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Making memories together: The influence of mother-child joint encoding on the development of children's autobiographical memory style

Tessler, Minda, Ph.D.

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U·M·I
300 N. Zeeb Rd.
Ann Arbor, MI 48106

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MAKING MEMORIES TOGETHER: THE INFLUENCE OF MOTHER-CHILD JOINT ENCODING ON THE DEVELOPMENT OF CHILDREN'S AUTOBIOGRAPHICAL MEMORY STYLE

by

MINDA TESSLER

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Katherine Nelson
Chair of Examining Committee

January 31, 1991
Date

Herbert D. Saltzstein
Executive Officer

Katherine Nelson

Joseph Glick

Mary Parlee

Supervisory Committee

The City University of New York

Abstract

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THE INFLUENCE OF MOTHER-CHILD JOINT ENCODING
ON THE DEVELOPMENT OF CHILDREN'S
AUTOBIOGRAPHICAL MEMORY STYLE

by

Minda Tessler

Adviser: Professor Katherine Nelson

The fundamental proposition guiding this study was that autobiographical memory is a particularly social form of memory, developed through adult-child interactions in which children internalize a particular style of attentional and representational processing, or encoding, and dialogically influenced form of recall.

Examining the influence of maternal style on 48 4-year-old children's subsequent talk about a joint mother-child picturetaking experience, the first major hypothesis tested was that the maternal style was not situation-specific but rather a consistent attribute to which children could be expected to have been exposed over time. The second major hypothesis was that children's exposure to this style would influence the development of their own in the same direction.

Children's preference for subsequent reconstructive talk by the experimenter in the style of their mothers rather than in a different style would be taken as evidence for such an influence and as support for the hypothesis of a social-interactive effect on the development of this form of memory.

The experiment was carried out over three sessions. The first consisted of a joint picturebook reading to assess maternal style, characterized as Narrative or Paradigmatic, followed by the picturetaking experience. Between the first two sessions, children were subdivided into 4 groups, consisting of 12 children in each, based on maternal style. At Session 2, two groups received reconstructive talk in the maternal style (a Narrative/Narrative and a Paradigmatic/Paradigmatic group) and two groups received reconstructive talk in the opposite style (a Narrative/Paradigmatic and a Paradigmatic/Narrative group). At Session 3, three weeks later, all the children received cues in both formats, from a different experimenter.

Maternal style was consistent across the picturebook reading and the picturetaking experience. Children showed a preference for their mothers' style,

to the extent that even children receiving talk in the opposite style "reformatted" it into the style to which they were most accustomed. A strong cohesion in the mother-child talk, characterized as "joint encoding," was proposed as the major vehicle for the transmission of the maternal influence.

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This is dedicated to my late father, Maurice Tessler, the foundation of it all, who is present on every page.

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CHAPTER I

INTRODUCTION

Commenting on the difficulties inherent in retrospective research, Yarrow et al. (1970) noted that

> two of every three comparisons showed mothers and children in closer agreement than were children's reports and baseline data. Incorporating both their own recall and the recollections passed on to them by their elders, children's reports present particularly uncertain blends of evidence. In these data, at least, close agreement between the descriptions offered by mother and child cannot be taken as confirming evidence regarding an earlier period in the family so much as evidence of a family folklore that may, or may not, reflect accurately the earlier time. (p. 35)

Others before Yarrow et al. have also noted the difficulty in disentangling recall of a childhood incident from recall of the many recapitulations over time of that incident, usually within the context of

the family. In their 1933 study of college students' childhood memories, Dudycha & Dudycha, for instance, felt compelled to instruct their subjects not to report childhood events that had been frequently recounted in their hearing but which they themselves did not truly recall. More recently, Brewer (1986) pointed out the likelihood that childhood memories that have been recalled and discussed a number of times would be "strong candidates for reconstructive processes."

There would seem to be general agreement, then -- reinforced, in fact, by a recent interest, to be discussed below, in the actual form, function, and development of this reconstructive talk -- that there may be a strong social-interactive influence on autobiographical recall.

Yet one of the main propositions underlying this study is that a focus solely on social effects on the reconstruction of experience, in the form of autobiographical recall, leaves out of its view another, equally influential, half of the memory process involved: social-interactive effects on the construction and representation of the experience later to become the memory to be recalled.

Perhaps because, from the very earliest investigations of autobiographical memory, the focus was on adults' recall, or difficulties in recall, of early childhood experience -- in order to answer the ever-fascinating riddle of infantile amnesia -- the focus has remained on what has been forgotten, or difficult to access, rather than on what became memorable and stayed memorable enough to become part of an individual's autobiographical memory. The dual directionality inherent in the phenomenon of autobiographical memory may play a large part in the methodological and theoretical difficulties accompanying this particular area of study. While, by definition, autobiographical memory pertains to recall of the past from the perspective of the present, the line of directionality leads in both directions: Memory moves forward but is remembered backward. Yet the real developmental question can as justifiably be stated as one of how this formerly present is carried forward into the "future" to become the "past" -- that is, how things <u>become memorable</u> -- as of how one looks backward from one's present state and recreates from that perspective a putative past.

Much evidence, dating from Bartlett (1932), has been brought forth to show the reconstructive aspect of recall from the present backward. Yet the logical other half of this -- the constructive element inherent in the creation of the present-tense representation that will become the memory to be later recalled -- has been relatively unexplored. But of what is the "past" constituted if not the once-present? The then and there was once the here and now, and one of the major arguments set forth in this investigation is that had the traditional study of autobiographical memory focused somewhat less on the memories that are the past-tense products of the representation process, and somewhat more on the process of constructing those representations -- memories-in-progress -- in the present, two integral aspects of autobiographical memory development would have been apparent much earlier: the importance of a process described here as "present-tense encoding" in the initial representation of an experience, and the strongly social nature of that process as it takes place in the everyday experience of young children.

From Galton (1883) to more recent researchers in the same line such as Crovitz & Schifman (1974) and Fitzgerald (1980), the focus has been on the finished products of memory and problems related to their retrieval rather than on the process of reconstruction -- and certainly not on its "construction" in the present. From Galton's (1883) "taxonomy" of memory (Robinson, 1986) to the questionnaires of Henri & Henri (1898) and Colegrove (1899), the self-report task of Dudycha & Dudycha (1933) or the checklists of Crook & Harden (1931) or Child (1946), the emphasis has been on the contents of a memory comparable to a storehouse. Memory has been seen as static, inert, "in there" (somewhere), waiting to be pulled "out." In this respect it is telling that researchers in this tradition spoke of "locating" memories.

What these studies tell us is what is remembered (perhaps), not how it becomes memorable. Because the studies are all undertaken from the perspective of an adult looking back, the viewpoint is nondevelopmental. For the same reason, because only one-half of the memory is looked at -- the recall, from a distance, but not the situation that would later become recalled -- the studies must of necessity be noncontextual,

providing no way to compare the recall with the thing recalled and thus depriving us of information as to correspondence between the two, information as to the process of selection, representation, and organization out of that present and into the memory representation, and no clues as to what in that situation or its physical, social, interpersonal environment might have influenced its having been "saved" for representation and recall. (One must note here that Dudycha & Dudycha (1941) did attempt to have subjects' memories verified by their parents, but this is an attempt whose admirable scrupulosity is attenuated by the naivetè implicit in their assumption that the parents' memory would have been undistorted by the same factors that made their children's memories questionable.)

Finally, the interest of traditional autobiographical memory research was in memory in a generic rather than individual form: in memories, that is, not in rememberers. Questions regarding differences in memory tended to focus on the categorical and the quantitative: number of memories in various affective categories; extent of recall; number of memories at each age. Where attempts were made to link such individual differences as

intelligence, gender, and personality traits such as stability or instability to differences in type or earliest onset of memory (cf. Dudycha & Dudycha, 1933; Child, 1940; Crook & Harden, 1931; Waldfogel, 1948), these too were comparisons or correlations between one static entity and another. It would have taken an entirely different philosophical outlook, one reflecting a constructivist rather than a quasi-positivist stance, to look at more dynamic aspects of memory as process consisting of selection, interpretation, organization, and different modes of representation and examine how these in turn might be influenced by the individual differences the researchers observed. It need hardly be said that questions relating to factors in the environment that might have played a part in these memories were also ignored, since memory was seen as something locked securely within the individual rememberer's mind, personal, "possessed," reflecting certain ideological concepts about the integrity and nonpermeability of the individual mind.

This focus on memory might have been greatly enriched by the Freudian focus on the individual rememberer (or, nonrememberer), but for reasons perhaps

attributable to what Brewer (1986) has called the "physics envy" of the experimental psychology of the time, but in any case more appropriately speculated upon in a study of the sociology of knowledge, psychologists interested in memory for the most part kept their purity, succumbing only to the exotic blandishments of Freud's theory of infantile amnesia. Had Freud's interest in individual patterns of remembering and forgetting been his legacy to memory researchers instead, we might have been led earlier to studies of the actual processes involved in representation of memory.

There is another point of view on memory, embodied in the constructivist view set forth most convincingly by Bartlett (1932). This view holds that memory involves transformations on the input; that constructive processes are determined jointly by the immediate context and the mental set, or "bias," brought into every context by the perceiver; that memory schemata are dynamic and changeable, depending on the function the remembering is to serve; and that memory is inherently interpretive in its transformational operations.

The constructivist point of view also allows many opportunities for the social world to enter the mind of the mnemonist: Constructive cognition mediates not only recall, but also the encoding of the input in the first place. As Paris & Lindauer (1977) state, "Even when memory is the involuntary consequence of comprehension, encoding often involves constructive strategies like the utilization of context, inference, elaboration."

In part due to a renewal of interest in Bartlett's work, and perhaps equally as strongly due to a suggestion by Neisser (1978) that memory researchers try to understand the uses of memory in everyday life, we have seen in recent years an increased interest in the functions of memories and remembering in general, as evidenced by research on reminiscence in the elderly and, at the other end of the lifespan, investigations into how young children use memory in everyday situations.

Everyday situations necessitate an examination of context, a context that is unquestionably highly social in the lives of young children. It is encouraging to think that we may at last be about to "arrive where we started and know the place for the first time." For

the current interest in naturalistic studies of children's memory is a renewal of an interest that goes back at least as far as Hurlock & Schwartz's 1932 study of parents' diary records of their preschool children's naturalistic memories.

Unlike the retrospective view of most autobiographical memory research, both of their time and of ours, Hurlock & Schwartz's data move forward in time, documenting a gradual accretion both of memories and the complexity of what is remembered. (It is important to note here, so as not to be guilty of attributing to the authors speculations or interpretations they did not make concerning factors in the children's lives that might have accounted for the changes in memory from one period to another, that the study is developmental only in its movement forward in time, and only in the <u>implications</u> that can be drawn from it. In its bare essence, the study is a compilation of quantitative and categorical data concerning the growth in number of memories reported at each age from infancy to six years, their increasing duration, and the changing proportions of the components of these memories, with no examination of

the factors underlying or accounting for the quantitative changes noted.)

One cannot, however, read these entries without noticing two things, whether or not our attention is called to them by the authors. The first is how very social these young children's lives are: how many of their experiences are shared with others, particularly adults. The second significant aspect is the enormous increase for memory of situations during one key period: between the ages of 3 to 6.

That the milieu of young children is a richly social one is not surprising; the opposite would be more so. Concomitantly, that the children's earliest memories are for persons quite familiar to them, and for familiar objects, is also not surprising, since persons and loved play objects constitute the child's psychological world. That memory for situations would not be among the children's <u>earliest</u> memories also seems logical: Situations are more complex than objects (and indeed most of the early memory for persons and objects was recognition rather than recall). Situations would have to be constructed to be remembered -- and situations have to be constructed and represented to be understandable even as they are

unfolding. In this respect it is significant that all of the situations described in the parents' diary entries were social ones, in which the child was a co-participant with someone else, usually an adult. The situations all are reported as taking place during the period from approximately 2 1/2 years on, when children are well into the language system, at least as facile comprehenders of language addressed to them.

That the heightened salience of situations in memory coincides with the most enormous growth in language is not the only important point to be considered here. Though many parents evinced surprise that their children could remember a situation or experience that, according to the parents, had not been discussed subsequently, the fact that all the children's memories were for situations of a social-interactive sort would indicate that though they may not have been talked about afterward, there is certainly reason to suppose that there would have been talk <u>during</u> the situation -- and there is such evidence from the parent diaries. Situations being more complex than objects, and in need of more structuring, verbal and nonverbal, the children would probably have been immersed in language at the time. Language, that is,

as a form of representation, was surely a part of the construction of the situation-in-process-of-becoming-a-memory, and can also be expected to have played a part in "holding on" to the memory, via the child's occasional rehearsal to self if not to others. By the time language comes in, there is much more talk from adults to children in the course of shared activities, which may make certain aspects of a situation more salient, and hence more memorable; and by the ages when these memories were reported, children could be expected to do some reconstruction, via this internal rehearsal, on their own. Language now becomes both a stimulus to recall and an object of recall, implicitly or explicitly. If we ask ourselves, for instance, what memory for a situation rather than, say, an object would be, it would be hard to purify it of any linguistic subtext.

Evidence from Waldfogel (1948) noting increase of memories with increase of language, and from Dudycha & Dudycha's (1933) findings that almost every one of their subjects' memories dated from the period when language had been acquired reinforce the importance of the implications from Hurlock & Schwartz. In fact, Dudycha & Dudycha suggest that it would be "interesting

and highly instructive to ascertain the extent of the correlation between language development and childhood memories" (p. 265). Though more recent researchers, among them Nelson (1981a) have noted the existence in young children of memories that date from before they had productive language, this is not in itself a refutation of the possible effects of language on memory. Whenever the two processes are considered together, the implication is that language development affects only the child's ability to talk about memories, and therefore it is concluded that if the memories have not in fact been talked about (because of circumstances or the child's linguistic incapacity), language could have had no influence on the subsequent memory. The effect of language -- the child's own, or someone else's -- on the development of the ability to construct and represent the situation that is the memory-to-be has not been given the share of attention that even a cursory perusal of material like the Hurlock & Schwartz diaries would justify.

Approximately forty-five years after these diary entries were published, and nine years after Neisser issued the challenge which renewed memory researchers' interest in studies of children's memory in

naturalistic contexts, much has been learned -- but many other aspects that might have been explored and thus enriched our knowledge still lie fallow. Recent research on the contexts in which children's memory is accessed and used has eventuated in findings that have importantly changed our ideas about memory in young children. We now know that they remember more, and over longer times, than we thought they did. But there is another aspect to their remembering, and it is in this that the significance of the Hurlock & Schwartz study lies: Children's lives are lived out in a social context and they get a good deal of help from others not only in remembering but in constructing their experience.

While researchers such as Nelson and colleagues (1981a) have shown how much knowledge children have of their social context, and while researchers such as Ratner (1980) have documented the demands that children's social worlds, in the form of the adults around them, place on them to remember, what has not been sufficiently attended to is the <u>help</u> that children receive in both these aspects from this same social world: in remembering, not only through explicit cues but also in the ways in which their world is routinely

organized; and in constructing and encoding their experience in the first place. The half of the memory process that is retrieval has been rescued from the laboratory and returned to the social context in which it naturally occurs and naturally gleans what it needs to do its work. The other half of the process, which involves the constructing and representing of the experience-to-become-the-memory, has been relatively neglected. Yet, as Moscovici has written (1984):

> Seeing, hearing, speaking, reasoning, touching, and such composite activities as perceiving and learning, are customary topics for psychologists or social psychologists, but these topics are viewed separately and independently of what is perceived or learned from the culture that is their common ground. (p. 946)

If social reconstruction is an accepted and acceptable explanation for the forms and re-forms of autobiographical recall of the past such as Yarrow et al. (1970) describe, should we not return our gaze to this same social context and consider social <u>construction</u> of the memory-in-process as an influence of the recall-to-be? And if the paradigm has shifted enough that autobiographical memory research has moved

from a quantitative focus on amount/reaction time/ category to the more recent highly qualitative and interpretive phenomenological reports of a Linton (1979), is the time not appropriate to catch up a step that somehow was skipped over in this transition from the objective to the subjective: the influence of the intersubjective? Is it not time, in sum, to look at what goes on during the child's experience in the actual situation that will later become the memory?

Situated Cognitions: The Influence of Culture, Family and Adult-Child Discourse on the Representation of Experience

The work of Bartlett (1932), showing the effect of social biases on memory and attentional processes, provides evidence for a social influence on the representational process, while the work of Vygotsky (1978) on the transition from interpsychic to intrapsychic regulation provides a formulation of how this occurs.

As Bartlett wrote:

> Nearly all important reactions, and most unimportant ones as well, have a social frame or background into which they must fit. Somehow or

> other, the specific bias [of the society] awakens in the individual, too, an active tendency to notice, retain, and construct specifically along certain directions....We can now see the general psychology underlying the way in which social conditions settle the matter of individual recall....Perhaps by actual inheritance...; perhaps all that happens is that it appears in the individual through the pervasive influence of one of the many forms of social suggestion. In any case, it does immediately settle what the individual will observe in his environment, and what he will connect from his past life with this direct response. [Italics added.] (Pp. 254-255)

It is thus not only the reconstructive processes evidenced in recall that are interpretive, and influenced by culture and socialization, but also, by extension, the attentional processes that construct and represent the experience in the first place.

It was Vygotsky (1978), of course, who most fully and richly described the process by which these "biases," through the "pervasive influence of one of the many forms of social suggestion," become internalized, in his classic formation of the process from other-regulation to self-regulation.

Bartlett's descriptions of the way in which "social conditions settle the matter of individual recall" are echoed in the work of Halbwachs (1980). It is "individuals as group members who remember," he wrote, and thus memory is always collective and social. As Faris (1980) has written of Halbwachs' work:

> Most of the contexts which carry human memory are social.... Even childhood memories are collective and exist only because the child's mind is organized by a social process and perceives and remembers within a social process. (From review cited on book jacket.)

In an echo of the Vygotskyan principle of internalization, Halbwachs concludes that we are never really alone: "Other men need not be physically present, since we always carry with us and in us a number of distinct persons" (1980) -- or, consciousness is "many-voiced," as Bakhtin has stated (cited in Todorov, 1985).

Finally, the <u>effects</u> of this internalization of the social/cultural world, which have been hypothesized by Schachtel (1947) to result in a change in the very categories of experience and interpretation of experience as the growing child's schemata become more

conventionalized with his/her entrance into the language system via adult-child discourse, provide both evidence for a process of conventionalization and socialization of the developing representational process and for the postulation that autobiographical memory is one embodiment of it.

Culture as Context

It is ironic that we have made more progress in investigating whether certain memory processes are universal or culture-specific through studies across cultures than within our own. The significance of the research to be discussed below for purposes of the present discussion is that everything that has been shown to influence differences in memory development in other cultures can equally be said to be influential in the form and development of at least one type of representational process, resulting in one type of memory within our culture -- autobiographical memory.

Cross-cultural research on memory has shown how influential the forms of a culture are on the varying forms that representation and recall may take. Different cultures have been shown to emphasize

different kinds of cognitive organization, and these different task demands and cultural values, activities, and rituals have led to the development of different ways of representing and recalling experience. The interconnection between cultural values and the psychological activities of individual members of the culture was of interest to Bartlett (1932), among others. Recall, he hypothesized, is guided by the available organizational schemas, and those are culturally determined.

Cole & Scribner (1977) have pointed to the need to examine the distinctive demands and supports for memory within different cultures, since these may be the source of the differences found in memory performance among different groups.

Wagner (1978) has found that differences in control processes -- strategies like clustering, categorization, and rehearsal -- appear to be culture-specific, and concludes that these differences are a function of different kinds of social contexts and early experience.

Parallels between Culture and Family

If cross-cultural memory studies over recent years have convinced us that many processes once thought to be inherent and universal are instead culture-specific, this would imply that memory is subject to social effects related to differences in social environments and their requirements.

Just as in different cultures there are different supports for memory and representation, and different task demands and requirements (Cole & Scribner, 1977), the same is true within families, which are here seen as cultures-in-microcosm. Different needs, different requirements within a certain group or environment, different kinds of interpretive schemas geared to assimilate different types of information -- all would be likely to direct the memory of family members as well as culture members into certain forms rather than others.

If the thesis set forth here that the child's earliest "training" in the representational process that eventuates in autobiographical memory comes about through social interaction with others, then what goes on in the family must be seen as the training ground. Glick (1979) once put the question, "What is the minimal useable unit of analysis in the cultural

domain?" and its corollary, "What kind of unit might a psychological unit of analysis be?" Given the highly social nature of the child's early life, the proper psychological unit of analysis would seem to be not the child him/herself, as previous research held it to be, but rather the child in context of his/her first culture: the family.

In this section, therefore, the family culture will be seen as the unit of analysis; the guiding assumption will be that families, like cultures, impose their own task demands and systems of organization; and that these must have their effects on the development and functions of their members' representational and memory processes.

The most fundamental argument underlying this section will be that there are many aspects of family organization in everyday life that influence children's representational and memory development, and that autobiographical memory, being the most closely tied to social interaction, is the most closely tied to family influence on style, organization, and use.

Construction of Experience Within the Family

Just as Wagner (1978) showed that control processes are influenced by culture, it will be argued in this section that socialization of memory and conventionalization of representation occur within the family through its equally powerful influence on children's attentional and encoding styles via those behaviors that reflect implicit and thus all the more potent organizations of time and space, based on equally implicit and enormously powerful feelings about experience as coherent and continuous vs. chaotic and random.

Family styles. Clinicians have long noted family styles of interaction, usually dysfunctional, by definition, and their effects on the development of pathology in family members. (For a review of this literature, see Jacob, 1975.) The influence of disrupted vs. stable family life on children's emotional development has been documented in detail. (For a review, see Rutter, 1985.) The negative effects of certain types of stressful family events on children's general competence in a school setting has also been noted (Roberts, 1985). Specific parental behaviors have been honed in on more closely, too. For instance, the effects of the presence or absence of

maternal stimulation (Hess & Shipman, 1965) and responsiveness (Clarke-Stewart, 1973) have been the subject of much study; and the effects of certain parental teaching strategies on children's performance of certain cognitive tasks have been noted (Sigel, 1984; Perry-Barras & Kaye, 1985). Family differences in linguistic style (Blount, 1984) and in conversational style (Tannen, 1986) have also been documented.

However, there has been less attention paid to other forms of family style, perhaps because in many ways they are much more implicit and thus invisible, as evidenced in such aspects of daily family life as attention regulation; information gathering, processing, and disseminating; time and space regulation; and the effects of such aspects of family organization on children's normal cognitive, as differentiated from pathological emotional, development.

Evidence will be briefly presented here for the existence of family styles of organization in three areas directly pertaining to the major thesis of this research: that these processes, as exemplified in

autobiographical memory, are importantly influenced by social interaction.

Berger & Luckmann (1967) have suggested that an intimate group develops its own conception of reality as a derivative of the "patterned and habitualized interaction patterns among themselves."

Family therapists have long noted the prevalence of "family myths," which reflect the family's consensus about itself and determine how it experiences and interprets the world. These collective representations can also take the form of family lore -- the stories a family tells itself about itself. Family therapists have observed (Anderson, 1985) that some families in therapy tend to tell stories about themselves again and again, and these stories seem well rehearsed. A family does not have to be dysfunctional, however, to engage in this sort of routine: The telling and retelling of stories, events, and memories of a family's (and sometimes generations of a family's) progress through the world is an integral part of family life.

David Reiss (1981) has studied the construction of shared schemas among family members which cause them to construe and experience reality in similar ways because they designate what is worthy (or allowable) to attend

to, and what can or must be ignored. These shared schemas, like the collective social representations described by Harré (1981, 1984) and Moscovici (1984), reside not only in the minds of each member but in the interaction between them. The ways in which these shared schemas come into being to form the "family paradigm," or characteristic way of organizing and understanding experience, are herewith proposed to be not only influential but crucially determinative of the development, form, and function of autobiographical memory -- and are presented as evidence supporting the proposition that autobiographical memory style is influenced by the family's style of organizing its everyday reality.

Embedded in a family's daily activity are "pattern regulators," which are the behaviors and routines that shape the family's experience of two fundamental constituents of day-to-day life: time and space. Reiss has found that families differ in their management of these elements and that these differences play a crucial role in the maintenance of the family paradigm. Though Reiss's research interest is in family patterns of communication, anyone interested in memory could not fail to note the significance of the

pattern regulators relating to time management, referred to by Kantor & Lehr (1975), upon whose research in the area Reiss's discussion is based, as "orienting" and "clocking." For lest the discussion of "family paradigms" seem too implicitly connected to clinical or emotional rather than cognitive matters, it should be pointed out that these pattern regulators exert a powerful influence on all the elements that go into constructing experience and representing it in memory, dealing as they do with the most basic attitudes toward how stimuli are to be experienced and interpreted -- whether order, coherence, sequentiality, and continuity are used as organizing factors, or their opposites.

"Orienting" refers to a family's preferred reference points in time. In <u>past orienting</u>, some aspect of historical time -- usually something in the family's own past -- is the fundamental reference point or organizing principle; one can easily conjecture that there would be very different interpretations of present experience, linkages with or feelings of disjunction from the family's past, and uses of memory in families whose preferred orienting point is the <u>present</u> or the <u>future</u>.

"Clocking" refers to the space, sequencing, and timing of events in the flow of a family's experience (Reiss, 1981). Reiss's depiction of the differences possible among families in this area is so illuminating in its specificity that it seems worth quoting in full:

> Some families order events into a linear schedule with each event neatly following the next. Not only is the sequence of events clear, but the boundaries between events are kept clear so that there is no mistaking when one is actually participating in one event and when one has gone on to the next. Thus, a family has a distinct meal preparation time, an eating time, a clean-up time, a pre-bedtime, and so on. Activities are carefully organized so that there is clarity about which is which. Another family attempting the same sequence might typically let the various activities run together and blur. The overall order is clear enough, but neither the members or outsiders are very sure exactly which point of the sequence they are in. (p. 243)

Obviously, these are very different ways of constructing experience, which one would expect to show up in how events are verbally constructed and encoded

in the present, and reconstructed in creating the sense of the family's past.

The "closure dimension" refers to the family's "proclivity for suspending or applying order and coherent concepts to raw sensory experience" (Hess & Handel, p. 14). The same families who organize their daily experience in terms of strict, observable sequences and boundaries would be expected to organize all incoming stimuli in the same structured fashion. As Reiss elaborates this concept, "Not only may the world [of such families] be experienced as ordered; it may be experienced as continuously ordered, and the current structure is experienced as derived from the past in an uninterrupted way" (p. 75). One would expect that the same "proclivity" for order and continuity would show up in the stories the family tells itself about itself and its experiences. The present is meaningful (because the structure of explanation and interpretation applied to incoming stimuli makes it so), and it is connected in a coherent and understandable way to the past. Families such as this could be expected to use memory as consultant and advisor much more often than families of the opposite extreme who, as Reiss describes them, for the most part

experience stimuli as "continuously novel and, at times, chaotic." Such families "cannot utilize or cannot remember the family's previous approaches or solutions to similar problems" because they tend to live in the present, where the stimuli coming at them are experienced as immediate, novel, and transient.

Time orientation, clocking, and closure are only a few of the ways that a family organizes its experience, but it would be almost too obvious to underline the significance of these particular dimensions for how experience in the present is structured and encoded, how reconstruction of the past takes place (<u>whether</u> it takes place, and for what purpose), and what form of autobiographical memory the family as a whole, and its individual members, develop. Family pattern regulators are its ways of constructing reality, and dealing with it. While obviously in most cases unconscious and only implicit, it seems clear that a family's preference for orienting toward the past, present, or future, its way of ordering time and space, and its proclivity for order and coherence, or the opposite, would have an enormous effect on the ways in which it organizes and represents experience, and conceives of the function of family memory.

Corroborating evidence that the family is a prime learning environment for the organization of experience is plentiful. Rutter (1975) has commented, in distinguishing what is learned at school from what is learned at home, that the skills learned at home apply as much to processes of attention and organization as the skills learned at school. Data from Tizard & Hughes (1984) go even further. What children are learning in the family setting, they say, are basic information about color and size, time relationships, family constellation, social interaction; in other words, they would seem to be being instructed in the basic building blocks of reality. One might also note that all of these subjects except perhaps color would be likely to show the influence of a particular family's schema and pattern regulators.

What may also be being learned in the family is a memory "specialty." Both Reiss and Hope Leichter (1985) have noted family "divisions of labor" in the realm of memory, a collective family memory being based on the family-known specialties of the various members. Reiss cites examples from laboratory experiments in which family information processing, organizing, interpreting, and disseminating styles -- evincing the

same division of labor seen in more naturalistic settings and thus felt to be characteristic of the families -- displayed themselves even on artificial tasks.

The work of child-language researchers provides a look, in microcosm, at different forms of family-talk. In the following section it is proposed that much of what has traditionally been looked at in the language and discourse literature, if looked at from the perspective of memory development, with a focus particularly on the encoding aspects, would yield an enormous amount of data showing the influence of adults not only on the increasing well-formedness and conventionalization of a child's sentences, but of his/her representation and recall of experience as well. One might, for instance, ask how that present-tense talk might also be affecting the child's representation of what was going on -- and being talked about -- at that time.

Joint Present-Tense Encoding: The Mutual Creation of a Representation

Language acquisition research has focused a great deal of attention, for instance, on how the here and

now is talked about. Though the focus of such work is not on looking at how that present-talk might be influencing the memory representation of the present that was going on at the same time, given the fact of language as a representational system difficult if not impossible to separate from all the other cognitive processes at work at any given moment, it seems clear that the descriptions of that talk can be seen as equally useful descriptions of present-tense encoding, or on-line representation, as well.

Evidence for the Existence of Present-Tense Encoding

Sachs (1984) mentions that in adult talk to children, quite often a good deal of the talk is about the immediate past, encoding something the child has just been doing, as in "You covered your eyes!" when the child has just done so. Another kind of talk that occurs frequently with young children, and is similar to the above but deals in the present, is a kind of captioning or subtitling of the child's actions as he/she performs them, as in "Oh, you're putting the dolly to bed now." These can be hypothesized, and are

here, over time to enter into the way the child represents such experiences to him/herself.

Similarly Moerk (1975) documented certain categories of verbal behavior between 2-5-year-olds and their mothers, which included "those variables that represent a translation of objective/environment/ pictorial configurations into the verbal medium" -- in other words, which can be seen as encodings of a present situation. Other examples from Moerk of such translations of the present environment into words include the mother describing an object or event; the mother describing her own acts; and the mother describing an action of the child.

Moerk found parallel behaviors in children, which include the child encoding from a picturebook; the child describing an object or event; the child describing an action of his/her own. Moerk concludes that these behaviors parallel those of the mother in that "external circumstances are translated into language."

Bruner's descriptions throughout his work (but see particularly Bruner, 1975, and Bruner, 1983) of the form and significance of mother-child joint attention describe perhaps the earliest version of joint encoding

beginning with the establishment of shared focus, joint attention, and joint reference.

The most important questions to be raised now pertain to the significance of these common and well-documented mother-child behaviors. What is being accomplished here, and what are the effects?

Interpretive Nature of Joint Encoding

Bruner (1975, 1978, 1983) and others have pointed out the interpretive nature of this joint encoding of experience. Mothers do a great deal of interpreting of their child's behavior, intentions, and feelings through labeling or attribution. These interpretations, as has been suggested earlier, have a strong conventionalizing and socializing effect, not only conveying to the child what his/her feelings or behaviors do "mean," but in effect also what they ought to mean.

Adult talk to children has also been characterized as having a high proportion of questions. Many researchers (e.g., Cicourel, 1970; Corsaro, 1979) have pointed out that these quite often function to direct attention and thus have a socializing function, informing the child in a fairly nondirective way what

the culture finds it appropriate to attend to. Sachs (1983) and Schaffer & Crook (1979) are only a few of the researchers who have pointed to adults' attention-focusing via questioning. As Krauss (1980) has said in another context, the crucial problem is not how to process information once given, "but how to decide what the information is in an immensely complex, confusing and subtle social environment." What adults are thus doing is "teaching" their children what information is considered salient, often through what Bruner describes as formats in which "what should be processed from the context has been prearranged by practice and ritualization" (1983).

Questions by adults to children exemplify the socializing and conventionalizing process that also affects representation and memory, in that questions are a way of constraining what data will be considered relevant. Schafer's (1983) description of the function of the analyst's questions to the analysand as establishing "contexts of significance" is very much to the point here. It would seem logical, then, that the most socializing and conventionalizing effects on children's construction, representation, and recall of experience would emerge in the very common

conversational routines between adults and children in which adult questions and other forms of scaffolding and direction elicit children's talk about events in the present or the past.

Sachs (1983), Stoel-Gammon & Cabral (1979), Eisenberg (1985 a), and Van Kleeck & Gunter (1982) have all described situations in which the adults' elicitations are what keep the child's narrative going and on target -- at least in the adult's terms. Sachs (1983), for instance, has pointed out that one role of early adult-child dialogue is to teach the young child "what information is required" -- and thus, in relation to the representational training that discourse training has also been hypothesized to be, what to encode for later recall. Sachs describes her 3-year-old daughter's difficulty in "knowing what information to supply for the listener," and characterizes the adult strategy in cases like this as using questions "to pull information from the child that he/she could not know to supply" because he/she might not find it relevant to attend to until taught to do so. What the child is described as having learned from these interactional routines is "how to respond appropriately"; that is, how to play her part in

co-constructing a [co-]Authorized Version of reality. Exemplifying the Vygotskyan movement from other-regulation to self-regulation, these adult-child elicitations constitute a training not merely in how to talk about, but how to represent and thus, in effect, how to experience experience.

Findings from a study by Van Kleeck & Gunter (1982) of an interaction between 2-year-old children and their mothers in a session in which mothers asked their children about an event, reinforce this interpretation that children learn through adult-child dialogues of this type not only what to say (and how to say it) but what are the building blocks of event construction and representation.

Stoel-Gammon & Cabral (1979) are the only researchers to this investigator's knowledge who view this form of talk about the "past" as also potentially having a powerful effect on what the child learns is important to encode in the present. As they put it, "It is possible that elicitation of the reportative function in this manner serves as a training by which the adult indicates to the child which elements of an event are to be encoded."

That adult elicitation techniques may in fact have this effect is suggested by evidence from Pelligrini (1984) that the major use of private speech among preschoolers was found to be, not planning of future action, but the verbal encoding of ongoing activity.

The results of the kind of present-tense encoding described above are apparent when one considers this definition of an episode offered by Stern (1985):

> An episode is made up of smaller elements or attributes. These attributes are sensations, perceptions, actions, thoughts, affects, and goals, which occur in some temporal, physical, and causal relationship so that they constitute a coherent episode of experience. Depending on how one defines episodes, there are no lived experiences that do not clump to form episodes, because there are rarely, if ever, perceptions or sensations without accompanying affects and cognitions and/or actions. (p. 95)

All the above elements, as has been shown, from adult labeling of children's sensations, to attributions of intent, focusing of attention, and the conventions of personal narratives are taught through adult-child conversational routines that are part of

children's daily lives. Children are obviously learning more than the conventions of talk here. They are learning the very categories and cultural conventions in which experience, and the memory of that experience, is created. And, as the following section indicates, they may be learning this through exposure to certain representational styles rather than others, with concomitant effects on their own.[1]

Individual Differences in Representational Style: Further Evidence for Effects of Family Style?

Evidence has been found for individual differences in representational style (Wolf & Gardner, 1979; Gardner & Wolf, 1983); cognitive or conceptual style (Kagan et al., 1963); in people vs. object orientation (Jennings, 1975); in autobiographical memory style (Karis, 1979); in language behavior (Carroll, 1979;

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[1]And lest we doubt that the encoding state is so open and suggestible, work by Loftus (1975) on adult memory has shown how the encoding and formation of a representation can be influenced by linguistic input from others, thus illustrating the fluidity and suggestibility of the encoding state, its ability to be penetrated and transformed by outside influence. It would seem logical to assume that if an adult's mental representation, even after years of experience in self-regulation and the development and entrenchment of habitual ways of processing information, can be so subject to influence from others, a child's representational process would be even more amenable to social influences.

Day, 1979); in social discourse style (Gumperz & Tannen, 1979); in language acquisition style (Nelson, 1973, 1981; Horgan, 1978; Furrow, Nelson, & Benedict, 1979; Peters, 1977); and in preferred mode of thinking, as in literary vs. scientific or verbal vs. visual (John-Steiner, 1985).

In most cases, however, the context in which these differences developed was not explored. In Gardner & Wolf's (1983) study, for instance, the distinct preference by the age of 2 years for either a verbal or a visual style, while characterized by the researchers as acquired, not innate, did not lead (or, has not as yet led) them to focus on where these differences came from but rather on their development into the future.

Kagan et al. (1963), while collecting observational data on many of their subjects from the time of birth, did not observe the family context to see what factors there might have influenced the development of the cognitive styles they found. They set forth physiological data on autonomic reactivity, and claim to have initiated investigations "in order to gain more insight into the antecedent events that predispose a child to develop and maintain an analytic attitude [italics added]," but these antecedent events

do not seem to include parents, or any other factors pertaining to social or family context. They did look at behavioral correlates -- simple descriptions, primarily by teachers, of children's coordination, concentration, perseverance, ability to inhibit motor impulsivity -- but out of the context of the family organization or structure which other data (e.g., Tizard & Hughes, 1984) have shown to be in fact an influence on such behaviors.

Jennings (1975) has found people vs. object orientation to be a stable aspect of individual differences throughout two years of nursery school. These style preferences were looked at in relation to performance on tasks evoking or using one or the other. The only reference to any early-developmental influence on these preferences was a reported finding that the more object-oriented children interacted more frequently with adults. The author seems more persuaded by her casual remark that inherited personality traits such as introversion/extroversion may predispose children to certain kinds of orientation than by her [equally casual] conjecture that <u>parents</u> (who it may be presumed constitute the adults that children with one of the preferences interacted with

"frequently") may differ in the value they place on interest in the physical environment (and, one may assume, the social environment) and may encourage or discourage such interest in their children.

Karis (1979) looked at individual differences in autobiographical memory and found that high visualizers recalled more memories, showed faster recall, remembered memories from an earlier age, and more specifically, than low visualizers, and felt that their memories were less influenced by others or by subsequent information. More of the low visualizers' memories were of this "second-hand" variety.

In some ways, these findings have an implicitly developmental aspect, if not focus, since imagery may reach further back than verbally mediated processes and may not change as much over time; they would thus be less susceptible to disruption once, as Schachtel (1947) maintains, the categories change and verbal processes become more prominent. More continuity and stability between the imagery of the child and the adult he or she became may aid in the retrieval of the adult's childhood memories.

Why do some people show an early preference, though, for one form rather than the other? As Karis

hypothesizes, "Independent of any differences in ability that might exist between individuals, there are certainly large variations in the habitual strategies employed for remembering different types of information, and in the attentional sets and preferences people bring into different situations. These factors are probably at least as important as the ability to form vivid images in predicting performance in laboratory situations, and probably more important in natural situations." [Italics added.]

Remembering Bartlett's (1932) view that attentional sets are influenced by social attitudes and "biases," it would be interesting to know what influence family patterns may have had on the establishment of these habitual strategies and attentional sets.

In studies of language abilities and usage (as differentiated from language acquisition and development), differences have been found in "verbal ability," defined most often in terms of verbal fluency (Carroll, 1979); and differences have been reported between individuals who seem to encode experience verbally, perceiving and remembering events in language

terms, versus individuals who are not bound to this modality. Here, too, it makes one curious to know in what format experience tended to be constructed, how much talk about the present or the past (in fact, how much talk in general) tended to occur in the home context.

Differences have been found in discourse, primarily in communication style (Gumperz & Tannen, 1979). Where the cause, as differentiated from a description of the manifestation or social-educational consequences of such differences, has been sought, it has been attributed to social class differences rather than to differences of intelligence or other innate factors.

The same is true of research into differences in children's encoding and decoding style (Rosch, 1977); differences in or lack of usage of certain grammatical or linguistic categories (Hawkins, 1969); linguistic codes (Bernstein, 1962); and differences in patterns of language socialization (Heath, 1982; Michaels, 1983).

With the exception of Bernstein and Heath, all the work referred to above is primarily descriptive -- and descriptive of behaviors (either in the laboratory or in school, or in an interview with a strange

experimenter) in contexts other than the ones in which they usually, and most adaptedly and adaptively, occur.

Summing up these studies, then, most of them look at the manifestation of the difference and, perhaps, the consistency across tasks and stability over time -- but most do not look at the context in which the child is developing these differences. They therefore ultimately have little to tell us about the process, in whichever domain we look, that is developing.

It is certainly not by chance that it is only when we get to studies of individual differences in language acquisition and development that we begin to find an interest in and a focus on possible causes or antecedents of these differences in the child's environment -- and at long last a look at those others in the child's world. This is explainable by the fact that to look at language in context can only be to look at it in social context; therefore, to look at language acquisition and the different forms it can take is by definition to look at social interaction and the different forms it can take.

Individual Differences in Language Acquisition: Focus on the Dyad

There have been many studies showing effects of mother-child talk on the content, style, and the child's idea of the function of language. For instance, Nelson (1973), Furrow, Nelson, & Benedict (1979), Peters (1977), and Horgan (1978) have all found individual differences in children's style of language acquisition, with Nelson finding evidence for two different styles she called Expressive vs. Referential, Peters finding two styles she characterized as Analytic vs. Gestalt, and Horgan coming upon Noun lovers vs. Noun Leavers. Nelson's Expressive children were learning to talk about self and others, while the Referential children were learning to talk about things. Even at an early age, Nelson found, the perceived function of language influenced its content for these children (1973), with one group learning a social language and the other an object language.

Where might these different concepts of language emerge from? Children adopt different strategies and styles because, in Nelson's words, they have "different hypotheses about what language is used for" (1981b). These hypotheses seem to be based on the language they

hear around them. Thus if, as Nelson (1973) has observed it, the language a younger sibling hears is likely to be directive and centered around his/her own activities, this child "is likely to conclude that language is a pragmatic medium that is useful for social control and social exchange....On the other hand, a child who is exposed to a mother who teaches through relevant questioning" -- this would be more likely to be a first or an only child -- "is likely to conclude that language is basically a cognitive or referential medium."

Further evidence of selective environmental exposure as an influence on the development of different styles, based on different hypotheses, can be derived from a study by Furrow, Nelson, & Benedict (1979), in which significant correlations were found between the mother's language when the child was 18 months old and the child's language at 27 months in terms not only of MLU but in use of proportion of pronouns, verbs, etc. (There have also been many studies showing the effects of certain maternal linguistic behaviors on their children's <u>syntactic</u> development [e.g., Snow, 1972; Newport, 1976; Newport, Gleitman & Gleitman, 1977; Cross, 1978], but these

focus more on relative rates or orders of acquisition of certain terms or grammatical structures rather than on more deep-down and far-ranging aspects of content and style.)

Finally, in a study by Lieven (1978), two young children were seen to develop two very different conversational styles, based on what Lieven, like Nelson, characterizes as two very different concepts of what language is used for, in response to parallel differences in the language interaction they experienced with their mothers.

In this section, individual differences have been held to be evidence for social effects on certain cognitive processes. While the evidence in some areas is only implicit and, in a sense, prospective -- that is, in need of further exploration -- it is significant that in the one area in which individual differences were looked at in the <u>context</u> of their emergence, there is clear evidence of an environmental effect on their development. If a form of representation such as language can be influenced by the sort of dyadic interaction described here, then it does not require a great leap to assume that, the closer we look at it,

the more the memory domain so inextricably allied with this form of representation will show equally significant social-interactive effects.

Schachtel (1947) sees culture as penetrating an even deeper level of the mind, influencing not only what is told, but what is thought. Acculturation is seen as a prime influence on a change in the very categories of thought itself as the child grows older. "These categories," he writes, "are formed in large part by linguistic discourse..., which functions to bring the child into an adult social world premised in some part on shared thought and judgment."

John Dore (1985), discussing the work of the analyst Roy Schafer (1983), has postulated that what parents, teachers, and analysts have in common is that "they are all changing the central questions around which [personal narrative] should be organized." Dore has depicted mother and child "trading versions of reality" in their dialogues. Not only the content changes in these dialogues between children and parents, students and teachers, analysands and analysts, but, more profoundly, the focuses and interpretations change as well.

It would be taking the vast corpus of adult-child discourse data far too literally, then, and for far less than it could be worth to us, if we assume that mothers are teaching their children only how to talk about the events experienced, and not how to think about them.

Rom Harré (1981) has written that "it is very tempting to think that because something is cognitive it must be located only in individuals, and because it is thought, it must be something that happens 'in' an individual..." (p. 212). He concludes that some very important cognitive processes are not inner and private, but public and collective. This casts even the most seemingly ordinary adult-child language interactions in a new light. For language would certainly seem to be the representational form at once the most seemingly objective and public, while over time becoming indistinguishable from an individual's most private thoughts. Language, as Berger & Luckmann have stated, provides a ready-made possibility for the ongoing objectivation of an individual's unfolding experience (1967); and its conventionalizing power derives from its power to typify experiences, allowing the individual to "subsume them under broad categories

in terms of which they have meaning not only to [oneself] but to [one's] fellowmen" (p. 39).

The creation of the kind of social representations Harré refers to, which are independent of individual minds but are created among or between persons -- along with the effects of such collective representations in conventionalizing the minds of their "creators" -- is certainly aided and abetted by the conventionalizing process inherent in adult-child talk during the period the child is entering the language, and may it be said, the cultural system. Through linguistic interaction with adults, children are being initiated into the categories in which experience is talked about and, indeed, experienced, within a particular culture.

Even in the most seemingly straightforward semantic or syntactic corrections adults commonly make of children's language usage, it is more than children's language that is undergoing correction, clarification, and gradual conventionalization. The process of "concept-matching" described by Nelson (1973) serves among other things to bring the child's meaning into line with that of the adult world; and, as Brown & Bellugi have described it, when adults expand and organize children's telegraphic utterances, "the

meanings that are added...seem to be nothing less than the basic terms in which we construe realty....It seems that a mother in expanding speech may be teaching more than grammar: she may be teaching something like a world-view" (cited in White & Pillemer, 1979).

Just as in the language-acquisition process the adult can be seen as scaffolding and expanding the child's references, supplying the correct word or category, structuring the discourse so as to approximate the more conventionalized meaning in the adult's mind, so, too, in everyday life adults can be seen as scaffolding the experience itself and supplying its proper frame of reference by focusing the child's attention on certain aspects rather than others, making certain kinds of inherently interpretive connections to other aspects of the child's or the family's life, and thus providing the thematic context or, in Bartlett's (1932) term, "bias," that will eventually become the meaning of the event for the child.

The work of Bakhtin (discussed in Todorov, 1985), like that of Vygotsky, carries this to its ultimate point. In his terms, the child internalizes the dialogic style, to the point at which thinking itself consists of "dialogues with other people, whose voices

and implicit social values live within us." For Bakhtin, the basic unit of linguistic analysis is not the individual utterance, but the utterance-in-dialogue. One's most "private," internalized thinking is in reality "many-voiced," reflecting and embodying the social dialogues from which the self is constructed -- and the process described by Vygotsky through which thought moves from interpsychic to intrapsychic regulation is wrought to its uttermost. The very self is constituted of conversations with others.

Though developmental and cognitive psychology have provided us with too much evidence of how much a child is doing on his/her own in the cognitive realm to accept a view of mind as a totally social creation, nevertheless the fact remains that we <u>are</u> always engaged in the kinds of "conversations" described by Bakhtin, they begin quite early, and they are a continuous and continuing aspect of our lives.

Todd & Perlmutter (1980) found that telling/retelling routines are not only a traditional, ritualized part of the fabric of children's lives, but their frequency increases as the children grow older. Nelson's Emily data (1983) show this same ritualized telling routine, and, as has been cited earlier, there

are data to show that it could be thought of as part of the natural talk in the home.

If "home-talk" is in this mode, and the home constitutes the young child's first world, one in which he/she is totally immersed in these dialogues of personal experience which it has been proposed are the building blocks of autobiographical construction and recall, then it is difficult to see autobiographical memory as anything other than inherently social -- and inherently connected, whether explicitly or implicitly, to language.

Nelson (1987) raises the question, "What happens in the pre-school period to enable the establishment of an autobiographical memory system," and proposes as one critical development the fact that through language "the child enters into and begins to participate in, the system of culturally stored and transmitted information."

It is a major contention of this study that the child has been immersed in this system from very early on -- from the beginnings of joint attention and the establishment of joint reference (Bruner, 1975) to the later joint encoding of the present in verbal terms.

All these are ways in which first adults, then adults and children together, frame, organize, and mutually construct reality. There could be no better piece of evidence for this process and the results of this process than Esther Salaman's (1970) description of how the present-tense encodings of others have provided a lifelong "subtitling" of her recalls of the past:

> In my memories..., I see, feel, react, but I use no words. Other people do. Father says: "Don't take any notice of her!"; the teacher scolds: "Chatterbox!" Often it is the words of other people which give the memory a name, like a label on a picture, making it easy to pick out of the stack. So I have a memory called "The Little Magic Stick," another "Mad Dog"; one is called "The Revolutionaries": all of them words or exclamations of other people. If I do remember my own words they are usually linked to another person's. [Italics added.] (Cited in Neisser, 1982, p. 58.)

Nelson (1987) has referred to "vast individual differences in autobiographical memory development" and suggests that recounting and sharing memories with others may account for these differences. This section

has proposed that all adult-child talk is memory talk, whether it involves the sharing of memories referred to by Nelson or a chat while walking to the grocery store. Everything that adults and children do together with language is also affecting memory by providing training in both the construction of a representation and the reconstruction of the memory. It is not, therefore, only talk about the past (the then and there) that is "memory talk." It is also talk about, and in, the present (the here and now). What has been referred to here as "present-tense encoding" is set forth as a form of on-line representation, or construction-of-memory talk, and the argument has been put forth that the "training" of attention and, later, of talk about the present and the past is not merely instruction in how to tell, but in how and what to notice, represent and remember, with the result that the child's memory undergoes a process of increasing conventionalization as learning how to say it becomes, in fact, learning how to see (and represent, and recall) it.

Recent Work on Memory in a Social Context

Most work on children's memory has focused on children's ability or inability to retrieve the memory of an experience once it has occurred: what affects

retrieval, what elicits it, and, lately, how children learn to talk about the memory they have retrieved. Relatively little attention, however, has been paid to what goes on between adults and children in a situation that is later recalled by the child, and how that interaction may influence the form in which the experience is represented.

This selective inattention in the research literature is perhaps due to the fact that descriptive work on what goes on in naturally occurring situations, as differentiated from laboratory studies, has only begun within the past decade or so. Had such work been going on longer, there might be much more research to cite here dealing with adult-child interaction effects on the representation, and not just the retrieval, process. For anyone who looked at what occurred between a mother and child during an experience they shared would see not only the memory demands, recall cues, etc., that are currently being called forms of "memory teaching," but would see the kind of scaffolding, interpreting, elaborating, defining, focusing on various aspects of the situation itself -- <u>as it unfolds</u> -- that it is proposed here affect the original encoding process, the very form of the

representation-in-formation, as well as the eventual recall of the representation.

Yet, even now, with more interest all the time in naturalistic research into children's use of memory in everyday life, as this sample of some of the most significant work that does take social interaction effects into account shows, the focus is still primarily on that interaction's influence on only one stage of the memory process.

Hilary Ratner (1980), for instance, has done very interesting, very Vygotskyan, work focusing on the possibility that children internalize maternal questions, or memory demands, and that these promote later remembering by the child independently. Ratner studied whether questions asked by the mother at home -- particularly certain types of questions and their frequency -- would be related to a child's subsequent performance on verification and production tasks in a laboratory situation. She found that in 2-year-olds, neither rate nor type of question was correlated with the children's performance on the laboratory tasks; however, 3-year-olds whose mothers made more memory demands, particularly in the form of questions dealing

with the past, which gave more retrieval practice, performed better.

Todd and Perlmutter (1980) looked at the amount and type of information preschoolers are able to communicate to adults about the past in a naturalistic setting. Their primary focus was on what elicits such memories, and the time intervals over which young children retain them. Among their more interesting findings was that the telling and retelling of memories is a regular routine in childhood, and increases with age. When parents were asked how often their children had talked about certain episodes related by them to the experimenters, it was found that, among 3-year-olds, 35% of the memories had been repeated over three times; and, among 4-year-olds, 52% of the memories had been repeated over three times. The social aspects of this personal form of memory were implicitly, though not explicitly, acknowledged by the authors when they concluded that "children appear to rehearse a substantial amount of memory information in conversations with others, and there might be a trend with age toward increased rehearsal." (1980)

Ann Eisenberg (1985) and Susan Engel (1985) have looked at the development of the child's ability to talk about the past, while Katherine Nelson's unique Emily data (1983) focus on the child's emerging ability to differentiate past, present, and future, and how this developing linguistic ability seems to be playing an important role in the development of her memory system.

Eisenberg (1985) found that adults played a scaffolding role in talk about the past with their children, and characterized their help as synchronic rather than diachronic.

Engel (1985) documented developmental changes in children's ability to talk with their mothers about the past, consisting of changes in frequency, length, detail, and their general quantitative contribution to the exchange. Early talk about the past was a "shared interpersonal activity," characterized by Engel as an illustration of Vygotsky's principle of internalization; finally, confirming the findings of others, she reported two distinct styles of maternal talk about the past, which she labeled "Reminiscers" and "Practical Rememberers."

Fivush, Gray, Hammond & Fromhoff (1986) carried out a study similar to Engel's in which mothers were asked to engage their 30-35-month-old children in conversations about events that had occurred at various points in the past. The aim of the study was to see whether the ways in which mothers structured these conversations about past events with their children might influence the children's independent recall of these events 6 weeks later.

The major results from this study were, again, confirming evidence for two maternal styles of talk, here called Elaborative and Repetitive, and a finding that the children of the Elaborative mothers showed differences in the quality and organization of their recall as compared with the children of the Repetitive mothers.

It is not clear why Fivush et al. feel that these findings "do not indicate that the mother's conversational style for talking about past events has much impact, at least in the short term, on children's ability to recall and recount the past," since their findings seem to indicate exactly such an impact. They do acknowledge, however, that adult-child conversations may come to influence the content and structure of

young children's memory "over a more extended period of time," and that it is also possible that "in talking about events in such a way as to highlight distinctive and memorable aspects of events, the adult may be implicitly teaching the child what is interesting to notice and remember about a similar event the next time it is experienced."

Considering that much of adult talk to children is exactly of this type of here-and-now highlighting and attention-focusing, and that there is reason to assume that mothers use a similar style of talk in both present- and past-talk situations, we may be missing important information by artificially separating the kind of talk that reconstructs an experience from the kind of talk that constructs it. It is possible, as Fivush et al. conjecture, that it is the cumulative effect of the maternal input, over time, that has the real effect. But without looking at talk in both aspects of the memory situation, it is surely too soon to conclude that we know what the effects of such talk might, or might not, be.

Hudson (1986) also looked at mother-child talk about the past, this time between a mother and her child between the ages of 21-27 months of age.

Hudson's focus was on whether the effects of mother-child repeated conversations about a particular event (along with the accompanying informational element) would be incorporated into the child's subsequent recall of the event. After repeatedly recalling with her mother the event in question, would the child's recall largely be based on what had been discussed in their prior conversations?

Though many instances are provided of the mother scaffolding the child's recall, "setting up a question-answer format and providing the child with a model of what kinds of information to report," and Hudson attributes to this type of scaffolding the child's learning of "how to participate and over time [provide] more information in response to the questions," in a kind of co-construction of the recall, she found, contrary to her expectations, that "there was relatively little overlap in information from one conversation to the next." Only 22% of the child's contributions repeated information given by the mother in the preceding conversation; 44% consisted of "new information that <u>had not previously been mentioned</u> by the mother of the child" [Italics added].

The problem -- and it is a problem in coming to a conclusion as to the significance of this interesting finding -- is that we do not know, nor have we any way of knowing, what information later incorporated into the child's representation and given back to the mother as "new information" actually consisted of information provided by the mother during the event. Thus, though Hudson concludes on the basis of these data that "in repeated conversations about the past, children are learning how to remember, not what to remember -- that is, the structure of remembering, not the specific content," without looking at both conditions in which talk occurred, we cannot justifiably come to even a tentative conclusion about what the role of language, or interaction, might be.

Judy DeLoache's work (and that of Elaine Justice and Denise Coley), is among the relatively small body of research that looks at an ongoing, present situation. DeLoache (1983) studied joint picturebook reading by mothers and their 18-38-month-old children, emphasizing the ways in which this social activity was used by mothers as an informal memory-training exercise. DeLoache found that mothers "demonstrated certain explicitly mnemonic activities," such as, among

others, relating the pictured material to the child's own past experience.

Elaine Justice and Denise Coley (1983) videotaped 3-year-olds and their mothers playing a game requiring memory for the location of hidden pictures. They scored the frequency of certain maternal behaviors such as naming, verbal orienting, questioning, instruction, etc., and then looked at the relationship between these parental behaviors and children's performance and study behaviors on a subsequent memory task. Though no relationship was found between the two, the authors hypothesized that "Despite the lack of direct relationship between parent and child behaviors on these tasks, it is [possible] that over a series of memory-relevant interactions, adult emphasis on nonverbal behaviors may influence children's adoption of these behaviors."

While Ratner focused solely on the mother's memory demands to the child, the focus of the present study has been on the more subtle ways in which a mother may direct and structure the situation that is in process of <u>becoming</u> a memory. Further, Ratner focused only on retrieval: the child's internalization of strategies

that promote remembering on his/her own. The present study examines mother's talk as an influence on more than retrieval: as an influence, that is, on what is perceived as salient and into which interpretive context the salient object or event is placed -- in effect, on the more preliminary stage in which the mother helps the child "create" the memory in the first place.

Though DeLoache, and Justice et al., are working more with present situations, their emphasis is on how the present-tense maternal behaviors function as forms of "memory training" for the child's future recall, whereas the research undertaken in support for the thesis set forth here focused on maternal behaviors as training in ways of seeing, understanding, connecting, and interpreting the experience in the encoding stage. Indeed, everything that DeLoache, and Justice et al., describe as mnemonic training for retrieval could as easily, as has been suggested here, be seen as training in representation. DeLoache's reading situation is thus also an interpreting situation, in which the mother's questions and attentional devices are not random, but have a regulating effect on what the child

will focus on, find salient, and encode -- as well as subsequently remember. Justice et al., too, can be seen as looking as much at encoding as at recall, and are perhaps merely seeking too direct, or immediate, a relationship between the two.

Nelson's Emily data (1983) focus primarily on the child's understanding and encoding of the distal past as opposed to a present situation, as evidenced by her nightly monologues to herself. These monologues are interesting for many reasons, but one of the most significant aspects from the point of view of the research to be described below is that the monologues seem to incorporate much parent-child talk from earlier that evening or day. Nelson has observed that Emily seems to be trying, to some extent, to adapt the narrative form she is getting from storybooks to her own life. One might also hypothesize that children get this same narrative structure from a very young age as co-participants, with the adults around them, in the creation of joint narratives, in the form of joint encodings of experience, that are the substance of everyday talk.

Even in the less explicitly, verbally shared, development of children's event representations, or

scripts, there is nonetheless a social subtext. As Nelson has written:

> Scripts primarily represent culturally defined events as a consequence of the fact that virtually al the events we take part in are culturally defined. Scripts, therefore, are necessarily learned, the product of experience. Adults inevitably guide and direct such learning, implicitly or explicitly teaching children how to take their part. (1986, p. 15)

Theoretical Assumptions and Propositions

The fundamental proposition underlying this research was that autobiographical memory is a particular kind of memory -- developed, "learned," and "taught" in a social context, in inherently social and socializing ways, through adult-child interaction in which the child internalizes the dialogic format of organizing, representing, and talking about experience and thus comes to develop the more conventionalized representational "technique" that becomes embodied in his/her autobiographical memory process.

The "product" of this autobiographical memory process is thus seen as the result of a joint

representation in the present, and joint reconstruction afterward, of the experience that will later become the memory.

It is proposed that autobiographical memory emerges from the interplay between the objective and subjective domains. It is in the realm of the intersubjective that autobiographical memory is seen to develop, and thus the cognitive representation of a shared event may be seen as dialogic, created cross persons just as linguistic meaning has been proposed to occur (Dore, 1985). Social influence on the development of autobiographical memory is thus seen as taking place not only in the reconstructive phase, but also in the shared, adult-child present-tense experience of events. Through a dialogue here described as joint "present-tense encoding," which influences not only the later memory of the event but plays a crucial part in the representation of the event, by making memorable certain aspects as it takes place, a process of conventionalization of the child's representation of experience is proposed to take place.

The "directionality" of this view of autobiographical memory focused on how the developing process of constructing a sense of one's past is built

up during present experience -- that is, on what goes into the forward construction of the memory rather than on how it is accessed from the present backward. In this study the focus was not on memory as a product, but on representation as a process, consisting of the present state of adult-child joint constructing, or encoding, of the experience -- that is, the "making" of the to-be-remembered -- and the later reconstruction of the experience, or the "making" of the memory.

The process is considered a social-interactive one exemplifying Vygotsky's (1978) formulation that all higher psychological functions first occur between persons, interpsychically, before being internalized by the individual and becoming intrapsychic.

Joint construction of the present and joint reconstruction of the past are thus set forth as the two aspects of the "learning" of autobiographical memory-making and recall by children. It is proposed that in this learning process, the representational operations involved in autobiographical memory and language are inextricably bound together. Language is in itself a form of representation and the primary vehicle of adult-child social interaction. The cognitive representation by an individual of a shared

event is seen as created across persons in the same way that discourse meanings are created. It is proposed that these mutual social representations may develop through social interaction in the same way that language does, with adult-child interaction during the mutual experience of an event following a behavioral pattern similar to that of adult and child language learner.

Corsaro (1979) has described how the language directed to children by adults has the effect, if not always the intention, of negotiating a shared meaning -- but one that brings the child's meaning, or reality, more into line with adults':

> How adults use language to structure interaction events with young children is an important aspect of childhood socialization. The child not only gradually acquires the language and interactive skills necessary to carry on competent social interaction in the adult world, but he is also continually exposed to the adult's perspective on the normative order (pp. 388-389).

Just as Corsaro hypothesizes that there is something in the way adults talk to children that leads to the socialization of the child, the most fundamental

proposition that this study was designed to test is that there is something in the way adults guide children through the events of their daily lives that leads to the conventionalization and acculturation of a process that subjectively may feel the most totally private and personal of all while, as the Yarrow et al. data indicate, being continually shaped and modified to match that of the child's first culture -- that of the family, here embodied by the mother; and that this process can be seen, in microcosm, in a close examination of an experience shared by mothers and their young children.

Preliminary Study

A previous study by the present investigator (Tessler, 1984) explored to what extent and by what devices adults frame and structure experience for children, and to what extent children internalize these frames in their representation and memory of a shared event. Ten mother-child dyads were observed and tape-recorded as they visited a museum together. Half the mothers were asked to interact with their children as they ordinarily would on such an occasion; the other

half were asked merely to respond to their children's questions or comments but not to initiate or elaborate on this talk.

It was expected that the presence or absence of maternal talk would account for any differences in recall between the two groups of children. That there were effects of talk per se was evidenced by the fact that none of the children in either group showed any recall of objects that had been seen but not talked about. Further, it appeared that at least at this age, there was a need for the attention to the object, and for the talk, to be mutual: There was no recall by children in either group of objects talked about by the mother only, or by the child only. The only objects recalled were those that had been talked about by the mother and child together.

However, the unexpected finding of strong within-group differences made it clear that the presence or absence of talk was not the major influence at work. Though the five children from Group I (Talk group) recalled more objects than the children from Group II (No-Talk group), two children from Group I showed recalls almost as low as four of the five children from Group II, and one child from Group II showed a recall

almost as high as that of the highest-scoring children in Group I. This prompted a re-examination of the data, in which it was found that differences within the two maternal groups were also apparent, and that these differences did not seem to be attributable to the different experimental conditions.

The two groups of mothers differed not only in their amount of talk, but in their style of talk.

It was found that within each group, certain mothers showed a greater frequency of the following verbal behaviors defined in the coding scheme (see Appendix A for description of code):

Describe Activity

Aesthetic

Color

Location

Temporal

Autobiographical

Theme

Affective

Possessives

Interpretation

These mothers were characterized as Narrative.

Other mothers, characterized as Paradigmatic (Bruner, 1986), showed a greater frequency of the following:

Describe Category

Size

Quantity

Knowledge Base

Describe Properties

What Part Of

Another

Same/Different

Which One?

The within-group differences among the children paralleled those among the mothers. Children 1, 3, and 5 in Group I showed a higher frequency of Describe Activity, Temporal, Interpretation and Autobiographical Recall than children 2 and 4. On the other hand, children 2 and 4 showed a higher number of Describe Category and Knowledge Base than children 1, 3, and 5. Child 2 in Group II was the only one to show instances of references to Describe Activity, Temporal, Interpretation, and Autobiographical Recall; Children 1, 3, and 5 of Group I, and child 2 of Group II all had mothers who were characterized as Narrative, while the other children -- 2 and 4 from Group I, and all the

children from Group II -- had mothers whose behaviors were characterized as Paradigmatic.

Overall, the differences in the children's recall were better accounted for in terms of differences in style of mother-child talk than presence or absence of talk *per se*.

These representational behaviors could thus be used to define two quite different maternal-style categories best characterized by Bruner's (1986) Narrative and Paradigmatic styles. The Narrative style is characterized by dynamic rather than static descriptives (e.g., Describes *Activity* rather than Describes *Category*); a high proportion of references to autobiographical recall; use of fantasy or verbal play; and generally more interpretive utterances relating to the objects being viewed, such as attributions of intentionality or feelings, variations on temporal sequencing, particularly in an interpretive or imaginative way (e.g., "What do you think he'll do next?") and an emphasis generally on connecting and contextualizing.

The Paradigmatic style showed a high proportion of categorizing (e.g., *Describes Category*) and specifications (e.g., *Describes Properties*,

Same/Different, What Part Of?), a greater number of references or questions directed to the child's knowledge base rather than to his/her autobiographical recall. This was a style of representation in which the emphasis appeared to be on explanation and differentiation as ways of ordering experience.

While there are similarities between Bruner's Narrative and Paradigmatic characterization and Engel's Reminiscers and Practical Rememberers (1986) and Fivush, Gray, Hammond & Fromhoff's Elaborative and Repetitive Mothers (1986), Engel's categorizations are more narrowly focused on memory talk per se, and Fivush et al. more closely focused on language usage only. In contrast, Bruner's Narrative and Paradigmatic modes are more broadly representational, ways of "ordering experience, of constructing reality....Each also provides ways of organizing representation in memory and of filtering the perceptual world" (1984). The Narrative mode is concerned with action, intentionality, and situations unfolding in a temporal rather than timeless realm, subject to interpretation rather than logical verification procedures. The Paradigmatic mode is based upon "categorization or

conceptualization and the operations by which categories are established, instantiated, idealized, and related one to the other to form a system" (1984). It operates by ideas such as conjunction and disjunction, and "makes use of constraining principles to assure verifiable reference and to test for empirical truth."

As exemplified by the mothers in the preliminary study, and as was expected would be equally apparent in the present study, these modes of experiencing and representing reality are seen as inseparable from, and indeed exemplified in, the ways in which we construct our personal realities through autobiographical recall.

Purpose of the Present Research

The fact that in the first study different forms of social interaction appeared to have different effects on children's representation of the event was taken as preliminary evidence for the social nature of autobiographical memory development. The effects of such differences on children's development of the representational style in which their autobiographical memory would take form remained to be explored.

Since that study, other researchers have found style differences in mothers' talk with their children about the past (reconstructive talk), but have not examined how these style differences may have affected their children's representation of the experience as it took place. For instance, of those who have looked at talk about the past, Engel (1986) looked only at the development of such talk as a genre in itself, not at the effects of such talk on the development of the representational process eventuating in recall. The possible consequences of the differences in maternal style that she, too, found were not explored. Fivush, Gray, Hammond & Fromhoff (1986) also found evidence of different styles of maternal talk about the past and, unlike Engel, did investigate and find some effects of such differences on children's subsequent recall of the event that had been discussed with the mother. Hudson (1986), on the other hand, found no strong effect of the mother's reconstructive talk on a child's recall of an experience shared with her mother and discussed with her afterward.

None of these studies considered the talk that took place during the experience that was later to be recalled. The research that <u>has</u> looked at adult-child

talk during an experience (cf, Ratner, 1980; DeLoache, 1983; Justice & Coley, 1983), has analyzed the effects of specific memory cue-ing but not effects of variability in style of naturally occurring talk. While Tessler (1984) did look at the effects of naturally occurring talk during an experience, the effects of subsequent reconstructive talk on the child's representation of that experience were not explored.

Yet, as Freeman and Csikszentmihalyi (1986) have written:

> The question remains...as to how to establish in fact what recollection can tell us. How do we know what is being accomplished in recollection, the particular function it may be serving in ordering the past? Data of ongoing experience are needed to serve as a baseline for casting retrospectively derived meanings into relief. It is through reading the "text" lying at the interaction of immediate experience and recollection that we are in a position to ascertain the interpretive work that is being accomplished. [Italics added.] (p. 170)

The aim of the present study was to observe and describe, first, the original style in which the "text" of ongoing experience was being written, or represented, by a mother and child during a shared situation; and then to document the influence of this particular style of representation on the child's later recalling of the text.

Overview of the Study

This experiment examines (1) the styles in which mothers and children represent a shared experience; (2) reconstructive talk between the experimenter and the children one week later in the same or different representational style; and (3) the children's representational style three weeks later. Adult's style of talk (Narrative or Paradigmatic) and time of talk (during the encoding of the experience, or during the reconstructive talk afterward) are the major independent variables. Mother's style is identified prior to the experience and recorded during the experience. Reconstructive talk is guided by the experimenter in either the mother's style or the alternative style.

Major Experimental Questions

1. As described by Bruner (1984), the Narrative and Paradigmatic modes are more than minor stylistic variations on a basically shared way of viewing the world. Rather, they seem to be quite distinct ways of experiencing and interpreting one's experience, and are here hypothesized to be all-pervasive, consistent across situations. However, since experimental research that could confirm the consistency of these styles across conditions and situations has not previously been done, the first question this study will attempt to answer is exactly that: Are the styles of the mothers consistent across tasks?
2. Following from this hypothesis of consistency, does the representational style to which a child has the greatest exposure influence the child's preference for that style over another and thereby influence the development of the child's own representational style in that direction? Data supporting an affirmative answer to this question would be taken as evidence in favor of a social-interactive influence on the development of autobiographical memory.

3. Does talk at one time (i.e., during the encoding of the experience) have a greater effect on representation and subsequent recall than talk at another time (i.e., reconstruction afterward)?

Predictions.

1. It was predicted that the maternal styles observed in the earlier study (Tessler, 1984) would also be apparent in this one, and that maternal style would be consistent across the pre-test and experimental conditions.
2. It was also expected that children in the two groups would manifest differences in style, and that these differences would reflect the more familiar, maternal style, whether that was Narrative or Paradigmatic in type.
3. Finally, it was predicted that talk during the experience would prove to have the greater effect on the child's representation and subsequent recall of the experience.

Rationale for Choice of Experimental Condition

In deciding upon an experimental condition, the intention was to approximate as nearly as possible an

experience, or situation, rather than a task, for the obvious reason that an experience, with its greater dimensionality, would offer a richer and more naturalistic context and opportunity for mother-child discourse than the constrained, regulatory type of talk brought out by task or test conditions in laboratory settings.

It was determined that a mother-child picture-taking experience would meet these criteria, with the added benefit of exemplifying, in the mother-child negotiations of what to attend to and photograph, the kind of adult-child social construction of experience of which this study holds the development of autobiographical memory to be in itself the product.

While this particular use of a picture-taking method appears to be somewhat novel, the method itself has precedents. Strandberg & Griffith (cited in Cazden, 1970), for instance, asked children to talk about photographs of personally relevant objects that they had taken either at school, under the experimenter's instructions, or at home. As in the present study, the focus was on discourse rather than photography per se, and the use of photographs was not found to present problems to young children. In

another study (Beilin, class project, 1979), experimenter-child dyads (children's ages ranged from 3-13 years) walked around one city block, with the children instructed to take photographs of anything they wished. As long as the photographs came out relatively clearly -- and for the most part they did -- even the youngest children were able to recognize and talk about their pictures. Cowan, Weber, Hoddinott and Klein (1967) asked children to talk about photographs of various situations or objects familiar to them, and found that the use of photographs did not in itself present problems to the children but served well as stimuli for talk.

Finally, the experience of participating in picturetaking situations (though presumably more often as subjects than as co-photographers), and looking at and discussing photographs of familiar persons and places is a very familiar one to young American children.

CHAPTER II

METHOD

Design

The major experimental questions investigated in this study required a 4-cell design as shown in Figure 1. The participants were first divided into two groups, each consisting of 24 dyads, on the basis of maternal style characterized as Narrative or Paradigmatic. These groups were then subdivided, resulting in 4 groups consisting of 12 mother-child dyads. The basic paradigm consisted of mothers doing the constructive talk during the experience, and the experimenter doing the reconstructive talk, one week later, with four variations on this scheme as follows:

The Narrative/Narrative (N/N) group was composed of children whose mothers used a Narrative style; these children received reconstructive talk in the form of cues and questions, in that same style. The Narrative/Paradigmatic (N/P) group also included children whose mothers used a Narrative style, but these children received reconstructive talk in the

Paradigmatic style opposite to that of their mothers. The Paradigmatic/Paradigmatic (P/P) group included children whose mothers used a Paradigmatic style; these children received reconstructive talk in that style. The Paradigmatic/Narrative (P/N) group included children whose mothers were Paradigmatic in style; these children received reconstructive talk in the opposite Narrative style.

Three weeks later, all the children were visited by a different interviewer and received questions and cues in both formats.

Subjects

Forty-eight dyads consisting of mothers and their 4-year-old children participated in this study. The

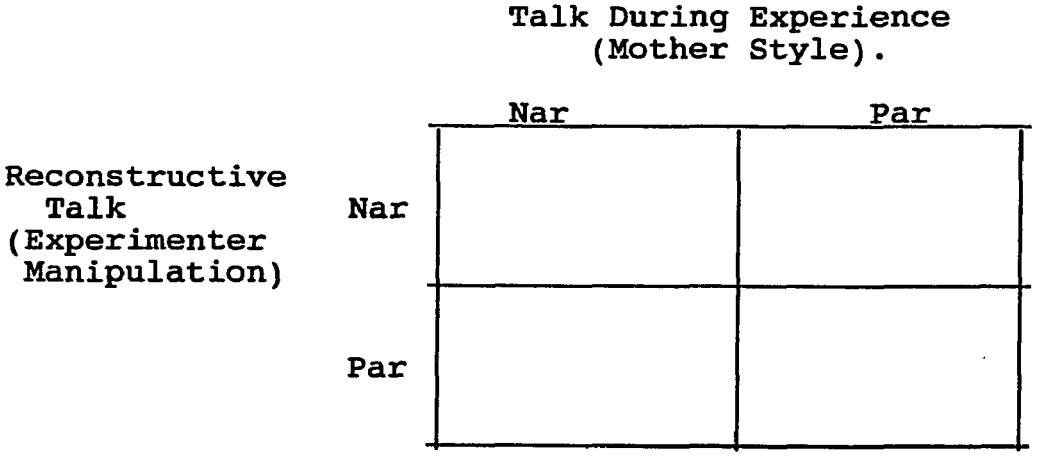

Figure 1. Schematic design

original sample was recruited from nursery schools throughout Manhattan, and additional subjects were found through participating mothers' referrals as the study progressed. Only children whose first language was English were included.

Characteristics of the children. The sample consisted of 24 males and 24 females. All the children were Caucasian and came primarily from middle- to upper-middle-class homes. The mean age of the children was 4 years, 4 months (range=4 years, 1 week-4 years, 7 months). Of the 48 children, 16 were only-children, 22 were first-borns, and 10 were later-borns. All the children were attending nursery school at the time of the study for an average of 4 hours per day (range=3-4.5 hours per day) and had been doing so for an average of 2 years (range=6 months-3 years).

This particular age group was chosen for several reasons. First, most of the previous research on maternal influence on child memory, as has been noted earlier, was carried out with children between the ages of 2 and 3 (e.g., Eisenberg, 1985a & b; Engel, 1986; Fivush et al., 1986; Hudson, 1986), and the evidence

for a relationship between maternal representational style and child recall from these studies is inconclusive. A study carried out by the present investigator (Tessler, 1984), using children whose average age was 3 1/2, found a stronger relationship between maternal linguistic style and child recall. It may be hypothesized that these children's longer exposure to language in general, and to their mothers' linguistic style in particular, resulted in stronger observable effects. It was expected that using a subject group very close in age to that in the previous study would allow a closer examination of the representational process, while the slight increase in age would ensure the children's greater understanding and ability to participate in the task chosen for the present study.

Characteristics of the mothers. The mean age of the mothers was 38 years (range=25-53). Of the 48 mothers, all but one were married to and living with the father of the child in the study; one was divorced and had full custody of the child. Their mean educational level was 17.5 years (range=13.5-20 years of education). It must be acknowledged that this was an

especially well-educated, and thus not totally representative population.[1]

Because the major hypothesis being tested was that children's exposure to a particular maternal representational style would influence the development of their own, it was decided that only mothers who spent at least half a day with their children would be suitable as subjects.

Procedure

The experiment was carried out in three sessions, as shown in Figure 2. Session 1 included a picturebook reading by mother and child designed to assess maternal style, followed by the picturetaking experience. In session 2, a week later, the child constructed a picture booklet with the experimenter and engaged in Narrative or Paradigmatic talk with her. Three weeks later, in session 3, the child was again engaged in reconstructive talk, this time with a different experimenter. Details of the procedures for each session are described further in what follows.

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[1]To be more specific: Of this sample of mothers, 6 held the Ph.D. degree, one was a Ph.D. candidate, 21 held master's degrees, 2 held the J.D., 2 held R.N. degrees, 11 held B.A.s, and the remainder had at least 1 1/2 years of college.

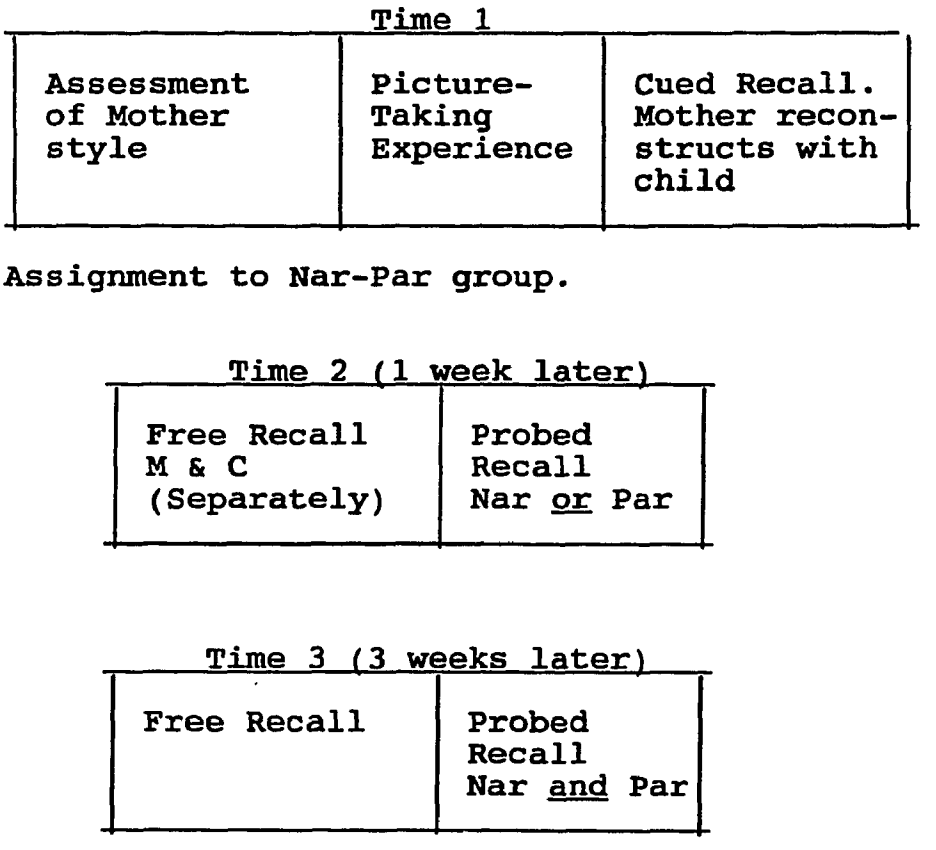

Figure 2: Procedure.

During the recruitment phase, the project was described to mothers as a study of how children talk about photographs they have taken or helped to take. (See Appendix B for sample of recuitment letter.)

Task 1: Pre-Test for Maternal Style Categorization

On arriving at the child's home on the day of the picturetaking session, the experimenter asked the

mother and child to look together at a picturebook she had brought. The mother was asked to go over the book with her child in whatever manner they would ordinarily do. The mother was told that this was for the purpose of obtaining an idea of how the child tended to talk about pictures in general. The picturebook reading was tape-recorded.

The picturebooks chosen for the mothers' use in this pre-test, Shopping and The City (Toronto: Annick Press, Ltd., 1986) are cardboard books containing five unpaginated, uncaptioned, unsequenced pages of pictures that portray in a nonlinear way typical aspects of city life familiar to all city children. Because there is no pre-set text that would, in effect, force a mother into one particular pattern of description or conversation, and yet each page is crowded not only with a multitude of objects and people but with many activities that might lend themselves to thematic as well as categorical talk, the books offer several possible ways in which a mother might discuss them with her child. Because the various characters are depicted in the midst of activities of all sorts, a mother could develop with her child a story narrative of what might be happening or about to happen; the books lend themselves equally well to a simple naming game or

category quiz, in which a mother could point to an object or character and test her child's knowledge in that way. (This categorization procedure is similar to that used by Seligmann, 1986; Weitzman et al., 1985; and others.)

In order to avoid the possibility that either book was biased toward one style or the other, the books were simply alternated, so that if one mother had been asked to look at The City with her child, the next mother was given Shopping.

After Task 2, the picturetaking walk (see description below), but before the next meeting with the child, the tape-recorded mother-child picturebook reading (Task 1) was transcribed verbatim and coded as to the amount and proportion of each type of utterance, Narrative and Paradigmatic. The criterion of .50 was used as the cut-off point for the determination of maternal style; that is, if more than .50 of a mother's utterances fell into the Narrative classification on the code, she was placed in the Narrative group, and if more than .50 of a mother's utterances fell into the Paradigmatic classification on the code, she was placed in that group. The two styles, however, are not seen as total dichotomies: Talk classified as predominantly

Narrative included utterances in the Paradigmatic style, and vice versa.

Subject characteristics by group, after classification: Mothers. A total of 60 mothers were tested. The original sample recruited from nursery schools consisted of 32 dyads. Of these, 17 mothers were classified as Narrative and 12 as Paradigmatic; 3 dyads proved impossible to use because there was too little verbal interaction between mother and child. The remaining 19 mothers and children were recruited from participating mothers' recommendations of friends, and from a second canvass of nursery schools and day-care centers in other parts of the city.

Of the total tested, 56% were categorized as Narrative,* 42% as Paradigmatic, and 2% were uncategorizable. It was necessary to oversample for Paradigmatic mothers in order to achieve the final balance of equal numbers in each group. It should be noted here that the Narrative mothers all scored

*Of the overabundant Narrative dyads, all were seen in the order in which they responded to the recruitment effort, and were given the entire 3-part experience except that the present investigator also did a second follow-up interview. The data from this Narrative oversample were not, however, used in this study.

substantially above the .50 criterion, with a mean of .69, and the Paradigmatic mothers all scored well below it, with a mean of .30.

The mean age of the Narrative mothers was 38 (range=30-53). Their mean educational level was 17.5 years (range=14.5-20 years). (This group contained 4 Ph.Ds and 1 Ph.D. candidate.)

The mean age of the Paradigmatic mothers was 36 (range-25-44). Their mean educational level was 17.5 years (range=13.5-20 years). (This group contained 2 Ph.D.s and 2 J.D.s.) The difference in mean age of mothers was not significant.

Subject characteristics by group, after classification: Children. Of the 24 children in the Narrative dyads, 14 were females and 10 were males. The mean age of the children was 4 1/2 years (range=4 years, 1 week-4 years, 7 months). Seven were only-children, 11 were first-borns and 6 were later-borns. Their mean amount of hours per day in nursery school was 4 hours (range=3-4.5 hours), and their mean number of years attending nursery school was 2 (range=6 months-3 years).

Of the 24 children in the Paradigmatic dyads, 10 were females and 14 were males. Their mean age was 4 1/2 years (range=4 years, 2 weeks-4 years, 7 months). Nine were only-children, 11 were first-borns and 4 were later-borns. Their mean amount of time in nursery school per day was 4 hours (range=3-4.5 hours), and their mean number of years of attendance was 2 (range=1-3 years).

Thus, overall, the two groups were very closely matched on all measured maternal and child characteristics.

Composition of the subgroups. The group of 12 children whose mothers were classified as Narrative and who received Narrative talk at Task 3 (hereafter referred to as the N/N group) was constituted as follows:

Nine children were females and 3 were males. The mean age of the subgroup was 4 years, 4 months.

The group of 12 children whose mothers were classified as Narrative and who received Paradigmatic talk at Task 3 (hereafter referred to as the N/P group) was constituted as follows:

Five children were females and 7 were males. The mean age of the subgroup was 4 years, 5 months.

The group of 12 children whose mothers were classified as Paradigmatic and who received Paradigmatic talk at Task 3 (hereafter referred to as the P/P group) was constituted as follows:

Three of the children were females and 9 were males. The mean age of the subgroup was 4 years, 4 months.

The group of 12 children whose mothers were classified as Paradigmatic and who received Narrative talk at Task 3 (hereafter referred to as the P/N group) was constituted as follows:

Seven of the children were females and 5 were males. The mean age of the subgroup was 4 years, 5 months.

Task 2: Mother-Child Picturetaking Walk

Procedure

After the mother-child picturebook reading, the child was shown a sample of the kind of picturebook he or she would be making. This consisted of a brightly colored folder with inserts for photographs. In order to avoid any possible bias or suggestion that the words "picturebook" or "album" might suggest (since one or the other might convey a connotation more Narrative or

Paradigmatic), the child was simply told, "You're going to make one like this," and asked what color folder he or she wanted.

Mother and child, accompanied by the experimenter, then took a bus ride to an area approximately 10 blocks away from the child's home neighborhood, to avoid familiarity effects. The mother confirmed that the area was unfamiliar to her child. The experimenter explained the use of the camera (a Kodak Extralite #10, using Kodacolor film with 12 exposures). Of the 48 children, 11 had never used a camera before, but none of these first-timers had any difficulty once they began to take the pictures. (Except for two children, all the children took all their own pictures; those two children had their mothers take the first, in one case, and the first two, in the other, and then took all the rest by themselves.)

The child was told that he or she could take 12 pictures of anything he or she wanted. The mother was asked to talk with her child as he or she took the pictures, on the excuse that the children otherwise tended to take the pictures too quickly and then become disappointed when the film was used up so quickly. She was also told that she could help the child decide what

to take. The mother was told that the session was being tape-recorded so that the experimenter would be better able to identify the pictures afterward.

Tape-recorded talk during this task, too, was transcribed verbatim and the mother's and child's talk was coded as to amount and proportion of Narrative and Paradigmatic information provided or requested by each, using the code previously described.

Mother, child and experimenter walked around three city blocks. When the 12 pictures had been taken, the experimenter accompanied mother and child back to their home by bus. Once at the child's home, the experimenter obtained the child's recall of the picturetaking walk under the guise of wanting to be able to be sure, on picking up the developed photographs, that they were all there. (E to child: "Now, can you help me remember what you took pictures of, so when I get them back I'll know they're all there?") After the child had recalled one or two items, the mother was asked to help her child recall more. (E to mother: "Can you help him/her remember any more?" Or, alternatively, since many mothers began to try to cue their children at this point but then restrained themselves, unsure whether that was allowed:

"That's okay, mothers can help.") The child's free recall and the mother's cues to the child were tape-recorded. The mother was asked not to discuss the experience with her child and to try to prevent others from doing so. She was then told that the study concerned children's memory and discussion about a shared event, but maternal style was not mentioned. In the majority of cases, by this point the child was either running ahead, working off the energy that had had to be held in check during the picturetaking, or was lagging behind, fatigued. In either circumstance, the experimenter and the mother were usually walking together in private conversation when this information was conveyed.

Task 3: Children's Response to Four Cues in Same or Different Style From That of Mother

Free recall. One week later, the experimenter returned to the child's home with the developed photographs. Before taking the pictures out, the experimenter told the child that she wanted to see if the mother remembered all the pictures as well as the child had remembered them the week before. In order to justify going into a separate room with the mother (or, in some

cases, by the mother's choice, asking the child to play in his/her own room for a few minutes), the experimenter told the child that the mother wasn't allowed to get any help. The mother was then asked to recall what her child had taken pictures of, and anything else about the picturetaking walk that came to mind.

This took from 5-10 minutes, after which approximately half the mothers usually went into another room, while the child was asked to recall what pictures he/she had taken, and anything else about the experience that came to mind. If the mother remained in the room at this point, she was asked not to help the child.

Cued recall. The experimenter then showed the photographs to the child. The children in all four groups were asked the same initial question: "What's this a picture of?" After that, the 12 children in the N/N group were presented with 4 Narrative questions or cues per picture.[2] These Narrative questions were

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[2]Tasks 3 and 4 were carried out and analyzed on the basis of 10 pictures per child, since it was quite common that one or two pictures per child would fail to come out. These pictures were chosen (prior to arriving at the child's apartment) randomly, unless that random draw would have eventuated in the child's being presented with more than one picture of the same thing, or in a

derived from aspects of the code that were deemed most characteristic of the Narrative style and consisted of one Location, one Temporal, one Activity and one Interpretive question or cue. (See Appendix C for examples of both Narrative and Paradigmatic questions, and sample responses.)

The 12 children in the N/P group received 4 Paradigmatic questions or cues. These were derived from the aspects of the code deemed most characteristic of the Paradigmatic style and consisted of one Category, one Knowledge Base, one What Part Of? and one Specific Physical Properties question or cue.

The 12 children in the P/P group received the 4 Paradigmatic cues per picture, and the 12 children in the P/N group received the 4 Narrative cues. After each of the photographs had been viewed and talked about, the experimenter helped the child place the photographs in the inserts of the folder. The mother was once again asked not to talk about the experience with her child and to try to prevent others from doing so. The experimenter took the inserts and photographs back from the child with the excuse of making a special

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picture that was visually unclear. In such cases, the experimenter simply made another random choice.

cover for them with the child's name on it. This session was tape-recorded, transcribed verbatim and coded as to the proportion of Narrative and Paradigmatic information in each child's responses to the four cues.

Task 4: Children's Response to All Eight Cues

Three weeks later, a different interviewer returned with the child's photographs and the special cover the child had been promised. After obtaining the child's free recall of the photographs and the picture-taking walk (E to child: "Minda said she had a terrific time when she went picturetaking with you. I wish I'd been there! Can you tell me about it?" If the child had difficulty beginning, E said: "What did you take pictures of?"), the experimenter explained that the pictures had become disarranged. While assisting the child in replacing them in the inserts, the experimenter first asked each of the 12 children in each of the 4 groups to identify the pictures, and then presented each child with all 8 of the above-mentioned Narrative and Paradigmatic cues per picture. This task, too, was tape-recorded, transcribed verbatim and coded as to proportion of Narrative and Paradigmatic responses by the children to the experimenter's cues.

Coding

Twenty-five percent of the transcripts of the picturebook reading and the picturetaking walk, chosen randomly, were coded by an independent judge for Narrative and Paradigmatic discourse using the code described above and included as Appendix A. All the utterances were assigned a particular code number, and reliability calculated on the basis of agreement as to total number of Narrative and total number of Paradigmatic. Intercoder agreement on the assignment of utterances to code category was .92 for the picturebook reading and .89 for the picturetaking walk.

Scoring

Frequencies of occurrence for each type of information, Narrative and Paradigmatic, in the children's and the mothers' talk were converted to proportions of the total amount of information provided or requested for each of the four tasks. In addition, mothers' cues to their children immediately after the picturetaking walk were analyzed for proportions of each type of talk, and the mothers' interpersonal style and "agenda" or orientation were analyzed.

The children's scores for Free Recalls and Picture Recognitions 1 and 2 were on the basis of number of

pictures recalled and recognized, out of a total of 10 pictures per child, or 120 pictures per group.

For Tasks 3 and 4, in addition to assessing the amount of Narrative and Paradigmatic information provided, the children's responses to same-style or different-style experimenter cues were scored as follows:

Of the four Narrative questions, only two required a strictly factual response: the Location question ("Where did you take this?") and the Temporal question ("When did you take this one?" or "Did this come before this one or after?") Possible children's responses were No Response, Don't Know, Asks Experimenter the Correct Answer, or a correct or incorrect specific factual response.

The two remaining questions -- Activity ("What's the lady doing?") and Interpretive ("What do you think's going on here?") -- did not have predetermined correct or incorrect responses but were scored as correct or incorrect on the basis of consistency of the response with the format of the question. That is, a child who answered an Activity question with, for instance, an Autobiographical response ("I've got a book bag like that") rather than a descriptive one ("He's putting his sandwich in the book bag"), or an

Interpretive question with, for instance, a Knowledge Base response ("That's a delivery truck"), was scored as inconsistent, and thus incorrect, while a response in the same mode, whether or not totally correct in a factual sense, was scored as consistent, and therefore correct. The primary criterion for correctness, for all four cues, however, was consistency of the response with the format of the question.

The same system of scoring was used for Paradigmatic cues and responses. The response to a Category question, for instance, was scored as consistent, hence correct, if the response was in that format ("That's a movie theater") but inconsistent and thus incorrect if in a different mode ("We just got a video of 'Cinderella'!")

Group Data

Comparisons were made between the groups receiving cues in the same style as their mothers' and those receiving cues in a different style.

The presence or absence of significant differences among the children based on gender was also analyzed.

CHAPTER III

RESULTS

The purpose of the first task was to confirm the maternal style classifications observed in an earlier study (Tessler, 1984) and to classify the children based on their mothers' scores. The purpose of the second task was to determine whether these style differences were consistent over two types of situations.

After the completion of Task 2, the maternal talk during Task 1 was coded according to the criteria established in the previous study. (See Appendix A for coding scheme.) The comparisons being made here with regard to style derive from, and are subsequent to, the assignment of mothers and children to particular groups based on that initial assessment.

For purposes of statistical analyses to confirm consistency over time and situation, for comparison with the children's style, and to control for individual differences in amount of talk, a ratio scale was constructed as follows: The 18[1] different types of

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[1]19 categories appear on the code (see Appendix A), but since the Possessive category (#13) derived from the previous study proved to be a neutral category in this study, it was excluded from the analyses that follow.

utterance were collapsed into the 2 categories of Narrative and Paradigmatic, and for each mother the sum of her Narrative talk divided by the sum of Narrative and Paradigmatic talk became her score:

$$\text{(Score} = \frac{\text{sum of N}}{\text{sum of N + P}}\text{)}.$$

Scores over .50 were categorized as Narrative; scores below .50 as Paradigmatic.

Task 1: Mothers' Scores

As Table 1 indicates, for the 48 mothers observed in Task 1, the mean score was .50 (s.d.=.21), and scores ranged from .16-.81. Among the Narrative mothers, the mean score was .69 (s.d.=.06), with a range from .55-.81. Among the Paradigmatic mothers, the mean score was .30 (s.d.=.05), with a range from .16-.38.

Table 1

TASK 1: Picturebook Reading
and
TASK 2: Picturetaking Walk

(Mean Score for Mothers and Children By Type of Mother)*

Task	Subjects	Type of Mother		TOTAL
		Narrative (N=24)	Paradigmatic (N=24)	N=48
TASK 1	Mothers	.69 (.06)	.30 (.05)	.50 (.21)
	Children	.68 (.09)	.31 (.05)	.49 (.20)
TASK 2	Mothers	.58 (.03)	.19 (.04)	.38 (.20)
	Children	.57 (.08)	.23 (.06)	.40 (.19)

It would be tautological to point out that the Narrative mothers all had scores above .50, and that the Paradigmatic scores were all below .50, since that was the criterion for assignment to one group or the other. However, it is interesting to note the degree of difference between the two groups. The fact that the lowest Narrative score was .55, and of the 23 other Narrative scores, most were clustered in the high .60s and .70s, with one as high as .81, while the highest

*S.D.s in parentheses

Paradigmatic score was .38, with a low of .16, gives a picture of two very different types of profiles -- a degree of difference not necessitated by the classification scheme.

Characteristics of the Two Styles During Picturebook Reading: Mothers

Table 2 presents a close-up of the internal content of the mothers' talk, and offers an opportunity to examine in more detail the nature of the differences between the two styles. The most striking differences between the groups appear in the Autobiographical and Interpretation categories, to which the Narrative mothers show the higher number of references; and in the Knowledge Base category, to which the Paradigmatic mothers make the higher number of references. The Narrative mothers produced a larger number of references to Activity, Color, Location, Temporal, and Affective; while the Paradigmatic mothers made more references to Specific Physical Properties, What Part Of, Another and Same/Different.

The surprisingly high frequency among the Narrative mothers of Category utterances, which had seemed a more fundamental element of the Paradigmatic repertoire, along with a slightly higher number of

references to Color, seems to be attributable to two characteristics of their style: a high number of instances of "combinational" talk, in which several objects are connected (as in "The girl with the purse," "The truck with the picture on it"), and a greater use of modifiers in general: "The big blue car," as opposed to the more characteristically Paradigmatic "The car."

Finally, Narrative mothers produced a mean of 2.6 utterances of a personal-interactional sort (for instance, "You're really getting a kick out of this, aren't you?") as compared with a mean of .45 on the part of the Paradigmatic mothers.

It should be noted that the actual amount, as differentiated from the content, of information provided or requested by the two groups of mothers was not very different: a total of 834 units, or a mean of 34.7, for the Narrative mothers; a total of 702 units, or a mean of 29.2, for the Paradigmatic mothers.

Table 3 compares the mothers' interpersonal styles during the picturebook reading. Here it appears that, concomitant with the differences between the two groups in representational style, there are some striking

Table 2

Task 1: Picturebook Reading
and
Task 2: Picturetaking Walk:

Mean Type of Talk
(Utterances used to compute score)
By Style of Mother

Type of Talk	TASK 1				TASK 2			
	Mothers		Children		Mothers		Children	
	N (24)	P (24)	N (24)	P (24)	N (24)	P (24)	N (24)	P (24)
NARRATIVE								
Activity	3.21	1.21	3.25	1.46	8.54	2.63	5.29	2.21
Aesthetic	0.04	0.00	0.13	0.21	1.17	0.33	0.38	0.13
Color	1.96	0.88	2.29	1.21	3.38	1.08	3.21	1.38
Location	2.42	1.21	2.13	1.21	10.58	2.96	5.79	3.50
Temporal	1.63	0.46	2.21	0.42	4.38	0.75	3.29	0.63
Autobiographical	6.04	2.17	3.79	1.75	3.67	0.79	2.67	0.92
Theme	0.17	0.04	0.17	0.08	0.42	0.17	0.58	0.08
Affective	2.67	1.58	2.88	1.75	4.88	1.63	3.25	1.42
Interpretation	5.17	1.08	3.96	0.96	4.00	1.33	3.79	1.42
PARADIGMATIC								
Category	5.42	5.96	5.38	7.42	23.63	21.08	18.17	19.42
Size	0.63	0.46	0.96	0.50	0.83	0.54	0.63	0.54
Quantity	0.21	0.29	0.13	0.33	1.00	2.25	0.46	1.92
Knowledge Base	1.96	6.71	1.21	4.92	0.92	8.13	0.46	7.50
Specific Physical Properties	1.13	2.42	1.38	2.54	1.42	5.21	1.17	5.25
What Part of	0.38	1.08	0.17	1.42	0.50	3.42	0.25	2.96
Another	0.33	1.54	0.33	1.71	0.33	2.83	0.17	1.00
Same/Different	0.33	1.33	0.21	1.92	0.21	3.46	0.21	0.75
Which One	0.13	0.54	0.00	0.00	0.46	3.38	0.08	0.00

Table 3

Mothers' Responses to Children During Picturebook Reading: Amount and Proportion of Each Type of Response

	Repeats C Wording	Accepts	Rejects	Corrects	Asks for Clarification	Extends C Focus or Remark	Total # Utterances That Were Responses
Narrative Mothers	51(.30)	47(.27)	1(<.01)	5(.03)	8(.05)	58(.34)	172
Paradigmatic Mothers	9(.05)	69(.38)	32(.17)	32(.17)	40(.21)	4(.02)	186

differences in interpersonal style as well. Seventeen percent of the Paradigmatic mothers' responses to their children's remarks consisted of rejections, compared with less than .01 among the Narrative mothers; 17% of the Paradigmatic mothers' responses were corrections of such remarks, compared with .03 corrections on the part of the Narrative mothers; requests for clarification composed .21 of the Paradigmatic mothers' utterances, in contrast to .05 among the Narrative mothers; and .05 of the Paradigmatic mothers' responses consisted of repetitions of the child's wording, as compared with .30 on the part of the Narrative mothers.

There are a few categories that one would want to interpret with care. While .38 of the Paradigmatic mothers' responses consisted of acceptances of their children's remarks, as compared with .27 of such acceptances by the Narrative mothers, such behavior could seem rather controlling in a context that is meant to be one of fairly mutual exchange: That is, a mother who is frequently rejecting or accepting a child's remarks could be said to be setting up strict constraints on what is a "good" or "bad," "right" or "wrong," acceptable or unacceptable answer. A comparison of the behaviors of the two group on the

"Rejects," "Asks for Clarification" and "Extends C Focus or Remark" may further serve to clarify this point. One might hypothesize that Narrative mothers were asking their children to "clarify" a statement that the Paradigmatic mothers might have rejected as wrong, and that Narrative mothers may make statements extending the child's remark for the same purpose. Similarly, repeating the child's wording, which the Narrative mothers did at a much higher rate than the Paradigmatic mothers, might indicate more responsiveness or cohesion between Narrative mothers and children, or this behavior may function, again, as an indirect way of calling the child's comment into question.

Task 1: Children's Scores

Although the focus of attention in Task 1 was on the classification of the mothers, it is nevertheless interesting to see, looking at Table 1, how closely the children's scores match those of their mothers.

For the 48 children observed, the mean score was .49 (s.d.=20), with a range from .18-.79, which is very close to the mothers' mean of .50 (s.d.=.21) and range of .16-.81. For the children of Narrative mothers, the mean was .68 (s.d.=.09) with a range from .50-.79, very

close to the Narrative mothers' mean of .69 (s.d.=.06) and range of .55-.81. For the children of Paradigmatic mothers, the mean was .31 (s.d.=.05), with a range from .18-.44, close to the Paradigmatic mothers' mean of .30 (s.d.=.05) and range of .16-.38.

The lowest score among the Narrative children was .50, with the majority of the scores in the upper-.60s-low-.70s range. The highest score among the Paradigmatic children was .44, with the rest of the scores falling into the mid-.20's-low-.30's range.

The Pearson-Product-Moment correlation between the mothers' and children's scores, run on overall ratios was .94 (p=<.001). The fact that the children's scores were very close to those of their mothers is not surprising when one looks at the proportions of children's talk that were initiations or responses (Table 4). For both groups, the majority of the children's utterances consisted of responses to their mothers, and there were virtually no differences between the two groups of children in the proportion of initiation to response. The differences in actual amount of information provided or requested by the children was also not large: a total of 749 units, or a mean of 31.2, for the Narrative children, versus a total of 728 units, or a mean of 30.3, for the

Paradigmatic children. Since we would expect children's responses to be in the same format as the maternal talk to which they were replies, the similarity in the distribution of children's and mothers' scores is not surprising.

Table 4

Proportions of Children's Talk During Picturebook Reading That Were Initiations or Responses

	Total # Utterances	Initiations	Responses
Narrative children	516	.42	.57
Paradigmatic children	448	.40	.59

Just how closely the children's talk adhered to the formats set by their mothers is shown by a comparison of Tables 5 and 6, in which the relative proportion of information in the Narrative and Paradigmatic format supplied or requested by the mothers and children in each group matched almost exactly.

Table 5

Amount and Proportion of Each Type of Information Supplied or Requested by Mothers During Picturebook Reading

Narrative Mothers		Paradigmatic Mothers	
Total amount of information*	834	Total amount of information*	702
Total amount Narrative information	559 (.67)	Total amount Paradigmatic information	481 (.68)
Total amount Paradigmatic information	251 (.30)	Total amount Narrative information	207 (.29)

*With 1 neutral category from code ("Possessive") excluded.

Table 6

Amount and Proportion of Each Type of Information Supplied by Children During Picturebook Reading

Narrative Children		Paradigmatic Children	
Total amount of information*	749	Total amount of information*	728
Total amount Narrative information	499 (.67)	Total amount Paradigmatic information	498 (.68)
Total amount Paradigmatic information	234 (.31)	Total amount Narrative information	217 (.30)

*With 1 neutral category from code ("Possessives") excluded.

Characteristics of the Two Styles During Picturebook Reading: Children

Again illustrating how closely aligned the mothers' and children's talk was, Table 2, which characterizes the

content of the mother-child talk, shows that the most important differences between the Narrative and Paradigmatic children come on the same categories that brought out the most marked differences between their mothers: Autobiographical and Interpretation, and, to a lesser extent, Activity and Temporal, in which the Narrative children, like their mothers, produced the higher number of utterances; Knowledge Base and, to a lesser extent, What Part Of, Another, and Same/Different, in which the Paradigmatic children, like their mothers, produced the higher number of utterances. The Paradigmatic children show a higher number of references to Category than their mothers did, and a higher number than the Narrative children -- perhaps reflecting their response to the large number of their mothers' Knowledge Base questions, which were of the "What's this?" type. They coincide with their mothers in showing a higher number of references to Specific Physical Properties than the Narrative children or mothers.

The Narrative children, like their mothers, made more references to Color, Location, and Affective than the Paradigmatic children and mothers, and coincide with their mothers in the number of Category references, which, though less than those of the Paradigmatic

children, is nonetheless high in relation to the much lower amount of other Paradigmatic-type utterances made by Narrative children. As was true for the Narrative mothers, this and the slightly higher number of references to Color, seems to reflect a particularly "combinational" aspect of the Narrative style.

Narrative children made an average of 2.4 utterances of a personal-interactional nature, very close to their mothers' average of 2.6; the Paradigmatic children made an average of 1.17, higher than their mothers' average of .45.

Summary of Findings From Task 1

The findings from Task 1 may be summarized as follows:

1. The maternal styles observed in the earlier study (Tessler, 1984) were apparent here as well. The means between the two groups of mothers were quite different, thus confirming that they are two quite distinct styles.
2. The distribution of the children's scores very closely paralleled that of their mothers and showed the same distinctness between the two groups.

Task 2: Mothers' Scores

Task 2 had two major purposes. The first was to confirm the classification of the mothers from Task 1, in order to be sure that the scores achieved there were not situation-specific. The second was to have a sample of the style of the mother-child talk that went on during the picturetaking experience to compare with the style of the children's response to the later experimenter-child talk in order to determine whether the child showed a preference for one over the other.

As Table 1 indicates, for the 48 mothers observed the mean score was .38 (s.d.=.20) and the range was from .14-.66. Among the Narrative mothers, the mean score was .58 (s.d.=.03), with a range from .53-.66. Among the Paradigmatic mothers, the mean score was .19 (s.d.=.04), with a range from .14-.25.

The strong differences in the means between the two groups again indicates that they are indeed two very distinct groups. The classifications remained constant across tasks and no mother had to be reclassified. The basic pattern of differences between the two groups held constant, indicating that the style behaviors were not situation-specific.

The correlation between the mothers' scores on Task 1 and Task 2 yielded a reliability coefficient of .83.

Characteristics of the Two Styles During Picturetaking Walk: Mothers

A closer look at the behaviors of the two groups of mothers, as shown on Table 2, indicates more specifically the ways in which the differences between them continued in the new situation. While both groups of mothers made a quite similar number of references to Category, possibly due to the nature of their task -- helping their children decide, from a multitude of possible subjects attracting their attention, which to photograph -- the differences between them are consistent with those observed on Task 1. Thus, the two groups showed the greatest disparity of scores on Activity, Location, Temporal, and Affective, in which the Narrative mothers produced the greatest number of utterances; and on Knowledge Base and Specific Physical Properties, in which the Paradigmatic mothers produced the greatest number. The Narrative mothers, as previously, showed a higher number of references to Autobiographical, Color, and Interpretation; while the Paradigmatic mothers, also consistent with their previous pattern, showed a higher

number of references in the Same/Different, What Part Of and Which One categories.

Perhaps because of the differences in the two tasks themselves, the Narrative mothers produced fewer Autobiographical and Interpretation references on Task 2 than on Task 1, but showed an increase in the number of Affective utterances. The Paradigmatic mothers, however, showed only a slight increase in Affective utterances and greatly reduced their number of Autobiographical references.

It is interesting to note where the greatest increases for each group came. On Task 2, the Narrative mothers increased their number of utterances in characteristically Narrative categories such as Activity, Color, Aesthetic, Location, and Temporal, and, on a lesser scale, showed more utterances in the characteristically Paradigmatic categories of Specific Physical Properties, What Part Of, and Which One. Among the Paradigmatic mothers, there was an increase in characteristically Paradigmatic categories such as Knowledge Base, Which One, Specific Physical Properties, What Part Of, Another, Same/Different, and Quantity, and slight increases in the more Narrative Activity, Location, and Interpretation. Thus, while the mothers in

each group can be seen adapting to some extent to the demands of the new situation -- the Narrative mothers making greater use of the more characteristically Paradigmatic utterances useful in discriminating and specifying; the Paradigmatic mothers making somewhat more use of the more typically Narrative focuses on context (Location) and Activity -- each group nevertheless maintained its characteristic profile, showing its largest increases in utterances in its own style.

There appeared, however, to be a difference in what might be termed stylistic flexibility between the two groups: Of the total amount of the Narrative mothers' talk, 58% was in the Narrative format and 41% in the Paradigmatic format. In contrast, of the total amount of the Paradigmatic mothers' talk, 81% was in the Paradigmatic format and only 19% in the Narrative.

The total amount of information provided or requested by the Narrative mothers was 1698 units, or a mean of 70.7. The total for the Paradigmatic mothers was 1489, or a mean of 62.0.

Many of the same differences in interpersonal style observed on Task 1 were consistent across Task 2. As Table 7 indicates, Narrative mothers showed more interest in the child's reason for taking the picture; made more

Table 7

Mean Numbers of Interpersonal Utterances in Mothers' Talk During Picturetaking Walk

	Initiates Focus or Suggests Idea	Queries C's Reason For Taking Picture	Personal-Interactional	Evaluative P	Evaluative N	Assents	Responses to C Initiations: Refines C Focus	Responses to C Initiations: Extends C Focus	Responses to C Initiations: Suggests Different Focus	Responses to C Initiations: Ignore, Interrupt, Distract
Narrative mothers	2.83	1.92	3.67	2.54	0	1.62	.96	10.58	0.75	0.17
Paradigmatic mothers	3.33	.46	1.62	3.38	.71	2.38	6.88	2.96	1.29	1.17

personal/interactional comments along the way; made fewer negative -- but also fewer positive -- evaluations of the child; were less likely to suggest a different focus, or subject for a picture; less likely to ignore, interrupt or distract the child; more likely to repeat the child's wording; less likely to ask for clarification; more likely to elaborate on the child's remark; and more likely to extend the child's focus than to refine or narrow it. Paradigmatic mothers were more likely to suggest an idea to the child, but both groups of mothers were almost equally likely to offer the child an open-ended choice.

Why did the Narrative mothers, who on the whole would seem to have been more responsive to and less constraining of their children, offer fewer positive evaluations of their children than the Paradigmatic mothers, assent to the child's choice fewer times than the Paradigmatic mothers, and acknowledge (Yes/No) their children's remarks less often? It is possible to conjecture that evaluativeness, whether negative or positive, is more of a controlling than a responsive act; likewise, assenting, or giving permission. Repeating the child's wording, too, may function as a more indirect, understated way of asking for clarification.

Some illumination of these differences may be provided by Table 8, which looks at the mothers' behaviors during the picturetaking walk in terms of their orientation or"agenda." The relatively large number of references to task and to procedure on the part of the Paradigmatic mothers, and the relative paucity of references to (and, one must thereby assume, attention to or acknowledgement of) extra-picturetaking occurrences in the picturetaking context, or off-task behaviors by the child, are taken to indicate more of a Task than an Experience orientation. The relatively large number of references to the experience itself (as in "This is fun, isn't it?" or "I think this is something you're going to want to do again, am I right?") and to extra-picturetaking occurrences on the street, or off-task behaviors on the part of the child, seem to indicate a very different, more experiential orientation on the part of the Narrative mothers.

One could thus hypothesize that the Narrative mothers' Experience rather than Task orientation is what is at work in the interpersonal behaviors depicted in Table 8. That is, if a mother sees the picturetaking as a task, to be performed correctly or incorrectly, she would be likely to make more suggestions or directives,

Table 8

Maternal Orientation or Agenda During Picturetaking Walk: Mean Number of Utterances Indicating Experience or Task Orientation

	Setting Statement								Response to C Off-Topic Talk or Behavior		Encourage or Cajole		Closure Remarks	
	#Refs. to Exper.	#Refs. to Task	#Refs. to Task	#Refs. to Exper.	#Refs. to Goal	#Refs. to Proced.	#Refs. Extra-Pxtak. Activ. by C	#Refs. Extra-Pxtak. Occur. on St.	Goes Along With	Directs Back To Task	Via Ref. Task	Via Ref. Exper.	Ref. to Task	Ref. to Exper.
Narrative Ms	.54	0	0.33	2.12	0.16	3.29	1.08	3.21	1.08	0.37	0	1.0	.71	2.96
Paradigmatic Ms	0	.54	3.54	0.25	0.16	8.96	0.37	0.87	0.37	1.50	1.46	0.37	2.46	.42

Response to C Talk

	Repeat C Wording	Ask For Clarification	Elaborate on C Remark
Narrative Mothers	4.21	0.21	2.21
Paradigmatic Mothers	1.50	1.12	

evaluate her child's performance, and give or withhold her consent more often than a mother who sees the picturetaking as an experience to be shared with her child.

Finally, there are two parallel categories that present some interesting differences here: "Refine C Focus" and "Extends C Focus." The "Refines" category was the result of calculating the number of maternal utterances in the What Part Of and Which One categories. The "Extends" category represents the total number of maternal references to Location. (The categories were devised only after it was observed that Narrative mothers used a much higher proportion of Location references, and Paradigmatic mothers a much higher proportion of references to What Part Of and Which One.)

In the context of the picturetaking walk, it appears that Narrative mothers used these Location utterances to create a verbal context for the child's picture. For example, a typical "Extend C Focus" utterance was: "Do you maybe want to get that driveway in too?" or "How about if I stand in front of that tree?" In contrast, the Paradigmatic mothers' more frequent use of specifiers such as What Part Of and Which One seemed to function to refine, or make more distinct, the child's focus.

Examples of a "Refine C Focus" would be: "Which part of the car do you want to get?" or "Which one are you taking: the lady or the dog?"

The mothers' cues to their children immediately after the picturetaking were also coded for maternal style, interpersonal behavior and agenda, or orientation. As Table 9, depicting utterances within the major, most characteristically Narrative or Paradigmatic categories shows, both groups of mothers produced similar numbers of Category cues such as, "Did you take any cars?" or "Did we take any pictures of people?" The Narrative mothers provided or requested a greater amount of information in the spatio-temporal format; used an activity the photographic subject was observed performing as a clue (for example, "Did we see anybody shoveling?"); and made more linkages to their children's autobiographical recall than knowledge base (for example: "Did we take a picture of somebody playing with something you got for your birthday?"). The follow-up probes of the Narrative mothers used fewer utterances requiring a Category response, such as "What else? Anything else?" and more that required or provided a spatio-temporal response: "What did we take/Where did we go after that?" The Paradigmatic mothers relied more on cues of a Category

Table 9

Mean Number of Each Type of Cue and Probe
Used By Mothers for Child Recalls
Immediately After Picturetaking Walk

						Types of Probe	
	Category	Describe Activity	Spatio-Temporal*	Auto-biographical Recall	Knowledge Base	What Else? Anything Else?	What/when next? Where/when after that? Then What?
Narrative mothers	3.6	2.6	5.2	0.96	0.16	0.16	1.75
Paradigatic mothers	3.9	0.95	0.62	0.16	0.79	1.04	.08

* Location and Temporal references combined.

sort, showing higher amounts of references to Knowledge Base ("Did you take a picture of a place where people buy food?") and probes such as "What else? Anything else?"

As can be seen from the table, the Narrative mothers seem to incorporate, or turn as easily to, Paradigmatic cues more commonly than the Paradigmatic mothers incorporate talk from the opposite style: Narrative mothers used a total of 253 cues from the Narrative format and 95 from the Paradigmatic; Paradigmatic mothers used 137 cues from the Paradigmatic format and only 44 from the Narrative.

The mothers' interpersonal behaviors and Task or Experience orientation during the cue-ing paralleled those shown during the picturetaking. Narrative mothers, for instance, produced twice as many utterances relating to their children's affect or interest, or other such personal references, as the Paradigmatic mothers; and they made twice as many references to the experience, including references to extra-picturetaking occurrences or sights. The Paradigmatic mothers, on the other hand, made twice as many references to the task, and no references to extra-picturetaking occurrences or sights.

Task 2: Children's Scores

Again, while it may not be surprising, it is interesting to find the pattern of the children's scores so closely resembling those of their mothers.

As Table 1 indicates, for the 48 children observed the average score was .40 (s.d.=.19), which is very close to the mothers' mean of .38 (s.d.=.20). The children's scores ranged from .08-.84, as compared with their mothers' range of .14-.66. For the children of Narrative mothers, the mean was .57 (s.d.=.08), with a range of .45-.84; in comparison, the Narrative mothers' mean was .58 (s.d.=.03), and scores ranged from .53-.66. For the children of Paradigmatic mothers, the mean was .23 (s.d.=.06) and scores ranged from .08-.35, as compared with their mothers' mean of .19 (s.d.=.04) and range from .14-.25. Only one Narrative child had a score under .50; no Paradigmatic children scored in the Narrative range.

The closeness of the children's scores to those of their mothers is not surprising when one looks at the proportions of children's talk during the picturetaking session that were initiations or responses (Table 10). For both groups of children, the majority of their utterances consisted of responses to their mothers, and there were virtually no differences between the two groups in the proportion of initiation to response. The

differences in amount of information provided or requested by the two groups of children was not large: a total of 1210 units, or a mean of 50.4, for the Narrative children; a total of 1230, or a mean of 51.2, for the Paradigmatic children.

Table 10

Proportions of Children's Talk During Picturetaking Walk That Were Initiations or Responses

	Total Number of Utterances	Initiations	Responses
Narrative children	898	.40	.60
Paradigmatic children	795	.37	.63

As discussed earlier, since we might expect that children's responses would be in the same format as the maternal talk to which they were replies, the similarity in the distribution of children's and mothers' scores is not surprising.

Correlation and Reliability of the Measure

The correlation between the children's scores on Task 1 and Task 2 yielded a reliability coefficient of .88. The correlation between the mothers' and children's scores on Task 2 was .95.

Characteristics of the Two Styles During Picturetaking Walk: Children

The Narrative children and the Paradigmatic children maintained their original profiles and manifested their previous differences from each other on the same dimensions and categories on which their mothers had differed.

The most marked differences between the two groups of children appeared in references to the Activity and Temporal categories, in which the Narrative children, like their mothers, produced the higher number of utterances; and references to the Knowledge Base and Specific Physical Properties categories, in which the Paradigmatic children, like their mothers, produced the higher number of utterances. As on Task 1, differences also occurred, to a less marked degree, in more references by Narrative than Paradigmatic children to Color, Location, Autobiographical, Affective, and Interpretation; and more references by Paradigmatic than Narrative children to Quantity and What Part Of. Both groups produced a similar number of references to Category.

While, as Table 11 shows, the Narrative children showed slightly more of a tendency than the Paradigmatic children to incorporate some talk from the opposite format, the greatest increases for both groups between Task 1 and Task 2 came in utterances in their own style (see Table 2). Thus, the Narrative children increased their references to Activity, Color, Location, Temporal, and Affective -- all characteristic of the Narrative style -- while decreasing their references to the more Paradigmatic Knowledge Base, Specific Physical Properties, and Another. Narrative children did, however, increase their use of characteristically Paradigmatic references to Category and What Part Of.

The Paradigmatic children made slight increases in references to the more Narrative categories of Activity, Color and Location, while decreasing their references to Autobiographical and Affective. They showed an increase in references to the characteristically Paradigmatic categories of Quantity, Knowledge Base, Specific Physical Properties and What Part Of.

Table 11

Amount and Proportions of Narrative and Paradigmatic Utterances in Children's Talk During Picturetaking Walk

	Total amount Information	Total amount Narrative Information	Total amount Paradigmatic Information
Narrative children	1210	678 (.56)	514 (.42)
Paradigmatic children	1230	280 (.23)	944 (.77)

The interpersonal behavior of the two groups during the picturetaking walk was also examined. There were somewhat more expressions of negative affect, medium or low interest and ignoring behaviors among the Paradigmatic children; they also made fewer remarks of a personal/interactional nature, produced fewer repetitions of their mothers' characterization of the subject of the picture, and were less likely to initiate a different focus. They did, however, express more assent to their mothers' suggestions than did the Narrative children. Both groups produced almost equal amounts of off-topic remarks or behaviors.

The differences between the two groups of children in terms of Experience versus Task orientation during the picturetaking walk seem most clearly to reflect the orientation of the two groups of mothers. Narrative and Paradigmatic children differ on every measure in the same direction that their mothers did. The Paradigmatic children made nearly twice as many references to the task and the procedure as the Narrative children; the Narrative children made twice as many references to their own extra-picturetaking activity as the Paradigmatic children, and three times as many references to extra-picturetaking occurrences observed during the walk. While this, of course, is not surprising in light of how much of their talk consists of responses to their mothers, the close correspondence between the two does tend to provide further evidence in favor of a certain pervasiveness of the influence, through direct or indirect means, of maternal style.

Summary of Results of Task 1 and Task 2

The questions asked in relation to Tasks 1 and 2 were:

1. Would the differences in maternal style found in the earlier study on which the present research is based (Tessler, 1984) be found here as well?

2. Would these style differences be consistent across situations?

As the results on Table 1 indicate, the means of the two groups were consistently different, indicating that the groups themselves were quite distinct. On the ratio scale described earlier, the Narrative mothers always had means above .50 while the Paradigmatic mothers always had means below .50.

The correlation between mothers' style on Task 1 and Task 2 yielded a reliability coefficient of .83, thus confirming that the style behaviors were not situation-specific.

The children's behaviors on Tasks 1 and 2 paralleled those of the mothers. The means of both children's groups were very close to those of the maternal groups, as they had been on Task 1. Narrative children, like Narrative mothers, were always at the upper end of the ratio scale, while Paradigmatic children, like their mothers, were always at the lower end.

Task 3

The major hypothesis guiding this study was that the children's exposure to their mothers' style, as exemplified during Task 2, the picturetaking session, would make them more receptive to cues or questions in that style than to its opposite, in Task 3, the follow-up session one week later.

Thus, it was expected that the 24 children receiving talk in the same style as their mothers', whether Narrative or Paradigmatic, would show a better response to cues or questions in the maternal style than in the opposite style -- "better response" being defined as a greater amount of information provided, and appropriateness of the format of the response to the format of the question. Conversely, children receiving follow-up talk in the style opposite to that of their mothers were expected to provide less information during the follow-up session.

Children's Free Recall and Picture Recognition 1 Week Later

The results of the free recall session that preceded the Experimenter-Child talk about the pictures

show that out of a total of 240 pictures taken, the 24 Narrative children recalled a mean of 4.25 pictures; the 24 Paradigmatic children, a mean of 3.0. This difference was significant by t-test (t_{46}=3.16, p=.003).

An analysis of the type of information voluntarily (i.e., with no cue-ing) provided by the children showed that of the total amount of 305 units of information provided by the Narrative children, 142 units (.46) were of the Narrative type, as defined by the code used for Tasks 1 and 2, and 156 units (.51) were of the Paradigmatic type. The Paradigmatic children provided 146 units of information, of which 129 (.88) were of the Paradigmatic type, and 13 units (.08) were of the Narrative type.[1]

While it is surprising to see a higher percentage of Paradigmatic than Narrative information provided by the Narrative group (even though, by an overwhelming amount, the Narrative group provided more Narrative information as well), a close examination of their responses showed that the Narrative children tended to

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[1]Does not equal 100% because 1 category from the code (#13), which turned out to be a neutral category, was excluded from the analysis.

relate items more in combinations (for instance, "The man and the little girl," "The car near the tree"), which gave them -- per picture discussed -- a larger number of specific category items. The Paradigmatic group, paradoxically, had a smaller number of such items because they seemed to recall -- or to relate their recall -- by general categories. When asked what they had taken pictures of, a typical Paradigmatic answer in its entirety was, "Cars...trucks...and buildings."

Following the free recall, all the children were asked to identify each picture, one by one. The Narrative children recognized a mean of 7.75 pictures; the Paradigmatic children, a mean of 7.12 pictures. This difference was not significant (t_{46}=.54, p=.589).

The same pattern of specific combinational answers on the part of the Narrative children, and more generalized categorical responses on the part of the Paradigmatic children held here as well.

Relationship between recall and talk per se. The relationship between picture recall and talk about the pictures before, during, or after they were taken was also examined. In both the Narrative and the

Paradigmatic groups, no picture was recalled that had not been discussed at all, by either the mother, the child, or the mother and child together. Out of 102 pictures recalled by the Narrative children, 94 (.94) had been talked about by the mother and child together, 4 (.04) by the mother only, and 4 (.04) by the child only. Out of 72 pictures recalled by the Paradigmatic children, 53 (.74) had been talked about by the mother and child together, 9 (.12) by the mother only, and 10 (.14) by the child only.

Some interesting differences between the two groups involved the timing of this talk about the pictures. Of the pictures recalled, in the Narrative group, only 3 (.03) pictures had been discussed in advance (i.e., planned) while the mother and child were still at home, while 26 (.36) had been planned beforehand by the Paradigmatic mothers and children. The Narrative mothers seemed to spend more of their time talking about a picture just before and just after it was taken (96, or .97, were discussed before the child took them, and 99, or .97, afterward). The Paradigmatic mothers, on the other hand, spent more of their time planning the picture in advance at home (26

pictures, or .36) or talking about it during the time the child was taking it (65 pictures, or .90). Only 33 pictures (.46) were discussed by the Paradigmatic mothers after they had been taken.

These differences seem to reflect differences in maternal interpersonal styles and orientations or agendas, as discussed earlier when describing the characteristics of the two styles. The talk between the Narrative mothers and their children before the children took a picture and right after the picture was taken more often involved the child's reason for taking the picture (see Table 8), and there was relatively less talk (51 pictures, or .50) during the time the child was actually taking the individual pictures; this talk tended to be of a procedural nature in both groups.

The Paradigmatic mothers, on the other hand, talked more about the picture during the time it was being taken (65 pictures, or .90), and this talk was totally procedural, while there was relatively less talk afterward about the picture (33 pictures, or .46) -- a type of talk in both groups dealing primarily with the child's reason for wanting to take the picture.

The 72 pictures (1.00) discussed by the Paradigmatic mothers before they were taken also tended to consist primarily of procedural instructions.

Mothers' Free Recall 1 Week Later

Of the 240 pictures taken by their children, the Narrative mothers[2] and the Paradigmatic mothers[3] recalled nearly equal amounts: 208 pictures, or a mean of 9.5, for the Narrative mothers; 207 pictures, or a mean of 9.0, for the Paradigmatic mothers. The Narrative mothers provided a total of 739 units of information about the pictures, or a mean of 33.6; the Paradigmatic mothers, a total of 508 units, or a mean of 22.1.

Of the information provided by the Narrative mothers, 441 units (.60) were in the Narrative style, and 297 units (.40) in the Paradigmatic style. Of the information provided by the Paradigmatic mothers, the results were exactly the opposite: 304 units of information (.60) were in the Paradigmatic style and 202 units (.40) were in the Narrative style.

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[2]Of 22 mothers available for testing

[3]of 23 mothers available for testing

Both groups of mothers provided their recall primarily in a spatio-temporal format, as evidenced by phrases such as "And then we took...," "And then we saw...." The Paradigmatic mothers, however, had a greater amount of information cued by a more categorical recall, as evidenced by self-cue-ing phrases such as "Let's see...Cars...trucks...Two buildings...," while the Narrative mothers, in the same detailed, combinational style described earlier, might say, "Let's see...The house with the blue door...The man driving away in the car...."

Characteristics of the Two Styles During Mothers' Recalls

As on Tasks 1 and 2, the Narrative mothers used a strikingly higher proportion of Activity, Color, Location, Affective and Interpretion references. The Paradigmatic mothers were also consistent with their previous behavior, producing a higher number of Category, Quantity, Specific Physical Properties, Another, and Same/Different. In line with their characteristic frequent use of modifier combinations, the Narrative mothers adopted a high use of Size

references at this point as well. The differences between the two groups on other aspects of the code were not marked.

Mothers' Interpersonal Behaviors During Own Recalls

The differences between Narrative and Paradigmatic interpersonal styles noted earlier, in reference to Tasks 1 and 2, held true here as well.

Out of a total of 210 utterances by the Narrative mothers, .22 referred to their child's focus of attention during the picturetaking, as part of their own recall. This was exemplified by phrases such as "And then she saw the..." In contrast, out of a total of 217 utterances by the Paradigmatic mothers, only .10 referred to their child's focus of attention. Twenty-one percent of the Narrative mothers' utterances referred to their children's affect, interest, intent, or other such personal reference, as compared with .08 for the Paradigmatic mothers. Narrative mothers were more likely to emphasize or focus on their child's taking of the picture (as exemplified by such phrases as "And then she took that picture of the dog" or "Then she tried to get..."), while the Paradigmatic mothers

more often tended to highlight the picture itself or object of the picturetaking separate from the child's taking of the picture (as exemplified in phrases such as "Then there was a picture of a dog..."). Fifty-four percent of the Narrative mothers' references were of the former type, as compared with .43 of the Paradigmatic mothers'; .08 of the Narrative mothers' references were of the latter type, as compared with .19 of the Paradigmatic mothers.

Maternal "Agenda" As Seen in Own Recall

The Narrative and Paradigmatic mothers showed the same Task Versus Experience orientation or agenda that they had demonstrated during the picturetaking session. Of the 210 utterances by the Narrative mothers, 54 (.26) related to the task (as exemplified by phrases such as "Then we had two pictures left to take") versus 73 (.35) references to the experience (as in "Then we walked into the park and she...") Out of 217 utterances by the Paradigmatic mothers, on the other hand, 94 (.43) references were to the task and 30 (.14) to the experience.

The difference between the two groups in number of references to the picture or object versus references

to the child's taking of it, discussed above in relation to the mothers' interpersonal behaviors, also seems to illustrate this difference between a Task and an Experience orientation.

Children's Response to Experimenter Talk in Mothers' Style or Opposite Style

It will be remembered that the expectation was that children who received talk in the same style as that of their mothers, in whatever style that talk occurred -- Narrative or Paradigmatic -- would show a better response than children who received talk in the opposite style. Thus, it was expected that the 12 children in the N/N group and the 12 children in the P/P group would score the highest in amount of information provided, and that the format or style of the information would correspond to that more familiar maternal style. Following from that, it was expected that the 12 children in the N/P group and the 12 children in the P/N group would perform less well; that is, that they would provide less information in response to talk in the style opposite to that of their mothers, because they would be being forced into responding within a different format.

The results of Task 3 therefore came as a surprise. As can be seen on Table 12, the two Narrative groups resemble each other -- that is, behave in accordance with their original classification -- more closely, in response to both Narrative and Paradigmatic types of cues, and the two Paradigmatic

Table 12
TASK 3: Talk with First Experimenter: Average N-P Scale Score

Experimenter Cue	Children with Narrative Mothers (N/N Group) n = 12	Children with Paradigmatic Mothers (P/N Group) n = 12	Total N = 24
Temporal	.60 (.04)	.50 (.06)	.55 (.05)
Location	.61 (.06)	.46 (.08)	.54 (.07)
Interpretation	.55 (.05)	.35 (.07)	.45 (.12)
Activity	.52 (.04)	.46 (.08)	.49 (.07)
	(N/P Group) n = 12	(P/P Group) n = 12	N = 24
Specific Physical Properties	.56 (.05)	.41 (.06)	.49 (.05)
Category	.53 (.07)	.45 (.06)	.49 (.07)
What Part Of	.51 (.04)	.46 (.08)	.49 (.06)
Knowledge Base	.52 (.06)	.39 (.06)	.45 (.06)

groups resemble each other more closely, in response to both types of cues, than the two groups receiving same-style talk (N/N and P/P) and the two groups receiving opposite-style talk (N/P and P/N) resemble each other.

It is not surprising to see a high proportion of Narrative talk by the Narrative children receiving Narrative cues (N/N group); as can be seen on the table, the responses by these children to the four Narrative cues -- Temporal, Location, Interpretation, and Activity -- were well into the Narrative range. It is, however, surprising to see that the responses by the Narrative children to the 4 Paradigmatic cues were also higher in the Narrative format, and less Paradigmatic than the responses by the P/P and P/N groups.

Turning to the two Paradigmatic groups, we can see a similar pattern. With the exception of their response to the Narrative Temporal cue, which was in the Narrative response range, the responses of the Paradigmatic children to both Paradigmatic and Narrative cues were in the Paradigmatic format.

Looking at Table 12, it can be seen that, in terms of the ratio scale used to analyze Tasks 1 and 2, the two groups of children of Narrative mothers remained at the

Narrative end of the scale (above .50), consistently giving more Narrative than Paradigmatic responses to both Narrative and Paradigmatic types of cues; that is, whatever the total mean was for each of the cues, Narrative and Paradigmatic alike, (column 1, at left), the Narrative means were at the Narrative end of the scale. As mentioned earlier, while it is not surprising to see that the N/N children gave consistently more Narrative responses to the four Narrative cues -- particularly as compared with the responses of the P/N group in the next column -- it is interesting that the same pattern held with the N/P group in response to the 4 Paradigmatic cues. Comparing the means of the N/P children with those of the P/P children in response to the four Paradigmatic cues, we can see that those means were also in the Narrative range, indicating a more Narrative response to the Paradigmatic cues as well.

The same pattern held for the two groups of children of Paradigmatic mothers, with two exceptions: The response of the P/N group to the Temporal cue put them just barely into the Narrative response range, though their mean of .50 was still far below the .60 of the N/N children; and although the P/N group's mean response

(.46) to the Activity cue was below the Narrative range, four Paradigmatic children had scores of .50 or above, and one outlier had a score of .64, higher than the Narrative maximum score of .59.

Apart from that, the pattern of their responses was similar to that of the two Narrative groups. The P/P children, who received talk in the Paradigmatic style of their mothers, behaved as expected: Their means placed them firmly on the Paradigmatic side of the ratio scale. But the same surprise factor also proved evident here: Looking at the means of the P/N children, who received talk in the opposite Narrative style, we see that with the exception of their response to the Temporal cue, their responses to the other three Narrative cues were Paradigmatic in format.

Characteristics of the Two Styles As Seen in Response to Four Cues.

While Table 12 shows the basic profile or format of the talk comprising the children's response to each cue, Tables 13 and 14 fill in that outline to give a more three-dimensional picture of the elements composing that Narrative or Paradigmatic talk.

If we, for instance, compare the N/N group (Table 13) and the N/P group (Table 14) in terms of the amount of Narrative or Paradigmatic talk in their responses, we can see that despite the fact that they were responding to two different types of cues, the two groups show marked similarities. The N/N group produced most of its talk in the Narrative utterance catgories of Activity, Location, Temporal, Affective, and Interpretation. Their scores in these categories also constituted their strongest points of difference from the P/N group responding to those same cues. The N/P group produced its highest number of utterances from within the Narrative categories of the code as well: Activity, Location, Temporal, Autobiographical, and Interpretation. These were also the areas of strongest difference from the P/P group responding to the same cues.

The P/N (Table 13) and P/P (Table 14) groups showed the same accord, each producing its highest number of utterances -- and showing its strongest difference from the two Narrative groups -- in two particular categories from the Paradigmatic side of the code: Knowledge Base and Specific Physical Properties.

Several aspects of this pattern are of interest here. First, it recapitulates the behaviors observed on

Tasks 1 and 2, in which the same emphases and differences in the groups were observed. Second, both groups of Narrative children scored higher in use of the more characteristically Paradigmatic reference to Category -- and this, too, recapitulated their earlier showing, attributable, it would seem, to their predilection for the "combinational" style described earlier. Finally, it seems that there was a tendency for the groups confronted with cues in the opposite style actually to accentuate their own style in response: The N/P group, for instance, produced a higher number of Narrative utterances in the Location, Temporal, Autobiographical and Interpretation categories in response to Paradigmatic cues than did the N/N group in response to Narrative cues. Similarly, the P/N group scored higher in use of references to such Paradigmatic utterances as Category and Specific Physical Properties in response to Narrative cues than did the P/P group in response to Paradigmatic cues. It appears that the groups are responding in accordance with their familiar, accustomed style no matter in which format the talk was addressed to them.

The remaining types of children's response -- No Response (N/R), Don't Know, Asks Experimenter,

Table 13

Task 3: Talk With First Experimeter: Mean Type of Talk (Utterances to compute score) By Cue and Style of Mother

Type of Talk	Narrative Cues							
	Activity		Interpretation		Location		Temporal	
	N/N (12)	P/N (12)	N/N (12)	P/N (12)	N/N (12)	P/N (12)	N/N (12)	P/N (12)
NARRATIVE								
Activity	10.33	6.42	12.92	3.25	6.17	1.83	9.00	2.83
Aesthetic	0.00	0.00	0.00	0.00	0.33	0.25	0.08	0.00
Color	0.33	0.67	0.83	0.92	2.33	0.92	1.25	0.33
Location	3.17	0.25	3.42	1.75	10.92	5.08	2.42	0.75
Temporal	0.58	0.00	1.58	0.88	1.83	0.25	10.08	5.50
Autobiographical	0.00	0.25	0.58	0.67	1.00	0.67	1.00	0.75
Theme	0.00	0.00	0.00	0.00	0.92	0.17	0.33	0.08
Affective	0.33	0.00	1.25	0.83	1.33	0.75	1.00	0.00
Interpretation	0.75	0.42	7.00	1.83	0.67	0.50	0.75	0.58
PARADIGMATIC								
Category	12.25	6.67	17.5	9.83	12.33	7.25	13.92	6.67
Size	0.50	0.50	0.58	0.58	1.08	0.58	1.08	0.08
Quantity	0.00	0.00	0.58	0.33	0.17	0.17	0.25	0.00
Knowledge Basis	0.75	1.50	2.08	2.58	0.83	1.67	0.75	1.92
Specific Physical Properties	0.75	1.25	1.42	2.08	0.67	1.33	1.08	1.42
What Part of	0.00	0.00	0.00	0.58	0.17	0.33	0.17	0.42
Another	0.83	0.00	0.08	0.17	0.33	0.25	0.08	0.33
Same/Different	0.00	0.00	0.08	0.42	0.25	0.75	0.25	0.42
Which One	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 14

Task 3: Talk With First Experimeter: Mean Type of Talk (Utterances used to compute score) By Cue and Style of Mother

Type of Talk	Paradigmatic Cues							
	Category		Knowledge Base		Specific Physical Properties		What Part Of	
	N/P (12)	P/P (12)	N/P (12)	P/P (12)	N/P (12)	P/P (12)	N/P (12)	P/P (12)
NARRATIVE								
Activity	6.42	4.00	10.42	5.08	6.67	4.00	4.75	0.83
Aesthetic	0.00	0.17	0.00	0.00	0.00	0.50	0.17	0.17
Color	0.83	0.75	0.75	1.00	0.83	0.67	1.33	1.00
Location	3.58	1.50	4.50	2.75	2.25	0.83	5.33	5.58
Temporal	1.17	0.33	3.58	0.92	2.75	1.17	2.50	0.67
Autobiographical	1.50	0.58	1.75	0.67	2.58	1.17	0.00	0.00
Theme	0.08	0.00	0.25	0.00	0.42	0.17	0.00	0.00
Affective	0.83	0.83	0.58	0.75	1.50	1.00	0.58	0.42
Interpretation	1.25	1.00	1.83	1.25	1.50	0.58	1.50	0.42
PARADIGMATIC								
Category	11.25	8.83	13.33	9.58	11.25	9.00	11.50	4.50
Size	0.92	0.58	0.58	0.67	0.58	0.42	0.92	0.58
Quantity	0.17	0.08	0.08	0.25	0.17	0.00	0.33	0.25
Knowledge Base	0.00	0.00	5.58	6.67	0.67	3.25	0.58	0.00
Specific Physical Properties	1.00	1.08	1.83	1.92	0.92	0.58	1.42	3.25
What Part of	0.00	0.00	0.33	0.67	0.00	0.58	0.33	0.92
Another	0.08	0.58	0.00	0.00	0.33	0.33	0.00	0.00
Same/Different	0.08	0.17	0.08	0.00	0.25	0.33	0.17	0.67
Which One	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Correct/Incorrect -- showed higher numbers in the first three categories for the two Paradigmatic groups. The N/N and N/P subgroups had similar numbers of references to Extra-Picturetaking Activity and Extra-Picturetaking Occurrences or Sights, and the P/P and P/N groups had similarly low numbers of references in these categories. Tables 15 and 16 indicate the proportion of Narrative to Paradigmatic information in the responses of each group. By subgroup, Table 15 shows the N/N and N/P groups as very similar to each other and different from the P/P and P/N groups, despite the fact that two of the subgroups received talk in the same (i.e., Paradigmatic) format.

The two Narrative groups provided the highest total amounts of information, and of this information, the greater proportion of each was in the Narrative form: 56 percent of the N/N group's information was of the Narrative type and 52 percent of the N/P group's response was in the Narrative format. The N/N group provided 42% Paradigmatic information, while the N/P group, which had been addressed in the Paradigmatic format, responded with only 40% Paradigmatic information.

The two Paradigmatic groups formed almost a mirror image of the Narrative groups. Both provided a preponderance of Paradigmatic information with the P/P

group responding to Paradigmatic cues with 57% Paradigmatic information and 42% Narrative information; the P/N group, which had received talk in the Narrative format, responded with 56% Paradigmatic information and 43% Narrative information.

Table 16 shows the children's responses by original style classification. The Narrative children (composed of the N/N and N/P subgroups) responded with a total amount of 3704 units of information, of which 2013 units (.54) were in the Narrative style and 1618 units (.44) were in the opposite Paradigmatic style.

The Paradigmatic children (composed of the P/P and P/N subgroups) responded with a total of 2207 units of information, of which 1252 units (.57) were in the Paradigmatic style and 937 units (.42) were in the opposite Narrative style.

Though the proportional differences are not great, the two Narrative groups actually scored higher than the two Paradigmatic groups in number of references to the more characteristically Paradigmatic Category, Size, and Quantity -- perhaps, again, as a function of their tendency toward combinational answers and high use of modifiers -- and scored very close to the Paradigmatic groups in number of references to Knowledge Base and Specific Physical Properties. The

Table 15

Proportions of Narrative and Paradigmatic Information Provided by Children At Task 3, By Subgroup

N/N		N/P		P/P		P/N	
Total Amount Information	2015	Total Amount Information	1689	Total Amount Information	1159	Total Amount Information	1048
Proportion Narrative Information*	.56	Proportion Narrative Information*	.52	Proportion Paradigmatic Information*	.57	Proportion Paradigmatic Information*	.56
Proportion Paradigmatic Information	.42	Proportion Paradigmatic Information	.46	Proportion Narrative Information	.42	Proportion Narrative Information	.43

*Does not total 100% because excludes one neutral category on code.

Table 16

Proportions of Narrative and Paradigmatic Information Provided by Children At Task 3, by Major Groupings

All Narrative children (Including N/N and N/P)		All Paradigmatic children (Including P/P and P/N)	
Total Amount Information	3704	Total Amount Information	2207
Proportion Narrative Information	.54	Proportion Paradigmatic Information	.57
Proportion Paradigmatic Information	.44	Proportion Narrative Information	.42

*Does not total 100% because excludes one neutral category on code.

same was not true for the two Paradigmatic groups. Although they approached the Narrative groups in number of references to Color and Affective, the differences on other aspects of the Narrative code were substantial, and there were no Narrative categories in which the Paradigmatic groups scored higher.

In total amount of information provided, as well, the two Narrative groups resembled each other more closely than the N/N group resembled the P/P group or the N/P group resembled the P/N group: 2015, or a mean of 168, units of information on the part of the N/N group; 1689, or a mean of 141, units of information on the part of the N/P group. The same similarity held for the two Paradigmatic groups: 1159, or a mean of 96.6 units of information on the part of the P/P group; 1048, or a mean of 87.3, units of information on the part of the P/N group.

The mean number of utterances was very similar for all four groups: 68.6 for the N/N group; 67.6 for the N/P group; 65.2 for the P/P group; 63.5 for the P/N group.

Statistical Analysis

One-way ANOVAS (Type of Cue X Style of M) were run on each cue. The homogeneity of variance assumption was met for all the cues. To decrease the possibiliy of a Type I error, a conservative alpha level of .01 was chosen.

The difference between the groups was significant for Interpretation (F^1=63.80, p=<.001), Location (F=24.80, p=<.001), Temporal (F=19.65, p<.002), Category (F=9.38, p=.006), Knowledge Base (F=33.85, p=<.001), and Specific Physical Properties (F=48.95, p=<.001). No significant differences were found for Activity (F=4.62, p=.043) or What Part Of (F=3.87, p=.062).

Summary of Results of Task 3

Children's Free Recall and Picture Recognition

The Narrative children recalled a mean of 4.25 pictures to the Paradigmatic children's recall of 3.0, and recognized a mean of 7.75 pictures to the Paradigmatic children's recognition of 7.12. T-tests

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[1]All F ratios have 1,22 d.f.

on the scores for free recall and picture recognition showed significant differencs between the two groups on the free recall task (p=.003) but not on the picture recognition task (p=.589).

Children's Response to Four Experimenter Cues in Same or Different Style

Task 3 exposed half the children to talk in the format opposite to that of their mothers, while the other half received talk in the same format or style as that of their mothers. It was expected that whether the type of talk received was in the same or opposite style would be the major factor differentiating between the groups. Instead, the results showed that the two groups remained distinct, on the basis of their original classification by mothers' style, no matter which type of talk they received. That is: The Narrative children responded more like one another, in a predominantly Narrative format, no matter what type of talk they received. Likewise, the Paradigmatic children retained their Paradigmatic style no matter what type of talk they received. On the same ratio scale used for Tasks 1 and 2, the Narrative children always appeared on the Narrative (.50) end of the

scale, and the Paradigmatic children (with the exception of their response to the Temporal cue) remained on the Paradigmatic (below .50) end. The differences between the two groups were significant for the following cues: Temporal, Location, Interpretation, Specific Physical Properties, Category and Knowledge Base. No significant differences were found for Activity or What Part Of.

Mothers' Recall

As would be expected, the mothers' recall was substantially better than that of their children, and there was almost no difference between that of the Narrative and Paradigmatic mothers.

The same style differences found on Tasks 1 and 2 appeared here as well, however: Narrative mothers provided 60% of their information in the Narrative style and 40% in the Paradigmatic style; the Paradigmatic mothers presented exactly the opposite proportions of the two types of talk.

Task 4

Task 4 gave all the children the opportunity to respond to talk from both styles, in the form of four

cues from the Narrative and four cues from the Paradigmatic formats. Its purpose was to determine which style had retained primacy: the style of the mother, as shared with the child at Task 2 and with half of the children at Task 3, or the opposite style used by the experimenter at Task 3.

Children's Free Recall and Picture Recognition 3 Weeks Later

The results, by subgroup, of the free recall session that preceded the experimenter-child talk shows that there were essentially no differences between the groups: Out of a total of 120 pictures taken, the N/N group recalled a mean of 4.2; the N/P group, a mean of 4.0; the P/P group, a mean of 4.0; and the P/N group, a mean of 3.7. These differences were not significant (t_{46}=1.22, p=.235).

An analysis of the type of information voluntarily (i.e., uncued) provided by the children showed that of the 148 units of information provided by the N/N group, which had received Narrative talk at Task 3, 97 units (.65) were of the Narrative type and 49 units (.33)

were of the Paradigmatic type. This group produced a mean of 8.5 utterances.

Of the 137 units of information provided by the N/P group, which had received Paradigmatic talk at Task 3, 82 units (.60) were of the Narrative type and 55 units (.40) were of the Paradigmatic type. This group produced a mean of 6.7 utterances.

Of the 121 units of information provided by the P/P group, which had received Paradigmatic talk at Task 3, 83 units (.68) were in the Paradigmatic style and 34 units (.28) in the Narrative style. This group produced a mean of 6.1 utterances.

Of the 92 units of information provided by the P/N group, which had received Narrative talk at Task 3, 80 units (.87) were in the Paradigmatic mode and 11 (.12) were in the Narrative mode. This group produced a mean of 5.7 utterances.

The free recall results by major grouping indicate that the Narrative children (composed of the N/N and N/P subgroups) recalled a mean of 4.0 pictures and provided a total amount of 285 units of information, of which 179 (.63) units were in the Narrative format and 104 (.36) were in the Paradigmatic format. The Paradigmatic children (composed of the P/P and P/N subgroups) recalled a mean of 3.8 pictures and provided

a total amount of 213 units of information, of which 163 units (.76) were Paradigmatic in style and 45 units (.21) were Narrative.

A 2 X 2 ANOVA showed no main effect for type of mother (F=.276, p=.602) or for type of talk received at Task 3 (F=.491, p=.487). There was no significant interaction between type of talk received at Task 3 and the mothers' style (F=1.503, p=.227).

The picture-recognition results by major grouping show that the Narrative groups recognized a mean of 8.7 pictures; the Paradigmatic group, a mean of 8.4 pictures. This difference was not significant (t_{46}=.70, p=.490).

The results of the picture recognition task, by subgroup, were as follows: The N/N group recognized a mean of 9.0 pictures; the N/P group, a mean of 8.2; the P/P group, a mean of 9.2; and the P/N group, a mean of 7.5 pictures. The differences between the P/P and P/N groups were significant (t_{46}=2.87, p=.010), with the P/P group recognizing more pictures than the P/N group.

A 2 X 2 ANOVA showed no main effect for type of mother (F=.584, p=.449) or for type of talk received at Task 3 (F=1.442, p=.236). However, there was a significant interaction between type of mother and type of talk received at Task 3 (F=10.023, p=.003).

Children's Responses to Cues in Both Formats

Table 17 shows the responses of all 48 children to cues in both formats. As evidenced by the total means for all eight cues, the two groups moved closer to each other in ways clearly reflecting a certain degree of responsiveness to talk in the opposite style. Though the scores of the Narrative children in response to the four Narrative cues were consistently higher (i.e., more "Narrative") than those of the Paradigmatic children, the scores of the Paradigmatic children moved closer to the Narrative range than previously. Similarly, while the scores of the Paradigmatic children in response to the four Paradigmatic cues were consistently lower into the Paradigmatic range of the ratio (i.e., below .50) than those of the Narrative children, and the scores of the Narrative children were still closer to their own range than to the Paradigmatic sector, the Narrative children too, evidenced lower (i.e., more Paradigmatic) scores in response to the Paradigmatic cues.

Nevertheless, no matter how closely the scores of one group approached the other, the Narrative children

as a whole never became as "Paradigmatic" in their responses as the Paradigmatic children, and (with the exception of individual outlier scores to be discussed below) the same holds true for the Paradigmatic children. Each group maintained its original profile as seen on the preceding three tasks. (See Appendix E for more specific analysis of responses.)

Table 17

TASK 4: Talk with Second Experimenter: Average N-P Scale Score

Experimenter Cue	Children with Narrative	Children with Paradigmatic	
	Mothers n = 24	Mothers n = 24	TOTAL N = 48
Temporal	.64 (.04)	.52 (.04)	.58 (.07)
Location	.58 (.05)	.52 (.07)	.55 (.07)
Interpretation	.59 (.03)	.37 (.04)	.48 (.13)
Activity	.54 (.03)	.48 (.07)	.51 (.06)
Specific Physical Properties	.53 (.07)	.29 (.07)	.41 (.14)
Category	.45 (.06)	.37 (.07)	.41 (.08)
What Part Of	.46 (.07)	.41 (.09	.44 (.08)
Knowledge Base	.47 (.03)	.27 (.04)	.37 (.11)

Characteristics of the Two Styles As Seen in Responses to 8 Cues at Task 4

As on the other three tasks, the most consistent differences between the Narrative and Paradigmatic groups (Tables 18 and 19) occurred in their differing numbers of references to Activity, Location, Temporal, Category and Knowledge Base, with the Narrative children producing more of the first four categories, and the Paradigmatic children more of the last. Lesser but nevertheless consistent differences were found for utterances relating to Color and Interpretation, in which the Narrative children scored higher, and to Specific Physical Properties, in which the Paradigmatic children scored higher.

Perhaps because of simple boredom with the task (the greatest excitement and enthusiasm occurring with the first viewing of the pictures during Task 3), both groups of children produced fewer utterances in the Affective, and Interpretation categories.

Table 18

Task 4: Talk With Second Experimeter: Mean Type of Talk (Utterances used to compute score) By Cue and Style of Mother

Type of Talk	Narrative Cues							
	Activity		Interpretation		Location		Temporal	
	N (24)	P (24)	N (24)	P (24)	N (24)	P (24)	N (24)	P (24)
NARRATIVE								
Activity	10.38	7.17	12.08	4.08	4.29	2.13	10.08	3.54
Aesthetic	0.00	0.00	0.13	0.08	0.04	0.00	0.17	0.00
Color	0.67	0.38	1.08	0.71	1.13	0.58	1.42	0.21
Location	1.71	0.54	3.92	1.54	10.13	6.63	2.33	0.79
Temporal	0.83	0.00	3.46	0.46	2.04	0.63	12.17	6.79
Autobiographical	0.42	0.17	0.58	0.42	0.67	0.00	0.50	0.08
Theme	0.00	0.00	0.00	0.00	0.21	0.00	0.08	0.00
Affective	0.17	0.00	1.13	0.92	0.75	0.38	0.46	0.00
Interpretation	0.71	0.38	6.21	2.08	0.92	0.50	0.88	0.29
PARADIGMATIC								
Category	11.21	6.92	15.88	9.21	11.96	5.88	13.42	7.04
Size	0.25	0.33	0.71	0.38	0.54	0.38	0.71	0.17
Quantity	0.00	0.08	0.04	0.25	0.13	0.00	0.17	0.00
Knowledge Base	0.38	1.38	1.17	2.67	0.33	1.29	0.21	1.46
Specific Physical Properties	0.79	1.08	1.21	1.92	0.67	0.96	0.67	1.46
What Part of	0.08	0.00	0.00	0.54	0.00	0.25	0.08	0.00
Another	0.00	0.00	0.08	0.21	0.29	0.54	0.21	0.50
Same/Different	0.00	0.00	0.00	0.38	0.25	0.75	0.17	0.00
Which One	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 19

Task 4: Talk With Second Experimeter
Mean Type of Talk
(Utterances used to compute score)
By Cue and Style of Mother

Type of Talk	Paradigmatic Cues							
	Category		Knowledge Base		Specific Physical Properties		What Part Of	
	N/N (24)	P/N (24)	N/N (24)	P/N (24)	N/N (24)	P/N (24)	N/N (24)	P/N (24)
NARRATIVE								
Activity	4.04	4.58	8.17	4.50	6.08	3.71	3.58	1.88
Aesthetic	0.00	0.00	0.08	0.04	0.21	0.25	0.08	0.00
Color	0.71	0.17	0.88	0.38	1.13	0.21	0.88	0.38
Location	3.13	1.25	5.79	1.50	1.83	0.42	5.67	4.33
Temporal	1.54	0.00	3.21	0.13	3.04	0.71	1.75	0.21
Autobiographical	0.88	0.54	1.46	0.50	2.13	0.46	0.13	0.21
Theme	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Affective	0.42	0.21	0.33	0.00	1.63	0.50	0.17	0.13
Interpretation	1.21	0.54	1.42	0.63	0.83	0.42	0.75	0.58
PARADIGMATIC								
Category	12.17	9.63	14.04	10.17	10.71	9.75	11.13	4.08
Size	0.58	0.13	0.63	0.21	0.46	0.04	0.42	0.13
Quantity	0.08	0.00	0.00	0.08	0.29	0.21	0.38	0.33
Knowledge Base	0.00	0.00	7.17	7.42	0.63	2.63	0.21	1.42
Specific Physical Properties	1.00	1.17	1.13	1.71	0.96	1.38	2.13	2.96
What Part of	0.17	0.33	0.08	0.38	0.13	0.38	0.21	0.96
Another	0.13	0.79	0.13	0.38	0.17	0.58	0.00	0.46
Same/Different	0.17	0.50	0.33	0.21	0.00	0.38	0.29	0.50
Which One	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

As was observed in the children's free recall at Task 3, the two Narrative groups unexpectedly showed a higher number of references than the Paradigmatic children to Category, which had been considered a prototypically Paradigmatic form. Once again, a close examination of the Narrative responses reveals a higher proportion of combinations of items, as in "We saw the man with the dog," or "We took a lady sewing clothes," which accounted for the higher number of Category references.

The remaining types of children's responses -- N/R, Don't Know, Asks Experimenter, Correct/Incorrect -- show increases from Task 3 in N/R, Don't Know and Asks Eperimenter among the two Paradigmatic groups.

Tables 20 and 21 indicate the proportion of Narrative to Paradigmatic information in the responses of each group. By subgroup, Table 20 shows that of the total amount of 3439 units of information provided by the N/N group, 1852 units (.54) were in the Narrative style and 1546 units (.45) were in the Paradigmatic style. The N/P group shows a very striking resemblance to the N/N group. Of 3430 units of information provided, 1874 units (.55) -- slightly more than in the N/N group -- were in

the Narrative style, and 1511 units (.44) -- slightly less than in the N/N group -- were in the Paradigmatic style.

The two Paradigmatic groups also strongly resembled each other. Of the total amount of 2127 units of information provided by the P/P group, 1257 units (.59) were in the Paradigmatic format and 865 units (.41) were in the Narrative. Of the 2085 units of information provided by the P/N group, 1255 units (.60) were in the Paradigmatic mode and 830 (.40) -- slightly less than that of the P/N group -- were in the Narrative.

Table 21 shows the proportions of Narrative and Paradigmatic talk provided by the two major groups, subsuming the totals of the subgroups. Of the 6869 units of information provided by the two Narrative groups, 3726 units (.54) were in the Narrative style and 3057 (.44) in the Paradigmatic. Of the 4212 units of information provided by the two Paradigmatic groups, 2512 (.60) were in the Paradigmatic style and 1695 (.40) in the Narrative.

Table 20

Proportions of Narrative and Paradigmatic Information Provided by Children At Task 4, By Subgroup

N/N		N/P		P/P		P/N	
Total Amount Information*	3439	Total Amount Information*	3430	Total Amount Information*	2127	Total Amount Information*	2085
Proportion Narrative Information	.54	Proportion Narrative Information	.55	Proportion Paradigmatic Information	.59	Proportion Paradigmatic Information	.60
Proportion Paradigmatic Information	.45	Proportion Paradigmatic Information	.44	Proportion Narrative Information	.41	Proportion Narrative Information	.40

*Excluding one neutral category on code.

Table 21

Proportions of Narrative and Paradigmatic Information Provided by Children At Task 4 by Major Grouping

All Narrative children (Including N/N and N/P)		All Paradigmatic children (Including P/P and P/N)	
Total Amount Information Provided	6869	Total Amount of Information Provided	4212
Proportion Narrative Information	.54	Proportion Paradigmatic Information	.60
Proportion Paradigmatic Information	.44	Proportion Narrative Information	.40

*Excluding one neutral category on code.

Statistical Analysis

Univariate results were again used for the statistical analysis of this task. The homogeneity of variance assumption was met for all cues except Interpretation and Activity. The F-test results for these cues must therefore be interpreted cautiously. To guard against the possibility of a Type I error, a conservative alpha level of .01 was chosen.

The difference between the two groups was significant for Temporal (F^2=103.25, p<.001); Location (F=14.48, p=.004); Interpretation (F=144.70, p=<.001); Activity (F=15.91, p=.002); Specific Physical Properties (F=159.14, p=<.001); Category (F=20.00, p=.001) and Knowledge Base (F=307.89, p=<.001). The difference between the groups was not significant at the .01 level for What Part Of (F=5.56, p=.023).

A Chi square (Type by Gender) found no significant differences due to gender (p=.39). The imbalance in the groups was thus not a significant factor and did not confound the results.

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[2]All F-ratios have 1, 46 d.f.

Summary of Results of Task 4

Free Recall and Picture Recognition. There were no significant differences between the two major groups (all the Narrative children, all the Paradigmatic children) on either the free recall or the picture recognition task. T-tests on the scores between the subgroups showed no significant differences between the four subgroups on the free recall task, but the differences between the P/P and P/N groups were significnt for the picture recognition task, with the P/P group recognizing more of the pictures than the P/N group.

Both Narrative and Paradigmatic groups tended to provide the greater part of their information about the pictures in talk commensurate with their original style classifications.

Response to Cues in Both Styles. Task 4 gave the children an opportunity to respond to cues from both formats. Even with movement on each group's part toward the opposite format, the groups seemed to maintain the preferences noted earlier for the maternal style. The differences were significant for the Temporal, Location, Interpretation, Activity, Specific Physical Properties,

Knowledge Base and Category cues. The difference was not significant at the .01 level for the What Part Of cue.

Under Narrative cues, the Paradigmatic children moved toward a Narrative response range, but with the two possibly anomalous exceptions among the Paradigmatic children mentioned above, they never became as Narrative as the Narrative children. The same held true for the Narrative children: Under Paradigmatic cues, the Narrative children were less Narrative than usual, but no matter how far down into the Paradigmatic response range they moved -- and this includes the two Narrative children who showed responses in the Paradigmatic range to two Narrative cues -- they were never as Paradigmatic as the Paradigmatic children. Both groups retained their original profiles.

CHAPTER IV

DISCUSSION

The origin of this study was a finding by Yarrow et al. (1970), in an investigation of retrospective memory, that children's recollections were in closer agreement with those of their mothers than with actual baseline data.

A review of the memory literature dating back to some of the earliest studies of young children's naturalistic memories seemed to provide some clues that are as suggestive and potentially useful fifty years later as they might have been much earlier. A 1932 study by Hurlock & Schwartz of parents' diary records of their children's early memories, for instance, provided two intriguing pieces of evidence. The first concerned the extent to which young children's lives were highly social: All the memories reported for the children were of experiences shared with an adult. The second revealed a great increase for memory of situations between the ages of 3-6, a period when children are well immersed in the language system. Findings from a Dudycha & Dudycha questionnaire (1933)

that almost every one of their subjects' memories dated from the period when language had been acquired, and evidence from Waldfogel (1948) that increase of memories appeared to parallel increase of language seemed to bring into relationship one very basic fact of young children's experience -- that it is for the most part shared experience -- with the development of the representational system, language, that is one of the first shared representational systems and a primary medium for interaction; and the development of a particular aspect of memory: autobiographical memory, or the memory for personal experience.

The fundamental proposition underlying the present study was therefore that autobiographical memory is a particular form of memory, developed within a social context, by means of social interaction with adults in which children internalize a particular format or style of attentional and representational processing mediated through the representational system of language, which eventuate in the representational process embodied in autobiographical memory.

Since, like all the other cognitive processes developing in the child, these aspects of the representational process develop over time, the first

hypothesis this study was designed to test was that the maternal style assumed to be influencing the development of the child's was not situation-specific but rather a consistent attribute to which the child could be expected to have been exposed over time.

Following from this, the second hypothesis guiding the study was that a child's long-term exposure to the style being observed in microcosm here would influence the development of the child's own representational style in that direction. Evidence for such an influence would be taken to be a relationship between the style of the adult with whom most of the child's experiences were shared -- and with whom the experimental experience-in-microcosm was shared -- and the representational style of the child as observed in two subsequent situations.

The third hypothesis being tested was that the talk during the experience (constructive talk) would have a greater influence on the child's representation and recall than the talk after the experience (reconstructive talk).

The results of Tasks 1 and 2 reconfirmed the existence of the two maternal styles observed in an earlier study by the present investigator (Tessler,

1984) and, with a correlation between the mothers' styles on Task 1 and Task 2 yielding a reliability coefficient of .83, supported the hypothesis that the maternal style would be consistent across situations.

In addition, the two groups presented two distinctly different profiles, as evidenced both by their scores on the original classification task (the Narrative mothers' mean of .69 and the Paradigmatic mothers' mean of .30 on a ratio scale from Paradigmatic to Narrative manifested a degree of difference not necessitated by the classification scheme) and by analyses of the internal content of their talk and of their interpersonal behaviors. What seemed to be becoming apparent in this study were two quite different ways of approaching and organizing experience.

The hypothesis that the children's representational style would reflect the style of their mothers was obviously the most crucial for a hypothesis of a social-interactive influence on children's representation of autobiographical experience. On the two tasks in which the children were observed interacting with their mothers, the distribution of the children's scores (that is, the proportion of Narrative

and Paradigmatic elements in their talk) very closely paralleled that of their mothers, with correlations between mothers' and children's scores on Tasks 1 and 2 being .94 for the former and .95 for the latter. The two groups also showed the same distinctly different profiles that their mothers had shown.

Results of the free recall and picture recognition tasks at two different times showed differences in the children's quantitative memory for the pictures taken. Furthermore, the internal content of their talk about the pictures -- and thus, one would assume, of their internal representation of the pictures and the experience -- was also quite different, with each group tending to provide the greater part of their information about the pictures in the same format or style of talk that had occurred during the experience as shared with their mothers.

The content of the children's talk during their responses to reconstructive clues by the experimenter also showed higher proportions of the style to which they were most accustomed, regardless of whether the format of the cues required it, and the form of their response seemed to reflect a propensity to, in effect,

turn the experimenter's talk into the type they were most accustomed to receiving.

The results described above are taken as support for the hypothesis that the representational style to which a child has the greatest exposure will influence the development of the child's own style in that direction.

The final hypothesis was that the talk during the experience would have a greater influence on the children's representation and recall than the talk afterward. This hypothesis was more difficult to confirm or disconfirm. Given the strong relationship between the style of the mothers' talk during the first two situations and the style of the children's talk at Tasks 3 and 4, it would certainly appear that the style of talk -- and therefore the encoding or constructing stage -- was the more significant influence. But since style of talk and time of talk are so bound together in this study, it is difficult to pull them apart.

There is some evidence, however, that at least for young children, the style of talk to which they are most consistently exposed would actually be very similar and all-pervasive throughout their experience. In the earlier study described above (Tessler, 1984),

mothers were asked to cue their children immediately after their visit together to a museum. In analyzing the maternal style as evidenced by this cue-ing session, it was found that mothers manifested the same style of talk as during the museum visit -- indeed, highlighting the same aspects or focuses, and in many instances recapitulating the same phrases and questions they had used during the experience.

The same results were found in the present study during the analysis of the mothers' cues to their children immediately after the picturetaking experience. Mothers' reconstructive questions and cues were analyzed specifically for the purpose of seeing in what ways "Talk About the Past," as a genre that has been the focus of a certain amount of attention, might differ from Talk During. The findings confirmed those of the earlier study: Mothers showed the same stylistic behaviors in reconstructive talk that they had shown during the constructive talk.

Given the mothers' consistency across the picturebook reading, picturetaking, and cue-ing tasks, it does not seem too great a speculative leap to assume that what was seen in microcosm here would be seen in similar form in other experiences shared by the mothers

and children. And since young children's experiences tend to take place within a fairly circumscribed social world, among those familiar figures to whose stylistic repertoires they have long been exposed and accustomed, it would seem likely that for them at least -- and we are looking at the early stages of development of the autobiographical representational process, therefore at young children -- the talk they would receive during and after experiences shared with those closest to them would be in the same style.

Several other aspects relating to this hypothesis will be discussed below in terms of alternative explanations of the results, but it must be acknowledged here that this study can provide only suggestive data in need of further investigation, rather than unambiguous confirmation or disconfirmation of this hypothesis.

A Closer Look at the Major Findings: Confirmations and Surprises

While the results of this study provided data in support of the hypothesis that children's exposure over the long term to a particular representational style would influence the development of their own style in

that direction, some aspects of the findings in support of this hypothesis provided some surprises as well. They were:

1. Children not only showed the hypothesized preference for the style to which they were most accustomed, but they maintained this preference even in response to talk in the opposite style.

2. The striking degree of alignment or cohesion in the mother-child talk during the shared experience embodied a highly interactive and mutual process that seemed to reflect not only the highly responsive rather than initiatory nature of the children's talk, but appeared equally attributable to certain characteristics of the representational styles themselves.

3. The degree of distinctiveness between the two groups of mothers was paralleled by equally distinctive profiles presented by their children. It appeared that what were becoming evident in this study were the later developmental "consequences" or sequelae of style differences similar to those observed at an earlier stage of development by researchers such as Nelson (1973, 1981b) and more recently Hampson (1989), Gardner & Wolf (1983) among others, and an earlier or precursor

stage of adult style differences depicted by Bruner (1984).

Strength of Children's Style Preferences

It had been expected that children's exposure to their mothers' style over the long term would render them more responsive to talk in that style than to its opposite. It was therefore expected that on Task 3, children receiving talk in the same style as their mothers', whether Narrative or Paradigmatic, would show a better response to talk in that style than children receiving talk in the opposite style -- "better" response defined as appropriateness of the response to the format of the cue, and greater amount of information provided.

Instead, all four groups of children maintained their original profiles no matter what the cue, responding to talk of either type for the most part in their characteristic Narrative or Paradigmatic format or style. This pattern was confirmed on Task 4, at which point the children were exposed to cues in both styles. Though certain cues brought out more movement toward the opposite style on the part of each group,

both the format and content of the children's talk reflected their original style classifications.

It appears that what made this possible was a process in which, faced with cues in the opposite style, children simply reformatted them, thereby turning the talk they were receiving in the present into the format they were most accustomed to receiving in the past. Presented, for instance, with an Interpretation cue, Paradigmatic children often turned it into a Knowledge Base cue (which, as the analyses of their mothers' talk has indicated, would indeed have been the type of cue more frequently directed to them in their usual experience). Asked "What do you think's going on there?" they would focus in on a specific property of something in the picture and respond, "That's an _____." Similarly, Narrative children presented with a Knowledge Base cue such as "What do people do in a bank?" might reply with an Autobiographical ("My sister threw my piggy bank on the floor and it broke") or Interpretation reference ("That man [in the picture] is gonna rob the bank!")

Evidences of this reformatting process may be seen in the children's scores on Tasks 3 and 4 (Tables 12 and 17), which show the basic format in which the

groups responded (that is, whether in primarily Narrative or Paradigmatic style of talk), and on Tables 13 and 18, which show in more detail the internal composition of this talk.

It is also possible that this tendency to reformat might be responsible for the results relating to the cues on Task 3 and Task 4 for which there were no significant differences between the groups.

At Task 3, there were no significant differences for the Activity cue, but the differences between the groups for this cue were significant at Task 4. Since the total mean for what was thought of as a Narrative cue was .49 on Task 3, just below the Narrative range, and .51, just above it, on Task 4, it is possible that this cue seemed to have as much an informational as the intended descriptive meaning for the children, depending on which style a child was most accustomed to, and thus lent itself too easily to reformatting. The fact that it did not bring out a clear differentiation between the N/N and P/N groups on Task 1 would seem to indicate that each group had found a way to deal with it in their own format. (The significant differences between the groups on this cue at Task 4 may be accounted for by the addition of the

N/P group at this point, which was receiving cues in its own Narrative style for the first time.)

What seemed to make this process of reformatting possible was the capacity of the children to use the same utterance categories in different ways, and in different combinations. For instance, when Narrative children used Specific Physical Properties references, these seemed more often to accompany an Autobiographical ("That's [gargoyle] like the one in our building. I have the book about it") or Interpretation utterance ("That boy is going to school. See his book bag?"). In such usages it appeared to be a personal or interpretive context, fairly global or holistic, that was the initial way in to understanding, with a calling forth of the individual attributes for purposes of making that understanding known. On the other hand, Specific Physical Properties references more often accompanied Knowledge Base and Category utterances for the Paradigmatic children, who seemed to build up from an accumulation of details a category or explanation for the object focused on: "See the yellow? It's a schoolbus."

Similarly, among the Narrative children, responses to the Location cue were frequently accompanied by

Activity and Autobiographical utterances, as in "That's when we were near the doggie run," while Paradigmatic children more often accompanied Location references with Knowledge Base and Specific Physical Properties utterances such as "That's the church. See the thing on top?"

The Contribution of Joint Encoding to Mother-Child Cohesion and Later Child Preference

That the children showed preferences for their mothers' style has been suggested by the results. Some ways in which these preferences were maintained even in the face of opposite-style cues, in part by children's ability to reformat the talk received into a more familiar style, have been briefly illustrated above. The question now is what aspects of the mother-child interaction during the two shared experiences (Task 1 and Task 2) were so influential as to apparently have had such a strong influence on the children's style.

The second surprising finding was the degree of the interactivity and cohesion between mothers' and children's talk during the two situations. In both groups and on both tasks where mothers and children interacted, the format of the children's talk adhered

very closely to that of their mothers', in terms of relative proportions of Narrative and Paradigmatic utterances. It is not that such cohesion is particularly surprising, given the evidence presented in Tables 4 and 10 for the amount of children's talk that occurred as responses to maternal initiations. it is rather what is being accomplished through the cohesion in these dialogues, and how the specific characteristics of each style aid and abet it, that is of interest here.

Vygotsky (cited in Pelligrini, 1984) has written that perception and memory acquire new features under the influence of language. In dialogues between adults and children as they engage in joint activities and joint referring to objects in the environment, adults are said to guide children's attention and actions. In accordance with the process embodied in the movement from interpsychic to intrapsychic regulation, children are said to internalize these dialogues. In this way, language as one representational system becomes inextricably a part of all the others that play a part in the child's developing way of experiencing the world.

Moerk (1975), too, has described certain kinds of verbal behavior between mothers and their 2-5-year-old children, in which "external circumstances are translated into language." Describing these interactions as "variables that represent a translation of objective/environment/pictorial configurations into the verbal medium," Moerk provides as examples the mother describing an object or event; the mother describing her own acts; the mother describing an action of the child, and parallel behaviors in the children.

Corsaro (1984) has described how language directed to children by adults has the effect, if not always the intention, of negotiating a shared meaning -- one that brings the child's meaning, or reality, more into line with the adults'.

With very young children, it often appears that all attention is a kind of social-interactive activity, since so much of their interaction with adults seems to consist of their verbalizing what they are attending to, or of adults bringing something to the child's notice. A joint attention whose purpose may have been no more than to bring about a shared moment of mutual engagement also serves as a kind of joint encoding of

the situation being shared. That process of joint encoding is here proposed to be a form of on-line representation, and this next section seeks to describe what was observed occurring during the process, and how what occurred achieved and maintained the close alignment between mothers' and children's talk that made possible what has been proposed was the children's internalization of that joint encoding dialogue in a way that influenced the development of their own representational style.

Forms Taken by Joint Encoding During Two Shared Experiences

Regardless of which style predominated in the content of the mother-child dialogue during the picturebook reading and the picturetaking, the form that the dialogue took in both experiences seemed commonly to be of a back-and-forthing, topic-comment type in which it was either an initial attention-focusing remark or question by the mother that set the process in motion, or (especially during the picturetaking) an excited exclamation of interest by the child that called forth expansive or specifying questions or comments from the mother. In either case,

the process that ensued, which has been characterized in this study as joint encoding, was in a sense a kind of writing aloud, in which each of the co-authors contributed different parts of the text being written as the experience they shared was translated into language.

Even at the age of 4, children still seemed to approach things in more general than specific terms on their first responses to and talk about what they were seeing, either in the picturebook or on the street during the picturetaking. (Quite often, when asked what they wanted to take pictures of, the children would reply: "Everything!") The role of the mothers seemed to be, depending on their style, to focus in on certain elements, setting them into relief and highlighting their distinctiveness from the rest of the picture or from the ongoing flow of visual stimuli on the street, as the Paradigmatic mothers tended to do; or to provide clarification of the object or sight in a different way, by maintaining it in its context but providing an interpretive "subtitle" or underlay, or by elaborating on its relationship to the other aspects of the pictured or actual scene.

The orientation of the Paradigmatic mothers toward specification and distinctions gave their dialogues with their children a different flavor from those of the Narrative mothers and children. During the picturebook reading, for instance, a child might say: "Look! Trucks!" A typical Paradigmatic answer would be: "Yeah! What kinds of trucks do you see?" Their conversation might continue:

M: How many different kinds of trucks can you find?

C: A fire truck...a mailman's truck...and an Entenmann's truck!

M: Where do you buy Entenmann's donuts?

C: (hesitates)

M: In a shoe store? In a video store?

C: [laughing]: No! In a grocery store!

Of a picture in the Shopping book in which a woman is seen sitting on a chair, with one shoe off, when her child said, "Look, a lady!" one Paradigmatic mother replied, "Yes, what's she doing?" and went on to the next page when her child responded, "She's just sitting." Of that same picture, another child said, "Look at that lady sitting there." Her Narrative mother replied, "Yeah, how come she's just sitting

there like that?" When the child replied, "Maybe she's tired," the mother answered: "Sure she is. Look at all she's bought!" and pointed to the overflowing shopping bags at the woman's feet.

Out on the street during the picturetaking, these differences in orientation to demarcation or connection, surface description or interpretive subtitling showed themselves in many ways. One thing all the children had in common was a desire to take a picture of their mothers. A typical Narrative response was: "Okay, what do you want me in front of?" Or, in the words of another Narrative mother: "Want me to stand here so you can get the ginkgo tree in behind me?" These Narrative responses were typical in their emphasis on connection and in the different ways they expanded the child's focus to place the object of attention in a wider visual, interpretive, or personal context.

In terms of the form of the joint encoding which this talk embodied, one can find in the Narrative dialogues the same "combinational," descriptive, highly modified kind of talk in both the picturebook reading and the picturetaking:

C: I'm gonna take that lady!

M: The lady waiting for the bus?

Here, the mother has provided an interpretive context and an elaboration for the child's representation of the lady. In another Narrative example, the same process takes place:

C: I'm gonna get that motorcycle.

D: That motorcycle in the stairwell?

Again, the Narrative mother has, seemingly automatically, placed the object in (this time) a visual context, adding that to the verbal representation she and her child are creating.

The combinational aspect of the Narrative style seems to be not merely a surface matter of quantifiably greater use of modifiers. A railing was nearly always "the green railing." "The lady with the hat on," "the man waiting to get his car out," "the motorcycle in the stairwell": all retained those characterizations, by both mothers and children, up through the time of the first follow-up. It seems that the factor underlying what might otherwise seem merely of syntactical interest is an emphasis on connections: things seen and understood in relation to each other, or in relation to a context that might be visual, interpretive, personal, or all three.

Certain categorical or disjunctive characteristics of the Paradigmatic style observed during the picturebook reading also were apparent in the talk during the picturetaking. Rather than place the object of mutual attention in context, Paradigmatic mothers tended to place emphasis on the object as thing-in-itself:

C: I'm gonna take that truck!

M: What part of the truck? The front part? Or...maybe the wheel?

When their children announced that they wanted to take a picture of them, the Paradigmatic mothers' typical response again seemed intended to focus in on one object distinguished from the context:

M: You better stand back a little or you won't get me all in.

In another Paradigmatic example, the child wants to take a picture of a woman at a bus stop, as another child in a previous example had done:

C: How about that lady? I wanna take a picture of that lady.

M: Well, let's go around the other side so you can get her front and not her back.

If we compare the talk here with that in the above example of the same situation, it seems that the two different ways in which that scene was jointly encoded would eventuate in two different kinds of representation: one of a woman-in-context, performing and recalling to memory an activity familiar to all city children -- waiting for a bus; the other of a woman as an object-in-herself, decontextualized. It is difficult to know what kinds of cues would bring that memory to mind for each of the children. One may also conjecture that the entire "tone" of the shared experience may seem quite different depending on whether the experience shared is of isolated objects passing separately in review or objects in contexts with a felt connection to the viewer.

Characteristics of Each Style That Contributed to Achieving and Maintaining the Joint Encoding Process

Certain characteristics of each style, dissimilar as they may have been in other respects, seemed to effect a similar drawing of the child into the dialogue, and a maintenance of this joint focus.

During the picturetaking experience, the more characteristically Narrative Autobiographical talk

tended to connect aspects of the things seen to things already experienced by the child, and the Interpretation talk functioned to place it in context. In both cases, interestingly, the child's attention would have to move back and forth between several different aspects of the situation, and draw on several different cognitive domains: from the actual here and now of the visual stimulus, to the child's own memory (for the Autobiographical talk to make sense) and general interpretive powers (which would call on the child's linguistic competence and real-world and social cognition, among other things) in order to participate in the Interpretation talk.

The more characteristically Paradigmatic Knowledge Base, What Part Of, and Specific Physical Properties, while having the effect, in most instances, of focusing the child's attention on the visual aspects of the object, homing in on its particularities and emphasizing its distinction from other objects in the scene, would nonetheless share with the Narrative Autobiographical and Interpretation talk the demand that the child process the material in two realms at once: the here and now and the more distal already known or experienced. These demands on both groups of

children to perform complex acts of dual processing could be expected to maintain in them a high level of attention to and mutuality with the mother, keeping them closely attuned to their moment-by-moment interaction.

Among the Paradigmatic mothers and children, the very specificity of the dialogue, and its question-answer format, made for a dialogue form of fairly quick back-and-forthing that would tend to keep the children quite engaged in the dialogue itself, because there would simply be no time to turn their attention away. In that kind of format, the alignment between questioner and responder would by definition have to be very close or the entire interaction would break down.

Among the Narrative mothers, the large number of Location references located the object in a visual context, while the large number of references to Autobiographical and Interpretation located the object or sight in a psychological context. The large number of references to Temporal and Activity, with their emphasis on dynamics, movement in time and space, may also have had an effect of maintaining the child as an active, moment-to-moment participant in the encoding process in the same way, if not the same manner, as the

more Knowledge Base-oriented questions of the Paradigmatic mothers did with their children.

Interpersonal Aspects of Each Style That Contributed to Achieving and Maintaining the Joint Encoding Process

Certain interpersonal aspects of the two styles may have also contributed to the mutuality of the focus and the cohesion of the joint encoding talk.

The propensity of the Paradigmatic mothers to evaluate their children's performance and utterances, to accept or reject or correct them, and to ask for clarification (see Tables 3 and 7) would have been likely to keep their children closely synchronized and attentive to their mothers' talk and actively engaged in the mutual attention to the object.

Narrative mothers' frequent expressions of interest in why the child wanted to take or had taken a particular picture (Table 7) would likely serve to maintain the child's own interest in it, and sense of a shared experience, while the mothers' frequent repetitions of their children's remarks would reinforce the cohesion of their talk as well, perhaps, as actively imbed in the joint coding. The Narrative mothers' frequent personal/interactional and

Autobiographical utterances, and attention both to extra-picturetaking occurrences and allowances of such behaviors on the part of their children, which have been defined as part of their experiential rather than task orientation, would also seem to underline the sense that they were sharing an experience, and could thus be expected to create an unquantifiable but nonetheless strong feeling of connection between mothers and children.

While the Paradigmatic mothers' task orientation might appear somewhat less personal, or interpersonally engaging, the sharing of a task is a sharing nonetheless; and when such mothers marked the taking of a picture by saying "Three more to go!" rather than, for instance, the more common Narrative "Where shall we go to look for the next one?" they are nevertheless expressing an implicit unity in the joint accomplishment of the task, just as their strong engagement in procedural talk during the child's taking of the picture effects the same sense of mutual engagement.

Encoding Effects: Some General Evidence

In the present study, evidence for an effect of encoding on the children's recall in general is taken from the fact that no picture was recalled during the free recall sessions that had not been talked about by anyone: mother, child, or mother and child together. Interesting in terms of the possible effects of age differences between these 4-4-1/2-year-olds and the 3-1/2-4 year olds in an earlier study (Tessler, 1984) is the fact that in the present study, all that seemed to be needed was for someone to have talked about the picture, whereas in the earlier study the talk had to have been by the mother and child together.

Other evidence relating to effects of language on representation and recall seems to be the children's tendency to recall, when looking over their pictures, things that were not visible in the picture but had been the subjects of talk during the picturetaking.

During both free recall and probed responses the Narrative children's responses were characterized by a high use of specifics in the form of combinations of modifiers. The Paradigmatic children tended toward less specificity. In their answers, specifics had

dropped out and general categories seemed to have taken over.

The combinational aspect of the Narrative mothers' style was noted as early as the picturebook reading, and, as described above, was consistent through the picturetaking walk and cues to children afterward. When Narrative mothers were asked to cue their children, they would say things like, "Let's see...You took a picture of a blue car, and the big red sign on the corner, and the man in front of the store...." Paradigmatic mothers, on the other hand, would say things like, "Let's see...You took pictures of cars, of people...buildings...."

These same style differences were evident in the children's free recalls. Narrative children would say, "We took a picture of the man with the little girl, the green railing, the house with the white jars...," while the Paradigmatic children would say, "We took cars... and people...and...houses."

The use of combinational phrases seemed to be almost routinized and formulaic among Narrative mothers and children. Modifiers like color and size ("The big blue car") or evaluative or aesthetic terms ("The pretty doll") were more evident in the talk of

Narrative mothers and children during their interactions, and in the recall of the children afterward.

There were also more instances among the Narrative children of exact repetitions of phraseology that had occurred during the picturetaking. Examples abound. One child whose mother said about the subject of one of the pictures that "she didn't even know somebody was taking her picture" characterized the woman in the picture that way at both Tasks 3 and 4. Another child characterized one particular picture as "a very interesting picture," just as his mother had characterized it during the picturetaking. "Those are the birds that commute from New Jersey," another child exclaimed, repeating her mother's characterization every time that particular picture was shown. "That's the very noisy place," "That's the old mud boat in the middle of the lake," "These are the different-neighborhood pictures," "This is the statue that looks like me" are only a few of many such descriptive phrases internalized from the mother-child talk during the picturetaking. The Narrative children also tended frequently to quote themselves, though not as often as their mothers. Given the orientation toward

specification ("Which one?" "What part of it?") characteristic of the Paradigmatic style, it is interesting that many of these specifics dropped out during free recalls or spontaneous, uncued comments by these children, though they were clearly available to the children when cued. What replaced the specific information seemed to be more general, abstract categories whose appearance was signaled by the frequent use of plurals, even in cases in which the child had taken only one picture of the object in question. Thus, a child might answer "Trucks" or "People" when asked what she had taken pictures of, even if only one truck or one person had actually been photographed. Interestingly, even a child who responded "All the way up" or "The top part" when asked to identify one of her pictures at the first follow-up, responded "building" at the second.

There were fewer instances among the Paradigmatic children of repetition of the same phraseology of their mothers, though this would be difficult to prove or disprove, since so much of the mothers' talk consisted of general terms.

It will be remembered that on the first free recall task, the Narrative groups showed better recall than the Paradigmatic groups, while on the second follow-up, the P/P group, which had received Paradigmatic cues, showed better picture recognition than the P/N group, which had received Narrative cues. It may well be that the particular characteristics of the Narrative talk, which provided more contextual and autobiographical cues and connections for each picture taken, may have given these children more to cue their recall with during the free recall task, while providing them with too many distracting possible focuses during the picture recognition task. The Narrative mothers' expansions of their focus may also have had a distracting effect here.

The Paradigmatic children, on the other hand, may have been helped by the talk that they did <u>not</u> get during the picturetaking. With mothers intent on helping their children refine their focus, these children had fewer distractions, so could focus more clearly on the object in the picture, or on the more generalized category form that object had taken in their own representation by this time.

Finally, it is possible that the fact that the children had talked about what they had photographed and done before viewing their pictures may have aided the Narrative group but confused the Paradigmatic. Because the Narrative children talked more in specific descriptives, this could have provided them with many more cues to recall, but also could have confused their focus when it came to looking at the pictures themselves. The Paradigmatic children provided fewer details in their free recall, and thus had on the one hand fewer cues to recognition -- but also fewer distractions from the particular category the object pictured fit into.

Effects of Interpersonal Aspects of Encoding Style on Children's Response Style

The Narrative mothers tended to ask more open-ended questions, ones which allowed for answers that were not necessarily "right" or "wrong" but merely possible, as if the point of the question was not to test or to teach but merely to begin or continue a conversational interaction. Their responses to their children's answers were consistent with this attitude (perhaps reflecting their experiential rather than task

orientation). During the picturebook reading, for instance, a typical Narrative mother's response to her child's misinterpretation or misunderstanding of some aspect of the picture was: "Yeah, she could be crying because she's afraid to cross the street. How come you think that?" Another Narrative response to an incorrect remark was: "Yeah, it does kind of look like a lion, doesn't it? That looks like a lion's tail to you?"

As was discussed earlier, and perhaps because of their apparent task orientation, Paradigmatic mothers much more frequently than Narrative mothers approved or disapproved, accepted, corrected, or rejected their children's comments. A typical Paradigmatic response to an incorrect answer was: "No, that's not a lion. Look at his tail."

The children's exposure to these differing interpersonal styles appeared to have as much effect on their differing approaches to answering a question as their exposure to their mothers' differing representational styles had on their own. The Narrative children, seemingly because accustomed to an interpretive, inferential style, used inference more themselves and were more willing to speculate. More of

their answers than those of the Paradigmatic children were preceded by "Well, that could be the..." or "That looks like the...." They were also more likely to take a guess: "I think it was a boy baby, but we couldn't really see it." This willingness to take a chance may also, of course, have led them into more incorrect responses on the picture recognition task.

The Paradigmatic children, on the other hand, were not as comfortable venturing a guess or an inference. They produced more instances of No Response, Don't Know, or Asks Experimenter the Answer, and tended to respond only when they felt sure of the answer. Their amount of correct answers on the picture recognition task may be due in part to this factor almost as much as to the less distracting, more focused elements of the Paradigmatic style.

Two Different Styles, Two Different Ways of Experiencing

The third "surprise" finding related to the degree to which the two groups seemed distinct from each other. The picture they present seems to be of two different ways of approaching and organizing experience. One might think of these two groups in any

of several different ways: as constructors vs. deconstructors or synthesizers vs. analyzers -- but during the course of this study I came to think of them as Characterizers vs. Categorizers.

The Paradigmatic mothers seemed to be categorizers, attending to the specific nature of things and the ways in which they differ from one another. Their approach to experience seemed to function to halt the flow of stimuli, breaking sequences or segments down into their constituent parts and organizing the perceptions derived from this process into a kind of "vertical" logical/factual structure closest to what we commonly think of as knowledge.

The Narrative mothers, on the other hand, seemed to be characterizers, focusing not on things in themselves but on things-in-relation, in a more contextual, "horizontal" fashion in which connections are based not on logical categories but interpreted or felt resonances.

In the end, though, one could not do better than return to Bruner's original characterization of the Narrative and Paradigmatic modes of thought (1984) for a summing up of the differences: "The Narrative mode,"

he wrote, "is concerned with action, intentionality, and situations unfolding in a temporal rather than timeless realm, subject to interpretation rather than logical verification procedures." The Paradigmatic mode is based upon "categorization or conceptualization and the operations by which categories are established, instantiated, idealized, and related one to the other to form a system."

How these observed differences came into being, and even how they can be accounted for in this one study, is of course open to other explanations or hypotheses than those offered here. It would seem that there are at least two possible alternative explanations for the findings of strong preference shown by the children for the maternal style. The first would argue that it was the influence of the mother <u>as</u> mother that was the real factor at work here. But far from being a confound, that could be seen -- and was, in the development of the hypotheses on which this study was based -- as a confirmation instead. For if the mother has a strong influence on her child <u>because</u> she is the mother, and if the mother is the person with whom most of the child's experiences are

shared, then that would seem to be even more reason to attribute a great deal of weight to the effects of her interactions with her child.

It seems an undeniable fact that the child's attachment to the mother evokes a special responsiveness to her behaviors that provides the emotional fuel driving the impact of the maternal effects on various domains. But to assert an influence of mother qua mother without operationalizing this in any way is in the end not to be saying very much. The mother's influence may be abetted by an emotional impetus, but it takes different forms and acts on different developing processes. The effects of "mother-ness" have to be operationalized as "mother-something." In this study, that "something" was operationalized as maternal style, and it was what happens during the social and cognitive interaction between mother and child in that domain that was the focus of investigation.

To stay at the emotional, quasi-instinctual level of attributing all effects of a mother on a child to a form of social-referencing explanation seems to miss opportunities to observe and understand the processes by which and through which the acknowledged maternal

influence achieves its impact. The fact that what must be considered similar emotional bonds could underlie such different types of mother-child interactions and contribute to such different child behaviors as were observed here would seem to be evidence for the fact that different things were happening in the different dyads apart from the fact that the dyads all consist of mothers and children.

The second alternative explanation is that the representational process is so malleable that anything can influence it, from one time to the next. Loftus' work (1975), among others', has shown that the representational process is permeable to influences from outside; even that an original encoding can be changed subsequently by the addition of new information. Certainly the children in this study were able to take in information in an opposite style. To imply that their representational process was impermeable would be to say that they were actually handicapped. It is the strength of their preference for one style rather than another, consistent over situations even after they had had an opportunity to take in information in a different style, though, that seems to militate against an argument that it would

vary from situation to situation. Individual preferences for certain styles rather than others have been found in various domains by many researchers. Gardner & Wolf's (1983) definition of style seems the best argument against this alternative hypothesis. "Style," they write, "is a mode of behavior which remains consistent across a range of materials and situations. Such a style has many components, including the means whereby children select information, capture it in symbolic forms, organize it into coherent messages, and transmit it deliberately to others."

Conclusions

Just as cross-cultural research has shown how influential the different demands and supports of a particular culture are on various forms of cognitive organization, including those involved in representation and recall; and just as studies of families, as cultures-in-microcosm, have demonstrated differences in their styles of organizing and representing experience, so, too, this study has found mother-child dyads -- in a sense, the most concentrated

form of culture in microcosm -- exemplifying different styles of representing experience.

The joint encoding observed taking place between mothers and their children here seemed to form a kind of representational training in which children are "taught" what to attend to and represent as well as how to talk about it: Language in fact being a representational system, this talking about and representing must in many ways be seen as equivalent.

That autobiographical representation and recall is not an automatic process but rather one that is learned seems apparent when one considers that young children rarely seem to do this kind of remembering on their own in any organized way, but rather seem first to do it aloud, in response to adult questions and cues.

It may in fact be that memory begins as undifferentiated semantic "knowledge," as Nelson (1980) has suggested. Through the internalization over time of adult questions and cues, this general knowledge may be broken down into episodic personal autobiography. Nelson's Emily data (1989) seem to provide some support for this hypothesis. Emily's representation of knowledge seems at first not to be differentiated in terms of past, present, future -- or in terms of

personal vs. general knowledge. It would seem to be at least partly through the dialogues in which Emily engages, first with her parents and then, internalized, in intense "work sessions" by herself, that her sense of personal past and personal future expectations emerges from a generalized information realm. While there are many cognitive operations in play here, her internalizations of those parent-child dialogues certainly come up very often in her study sessions.

In the Van Kleeck and Gunter (1982) study referred to earlier, the children also seem to be learning how to differentiate general semantic knowledge from personal experience, mostly through their mothers' questions, which cue them in to which settings, contexts, discourse interactions call for one mode rather than the other.

It is possible that certain mother-child styles, such as the Narrative, tend to orient the child toward personalizing this semantic information rather than abstracting it, while other mother-child styles, such as the Paradigmatic, orient the child toward less personalized, more abstracted versions of general knowledge. In the former case, the particular is personalized; in the latter, the personal is

generalized. In either case, the finding, in this study, of how different the two modes of representation seem to be indicates that, from a young age, children are learning to see the world, and to experience it, differently.

That there are individual differences in language acquisition and use has been amply documented (cf. Nelson, 1973, 1981b; and Hampson, 1989, among others). That there are individual differences in other forms of representational behavior has also been shown (cf. Gardner & Wolf, 1983). This study provided data casting light on certain aspects of the representational processes involved in the development of individual differences in autobiographical memory style, and provided evidence in favor of social-interactive effects on the development of those processes. It observed an earlier stage in the development of what Bruner (1984) characterized in adults as Narrative and Paradigmatic modes of thought, while documenting later sequelae or consequences observed in work by Nelson, Hampson, Gardner & Wolf and others relating to early development of differences in style.

The results showing children's consistent preference for the maternal style have been taken as support for the hypothesis of a social-interactive influence on the development of this form of memory.

APPENDIX A

Coding Scheme Used to Categorize Utterances of Mothers and Children During Picturebook Reading and Picturetaking Walk, and Children's Utterances During Tasks 3 and 4

	DISCOURSE
TYPE OF UTTERANCE*	DEFINITION
(Describe) Activity	A depiction in basic, "surface" (as differentiated from interpretive) form of a behavior or occurrence taking place in view of M and C. Example: "That lady walking down the street."
Aesthetic	A depiction in aesthetic rather than informative terms. Example: "Those white jars are beautiful, aren't they?"
Color	Self-explanatory. Example: "Why don't you take that red car?"
Location	Reference to an actual place (Example: "Shall we go to the park?") or utterance locating the object or person in a visual context (Example: "Do you want me to stand in front of the gingko tree?")
Temporal	Reference to past, present or future. Example: "We're going to do that tomorrow." Also reference to sequence. Example: "We'll take that one first, and then we'll take that."

*May be in either declarative or interrogative form.

TYPE OF UTTERANCE	DEFINITION
Autobiographical	A reference to something in the (usually shared) personal past; often a way of explaining by means of connecting the sight/ activity/occurrence with something already experienced by child. Example: "Where were we, not so long ago, when we saw something like this?"
Affective	Expression of an emotion or attitude toward the thing observed. Example: "I love those! They're my favorite!"
Interpretation	Utterance going beyond the basic information given about the feelings, intentions, possible future sequence of events or behaviors relating to the person or object. Example: "She might be crying because she's afraid to cross the street alone."
Theme	Utterances (more than 2) establishing a leitmotiv that recurs throughout the experience. Example: "We're going to a different neighborhood!...Wow, this really is a different neighborhood...What do you think's different about this neighborhood from our neighborhood?"
Describe Category	Utterance labeling an object (or person), defining class it belongs to. Example: "What kind of store is that? A video store, right!"

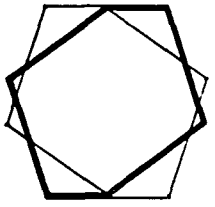
TYPE OF UTTERANCE	DEFINITION
Size	Self-explanatory. Example: "You mean that tall/big/little...?"
Quantity	May be a specific reference. (Example: "Those three guys?") or interrogative "How many?"
Knowledge Base	As with Autobiographical, often used for purpose of explaining something in present situation by reference to something child already knows. Unlike Autobiographical, reference is to child's "semantic" knowledge rather than "episodic" experience. Example: "Sure you know that. Where do wolves live?"
Specific Physical Properties	Reference, often for purpose of focusing attention, to perceptual (rather than more content-laden informational) properties of object. Example: "See the fancy stuff -- that's called molding -- around the windows?"
What Part Of	Used in attempt at specification. Example: "What part of the car are you taking?"
Another	Often used in conjunction with Category in classification mode. Example: "Are you taking another car?"
Same/Different	Also used as form of classification.

	Example: "This is the same kind as that one."
TYPE OF UTTERANCE	DEFINITION
Which One	Also used as specifier. Example: "Which one are you aiming at? This one or that one?"
	INTERPERSONAL BEHAVIORS
Personal/Interactional	A comment or question not meant to impart or request information, but merely to maintain the interaction or sense of connection. Example: "I think you're really getting a kick out of this, huh?"
Evaluative	Expression of approval or disapproval of child's performance or behavior. Example: (after C has taken a picture): "Great!" or "The way you were holding that I wouldn't count on it coming out."
	ORIENTATION (TO EXPERIENCE OR TASK)
Reference to Experience	Similar to Personal/Interactional in functioning to connect M and C and heighten sense of sharing. Focus is on the shared nature of the activity, and/or on the activity as thing-in-itself, rather than on its goal or purpose. Example: "Well, so here we are, two photographers together!"

TYPE OF UTTERANCE	DEFINITION
Reference to Task	Emphasis on end result of the activity, and/or on the "rules and regulations" surrounding its proper performance or completion. (May include, however, a sense of shared activity.) Example: "We're supposed to take twelve pictures of things."
Reference to Goal	Utterances reflecting the planfulness of the activity, and its end result. Example: "I thought we were taking cars, buildings, and animals."
Encourage or Cajole Via Reference to Experience	Utterances called into play when child's interest seems to be flagging. Example: "Hey...I thought we were playing Secret Photographer!"
Encourage or Cajole Via Reference to Task	"Minda says we have to finish the whole roll."
Closure Remarks: Reference to Experience	"That was fun, wasn't it? Maybe we can do that again sometime!"
Closure Remarks: Reference to Task	"That was our last picture. No more! You did it!"

APPENDIX B

Sample of Recruitment Letter



The Graduate School and University Center
of the City University of New York

Ph.D. Program in Psychology: Developmental Psychology / Box 300
Graduate Center: 33 West 42 Street, New York, N.Y. 10036-8099
212 790-4545

Dear parent:

The Columbia Greenhouse Nursery School has kindly permitted me to send home with your child this request for your participation in a study to be conducted over the next few weeks.

As part of the research for my dissertation, I am looking at how children talk about photographs they have taken, or helped to take. Your participation would consist of a short (3-block) picturetaking walk with your child, accompanied by me. One week later, I would return with the developed pictures and a scrapbook to keep them in. I would talk about them for a few minutes with your child, and then take them back so that a special cover with your child's name on it could be attached to the scrapbook. Three weeks later, my research assistant would come by with the pictures and personalized scrapbook, discuss the pictures with your child very briefly, and then leave your child with the memento of the experience.

Over the past few weeks, I have had the great fun of going on this outing with many mothers and children from all over the Upper West Side, our mutual neighborhood. The responses of both mothers and children have been uniformly enthusiastic.

I would be most grateful for your help. Please fill out the section below and return it with your child to Columbia Greenhouse if you would be willing to discuss this further with me, and accept my thanks for your attention to this.

Sincerely,

Minda Tessler

Minda Tessler

Yes, I may be interested in participating in this project. You may call me at (phone number):_____

NAME:

APPENDIX C

Narrative and Paradigmatic Cues and Sample Responses by Children.

NARRATIVE CUES

Location:	Where did you take this picture?
Temporal:	When did you take it? (If child does not respond: Before this one or after this one? If the initial picture: Was this your first one?)
Activity:	What's [he/she/they] doing?
Interpretation:	What do you think's going on here?

PARADIGMATIC CUES

Category:	What kind of [store/truck/etc.] is that?
Knowledge Base:	Do you know what people [buy/do/etc,] in a _____?
What Part Of?	What part of that were you taking?
Specific Physical Properties:	Wow! What do you think of that _____?

N/N AND P/N RESPONSES TO FOUR NARRATIVE CUES:

SAMPLE OF N/N CHILD #3's RESPONSES TO 10 LOCATION CUES*	SAMPLE OF P/N CHILD #5'S RESPONSES TO 10 LOCATION CUES*
(Where did you take this picture?)	
1. That's near the Daddy store [laughs] -- I mean the medicine store! It's got Daddy's shaving cream in the window.	1. At the park!

*One per picture.

2. Where the tall buildings were...And--and--near the puddle with the pretty colors!	2. Near the school.
3. That's the plain old houses street...It's near the outside furniture place. [Long pause] Where the drawers were...from a house.	3. That's the same near the school.
4. Where we saw the big red truck.	4. I don't know. Where?
5. That's where--that's where--[very excited]--that's where we saw the feather from the bird!	5. This is--this is <u>not</u> the same as that park. There's no gate, see?
6. That's the park where the slide was and I <u>roared</u> at the pigeons!	6. That's where the church...see the thing on the top?
7. Where the man was waiting and he had--he talked--he smiled to us.	7. That's the grocery store.
8. Where the lady was not--that the lady was not looking! The--the--the joke is, I had her picture but she doesn't even know I got her. She doesn't even know somebody took her picture!	8. He's a policeman! That's his police car!
9. Near the statue of the girl laying down 'cause she died.	9. That's on a different street. You know why? 'Cause that's a different kind of color building.
10. That's where's the real big bench! It is <u>so</u> big that no grown-ups could only fit in it...it's longer--it's longer--it's longer than a bench in our summer house.	10. Near the bus stop. That's where the bus stop--that's where you wait for the bus.

SAMPLE OF N/N CHILD #6'S RESPONSES TO 10 TEMPORAL CUES:	SAMPLE OF P/N CHILD #4'S RESPONSES TO 10 TEMPORAL CUES:
(When did you take it?)	
1. We took two blue cars and then the red one.	1. This was first!
2. That was when we went here, and then we went there.	2. This, then this.
3. First we went to the movie wall and then we got the red car.	3. This is my greatest! It goes before this!
4. First we took the car, then the high church, and then the little girl.	4. This came before this.
5. This was where we went last. You know which lady I like best? [Points] 'Cause she has more colors.	5. First we did this one and then this one.
6. This was when we went to the snowy river!	6. This was...in a different place. This is a video store.
7. We took this bee-you-tiful picture after we got the blue car.	7. This was almost at the end.
8. First we went by the tall buildings, then we took the truck.	8. I remember this one! It's of the movie house! See the big sign?
9. First we went here and then we went and got that.	9. This, then this, then this.
10. This was in the park, and then we went up the big way and got this.	10. This is not right. It was before.

SAMPLE OF N/N CHILD #7'S RESPONSES TO 10 ACTIVITY CUES:	SAMPLE OF P/N CHILD #7'S RESPONSES TO 10 ACTIVITY CUES:
(What's [he/she/they] doing?)	
1. They're going home.	1. Mailing a letter.
2. He's delivering mail.	2. Walking.
3. He just got a sandwich.	3. He's pulling the dog.
4. He's walking his dog.	4. He's standing.
5. They're fixing the car. That lady's car.	5. Fixing the street.
6. She's not working, she's just looking out the window.	6. Going to a fire!
7. He's waiting to get into his car.	7. Playing.
8. They're fixing the street. It's broken and they're fixing it.	8. Just standing.
9. Mailing a letter...to his Mommy! [Laughs]	9. Going to the store.
10. She's gonna cross the street and maybe get that bus.	10. Feeding the birds.

SAMPLE OF N/N CHILD #8'S RESPONSES TO 10 INTERPRETATION CUES:	SAMPLE OF P/N CHILD #9'S RESPONSES TO 10 INTERPRETATION CUES:
(What do you think's going on here?)	
1. He's smiling 'cause he likes to have his picture taken.	1. [Very quickly]: I don't know. What is?
2. He's waiting for somebody to drive away.	2. He's a police-man. See his uniform?
3. Somebody wants to scare people!	3. There's a hole in the street.
4. He probably got hurt in a fight!	4. Lots of birds!
5. I bet they're going to a fire or a fire drill.	5. He's standing there...I don't know what he's doing.
6. It's the birds' lunchtime.	6. They're carrying that thing.
7. They're coming home from school.	7. The lady's feed-ing the birds.
8. He's delivering lots of Christmas cards, I think.	8. [After a long pause]: I don't know.
9. They must be thirsty.	9. That's a tele-phone truck. See the drawing on it?
10. It's gonna fall in one minute!	10. They're going to a fire!

N/P AND P/P RESPONSES TO FOUR PARADIGMATIC CUES:

SAMPLE OF N/P CHILD #1'S RESPONSES TO 10 CATEGORY CUES: (What kind of ____ is that?)	SAMPLE OF P/P CHILD #2'S RESPONSES TO 10 CATEGORY CUES:
1. It's where you go to the movies [chuckles]...and eat lots of popcorn!	1. A Entenmann's yummy donut truck!
2. It brings that from--from country...from country people to the fruit store.	2. It's a food--a grocery kind of store.
3. You buy little Russell [baby brother] diapers there!	3. It's a van.
4. We don't go there 'cause they're not nice to little kids.	4. A mailman. That's his mailbag there.
5. Russell's afraid of that video but I LOVE IT!	5. A schoolbus kind of bus, that's why it's yellow.
6. It sells yummy-yummy [this goes on for a while] cakes for your birthday!	6. A big, really <u>big</u> one.
7. It's a very gigantic moving van...and--and--and if you got a piano it can carry it up the side of a building without dropping it at all! We saw that, right [turning to mother]?	7. It sells videos.
8. He's a mailman.	8. It's a Don't Go sign. See? 'Cause it's <u>red</u>.
9. It's a bank and I think it's the one we take our money from.	9. It's where you get food...See the bananas in the window?
10. It's a clothes store for very ugly clothes...For horrible ugly people clothes!	10. It's a bread--it's a bakery store.

SAMPLE OF N/P CHILD #2'S RESPONSES TO 10 KNOWLEDGE BASE CUES:	SAMPLE OF P/P CHILD #4'S RESPONSES TO 10 KNOWLEDGE BASE CUES:
(Do you know what people ___ in a ___?)	
1. You keep your money there, but I keep my money in my piggy bank only my sister threw it on the floor and broke it so I don't--so I don't have money except --unless--except under the bed.	1. You buy fruit. See? There's the fruit.
2. If you wanna buy fruit you go to our place 'cause it's the best.	2. You get your money out.
3. We get Daddy's things washed there but not mine. I'm too dirty.	3. You get your things washed.
4. They're eating Chinese food 'cause they're Chinese!	4. You watch the movie. And you eat the popcorn!
5. We don't go to church 'cause we're too Jewish. We go to Temple.	5. Because of the sign. See? That's red for Don't Walk.
6. They bringed their own wagon 'cause they were buying so much.	6. You eat restaurant food there.
7. He doesn't want to go in 'cause it's bo-o-ring.	7. You put money in and candy comes out.
8. It cleans the street.	8. It picks up the dirt and takes it away.
9. We used to go there but not anymore.	9. Because it's winter...that's why the mat is out. It's for keeping snow out.
10. That man is gonna rob the bank!	10. You can't eat them 'cause they're poison!

SAMPLE OF N/P CHILD #8'S RESPONSE TO 10 WHAT PART OF CUES:	SAMPLE OF P/P CHILD #9'S RESPONSE TO 10 WHAT PART OF CUES:
(What part of the _____ were you taking?)	
1. Where the funny parrot is.	1. That top part there.
2. Where the lady was with the little dog.	2. The pointy thing up there.
3. Right there...Where the man is talking to us.	3. The window.
4. You can't see the birds but she's feeding them.	4. The front of it.
5. Where the water is not there now but in the summer.	5. The front part.
6. The motorcycle in the stair-well.	6. That sign.
7. Where the doorman is shoveling.	7. The top of it... Way up.
8. Where we saw the feather.	8. Where the bird is.
9. Where they're coming out. See? The daddy and the little girl.	9. The numbers.
10. The birds that commute from New Jersey!	10. The Mickey Mouse cake!

SAMPLE OF N/P CHILD #10'S RESPONSES TO 10 SPECIFIC PHYSICAL PROPERTIES CUES:	SAMPLE OF P/P CHILD #10'S RESPONSES TO 10 SPECIFIC PHYSICAL PROPERTIES CUES:
(Wow! What do you think of that ____?)	
1. That's like the one on our building. I have the book about it.	1. That ladder's to go down with.
2. I hate that one! It's ugly and scary!	2. It's so when it rains you don't get wet.
3. It's gonna fall, look! Eek!	3. They'e decorations.
4. That's to make it beautiful... and birds can live on it, too.	4. It's because it's a food store.
5. We saw that near the park.	5. She's not real.
6. That's like--it's a movie... a video sign to say to buy your scary "Creepshow" video there...[Pause] I never -- I only want to see "Creepshow" again.	6. That's my favorite one thing.
7. It's so you can hide and no one knows where you are!	7. They're rocks.
8. This was where the very noisy restaurant was.	8. Those are Lady apples. That's the littlest apples.
9. They live in that window but they take them out and feed them sometimes.	9. It's a pot for plants but there's nothing in it.
10. That's in the glasses store. Everybody in my family wears glasses and I'm gonna have them when I'm 10.	10. That's because they're building something, so it won't fall when they're building it.

APPENDIX D

Narrative and Paradigmatic Responses to Four Cues in Same Or Opposite Style at Task 3.

In order to provide a more complete picture of the response pattern of the two groups, each cue will be discussed in more detail below.

Narrative and Paradigmatic Responses to Narrative Cues

Temporal. The total mean was .55, with a range from .41-.65. Among the Narrative children, the mean was .60 and scores ranged from .50-.65. Only 4 Narrative children had scores under .60; most of the other scores were clustered in the low to mid-.60s. Among the Paradigmatic children, the mean was .50, and scores ranged from .41-.64. Of the 12 Paradigmatic children, 6 had scores below .50; 5 had scores of .50 or above; 1 had a score above .60.

Location. The total mean was .54, with a range from .32-.69. Among the Narrative children, the mean was .61 and scores ranged from 52-.69. Seven Narrative children had scores well above .60, and the rest were primarily clustered in the mid-to-upper-.50s. Among the Paradigmatic children, the mean was .46 and scores ranged

from .32-.58. Four Paradigmatic children had scores of .50 or above; five scored at .40 or above; three had scores under .40.

Interpretation. The total mean was .45, with a range from .18-.64. Among the Narrative children, the mean was .55 and scores ranged from .49-.64. Only one Narrative child scored under .50, and most scored in the mid-to upper-.50s and low .60s. Among the Paradigmatic children, the mean was .35 and scores ranged from .18-.47. Only two Paradigmatic children scored above .40.

Activity. The total mean was .47, with a range from .35-.64. Among the Narrative children the mean was .52 and scores ranged from .46-.59. Eight Narrative children had scores of .50 or above; four had scores under .50, the lowest of these being .46. Among the Paradigmatic children, the mean was .46 and scores ranged from .35-.64. While the Paradigmatic children had the single highest score, .64, and four of their scores were in the Narrative range, eight of their scores were nevertheless in the Paradigmatic range.

Narrative and Paradigmatic Responses to Paradigmatic Cues

Specific Physical Properties. The total mean was .48, with a range from .31-.63. Among the Narrative children,

the mean was .56 and scores ranged from .46-.56. The Narrative response to this Paradigmatic cue was well into the Narrative range, with only one score below .50. Among the Paradigmatic children, the mean was .40 and scores ranged from .31-.48. Six Paradigmatic children had scores above .40, and six had scores below .40.

Category. The total mean was .49, with a range from .37-.66. Among the Narrative children, the mean was .53 and scores ranged from .53-.66; only four Narrative children had scores below .50. Among the Paradigmatic children, the mean was .45 and scores ranged from .37-.55; only three Paradigmatic children had scores of .50 or above.

What Part Of. The total mean was .49, with a range from .33-.60. Among the Narrative children, the mean was .51 and scores ranged from .43-.60. Of the 12 Narrative children, only two scored below .50. Among the Paradigmatic children, the mean was .46 and scores ranged from .33-.57, with five Paradigmatic children scoring at .50 or above.

Knowledge Base. The total mean was .45, with a range from .32-.60. Among the Narrative children, the mean was .52 and scores ranged from .43-.60; four Narrative children scored below .50, down into the Paradigmatic range. Among the Paradigmatic children, the mean was .38

and scores ranged from .32-.52. Only three Paradigmatic children scored above .40.

APPENDIX E

Narrative and Paradigmatic Responses to All Eight Cues at Task 4.

Since the differences between the groups were greater for some cues than for others, the cues will be discussed in more detail below, to give a more complete picture of what occurred.

Narrative and Paradigmatic Responses to Narrative Cues

Temporal. The total mean was .58, with a range from .46-.70. Among the Narrative children, the mean was .64 and

scores ranged from .57-.70, with most clustered in the upper .60s. Among the Paradigmatic children, the mean was .52 and scores ranged from .46-.62, with most found in the upper .40s-mid-.50s.

It appears that this Narrative cue prompted all the children to become somewhat more Narrative. However, the means of the two groups are nevertheless quite different. The Narrative mean of .64 is still quite a bit higher (that is, situated at the Narrative end of the scale) than the .52 mean of the Paradigmatic children, who are still ranked toward the bottom end of the scale. They are not as Paradigmatic as they

usually are, but they are nonetheless less Narrative than the Narrative children.

Location. The total mean was .55, with a range from .37-.67. Among the Narrative children, the mean was .58 and scores ranged from .47-.67, with most clustered in the upper .50s-mid-.60s, with the exception of one other Paradigmatic-range response of .48. Among the Paradigmatic children, the mean was .52 and scores ranged from .37 to an anomalously high .70, higher than the highest Narrative score. This score was an outlier; the next-highest score was .62, and the rest of the scores were to be found in the mid-.40s-.50s.

The Narrative and Paradigmatic means are closer here. As with the Temporal cue, the Paradigmatic children have moved up toward the Narrative range. However, with the exception of the outlier of .70 and one other score of .62, the majority of the Pardigmatic scores were clustered in a range far lower (hence, less "Narrative") than those of the Narrative children.

Interpretation. The total mean was .48, with a range of .13-.65. Among the Narrative children, the mean was .59 and scores ranged from .54-.65, with the majority clustered in the upper-.50s-mid-.60s. Among the Paradigmatic children, the mean was .37 and scores ranged from .13-.50, with most clustered in the mid-.30s-low .40s.

This Narrative cue brought out some of the strongest differences between the two groups. The closest the Paradigmatic children came to the Narrative end of the ratio scale was .50 (maximum), while .54 was the lowest score of the Narrative children.

Activity. The total mean was .51, with a range from .38-.69. Among the Narrative children, the mean was .54 and scores ranged from .48-.61, with most clustered in the upper .50s. Among the Paradigmatic children, the mean was .48 and scores ranged from .38-.69. This score of .69 was an outlier (not the same child as on the Location cue); the next-highest score was .56, and most were clustered in the mid-.40s-low .50s.

Once again, the differences between the two groups held, with the Narrative mean of .54 still higher than the Paradigmatic mean of .48. As with the Temporal cue, the Paradigmatic children moved toward the Narrative end of the ratio scale with nine Paradigmatic children scoring in the Narrative range of .50 or above. However, with the exception of the Paradigmatic outlier of .69, higher than the Narrative group's maximum of .61, the majority of the Paradigmatic scores were still well below .50, the Narrative cut-off point, while the majority of the Narrative scores were well above that point.

Summary of Differences Between Narrative and Paradigmatic Children on Narrative Cues

1. The Narrative children remained distinctively Narrative -- more Narrative than the Paradigmatic children even when some of the Paradigmatic group moved up into the Narrative end of the ratio scale on three cues: Temporal, Location, and Activity. On what could be considered the most "Narrative" cue, Interpretation, the differences between the two groups were most marked.

2. While the Narrative cues seemed to prompt the Paradigmatic children to move toward the Narrative end of the scale, they are nevertheless at the bottom end of that segment of the scale. They are not as Paradigmatic as they usually are, but not as Narrative as the Narrative children (with the exception of the two Paradigmatic outliers mentioned earlier).

3. The Narrative children were most Narrative on the Temporal, Location, and Interpretation cues. The Paradigmatic children were closest to Narrative on the Location, Temporal and Activity cues, and most characteristically Paradigmatic in response to the Interpretation cue.

4. Finally, of the 24 Paradigmatic children, two showed a higher Narrative than Paradigmatic response to two of the Narrative cues. Of the 24 Narrative children, one showed a more Paradigmatic than Narrative

response to the Location cue, and one a more Paradigmatic than Narrative response to the Activity cue.

Narrative and Paradigmatic Responses to Paradigmatic Cues

Specific Physical Properties. The total mean was .41, with a range from .17-.63. Among the Paradigmatic children, the mean was .29 and scores ranged from .17-.50, with most clustered in the mid-.20s-low .30s. Keeping in mind that the Paradigmatic side of the ratio consisted of scores under .50, this one score of .50 was an outlier, the next highest score being .36. Among the Narrative children the mean was .53 and scores ranged from .37-.63, with most clustered in the mid-.50s-low .60s.

This cue brought out some of the strongest differences between the two groups: The Narrative mean of .53 placed them squarely on the Narrative end of the ratio scale, and the Paradigmatic mean of .29 placed them unambiguously on the Paradigmatic end.

Just as the Narrative responses were even more Narrative in response to cues in that format, the Paradigmatic response was even more Paradigmatic to this Paradigmatic cue than to the opposite Narrative one.

The Narrative children, though somewhat less Narrative than on most of the Narrative cues, maintain their Narrative predilection: The minimum Narrative score of .37 was far higher (i.e., more Narrative) than the minimum (i.e., most Paradigmatic) score of .17.

Category. The total mean was .41, with a range from .23-.54. Among the Paradigmatic children, the mean was .37 and scores ranged from .23-.52. There were two additional scores in the low .50s; the rest of the scores were clustered in the mid-.30s. Among the Narrative children, the mean was .45 and scores ranged from .38-.54, with most clustered in the mid-.40s.

In general, the differences here are not as striking as on some of the other cues. Though the Narrative children do not attain a Narrative (above .50) response range here, they are nevertheless closer to it than the Paradigmatic children. The Paradigmatic children, in turn, are more Paradigmatic than the Narrative children in response to this cue, with scores well toward the bottom of the ratio scale, except for three anomalously high scores in the Narrative range of the .50s. The two groups maintained their distinctness even as they faced each other over much less of a divide than usual.

What Part Of. The total mean was .44, with a range from .22-.55. Among the Paradigmatic children, the

Narrative mean of .47 was second only to the Specific Physical Properties mean of .53 in proximity to the Narrative end of the scale, and the Paradigmatic mean of .27 was squarely in the Paradigmatic range. Although the Narrative children have clearly moved toward the Paradigmatic end of the scale, the closest they got to a Paradigmatic response was their minimum (i.e., most Paradigmatic) score of .45, as compared with the Paradigmatic minimum score of .18.

Summary of Differences Between Narrative and Paradigmatic Children in Response to the Paradigmatic cues

1. In response to Paradigmatic cues, the Paradigmatic children remained distinctly Paradigmatic -- more Paradigmatic than the Narrative children even when many of the members of that group moved into the Paradigmatic response range, as on the Specific Physical Properties and Category cues. On what could be considered the most "Paradigmatic" cue, Knowledge Base (the opposite number of the Narrative Interpretation cue), the differences between the two groups were most marked.

2. While the Paradigmatic cues prompted the Narrative children to move toward the Paradigmatic end

of the scale, no matter how far down the Narrative children moved into the Paradigmatic response range, they were never as Paradigmatic as the Paradigmatic children.

3. The Narrative children were the most Narrative in response to the Specific Physical Properties cue, and closest to the Paradigmatic end of the scale in response to the Category cue.

The Paradigmatic children were most Paradigmatic in response to the Specific Physical Properties and Knowledge Base cues.

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