition or translation than solving a problem. If we look at this group's results for the variable used to describe alternating between figurative and non-figurative interpretations (See Table 26, below) it is apparent that there is only one condition in which these frequencies are worth noting. That is, in general, ten-year-olds were quite decisive and direct in identifying figurative intent and then constructing interpretations based on this inference.

TABLE 26

Ten-Year-Olds' Alternating Between  
Figurative and Non-Figurative

	<u>Story Context</u> <u>CI</u>	<u>Isolated</u> <u>CII</u>
<u>Overall Frequency</u>	7	13
<u>Frequency Concluding With:</u>		
Figurative	4 (112)	12 (67)
Non-Figurative	3 (16)	1 (61)

Interpretations in which ten-year-olds began with non-figurative but concluded with figurative interpretations in the isolated condition were the only cases where this kind of switching in the course of interpretations was notable. Looking one step closer at these twelve interpretations that went from non-figurative to figurative in the course of interpretation in the isolated conditions we see that eight of the twelve cases of alternating took place in the course of interpreting context defined (T2) metaphors. These were cases where ten-year-olds began with the viable literal interpretation of these phrases whose metaphorical intent is dictated by the context in which they appeared, and then recognizing the possibility of a figurative intent in certain conditions, constructed such a possible figurative interpretation. This is direct evidence for ten-year-olds' interpretive flexibility or ability to consider alternative interpretations for the same phrase.

In Sum...

The results from the application of descriptive variables that differentiate between different forms of figurative and non-figurative interpretations as well as describe cases in which subjects alternate between figurative and non-figurative forms corroborate and extend the quantitative results for the ten-year-old group. This characterization of ten-year-olds' competence has included the following extended description of their interpretations.

- Their interpretations were mostly figurative and included specific figurative relations between the terms of the metaphor.

- They were much less dependent on the story context than younger age groups for both inferring and specifying figurative intent.
- They were flexible, in the sense of being able to consider the possibility of figurative interpretation for some context defined (T2) metaphors presented out of context.
- They constructed very few non-figurative interpretations of either literal or not possible to relate the terms form.
- They almost never alternated between the figurative and non-figurative inference of intent or vice versa in the course of their interpretations, except in some cases where they provided first literal and then figurative interpretations of context defined (T2) metaphors presented out of context (isolated condition).

Taken together, these characteristics of ten-year-olds' interpretations suggest that they were familiar with the act of interpretation itself, like good students who were used to providing answers and definitions. Further, they seem to be aware of figurative language use both in terms of being able to recognize that the task was about interpretation of metaphoric phrases which they spontaneously identified and, at times, actually able to label the items as "metaphors" or "like poetry."

Their competence at interpretation in general and figurative interpretation in particular was marked by their consistent ability to focus on and specify figurative interpretations in a

fascile, almost definitional way, quickly identifying figurative intent and then constructing interpretations based on this inference. Ten-year-olds seem to be able to fill in or consider possible information needed in a way that enabled them: to recognize that literal interpretations were not intended, and to generate possible figurative interpretations. Further, they were not dependent on a supportive text to use these abilities and were able to define the context of the task expansively, including task clues from successive trials -- they recognized that the task was about interpreting metaphors.

**B. Initial Judgments of Metaphor Interpretability -- Approaching the Task With Assurance**

Further evidence for the assured and fascile quality of ten-year-olds' interpretations is provided by the variable used to describe their initial judgments of interpretability as they approached the task of interpreting each metaphor (See Table 27, next page). The most notable observation from the results for this age group is that the vast majority of their interpretations in both conditions began with the assessment/perception that the phrase was interpretable, i.e., it made sense to them.

TABLE 27  
Ten-Year-Olds' Initial Affirmative  
Judgments of Interpretability

	<u>Story Context</u>		<u>Isolated</u>	
	<u>CI</u>		<u>CII</u>	
<u>Frequency</u>	121		99	
	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>
	59	62	49	59
<u>Percentage Followed By:</u>				
Figurative	91%		61%	
Non-Figurative	9%		39%	

Despite that fact that ten-year-olds were somewhat less likely to give affirmative initial judgments of interpretability in the isolated condition, they were still approaching more than three-fourths of all their interpretations, even without a context, with a sense that they understood the phrase they were about to interpret. Further, although they were somewhat less initially certain about evident (T1) metaphors, presented in isolation the type of metaphor does not appear to have affected their initial assessment in either condition.

The fact that 91% of these initial affirmative judgments were followed by figurative interpretations in the story context condition suggests that ten-year-olds were immediately inferring figurative intent and then proceeding to construct or describe their interpretation based on this inference. The fact that only 61% of these initial affirmative judgments were followed by figurative

interpretations in the isolated condition must be understood in relation to the fact that half of the interpretations constructed in the isolated condition are for context defined metaphors presented out of a context that defines/supports their figurative intent, therefore, most of the 39% of affirmative initial judgments followed by non-figurative interpretations were affirmative judgments of context defined (T2) metaphors with viable literal interpretations. With this in mind, the result that 61% of the affirmative judgments were followed by figurative interpretations can be understood as an indication that not only most evident (T1) metaphors but even some context defined (T2) metaphors for which figurative interpretations were constructed were initially perceived as "making sense." A major difference from younger subjects who indicated much more uncertainty about what was intended by these phrases, particularly in the isolated condition.

In Sum...

This evidence on ten-year-olds' initial judgments of the interpretability of metaphors supports their characterizations as assured, quick to pick up the intent of both the task and of particular metaphors. In almost all cases they were constructing interpretations of metaphors that did, by their own assessment, make sense; they were not uncertain nor were they attempting to work out interpretations as if they were problems to be solved.

C. Use of Context Information -- Integration and Reference for Focused Interpretation

It has been suggested at several points in this presentation of findings for the ten-year-old group that they were relatively context independent in terms of their reliance on text to infer and specify figurative intent. The question then becomes -- how were ten-year-olds utilizing context information when it was available in the story context condition? The evidence which relates directly to this question is found in the results from descriptive variable used to indicate...

Reference to Information in the Story Context (CI)

The frequency with which ten-year-olds referenced the story context in the course of their interpretation is similar to the seven-year-old group's results -- both groups positioned on the top of an inverted U-shaped developmental curve (See Table 28, next page). At first this appears to contradict various aspects of what has been described as distinctive about ten-year-olds' interpretations, particularly their context independence. However, when we consider how ten-year-olds were using these references to text information and the percentage of all their figurative or non-figurative interpretations which included such references to the text, their characteristic use of context begins to emerge, distinct from the characterization of seven-year-olds and other age groups.

TABLE 28  
References to Story Context - CI

	<u>Fives</u>	<u>Sevens</u>	<u>Tens</u>	<u>Adults</u>
Overall Frequency	65	79	81	66
Percentage of:				
All Figurative	60%	75%	68%	53%
All Non-Figurative	43%	40%	31%	30%

As suggested above, the frequency with which ten-year-olds refer to the story context is almost comparable to that of seven-year-olds, but there is an important difference in the way they are using this information as they refer to it. Ten-year-olds use text information to specify and support their interpretations. This is unlike younger groups whose references to text are either part of more diffuse or global interpretations that rely on implications for the text or part of working out interpretations that are not initially clear to them. In contrast, ten-year-olds were explaining their interpretations or the intent of the speaker/writer in a very focused manner, often pointing out the particular connections between the figurative meaning and information in the context. For example:

"My mother is a police-  
woman"  
(in story context - CI)

"She says it because she (the mother) is so stern. She could also really be a policewoman, but here she is acting that way in the house. Like instead of giving out tickets she tells them what to do."

"Sadness is a curtain"

(in story context - CI)

"It's the way she describes her sadness. It closes her mind to other things like a curtain keeps things out."

This distinctive quality or use of references to the story context is suggested by the developmental decrease in the percentage of both all figurative and all non-figurative interpretations in which ten-year-olds included references to the story context. All age groups were more likely to reference the context when constructing figurative interpretations that were consistent with the information in the context. But ten-year-olds were less likely than either of the two younger age groups to reference the context in the course of their few non-figurative interpretations (5 of 16 non-figurative interpretations). They were not using context information that was inconsistent with a non-figurative inference of intent to justify or construct such interpretations. Further, they were somewhat less likely than seven-year-olds to reference the context in the course of their figurative interpretations. Ten-year-olds were not using their references to the context to justify or work out their figurative interpretations but to explain and specify the figurative intent.

In sum, the findings from this particular descriptive variable suggest that ten-year-olds were referencing and using context information to specify their figurative interpretations in relation to particular information in the context -- the intent of the speaker, the conditions described. Taken in relation to other

qualities of their interpretations their distinctive use of context information becomes apparent despite similarity to other age groups in results from this descriptive variable.

Alteration of Information in the Story Context

The findings for the ten-year-old group for this variable used to indicate alterations of information in the context represent one step in a developmentally continuous function (Table 29, below). However, these results are distinguished from those of other age groups in their relation to figurative and non-figurative interpretation during which those alterations of context occurred.

TABLE 29

Alterations of Information in the Story Context - CI

	<u>Fives</u>	<u>Sevens</u>	<u>Tens</u>	<u>Adults</u>
<u>Frequency</u>	42	20	16	5
Percentage of:				
All Figurative	20%	11%	8%	3%
All Non-Figurative	44%	23%	44%	20%

Ten-year-olds were the third least likely of the four age groups to alter information in the story context as they constructed interpretations. The characteristic of their alterations of context information which sets them apart from this continuous developmental trend was the fact that they were the group with the largest difference between the percentage of such alterations that

were made during figurative as opposed to non-figurative interpretations. The 44% of all non-figurative interpretations is not reflective of a large number of alterations of context (7 out of 16 non-figurative interpretations). However, the fact remains that in the context of a continuous developmental decrease, proportionately more of their alterations occurred during non-figurative as compared with figurative interpretations than it did for any other age group.

In sum, ten-year-olds were less likely than younger subjects to alter context information provided and more likely than older (adult) subjects to make such alterations. They were also marked by their ability to maintain the integrity of context information during figurative interpretations and therefore in those cases where they did alter the context it was usually in the course of non-figurative interpretations. Although generally very able to integrate metaphor and context, they were capable of reinterpreting the context to fit the metaphor in those few cases where their own inference of intent was inconsistent with the context provided.

Providing an Alternative Context (when one was provided - C I) and  
Constructing a Possible Context (when one was not provided - C II)

The findings from these two descriptive variables, used to describe cases where subjects provided a context for interpretation, either as an alternative to the story context provided or as a possible context for interpretation in the isolated condition, are very important to the characterization of the ten-year-old

group (Table 30, below). The findings for ten-year-olds from the applications of these variables represents marked developmental discontinuity. Discontinuity that is direct evidence for the characterization of this group's interpretations as focused, and almost definitional. Because these two variables suggest a corresponding means or strategy of interpretation used by ten-year-olds in either condition the results on both variables are presented together.

TABLE 30

Providing an Alternative Context - CI

	<u>Fives</u>	<u>Sevens</u>	<u>Tens</u>	<u>Adults</u>
Frequency	28	32	14	37
Percentage of All:				
Figurative	15%	20%	<u>9%</u>	29%
Non-figurative	28%	20%	<u>25%</u>	30%

Constructing a Possible Context - CII

	<u>Fives</u>	<u>Sevens</u>	<u>Tens</u>	<u>Adults</u>
Frequency	70	65	47	84
Percentage of All:				
Figurative	59%	55%	40%	65%
Non-figurative	54%	48%	<u>37%</u>	65%

The key finding here is that ten-year-olds were the age group least likely to provide an alternative context in the story context condition and least likely to provide a possible context for interpretation in the isolated condition. In both cases the ten-year-olds' results represent a marked developmental discontinuity. Ten-year-olds were the group least likely to construct contexts for interpretation that either ignored the existing context, or set up an analogous or possible context for purposes of explanation. As suggested above, their interpretations were more global; more direct and definitional rather than playful or worked out like problems.

If we look a bit further it is evident that the percentage of figurative and non-figurative interpretations that included constructions of a possible context (C II) were similar in the results from ten-year-olds as they were in the results for other age groups. However, while the percentage of ten-year-olds' non-figurative interpretations that included an alternative context for interpretation was similar to that found for other age groups, the percentage of ten-year-olds figurative interpretations that included construction of alternative contexts was the lowest of any of the four age groups. They were not only the least likely to construct alternative contexts in the story context condition but less likely than any other age group to do so for figurative interpretations. That is, they almost never used alternative analogous contexts as a means of expanding or justifying their figurative interpretations, nor were they using an alternative context because they were unable to integrate the information in the context provided.

In sum, these findings provide support to the characterization of ten-year-olds' interpretations developed to this point. What ten-year-olds were doing was integrating the context information when provided and constructing focused, specific interpretations that referred to the provided information as they felt it was needed. When no context was available they usually constructed interpretations with minimal reference to possible contexts. Again, these interpretations might have included tacit consideration of context or reference to particular features of context, but additional contexts were seldom talked about; seldom used to justify, expand or develop interpretations through their implications for a possible or parallel situation.

Conclusion - The Qualities That Distinguish Ten-Year-Olds' Interpretations

Ten-year-olds were familiar with and competent at the task of interpretation. Like practiced students they were quick to infer the intent of the metaphors, and assured as they constructed focused and specified interpretations of figurative relations. Part of their competence was a general ease with this form of discourse in which someone asked them a pedantic question and they supplied an appropriate, almost definitional answer. Another important aspect of their competence was an awareness of figurative language as a particular way of expressing meaning or using words. They were quick to recognize that this use of language was the focus of the task and then to spontaneously identify metaphors

in the text or reflect on alternative ways of interpreting both types of metaphors.

The extent of this tacit awareness of figurative language was reflected in the criteria or standards for interpretation that can be inferred from their responses. They recognized that literal interpretations were not intended, but were also able to generate possible figurative interpretations even in some cases where the only information that suggested figurative interpretations for context defined metaphors (T2) presented in isolation (C II) was the interspersed presentation of both evident and context defined metaphors. This interpretive flexibility and the related ability to generate possible figurative relations with and without access to context distinguishes the ten-year-olds from younger age groups.

Ten-year-olds use of context information can be characterized in terms of:

- Their implicit integration of context information apparent in their specification of figurative relations in relation to context
- Their referencing context or talking about other or possible contexts for interpretation only as such information was directly relevant to their focused interpretations
- Their independence from context information in terms of being able to identify figurative intent without the supportive story contexts.

That is, ten-year-olds approach to interpretation, like competent students reciting book reports, was reflected in their use of context. They always took context into account but seldom used it to play with, justify or expand their interpretations.

## ADULT'S INTERPRETATION

### QUALITATIVE RESULTS FROM THE APPLICATION OF DESCRIPTIVE VARIABLES

The qualitative analysis of adults' interpretations provides a look at another variation on "competence" in the task of constructing figurative interpretations of metaphors. As indicated in the quantitative section, adults were the group that were most likely to infer the figurative intent of metaphors in either condition, although the actual frequencies are only slightly above those of the ten-year-old group.

Therefore, these results from the descriptive variables, analyzed in relation to each other, provide evidence for the characteristics of adult interpretations beyond the ability to infer figurative intent. This evidence suggests another developmental step, or at least another approach to drawing inferences and constructing the meaning(s) of metaphors. It is an approach that suggests the use of a larger, more individually defined realm of context information in the interpretive act.

#### The Qualities Which Distinguish Adults' Interpretations

What makes an adult's figurative interpretation any different than a ten-year-old's? This preview of conclusions drawn from the evidence to be presented in this section may help the reader to understand what is intended by phrases such as "another form of competence."

1. Adults do interpretations like would-be writers assuming an analytic approach to understanding the possible meanings of the metaphor as well as the implications of these meanings and uses of language for the child-author. This approach

includes an interpretation of the task itself as being about a certain kind of language that they differentiate and comment on in various ways, e.g., "like poetry," "these children say things in very original ways," "It's a metaphor."

2. Adults construct figurative interpretations that are either definitional and specific, or more expansive and global in the sense of developing analogies to the metaphor presented. In either case they focus and reflect on the metaphor, at times considering alternative figurative readings.
3. Adults are least reliant on the story context to infer figurative intent. They consistently integrate information in the text, although this is most often tacit in their interpretations. Further, they often use the context information provided as a basis for inference about either the child-author's state (age, emotions, circumstances) or the larger context from which they take the story to be an excerpt.

The following examples reflect various aspects of these general qualities that are indicative of the adult group as a whole.

"My mother is a policewoman."

(in story context - CI)

"She's saying her mother is an authority figure who tells people what to do, like a policewoman. I like the way she says it."

(in isolation - CI)

"Perhaps her mother works, and she really does it as a job. But she may also be angry and feeling her mother is very strict and bossy. Often children don't understand why their parents have rules."

"Sadness is a curtain"

(in story context - CI)

"Curtains hide things like feelings do. She was hiding behind a curtain because she was not showing her feelings -- like shutting out the whole world."

(in isolation - CI)

"It's deep for a child. A curtain draws you away from things, like things you would ordinarily pay attention to get blocked out. When you are unhappy the things you ordinarily see and enjoy get blocked out like you had a curtain around you and you don't see them."

A. Types of Figurative and Non-Figurative Interpretations --

Beyond the Ability to Infer Figurative Intent

As reported previously, adults were the group that most often constructed figurative interpretations in both conditions. More specifically, interpretations reflecting inference of figurative intent made up 92% of all their interpretations in the story context condition and 66% of all their interpretations in the isolated condition. Again, keeping in mind that in the isolated condition the context defined (T2) metaphors with viable literal interpretations made up half of the metaphors presented, 66 percent figurative interpretations is high. The results presented below (Table 31, next page) provide a more detailed description of these interpretations that were primarily figurative and only occasionally non-figurative. This more extensive description makes it possible to determine what is characteristic about their form and the abilities, or perhaps even the intent, which are suggested by this characteristic form.

### Figurative Interpretations

Adults' figurative interpretations were usually specified. However, these results also present several unique patterns at this end point of a consistent developmental increase towards more specific figurative interpretations.

TABLE 31

#### Adults' Figurative Interpretations Specific Versus Global

	<u>Story Context</u>		<u>Isolated</u>	
	<u>CI</u>		<u>CII</u>	
<u>Frequency</u>	118		85	
	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>
	61	57	55	30
<u>Percentage</u>				
Specific Figurative	77% (91)		86% (73)	
Global Figurative	33% (27)		14% (12)	

The first thing to be noted about these results is that while the frequency of specific figurative interpretations is greater in the story context condition, the frequency of global figurative interpretations is also somewhat larger in the story context as opposed to the isolated condition. Therefore, the overall percentage of specified figurative interpretations is somewhat less in the story context than the isolated condition. The key to understanding this particular pattern is to recognize that adults' global figurative interpretations are qualitatively different than those of young children.

Adults will sometimes present a figurative interpretation in terms of its implications for the child-author or their own ideas about its general truth value in relation to their own experience. In these cases the specification of figurative relations are often tacit. Therefore the interpretation is global in that it does not include articulation of these specific relations. The important point is that this global characterization describes the adults' generalization of the metaphors figurative intent to a larger context, usually a context built on and developed beyond the one provided in the story context condition. That is, these interpretations were not global in the style of younger subjects who would gloss or be unable to differentiate the figurative interpretation of the metaphor from the general meaning of the story.

Adults' global figurative interpretations that extended beyond or generalized the implications of the metaphor were more likely to be constructed in the story context condition. This suggests that adults may have been using the context information provided not just to infer figurative intent but also to further interpret the implications of the figurative meaning or the use of figurative language. This possibility will be supported by data on adults' use of context information.

The other important aspect of this examination of adults, figurative interpretation is that they are the group that were most often able to consider the possibility of a figurative interpretation from the context defined (T2) metaphors in the isolated condition. Further, for 25 of these 30 context defined

metaphors they were able to specify figurative relations between the terms without access to a context. This is a continuation of a capacity which was noted in the results of the ten-year-old group, an ability to pick up task cues from the interspersed presentation of evident metaphors with the context defined metaphoric statements. But this was particularly indicative of the adult groups and often included reflections on the alternative figurative and non-figurative readings (note the example for "My mother is a policewoman" in the introduction to this section).

#### Non-Figurative Interpretations

Adults seldom constructed non-figurative interpretations but it is worth looking closely at those cases where they did so in order to determine what influenced and characterized these few instances.

TABLE 32

#### Adults' Non-Figurative Interpretations Literal Versus Not Possible

<u>Frequency</u>	<u>Story Context</u>		<u>Isolated</u>	
	<u>CI</u>		<u>CII</u>	
	10		43	
	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>
	2	8	10	33
<u>Percentage</u>				
Literal Non-Figurative	1% (1)	5% (7)	5% (7)	23% (29)
Not Possible Non-Figurative	1% (5)	1% (1)	2% (3)	3% (4)

It is evident from these results that adults almost never asserted that it was not possible to interpret a metaphor. In those very few cases where they did, the assertion usually took the form -- "the child is talking nonsense, it doesn't mean anything."

The only non-figurative interpretations of magnitude were the viable literal interpretations of context defined (T2) metaphors presented in isolation. However, even these appropriate literal interpretations were constructed least often by this adult group.

In Sum...

These results indicate that adults were:

- The least reliant on context information to consistently infer and specify figurative intent;
- Able to both infer figurative intent and develop its implications in relation to a more expansively defined context, a context that the adult selected and brought to the interpretation from their own experience and perceptions;
- Aware both that literal interpretations were not appropriate or intended and that more than one intent was possible for a phrase, even if the phrase was one that was usually used in more conventional ways.

The ease with which they did the task and the way they extended their interpretations suggests that, the interpretive act for adults was more than simply inferring figurative intent. Their

reflections on the use and meaning of metaphor or more expansive interpretations went one step beyond basic competence. Their ability to easily infer and specify figurative intent as well as their flexibility in considering alternative uses or intentions of language seems to have enabled them to be more expansive in their interpretive acts.

B. Initial Judgments of Metaphor Interpretability -- Approaching The Task With Ease and Assurance

The ease and assurance with which adults constructed interpretations is evidenced by the high frequency of affirmative initial judgments of interpretability that they made initially, before actually constructing interpretations (See Table 33, on the next page). The frequencies presented in the chart represent the largest number of affirmative initial judgments of interpretability in the isolated condition and the second largest number of affirmative judgments in the story context condition (ten-year-olds were slightly more optimistic and less likely to occasionally assert that this was children's nonsense talk).

TABLE 33

Adults' Initial Affirmative Judgments of Interpretability

	<u>Story Context</u>		<u>Isolated</u>	
	<u>CI</u>		<u>CII</u>	
<u>Frequency</u>	112		108	
	<u>T1</u>	<u>T2</u>	<u>T1</u>	<u>T2</u>
	56	56	53	55
<u>Percentage Followed By:</u>				
Figurative	98%		73%	
Non-Figurative	2%		27%	

These results reflect the least difference between the two conditions in initial judgments of interpretability. This further corroborates their lack of reliance on context to construct or, in this case, consider the possibility of constructing an interpretation of a metaphor.

The percentages for the initial judgments of interpretability followed by figurative interpretations are the highest found for any age group. The fact that 27 percent of the initial affirmative judgments made in the isolated condition were followed by non-figurative interpretations relates to the fact that even the adult group constructed viable literal interpretations of about half the context defined (T 2) metaphors presented in isolation and preceded these conventional, literal interpretations of phrases like "My mother is a policewoman" with affirmative judgments of interpretability. The important point here is that adults, like ten-year-olds, were initially or immediately able to infer figurative intent and then pro-

ceded to construct or describe their interpretations based on this inference. However, unlike ten-year-olds, they were even more likely to do this in both conditions for both types of metaphors.

In Sum...

Adults initial judgments of the interpretability of metaphors were consistently affirmative and assured. The only cases where metaphors were rejected as uninterpretable were those instances in which a particular adult would decide that the phrase or the story was "kid's talk" or nonsense that should be dismissed or at least not taken seriously enough to interpret. However, by in large, adults were constructing interpretations of metaphors that did, by their own initial judgments, make sense. If they hesitated at all it was over how to interpret the child's state of mind or purpose in making the metaphoric statement not in inferring the figurative intent.

C. Use of Context Information -- Defining and Integrating Larger Context Domains

Reference to Information in the Story Context (C I)

Returning to the inverted U-shaped developmental curve that is formed by the results from this descriptive variable across the four age groups, we find that adults are at the furthest and almost the lowest end of this curve (See Table 34, on the next page). That is, the adults were no more likely than five-year-olds to talk about or refer to the story context out loud in their interpretations.

TABLE 34References to Story Context - CI

	<u>Fives</u>	<u>Sevens</u>	<u>Tens</u>	<u>Adults</u>
Overall Frequency	65	79	81	66
Percentage of:				
All Figurative	60%	75%	68%	53%
All Non-Figurative	43%	40%	31%	30%

This relatively low frequency of actual references to the story context does not mean that adults were not taking the context into account and integrating it with their interpretations. What it does suggest is that adults did this integration tacitly, without justifying or supporting their interpretations with references to the text made out loud. Perhaps part of their context independence in the ability to infer and specify figurative intent is the ability to take the context into account by use, to go beyond the information provided rather than lean on it or use it to work out an appropriate interpretation.

This possibility is supported by the fact that only 53 percent of all of the adults' figurative interpretations included references to the story context provided. Adults were able to construct almost half of their figurative interpretations without talking about information in the text. They were able to develop focused and extensive figurative interpretations in a way that involved tacit integration of story context information; a way that took off from the information provided rather than struggling

with it or being limited to it as the basis for interpretation.

Alteration of Information in the Story Context

There is one piece of direct evidence that adults' lack of reference to information provided in the story context is not a sign that they could not integrate that information -- the results on the descriptive variable indicating instances where subjects altered or changed that information provided in the story context (See Table 35, below). Adults were the least likely of all subjects to alter information in the story context.

TABLE 35

Alterations of Information in the Story Context - CI

	<u>Fives</u>	<u>Sevens</u>	<u>Tens</u>	<u>Adults</u>
Frequency	42	20	16	5

Just because adults' interpretations did not include references to the story context does not mean that they were not applying their own stringent criteria for maintaining the integrity of context information. The most illustrative comparison is between the five-year-old group who were as unlikely as adults to refer to the context but were the group that most often altered context information in the course of their interpretations.

Providing an Alternative Context (C I) and Constructing a Context When One Was Not Provided

The best evidence available for adults' unique tendency to define a context beyond the one presented is available from the

data on providing an alternative context for the story context condition and constructing a context when one was not provided for the isolated condition. Because these are the indicators of a similar interpretive strategy in either condition the data are reported together here (See Table 36, below).

The important finding to note in the results presented below is that despite a decrease in the previous age group (ten-year-olds) adults were the group most likely to provide context information beyond what was presented in both conditions.

TABLE 36

Providing an Alternative context - CI

	<u>Fives</u>	<u>Sevens</u>	<u>Tens</u>	<u>Adults</u>
<u>Frequency</u>	28	32	14	37
Figurative				34 (118)
Non-Figurative				3 (10)

Constructing a Possible Context - CII

	<u>Fives</u>	<u>Sevens</u>	<u>Tens</u>	<u>Adults</u>
<u>Frequency</u>	70	65	47	84
Figurative				56 (85)
Non-Figurative				28 (43)

Unlike younger age groups where providing an alternative context was often done when they were unable to make sense of the one provided, adults constructed an alternative context as a means of

expanding on their interpretations or developing a kind of parallel case. Similarly, unlike younger age groups who constructed possible contexts for interpretation in the isolated condition as a means of finding possible conditions in which these phrases could be interpreted, adults were developing the possible implications of the phrase for the author's intention or psychological state or the possible situation in which such a phrase might be used.

Several examples may help to illustrate what such expansions on the metaphor look like in the two conditions of presentation.

"I am locked outside"

(in isolation - C II)

"She is insecure and lonely. Perhaps her family is not sensitive enough to her needs because they are so wrapped up in their own problems."

(in story context - C II)

"Like being shut out. She feels she has no friends, that she cannot communicate. Because she is so young she cannot understand that this is only temporary. In life we all have to make an effort to reach out to others if our family and friends aren't around. I think she is very bright to be expressing herself so well."

#### Conclusions - The Qualities that Distinguish Adults' Interpretations

Adults' ease and competence in the task of interpretation was based on their ability to:

- Infer and specify figurative intent regardless of access to a supportive context,
- Consider alternative meanings to even conventional phrases presented in isolation, and

- Integrate context information with the metaphor.

However, what distinguished their competence from that of ten-year-olds was their stance as critics; as interpreters of these metaphors in relation to inferences they made from the information provided and their own beliefs or world knowledge.

Adults' use of context information is inherent in this characterization. Their integration of the story context, when provided, was usually tacit. Their references were most often to context information that they provided -- inferences from the story context, or about the child-author and his/her circumstances, as well as analogies from their own experience. That is, they used task cues, the metaphors themselves and the story context (when available) to expand on their initial inference of the child-author's intent.

Adults' characteristic stance as commentators or critics involved a definition of the act of interpretation as beginning with the inference of intent and then going beyond that to interpret the motivation or psychological state of the child-author, the possible circumstances in which such a phrase might be used, or the validity of the metaphor in relation to their own life experience. It involved defining the context for interpretation in terms of more extended domains or aspects of their own experience. It included interpretation of the metaphor in conjunction with interpretation of the task; of the child-author's state and motivation; of the generalizability of the metaphor to larger contexts as they defined them. In short, adults' competence was distinguished from that of ten-year-olds by its more analytic and reflective approach.

All this suggests several important considerations in defining competence in interpretation of metaphoric or other uses of language. The status of the interpreter in relation to the author influences the way that the task is defined. Adults interpreting children's writing assume this critical stance that has been described. It is possible that this mode of interpretation is one use of their competence that includes the ability to interpret task demands and deploy abilities in relation to the particular circumstances presented. In other situations adults might construct more definitional interpretations resembling those of the ten-year-old group.

This takes us beyond the question of characteristic developments in the ability to infer figurative intent and into the question of modes of interpretation as they are used in different circumstances. It leads us to a more expanded view of competence than would be possible with the simple distinction between figurative and non-figurative interpretations.

Further, this close up look at adults' interpretations of metaphors suggests that the question of context dependence/independence or the use of context information in metaphor interpretations is only one aspect of the relation between context and metaphor. This analysis has only begun to consider the different ways of interpreting the task context and the context the interpreter brings to and defines in relation to the task. These are aspects of context and of reflections on the interpretive act which are important to what has been described here as modes of interpretation, and what has been alluded to as a more expansive view of interpretive competence. They suggest issues for further research implicated by the closer look that this comparative, qualitative analysis has provided.

## DISCUSSION

This research has pursued the simple, but seldom considered assertion that context and the interpreter's use of context is an important factor in studying acts of metaphor interpretation and their development. As this approach has been explored in this study, many aspects of the significance of context in the interpretation of metaphor by different age groups have become visible. They will be discussed here in the following framework.

- Overview of Findings -- Evidence for a new perspective on competence
- Reconsidering Metaphor Interpretation and Its Development
- Next Steps

### Overview of Findings -- Evidence for a new perspective on competence

The research results to be discussed here begin with the basic finding that competence in interpretation of metaphor is significantly affected by access to a context supportive of figurative interpretation (quantitative results). Young children are frequently capable of inferring figurative intent when given access to adequate, supportive context information, and are generally more dependent on access to such a context. They appear to rely on the context provided to lead them into the act of constructing or exploring an interpretation. However, younger children also have more trouble integrating the metaphor with the context provided into a coherent whole. They tend to ignore incongruities between the information presented in the story context, and their own knowledge as they select it and relate it to the metaphor. Correspondingly, they are less flexible in shaping the interpretation of figurative relations between the terms of the metaphor

to the information in the context.

These findings suggest a different perspective on competence than that reported by previous research on the development of metaphor interpretation (Billow, 1975; Winner, Rosenstiel & Gardner, 1976; Malgady, 1977; Winner, 1977). These previous studies did not provide context information, nor did they include other controls and conditions of presentation conducive to interpretation. These studies report that young children have little ability to construct figurative interpretations and provide little or no description of either young children's use of context or of the ways that they engage in acts of interpretation, beyond this inability to construct figurative relations between the terms of the metaphor. By employing access to context as an experimental variable, the research reported here has led to reconsideration of the interpretive capabilities of young children.

The second phase of this study (qualitative results) has pursued this direction through a different approach to analysis. This approach involves a broader view of the development of metaphor interpretation including a more extensive characterization of the specific aspects and qualities of interpretive acts as they are articulated by subjects of different ages. The result has been additional description of interpretive acts constructed with and without access to a story context. This qualitative section begins to provide answers to the question -- What are subjects at different developmental levels actually doing when they are and are not able to construct figurative interpretations of metaphors, with and without access to an immediate context? By accounting for more variety between interpretations across age groups,

these qualitative results have extended our conception of competence at different developmental levels. Further, it has provided evidence that the distinction between figurative and non-figurative interpretations is only part of what differentiates acts of metaphor interpretation by different age subjects. That is, qualitative results have provided a richer description and conception of interpretive acts themselves, as well as of their development.

This expanded description of subjects' interpretations has revealed both continuous and discontinuous developments in aspects of the interpretation of metaphor. These continuous and discontinuous developments reflect two levels of analysis or perspective on the data from application of descriptive, outcome variables to subjects' interpretations. One perspective is that of examining particular elements or aspects and the other is that of considering the larger configurations or patterns that emerge in relations between aspects.

Continuous developments are those aspects of interpretive activity which show linear trends across successive age groups. That is, they become visible by looking closely at specific characteristics and indicate the aspects of subjects' interpretive acts which progress towards some end state we characterize as maturity. These continuous developments give us clues about the different, interrelated aspects of what develops as children "get better" with age at metaphor interpretation. Discontinuous developments have become evident in both non-linear trends found in results for particular outcome variables, as well as in distinct patterns of relationships between variables found at a given developmental level. These discontinuous developments suggest how

various aspects of the way subjects engage in interpretive acts in certain conditions interrelate to generate both a distinct experience of and attitude towards more figurative uses of language at a given level of development. Both continuous and discontinuous developments need to be considered independently and in relation to one another.

The following overview of continuous developments, described in detail for each age group in the qualitative results, reflects aspects which interrelate to determine the general competence and characteristics of interpretations constructed by different subject groups. Taken together these continuous developments indicate the specific ways in which subjects' interpretive acts change progressively at successive levels of development.

1. The form of figurative interpretations progressed from global and playful to more specific and finally more extended, including both specific relations to the immediate context as well as connections with larger domains of knowledge or experience.

The form of non-figurative interpretations progressed from literal relations that were often inconsistent with the context provided to more skeptical, not possible to relate the terms interpretations that tended to prevail when subjects recognized the inappropriateness of literal interpretations, but were not yet able to infer figurative intent. Almost no non-figurative interpretations were found in the responses of the older subjects.

2. The assurance subjects expressed about the interpretability of metaphors at the outset of their interpretations; their understanding of what they were being asked to do; their acquisition of more conventional criteria for what is entailed in interpretation, all increased with age. However, the lack of assurance in approaching interpretations or the absence of a conventional framework in which to understand the task demands that characterized younger age groups need not be viewed simply as inadequacies. Instead of gaps in their abilities they displayed different means of engaging in interpretive activity that reflected and served functions relevant to their own level of development.
3. The ability to use and integrate context with the metaphor into a coherent set of relations develops continuously. It develops as subjects become progressively better at handling more information, selecting information that is relevant to the interpretation being constructed, and being able to use both the task context and the immediate story context (when provided) in order to infer figurative intent with greater consistency, specificity and extension.

Clearly this is not intended as an exhaustive list of all the possible aspects of metaphor interpretation. They reflect the focus of this study and generally attempt to account for evident sources of variation between subjects' interpretations in this study.\* (next page)

Several of these continuous changes in aspects of the development of metaphor interpretation (e.g., the ability to integrate information

and construct relations or inferences in order to understand sentences or whole narratives) relate to issues explored in other bodies of research. More specifically, the continuous changes described above relate to findings of studies which have focused on children's ability to make different kinds of inference. These studies have explored hypotheses about the nature of the actual processing and representation of information. They have utilized methods like false recognition paradigms and recall probes to investigate the influence of memory limitations (Bryant & Trabasso; 1971, MacNamara, 1972; Nelson, 1974), the positioning of information in a narrative (Feldman, Klosson, Parsons, Rhodes & Ruble, 1976; Nummedal & Bass, 1976; Austin, Ruble & Trabasso, 1977), the use of inducements to inferential activity like acting out phrases (Paris, Lindauer & Cox, 1977), the form of questioning and the explicitness of information in the text (Stein & Glenn, 1979), and the developmental differences in dependence on context (MacNamara, 1972; Nelson, 1974).

The results of this research, taken as a whole, is that young children can make inferences but the ability increases with age and is influenced, particularly in younger children, by the kind of factors

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\* Note that, as mentioned earlier, the ability to make comparisons or think analogically is an important part of metaphoric understanding that is not focused on in this study as it has been elsewhere (Billow, 1975). Efforts were made here to reduce the influence of this factor as a source of variance by choosing metaphors in which analogies or relations between terms were within the grasp of most children. Further, the control task was used to assure that all subjects had the knowledge of terms needed to construct the relevant figurative relations posed by each metaphor. Those items with which younger subjects had difficulty in constructing relations between terms are discussed in detail in the quantitative results section.

described above (Trabasso & Nicholas, 1980). This summary statement is congruent with the findings reported here. Further, this body of research is derived from a class of models which see "words as abstract constraints that guide meaning creation" (Branford & Franks, 1974). This class of models places emphasis on the active process of constructing relations in order to realize meaning. Constructive models of comprehension and memory are clearly compatible with the approach to metaphor interpretation that has been taken throughout this study. Such models and the research generated by their proponents implicate the importance of the kinds of variables described above for the development of many kinds of inference and comprehension.

It would be useful to explore the influence of some of these factors (like position of information in the text), beyond what has been undertaken in this study, to determine their influence on interpretation of metaphors. However, it is important to recognize that there is a difference in the object of study defined in the research here and that reported on by these authors. The research here was not directed at determining the nature of encoding or constructive processes in children, although such processes are clearly implicated in all interpretive activity. This research is directed at description of interpretive acts as subjects were able to articulate them. The fact that similar variables influence both types of research follows logically, although the nature of the method, evidence and claims are quite different.

In addition to relating to previous research on general processes of inference and comprehension, there are several ways in which these continuous developments of aspects of metaphor interpretation are par-

ticularly significant for our understanding of the interpretation of metaphor. First, these particular developmental changes offer further support for the position that context and its use is central to the act of metaphor interpretation and its development. The ways in which subjects select, integrate and define domains of context information is indicative of their level of development, their ability to construct different types of figurative or non-figurative interpretations and the function that more metaphoric uses of language serve for them.

Second, these findings broaden our understanding of the significance of context in metaphor interpretation to the point where different types and layers of context become apparent. That is, interpretation of metaphors is influenced by the task context and the immediate text provided, as well as by the context as it is selected and defined by the interpreter from the task, the text presented and defined from his or her own knowledge, experience and approach to interpretation. That is, context is significant as experimental variable and psychological variable in the study of interpretive acts. This distinction becomes important in trying to understand the development of interpretive acts because the nature of the interaction between the context as presented and as defined by the individual changes with development. For example, the story context may have suggested a familiar discourse mode to the five-year-old ("you tell me a story, I'll tell you one"), but this group defined the informational context for interpretation in a very subjective manner (selecting some information from the story as it suited their needs, ignoring other information provided and including incongruous associations from their

own experience). However, this more subjective approach to the task was much less evident in the interpretations of older subjects. They defined the task context and used the story context much more conventionally; they engaged in acts of interpretation by constructing (more or less specified) congruent relations between the terms of the metaphor, the text provided, and (to a greater or lesser extent), their own experiences or knowledge.

Finally, these aspects of subjects' interpretive acts, described above, are significant because when differentiated and related to each other they enable us to step back and recognize qualitatively distinct forms of metaphor interpretation; forms that range from simple inference of intent and specification of very limited figurative relations to extended interpretations of figurative relations that go beyond the immediate context to enable the interpreter to reconsider his/her understanding through the unconventional relations posed in the metaphor. These characteristic ways of realizing metaphoric relations in connection with both the immediate and more individually defined context; of engaging in acts of interpretation with different criteria for the specification and coherence of relations being constructed, results in qualitatively different forms of interpretation. That is, looking at these particular aspects of metaphor interpretation enables us to provide a much richer description of the interpretations of metaphors by different subjects, and thereby to consider how the subject's attitudes towards interpretive activity and the way they engaged in these acts contributed to the pursuit of distinct qualities of interpretation. Qualities of

interpretation that encompasses more than the figurative versus non-figurative distinction.

Thus the level of analysis which offers description of particular aspects of interpretations and evidence for continuous developmental changes in these aspects, also provides the richness of detail necessary to making larger configurations visible at another level of analysis. The patterns in relations between specific aspects of interpretations becomes evident when we move back and assume a broader perspective in order to characterize overall qualities of interpretation. Qualities which, within the demands of this task, distinguished the interpretations of particular age groups.

These qualitatively distinct forms of or approaches to metaphor interpretation have become visible in patterns found by considering both the discontinuous developmental trends in, and relations between variables used to describe subjects' interpretations. The characterization of five-year-olds' form of interpretations as playful, "you tell me a story, I'll tell you one"; of the seven-year-olds' as a quest for "right answers"; of the ten-year-olds' as competent, "book report" form; and of the adults' extended, editorial commentary on the significance of metaphors, all represent a dimension of description that is made possible by looking at patterns within and between the same variables used to describe continuous developments of specific abilities.

These forms of interpretation suggest different ways that the relations posed in metaphors were realized in relation to the context as presented and defined by different subjects. Interpretations that are representative of these forms differed in:

- the extent to which they constructed relations with immediate information (text), and more remote or personal contexts (i.e., the definition of context as the story presented or as their own experience in relation to the story and the metaphor),
- the way they developed these relations (i.e., the criteria used for integrating information in a more or less coherent whole),
- the degree to which they pursued or took advantage of the metaphoric potential for extension and elaboration posed by the metaphor (i.e., did they point out similarities between terms or explore the implications of these figurative resemblances in relation to the context).

The progression from the first to the fourth form of interpretation described above reflects a shift from interpretation of metaphor in some haphazard exploration of relations in the immediate context as it is associated with personal experience; to interpretations of metaphor constrained to construction of specific relations with the immediate context; to interpretation of metaphor as a reorganization or reconsideration of the immediate and larger context in terms of the metaphor. The fact that these distinct forms occurred in a developmental progression suggests that the ability to integrate larger domains of information is important to qualitatively different ways of engaging in interpretive acts; that the development and use of the capacity to select and integrate information enables the individual to assume different intentions or attitudes in their interpretive activity.

It is important to note that the characteristics of these different forms of interpretation were not mutually exclusive. For example, the characteristics of interpretive acts described in the "finding of

right answers" form of interpretation appeared to be implicit in the "competent book report" form. The difference was in the way in which seven-year-olds struggle to make elements fit in very constrained, conventional terms as opposed to the ways in which ten-year-olds perceived these relations as evident and formulated them in a characteristic style of report. The act of constructing relations between the metaphor and the information in the context provided was apparent in both forms, but the former was marked by more or less visible struggle, while the latter indicated relatively immediate and tacit understanding of these relations.

These are qualities of interpretation that have not been reported or explored in previous research. Such qualities are important to our conceptualization of what is entailed in utilizing and developing the ability to utilize the potential of more metaphoric uses of language; the potential to, in varying degrees, extend what conventional language can be used to signify; the potential which, when engaged, can encourage the interpreter to stretch beyond conventional conceptions or ways of looking at things. The qualitatively distinct patterns described suggest approaches to interpretation which lead to different degrees and forms of pursuit of such metaphoric potential by subjects at different developmental levels. As the ability to pursue metaphor interpretations develops, there is a shift from tacit inference of intent, to explication of limited figurative relations to a more intentional use of metaphor as a means of extending particular concepts and re-perceiving experiences or understandings. These findings indicate qualitative differences in the way more metaphoric language is experienced by and functions for different age groups.

However, this discussion would be incomplete and misleading if it left the impression that this developmental progression was simply an evolution from lesser to greater forms of interpretive ability. The description of relations between continuous and discontinuous developments provides clues as to the functional significance of the extent to which aspects of interpretation were evident and organized at different developmental levels. The description of characteristic qualities of interpretation at successive developmental levels indicate that as children get better at particular aspects of interpretive activity (e.g., integrating information provided into a coherent whole), they become able to engage in interpretive acts in different ways and eventually become more intentional in their exploitation of metaphoric potential (e.g., selecting and developing analogies to larger domains of context from personal knowledge and experience). This evolution in the qualities of interpretive acts reflects different functions that become dominant or relevant at different levels of development (e.g., seven-year-olds practice the application of newly learned conventions for what constitutes appropriate language use, and are therefore resistant to exploration of unconventional metaphoric phrases as well as compulsive about making every detail fit).

It is through reflection on the significance of these relations between continuous and discontinuous developments; between aspects and qualities of interpretation that a new perspective on the development of metaphor interpretation and the functional significance of interpretive acts begins to emerge.

### Reconsidering Metaphor Interpretation and Its Development

Descriptions of distinct forms of interpretation characteristic of particular age groups and defined by patterns found in the development of different aspects of interpretation leads to both reconsideration of previous conceptions of interpretation, as well as of previous conceptions of what development of metaphor interpretation entails. The characterization of interpretations presented here requires that description and analysis go beyond the distinction between figurative and non-figurative inference of intent and take into account the "textedness" of metaphor, as well as the active and varied participation of interpreters in interpretive acts.

The outcome of this analytic approach is that "the text and the reader become independent and competing entities whose sphere of influence and responsibility must be defined and controlled" (Fish, 1980, p.12). This view of the reader-text relationship is one in which there is a kind of homeostasis between the text as a constraint or guide to the construction of meaning and the interpreter who selects and uses that text, as well as brings his or her subjective experience and own knowledge to building up the meaning which is suggested by the framework (the structure and material) of the text. Such a view necessitates that the characterization of developmental change in interpretive acts include and track relations between the interpreter's definition and utilization of text/context and the characteristics of the text/task presented.

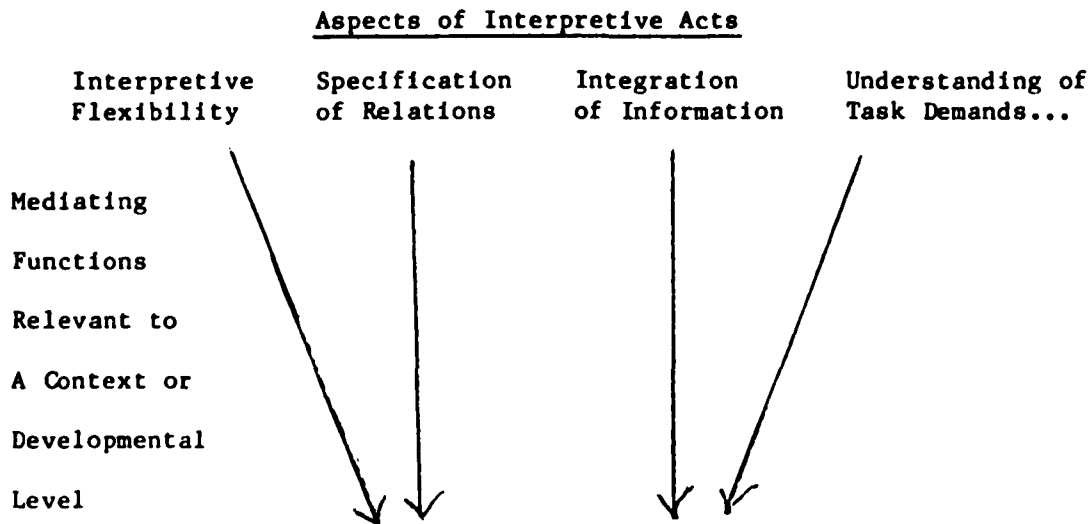
There are several advantages to this analytic approach. It provides a way of considering how the interpretation of more metaphoric language can be accounted for in the same framework of inferential and

interpretive abilities that are used in interpretation of more conventional language. This, as you will recall from the earlier discussion of theories, has presented considerable problems for those who have either avoided a constructivist approach to comprehension or focused on theoretical grammatical models in their efforts to account for metaphor.

The conception of interpretation reflected in the analytic approach presented here also enables us to consider how both the same and different phrases can function more and less metaphorically in relation to the context of presentation and the interpreter's form of interpretation. That is, the degree to which a given phrase functions metaphorically can be determined by the way interpreters engage in the act of interpretation, as well as the actual context in which the metaphor appears and the potential of relations between the terms of the metaphor for extending meaning in that given context.

What does all this suggest for a reconception of the development of metaphor interpretation? This analytic approach and the results of its application suggest a multi-dimensional conception of the development of interpretation in general, and metaphor interpretation in particular. This conception includes both continuous developments in specific aspects of acts of interpretation, as well as discontinuous developments as they are described above. It is possible to think of these two types of development in terms of related dimensions of developmental process rather than as paradoxes or contradictions to each other. The aspects of interpretation that tend to change continuously with age are one dimension; a dimension made up of interrelated aspects of the interpretive act which psychologists often

attempt to investigate in isolation (e.g., interpretive flexibility, capacity for integrating information or text, knowing when information has been left out or when a relation is incongruous). When one looks closer, and with more detail at these multiple aspects of interpretation that can serve as indicators of component abilities, patterns begin to emerge that distinguish qualitatively unique and discontinuous changes. These are overall qualities of interpretation that are visible in the way the interrelated, continuously developing aspects are brought to bear by an interpreter in relation to particular circumstances. These qualitatively distinct forms may be thought of as attitudes or intentions towards language which are reflected in the use of interrelated aspects of interpretive acts.



Characteristic Attitudes/Intentions Towards Interpretation

Playfulness -- "You tell me a story, I'll tell you one" ...

Pursuit of "right answers" ...

Assured, good students -- "book report form" ...

Commentary, criticism and extension ...

The point is not to wonder which dimension is more important or which is the origin of the other, but to consider both dimensions simultaneously; to consider the dynamics of the relation between them. Not all aspects of interpretive activity are equally important at different levels of development. For the five-year-old it is more important to find a way of engaging the task that lets him/her explore possible relations than it is to try and specify figurative relations unless they are immediately apparent. The characteristics that mark discontinuous developments at this dimension may be determined by both continuous developments in aspects visible in interpretive acts, as well as changes in which of these aspects have been or have yet to be developed. For example, the acquisition of conventions for language use appears to be particularly important to the seven-year-olds in this study. The importance of this particular aspect of interpretive activity for this age group tends to make them overly rigorous in applications of such conventions. It effects their willingness to engage in interpretation of less conventional phrases (like metaphors), as well as the specificity and compulsiveness with which they try to account for relations within an immediate context.

The organization and use of different aspects of interpretive activity is, at least in part, mediated by functions relevant to that level of development. Therefore, each qualitatively distinct level of characteristic intention, attitude towards interpretation of language in general and metaphor in particular, appears to have functional significance. Functions may be conceptualized as a kind of medium between the development/use of specific aspects of and intentions, attitudes towards interpretive acts.

The kinds of functions which mediate between aspects of and intentions towards metaphor interpretations relate to the extent to which various aspects of interpretive activity have developed or can be used in circumstances (contexts) which are more or less demanding. That is, different discourse forms, novel metaphoric relations, or more demanding interpretive contexts (relatively defined in terms of the kind and amount of information presented), may result in different functions mediating aspects of interpretive activity and intentions, attitudes towards interpretation. For example, if a metaphoric relation is particularly new and different a ten-year-old may appear to revert to either the playful exploration of relations or a rigidity in refusing to consider unconventional usages; attitudes that are characteristic of younger age groups in less difficult or more familiar situations.

In addition, the kinds of functions mediating both of these dimensions of interpretive acts at given points in development may be influenced by the experiences of the individual during that period. Initially, children's primary experience of written text is in the context of having stories read to them, later in school they learn to give answers that indicate they have learned the appropriate rules for definition or explanation, and eventually they may have experience with the kinds of talk that are used to comment on different types of writing (poetry, newspaper articles etc.) by different authors (literary figures, peers, etc.). Children are being exposed to and internalizing social expectations for appropriate forms of response or discourse related to different kinds of interpretive acts. The forms of discourse and interpretive activity which are prevalent in their

experience become evident in their own intentions, attitudes towards interpretation. For example, the seven-year-old is at times overly zealous in application of conventions that he is learning. This serves the function of enabling them to practice; to learn and to generalize the rules before trying to master the exceptions.

Seven-year-olds' experiences encourage this intention and the function it suggests. They are into the process of formal learning, including instruction in reading and writing according to rules and conventions taught to them in school. By way of contrast, five-year-olds' playfulness with language has an expansiveness as well as a haphazard quality which serves the function of enabling them to explore relations. The boundary between sense and non-sense; reality and fantasy is something they play at all the time in order to find new ways of doing and understanding. It is reflected in the stories they are read and in the games they play and adults play with them.

The fact that similar aspects of interpretive acts may appear serving related but slightly different functions and qualitatively different attitudes, intentions at different developmental levels is apparent from a comparison of five-year-olds' and adults' interpretive acts. Like five-year-olds, adults are expansive in their interpretations but their explorations of new relations and perspectives includes connections to a framework of conventions and a more or less organized body of experiences. The function for the adult is one of extending existing concepts by exploring the generalization of the metaphoric relation to their own experience or knowledge, while the function for the five-year-old is one of exploring any and all asso-

ciations without the constraints of, or the possibility of extending established concept boundaries.

Similar conceptions of development have been more formally described elsewhere in relation to other bodies of research (Werner, 1937; Nelson & Nelson, 1977). Like the model sketched out above, these models assume that the development of particular abilities is not unitary. They include more than one level of analysis and therefore describe more than one kind of developmental progression (e.g., within system and across system changes and individual differences (Nelson & Nelson, 1977), as well as consideration of more than one type of developmental change (e.g., shifts from narrow to more open approaches to use of information (Nelson & Nelson, 1977), or continuous increases in particular skills and qualitative changes in "patterns of processes" (Werner, 1937). Finally, such models view developmental progressions as being related to changes in function in the process of acquisition, or to the "dominance of functions in a given process pattern" (Werner, 1937).

The usefulness of the model sketched out above for understanding the development of metaphor interpretation is that it entails interrelated aspects of interpretive acts which are acquired gradually and adjusted or shaped in relation to different situations or contexts. It is a model that allows for variation in the acquisition and use of these aspects of interpretive acts, as well as in the extent to which the interpreter exploits the relative metaphorical potential of a particular use of language in a given context. It enables us to consider what a younger child is doing with and getting out of an act of interpretation even when it is qualitatively different in form and may

or may not include inference of figurative intent.

The development of metaphor interpretation, in this framework, is not unitary and metaphoricalness is relative. Competence may, by definition, be acquired and utilized in layers and degrees. For example, a child may find meaning in a very limited construction of relations between an immediate context and a metaphor, or play with relations to his own experience that enable him to explore the metaphors significance, while an adult may determine the extent to which he elaborates relations to larger domains of experience, constructing an interpretation that is extended or more like those that are characteristic of ten-year-olds. The metaphorical potential of the metaphor is, in part, determined by the interpreter.

As suggested in the description of adults interpretations, one implication of the findings and this model of development is that adults, and children at different developmental levels, may well be able to change their approach to interpretation, their selection and use of context information in which to construct relations and therefore the form of their interpretation. The evidence here is only gleaned from one type of stimulus material in a particular task context. Variation in task conditions, in the type of writing or talk in which the metaphor is embedded, or who the speaker and listener are in a given context may all influence the way the individual engages in specific interpretive acts and the form of the interpretation. Previous research on other topics has indicated that such changes in materials and task presentation can affect performance in part by influencing how the subjects understand the object of the task (Cole, Gay, Glick & Sharp, 1971; Scribner, 1975; Jewson, Glick, Pea &

Scribner, 1980). The critical question is -- How malleable are these aspects and the forms of interpretation described at different developmental levels?

This suggests an additional perspective on what is acquired as individuals develop competence in interpretation in general and in metaphor interpretation in particular. Perhaps part of what influences these qualitative shifts in forms of, or approaches to metaphor interpretation is how and when to interpret different uses of language differently; when to employ, define context in broader or more immediate terms or specify relations to a greater or lesser extent. Such developments would most likely be influenced by the experiences of the individual and the expectations of the social world for a given age group. For example, the experience of going to school and learning to give more focused, definitional answers shaped by the expectations of teachers would certainly influence the form of childrens' interpretations, particularly in situations where an adult is asking them structured questions. Perhaps the way children interpret metaphoric uses of language; the extent to which they exploit its potential is and can be influenced by others attitudes towards more expansive ways of exploring meaning. This is another level at which a different type of context becomes significant.

#### Next Steps

The findings reported here and this discussion of them pose many new questions. This research introduces and develops the implications of an approach to the study of metaphor interpretation rather than providing conclusive answers.

Given that context and its use is significant to metaphor interpretation, what context related factors (the amount, kind and organization of information presented in a context as well as who presents the task in what way) are important to acts of interpretation within and between levels of development? What influences both the way particular aspects of interpretive acts are engaged and the form of interpretation that is assumed by the individual? How maleable are the aspects and the forms of interpretation within different developmental levels? Answers to these questions would provide some indication of the variability and further clues as to the ways metaphoricalness is realized in different situations by subjects of different ages and with different experiences or training.

Another possible next step, which might better be characterized as a giant leap, extrapolates several of the same findings and ideas discussed in this research to larger considerations about the unique functions of metaphor. Step back for a moment and reconsider the utility of metaphor in terms of its maximal potential as a means of exploring ideas, reaching beyond existing concepts to new ways of viewing things or expressing that which seems inexpressable. More extended interpretations of metaphor can provide an analogical mechanism for exploring topics. A mechanism that serves a different purpose than the logical formulations of problems which leads to conclusions or solutions within an existing conceptual framework. The potential of metaphor for re-perceiving/re-conceptualizing a phenomena or problem through metaphoric-analogical comparison (e.g., the mind as a computer) offers a means of reaching beyond what we can express or understand. It is a means that may not offer solutions but may suggest

new ways of conceptualizing and exploring a given situation, idea or experience.

Now, returning to the context of this research, would it be possible to encourage individuals of different ages and experiences to engage in more extended interpretations of metaphor as a means of reconceptualizing or exploring topics that are relevant to them? The evidence presented here suggests that it is not that younger children cannot construct figurative interpretations, but that they do so in a way that reflects: their understanding of the task that is presented; their ability to construct relations and integrate them into both an immediate context and a context of their own knowledge and experience; their conceptualization of the topic of the metaphor in question; their interest in the topic of the metaphor, its relevance to them; their general level of conceptual and linguistic development as it determines the kinds of relations that are possible or interesting for them to explore. That is, what is maximal exploration of metaphoric potential for one group might not be for another, but regardless of how relatively it is defined it will only be possible for a given group of subjects when the metaphor in question and the context in which it is presented is shaped to their interests and needs for various kinds of contextual support.

It may be that the ten-year-old is capable of adopting a more extended mode of interpretation and thereby of learning to apply the potential of metaphor to a domain of concepts or problems that are relevant to him; topics he is interested in reconceptualizing, expressing or extending in some way. Perhaps ten-year-olds might be encouraged to reach beyond their succinct "book report"-like competence

in a situation in which they were presented with a metaphor (whose topic was relevant to them) in several different contexts. Contexts which varied in style and implications for the metaphor in question, contexts which would help them consider the topic of the metaphor in different ways and which might encourage them to reflect on the generalizability or extension of the metaphor. Considering the metaphor's relation to more than one context might enable them to engage in a more extended form of metaphor interpretation, and a different way of exploring/understanding the topic of the metaphor. A characteristic of interpretation that is often utilized by adult subjects.

Why would it be interesting to provide context that would be conducive to eliciting interpretations that exploited the potential of metaphor, as this could be defined relative to the developmental level and interests of the child or adult? It would be interesting because it would explore the potential for more metaphoric-analogical ways of approaching understanding relative to particular levels of development (an objective similar to the one described in the beginning of this section on "next steps"). It would also be interesting because it would be a way of helping both children and adults to acquire an approach to the learning of new concepts or understanding of a problem through the exploration of metaphoric-analogical relations, as opposed to the logical formulations of problems that is more prevalent in this culture. Finally, the process of determining the kinds of topics and the contextual supports required to help subjects from different groups engage in more extended, metaphoric interpretations

(again, defined relative to their developmental level) would tell us a great deal about the status of various aspects of their interpretive abilities and their conception of the topics and relations which they explored through such metaphoric extensions. The process of exploring what is required to extend concepts via metaphoric interpretation would inevitably suggest the nature of both the existing concepts and the system that supports them.

APPENDIX I  
STIMULUS MATERIALS

The Metaphors

My feet were wings.\*

Evident

My hair was spaghetti.

The darkness is a blanket.

Sadness is a curtain.

My thoughts were tripping over each other.

Context Defined

My mother is a policewoman.

She is a squirrel.

I am locked outside.

I was running uphill.

\*Presented to all subjects in the practice trial.

Metaphors in Story Contexts

I saw a face in the darkness. Right in back of me was a horrible looking creature with one eye looking right at me. I ran away, but I tripped and fell. I knew the thing was right behind me. I remembered a toy gun in my pocket. I aimed it right for his eye. The thing fell and I ran for all I was worth. My feet were wings. To this day I do not know if the thing is dead or alive.\*

When I was three years old I had a head full of curly hair. It was full of snarls. I started to scream at the top of my lungs when someone tried to comb it. My hair was spaghetti. When I was four my hair started getting straighter and longer. Twice I got it cut short, but it grew back. I am going to keep my crazy hair growing until it reaches my waist.

After school I sometimes play on my roof. The super of my building put a little house on the roof. He keeps his tools in it, but I can go inside. From the roof I can see everything, the river, the store on the corner and my friend's building. When it gets to be night it gets hard to see. The darkness is a blanket. When the lights come on my mother makes me come downstairs.

\*Presented to all subjects in the practice trial.

When I feel sad and lonely, I don't write or talk as some other people do. I can't say how I feel in words. I want to be away from things and people. I just think and close my eyes. Sadness is a curtain. I wonder a lot about how other people really put down their sad feelings into words. Some may even hide their own feelings from their diaries.

I couldn't fall asleep last night because I don't know why. It might be because I was hot or maybe it was because of the radio. Maybe it was because I was thinking about going to the movies on Saturday. My thoughts were tripping over each other. I hope it doesn't rain tomorrow. I want to go to the movies. But if it's sunny I could play in the park. I guess that this is what I was thinking about when I was trying to go to sleep.

When my mother says, "Nicole, I have a job for you to do," I groan inside and out loud. I know what she wants me to do. I have to hang up the laundry.

I say, "Aw, Mom. I don't want to."

She says, "Oh, come on, do it and get it over with." My mother is a policewoman.

But when I'm hanging up the clothes I start to have a little fun. I line up the clothes with all the same colors together, like a big design. The work is fun.

My sister Anne saves everything. She has boxes of shells from the beach last summer. She keeps rocks too. She even has her old toys in big paper bags. She is a squirrel. Sometimes she takes her stuff out to play or to look at it. She gives me some of her old things if I ask. But she never throws anything away.

Sometimes I like to be alone. I go to the bathroom and I think a lot about many things. Daydreaming is fun. Anything can happen. I like daydreaming while I'm alone and also it relaxes me. But sometimes I hate to be alone. Sometimes it feels like no one wants me. I am locked outside. This happens in the class when my friend Chris is absent. When she's not there I sometimes feel lonely.

I worked all day Saturday fixing my trains. Nothing would go. Sometimes the parts went together but they didn't fit anything else. The wheels didn't stay on. The track fell apart. I tried and tried but almost nothing worked. I was running uphill. When my brother came home he said he'd help me. He fixed the whole train. He did it real quick. I felt dumb.

APPENDIX II  
SUMMARY TABLES

TABLE I

FREQUENCY AND MEAN NUMBER OF FIGURATIVE  
INTERPRETATIONS IN TWO TASK CONDITIONS

Task Condition N <sup>a</sup> Type of Metaphor	<u>AGE GROUPS</u>							
	Fives		Sevens		Tens		Adults	
<u>Story Context (CI)</u>								
Evident Metaphors (T1)	#	Mean	#	Mean	#	Mean	#	Mean
	37	2.31	40	2.5	55	3.44	61	3.81
Context Defined Metaphors (T2)	23	1.43	40	2.5	57	3.56	57	3.56
Totals	60		80		112		118	
<u>Isolated (CII)</u>								
Evident Metaphors (T1)	#	Mean	#	Mean	#	Mean	#	Mean
	18	1.13	37	2.31	47	2.93	55	3.13
Context Defined Metaphors (T2)	4	0.25	16	1.00	20	1.25	30	1.09
Totals	22		53		67		85	

a The number of subjects in each of the two task conditions in each age group = 16

Note: The maximum number of possible figurative interpretations for each type of metaphor by an age group in each condition = 64, making the total possible figurative interpretations by an age group in each condition = 128 (16 subjects X 8 interpretations per subject = 128).

TABLE II  
REPEATED MEASURES ANALYSIS OF VARIANCE

<u>SOURCE</u>	<u>DF</u>	<u>SUMS OF SQUARES</u>	<u>F VALUE</u>	<u>PR</u>
<b>BETWEEN</b>				
Order	3	0.66885	0.61	0.6160
*Condition	1	20.25000	55.14	*0.0001
Condition x Order	3	0.00000	00.00	1.00
*Age	3	34.72656	31.52	*0.0001
Age x Order	9	3.29431	1.00	0.4485
Age x Condition	3	0.66406	0.60	0.6188
Age x Condition x Order	9	1.85829	0.56	0.8256
Error Term (ID(Age x Condition x Order))	96	35.25625	0.36	
<b>WITHIN</b>				
*Metaphor (within Type)	6	12.14062	15.47	*0.0001
Metaphor x Order (Type)	18	2.00311	0.85	0.6394
Condition x Metaphor (Type)	6	0.40625	0.52	0.7950
Condition x Metaphor x Order (Type)	18	1.25595	0.53	0.9425
*Age x Metaphor (Type)	18	6.45312	2.74	*0.0002
Age x Metaphor x Order (Type)	54	8.44430	1.20	0.1671
Age x Condition x Metaphor (Type)	18	2.90625	1.23	0.2272
Error Term (Age x Condition x Metaphor x Order (Type))	54	8.56954	1.21	0.1486

(Table 2 Continued)

TABLE II(continued)

<u>SOURCE</u>	<u>DF</u>	<u>SUMS OF SQUARES</u>	<u>F VALUE</u>	<u>PR</u>
WITHIN (continued)				
*Type of Metaphor	1	10.56250	70.80	*0.0001
Age x Type	3	0.17968	0.40	0.7552
Type x Order	3	0.26664	0.60	0.6229
Age x Type x Order	9	1.77514	1.32	0.2344
*Condition x Type	1	4.51562	30.30	*0.0001
*Age x Condition x Type	3	1.75781	3.93	*0.0108
Condition x Type x Order	3	0.04509	0.10	0.9545
Error Term	9	0.84124	0.63	0.7724
(Age x Condition x Type x Order)				

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TABLE III  
 FREQUENCY OF FIGURATIVE INTERPRETATIONS  
 FOR EACH METAPHOR IN TWO TASK CONDITIONS

Task Condition N <sup>a</sup> Type of Metaphors (Grouped by type)	<u>AGE GROUPS</u>			
	Fives	Sevens	Tens	Adults
<u>Story Context (CI)</u>				
<u>Evident (T1)</u>				
1. My hair is spaghetti	14	16	15	12
2. Darkness is a blanket	7	13	15	14
3. Sadness is a curtain	6	3	12	12
4. My thoughts were tripping	10	8	13	13
<u>Context Defined</u>				
5. My mother is a policewoman	6	7	15	13
6. She is a squirrel	7	11	16	14
7. I was running up hill	3	10	13	13
8. I am locked outside	7	12	13	15
<u>Isolated (CII)</u>				
<u>Evident (T1)</u>				
1. My hair is spaghetti	6	14	13	14
2. Darkness is a blanket	8	11	12	14
3. Sadness is a curtain	0	3	9	12
4. My thoughts were tripping	4	9	13	15
<u>Context Defined (T2)</u>				
5. My mother is a policewoman	2	13	4	5
6. She is a squirrel	0	5	9	9
7. I was running up hill	0	3	1	9
8. I am locked outside	2	5	6	8

Note: The maximum number of figurative interpretations of a given metaphor by an age group in each condition = 16. All interpretations that are not accounted for here as figurative were not nonfigurative.

TABLE IV

FORMS OF FIGURATIVE AND NON-FIGURATIVE  
INTERPRETATIONS IN TWO TASKS CONDITIONS

Task Condition Forms of Figurative/ Non-Figurative	AGE GROUPS Type of Metaphor							
	Fives		Sevens		Tens		Adults	
	T <sub>1</sub>	T <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>
<u>Story Context (CI)</u>								
Figurative								
Global	18	12	8	14	5	6	13	14
Specific	19	11	32	26	50	51	48	43
Non-Figurative								
Literal	16	36	6	10	6	5	1	7
Not Possible	11	5	18	14	3	2	1	1
<u>Isolated (CII)</u>								
Figurative								
Global	11	2	16	10	10	5	7	5
Specific	7	2	21	6	37	15	48	25
Non-Figurative								
Literal	16	49	10	44	9	39	7	29
Not Possible	30	11	17	4	8	5	3	4

Note: The number of interpretations for each age group in either condition is 128, 64 Evident (T<sub>1</sub>) and 64 Context Defined (T<sub>2</sub>).

TABLE V

FREQUENCY OF ALTERNATING BETWEEN  
 FIGURATIVE AND NON-FIGURATIVE IN TWO CONDITIONS

Task Condition	<u>AGE GROUPS</u>							
	Type of Metaphor							
	Fives		Sevens		Tens		Adults	
Alternating - Non-Figurative to Figurative Figurative to Non-Figurative	T <sub>1</sub>	T <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>
<u>Story Context (CI)</u>								
Non-Figurative to Figurative	8	4	15	8	2	2	4	11
Figurative to Non-Figurative	1	1	1	9	3	0	0	2
<u>Isolated (CII)</u>								
Non-Figurative to Figurative	5	0	7	7	4	8	7	3
Figurative to Non-Figurative	4	3	4	1	1	0	1	3

TABLE VI

FREQUENCY OF AFFIRMATIVE JUDGMENTS OF INTERPRETABILITY  
 PRIOR TO FIGURATIVE AND NON-FIGURATIVE INTERPRETATIONS  
 IN TWO TASK CONDITIONS

Task Condition Affirmative Judgment Prior to: Figurative, Non-Figurative	<u>AGE GROUPS</u> Type of Metaphor							
	Fives		Sevens		Tens		Adults	
	T <sub>1</sub>	T <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>
<u>Story Context (CI)</u>								
Prior to: Figurative	33	23	24	36	55	55	56	54
Non-Figurative	10	20	7	5	4	7	0	2
<u>Isolated (CII)</u>								
Prior to: Figurative	13	2	33	14	46	20	50	29
Non-Figurative	15	30	5	38	3	39	3	26

TABLE VII

FREQUENCY OF REFERENCES TO CONTEXT PROVIDED  
IN STORY CONTEXT CONDITION (CI)

Story Context Condition As Part of: Figurative, Non-Figurative	<u>AGE GROUPS</u> Type of Metaphor							
	Fives		Sevens		Tens		Adults	
	T <sub>1</sub>	T <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>
Figurative	16	20	26	34	31	45	31	32
Non-Figurative	8	21	6	13	1	4	0	3
Totals	24	41	32	47	32	49	31	35
Totals Across Type of Metaphor	65		79		81		66	

Note: References to context, by definition, could only be coded in the condition where a story context was provided. The total number of interpretations by each age group in this condition was 128, 64 for each type of metaphor.

TABLE VIII

FREQUENCY OF ALTERATIONS TO CONTEXT PROVIDED  
IN STORY CONTEXT CONDITION (CI)

Story Context Condition (CI) As Part of: Figurative, Non-Figurative	<u>AGE GROUPS</u> Type of Metaphor							
	Fives		Sevens		Tens		Adults	
	T <sub>1</sub>	T <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>
Figurative	6	3	12	4	7	3	1	1
Non-Figurative	6	13	6	10	3	1	1	2
<b>Totals</b>	<b>12</b>	<b>16</b>	<b>18</b>	<b>14</b>	<b>10</b>	<b>4</b>	<b>2</b>	<b>3</b>
<b>Totals Across Type of Metaphor</b>	<b>28</b>		<b>32</b>		<b>14</b>		<b>5</b>	

Note: Alterations to context, by definition, could only be coded in the condition where a story context was provided. The total number of interpretations by each age group in this condition was 128, 64 for each type of metaphor.

TABLE IX

FREQUENCY OF CONSTRUCTING A POSSIBLE CONTEXT  
FOR INTERPRETATION IN ISOLATED CONDITION (CI)

Isolated Condition (CII) As Part of: Figurative, Non-Figurative	AGE GROUPS Type of Metaphor							
	Fives		Sevens		Tens		Adults	
	T <sub>1</sub>	T <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>
Figurative	11	2	20	9	18	9	34	22
Non-Figurative	21	36	0	27	4	16	6	22
Totals	33	38	29	36	22	25	40	44
Totals Across Type of Metaphor	71		65		47		88	

Note: Attempts to construct a possible context for interpretation could, by definition, only be coded in the isolated condition where metaphors were presented without a story context. The total number of interpretations by each age group in this condition was 128, 64 for each type of metaphor.

TABLE X

FREQUENCY OF CONSTRUCTING AN ALTERNATIVE CONTEXT  
FOR INTERPRETATION IN ISOLATED CONDITION (CI)

Story Context Condition (CI) As Part of:	<u>AGE GROUPS</u>							
	Types of Metaphor							
	Fives		Sevens		Tens		Adults	
Figurative	T <sub>1</sub>	T <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>
Non-Figurative								
Figurative	6	3	12	4	7	3	17	17
Non-Figurative	6	13	6	10	3	1	1	2
Totals	12	16	18	14	10	4	18	19
Totals Across Type of Metaphor	28		32		14		37	

Note: Attempts to construct an alternative context for interpretation could, by definition, only be coded in the story context condition where metaphors were presented in a context. The total number of interpretations by each age group in this condition was 128, 64 for each type of metaphor.

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