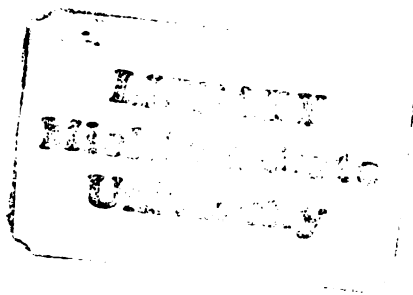




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EVIDENCE FOR THE UTILITY OF THE SCRIPT
CONCEPT AS A MODEL FOR CHILDREN'S
FRIENDSHIP FORMATION

presented by

William Michael Bukowski, Jr.

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EVIDENCE FOR THE UTILITY OF THE SCRIPT
CONCEPT AS A MODEL FOR CHILDREN'S
FRIENDSHIP FORMATION

By

William Michael Bukowski, Jr.

A DISSERTATION

Submitted to
Michigan State University
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ABSTRACT

EVIDENCE FOR THE UTILITY OF THE SCRIPT CONCEPT AS A MODEL FOR CHILDREN'S FRIENDSHIP FORMATION

By

William Michael Bukowski, Jr.

Two studies were conducted to test the hypothesis that the script (Schank and Abelson, 1977) concept would be a useful model for understanding of friendship formation among children. In the first study, the analysis of written descriptions of friendship formation provided by fifth grade boys and girls ($n = 117$) revealed that (a) only propinquity and mutual activity appear to be standard components (i.e., REQUIREMENTS) of friendship formation for children of this age; (b) that information seeking is more likely to precede mutual activity than follow it whereas information giving is more likely to follow mutual activity that precede it; and (c) that popular children relative to their less popular peers are likely to include more components in their descriptions. These results provide partial support for the script concept although the latter finding could be attributed to better verbal skills on the part of popular children.

In the second study, 40 previously unacquainted same-sex pairs of fifth-graders were observed for 25 minutes in a laboratory playroom as they interacted with each other for the first time. Two coding schemes were used to categorize their behavior during this session according to the mutuality of their behavior and the content of their

conversation. The results indicate that information exchange was most likely at the beginning of the interaction, that self-disclosure increased slightly during the session, that girls were more likely than boys to exchange information about school, family, and peers, and that boys tend to exchange information through the use of questions and answers whereas girls are more likely to engage in self disclosure.

These results are discussed in light of the proposed value of "scripts" in social behavior and they are described as being consistent with other studies of acquaintanceship formation among children.

To Melissa, for her love,
support and friendship

and

To my parents, for their encouragement,
affection and foresight

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When New York City had returned to financial wealth in the late 1970's, Mayor Edward Koch claimed that he was responsible for the city's improved fiscal condition. When asked by a reporter whether he actually believed that he was solely responsible for this change, Koch replied that "someone has got to take the credit and it might as well be me." I feel much the same way about the project that is described in this book: I did it. I might as well admit I did. Nevertheless, I recognize that several persons have given me a great deal of assistance on this and other projects I have conducted during graduate school. First, several undergraduates have been a big help, particularly Jim Heidrich, Wendy Kunce, Tom Shazer, Sharon Miller, Gwen Studnicki, and Bob Freeland. I appreciate their patience and persistence. Second, I would like to express my appreciation to students and administration of East Lansing and Holt, Michigan, especially Tom Davis of the Hope Middle School. Third, several graduate students have helped me greatly and have prevented me from doing and thinking many stupid things. I would like to thank Julie Stanley, Judy Meister, Tom Packard, Dan Stults, Roger Buldain, Dewayne Moore, Debbie Hotch, Esther Dienstag, Mike Fitzgerald, Jim Anderson, and many others. Fourth, I would like to thank Ellen Strommen, Wade Horn, and Lucy Rau Ferguson for serving on my committee, Gordon Wood for his support and his tolerance of my computer expenses, Phil Marcus for his faith in me, and Annette Barclay and Suzy Pavick for their service way above and far beyond the call of

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Evidence for the utility of the script concept

as a model for children's friendship formation

INTRODUCTION

Friendships are a universal phenomenon: they are found in all cultures, are enjoyed and experienced by nearly everyone, and serve as an important focus of many persons' lives. For children, the ability to engage in peer relations is regarded as an important developmental milestone and recent research indicates that the quality of a child's experience in the peer group is an excellent predictor of adjustment during adolescence and adulthood. Recently, increasing numbers of social scientists have taken steps toward understanding the processes underlying children's friendships by investigating a variety of factors associated with children's peer experiences. (see Hartup, in press; Asher & Gottman, 1981). These investigations have included behavioral studies (e.g., Newcomb & Brady, 1982; Dodge, 1980; Puttalez & Gottman, 1981; Gottman, 1983), social cognitive investigations (Bigelow, 1975, 1977; Rubin, 1973; Selman, 1980; Berndt, 1983;) and longitudinal investigations of social effectiveness (Coie, Dodge & Brakke, 1983; Bukowski & Newcomb, in press). These investigations have provided information about fundamental issues relating to the stability and consistency of children's peer relations, the behavioral components of friendships, and the structural qualities of children's friendship conceptions.

In spite of the recent increase of empirical interest in children's peer relations, Hartup's (1970) observation that the basic topography of peer interaction needs further exploration is probably still true (c.f., Puttallez and Gottman, 1981). It is likely that this persistent deficiency is due to a theoretical limitation that is intertwined with an empirical shortcoming. Typically, investigators have used a static conceptualization of relationships and consequently have chosen to study relationships as constant phenomena instead of considering them as ongoing experiences that take place over time. Due to this perspective, investigators have typically focused on frequencies of behavior summed across time and they have paid little attention to process oriented issues. Of course, this previous research has been very useful and necessary in that it has led to the identification of several parameters that affect the quality of children's relations. Moreover it has provided a large amount of important information concerning person perception, interpersonal expectations, the important dimensions distinguishing popular and less popular children and children's cognitive bases for their friendship relations. At this time, however, it appears that a more process oriented approach is needed to unravel the sequential aspects of children's friendship relations.

In the investigation reported here, children's impressions of the process of friendship formation were studied by asking children to explain how they become friends with other children. In addition, the

behavioral aspects of this process were examined by observing children during their initial social encounter. These impressions and behaviors were considered with respect to a theoretical model known as script theory (Schank & Abelson, 1977). According to this model, people organize their knowledge of an event in a sequential manner that is arranged according to temporal or causal relations among specific actions or subevents. Moreover, according to this model, persons' impressions of an event ought to fit the behavioral properties of the events themselves. An additional proposal of this theory concerns the goal directedness of behavior and cognitive schemas. That is, both behavior and persons' impressions of behavior are largely determined by a specific goal.

In this paper, theoretical and empirical evidence is presented in support of using the script model as a means of understanding the process of friendship formation among children. The results of two studies are described and discussed in terms of the support they provide for the script concept. Study one was conducted to address the question of whether of whether the script model could be used to describe children's written explanations of how they would become friends with another child. Study two was a behavioral investigation conducted in a laboratory playroom. Pairs children were observed as they interacted interacted with each other for the first time. The results of these two studies are discussed in terms of their relevance to the script concept and with respect to the complementarity between the written descriptions and the behavioral data.

Theoretical Foundations

J. D. Salinger's (1945) novel The Catcher in the Rye begins with the following sentence: "If you really want to hear about it, the first thing you'll probably want to know about is where I was born, and what my lousy childhood was like and how my parents were occupied and all before they had me." (p. 3). With this sentence the book's narrator, Holden Caulfield, a troubled and cynical adolescent, introduces himself to the reader and begins to tell his recollections of his childhood and his experiences at prep school. Holden proceeds to tell the reader quite a lot about himself and he proves to be a rather skilled story teller. In this first sentence, however, Holden appears to be doing something more than just telling the reader about himself; indeed, Holden starts by saying something about the reader. He states that first the reader might want to know something about where he was born, and then something about his childhood and so on. Along with introducing himself to the reader, Holden reveals his impression that readers expect to acquire certain kinds of information and to acquire it in a certain order. In addition, Holden appears to indicate that he considers order of presentation to be an important factor affecting the reader's ability to process information. Eventually, Holden decides not to follow his initial plan, but his original impression may have been a fairly close approximation of what people expect from a story. Indeed, recent research has indicated that people do have expectations of how information will be presented in a story and that these expectations may serve as guides to both story comprehension and the understanding of social behavior.

Investigations of the comprehension and structure of social processes fall beneath the topical heading of social cognition. Flavell (1978) defined social cognition as "any sort of cognition that takes human psychological and social phenomenon as its object. It therefore includes our conceptions ("naive theories"), knowledge, inferences, and observations concerning our own and other persons' feelings, perceptions, motives, intentions, thoughts, personality traits, social interactions, moral and other norms, and numerous other contents of our social world" (p. 43). More recently, Nelson (1981) provided a more succinct definition when she wrote "social cognition is the process of representing knowledge about people and their relationships" (p. 97). The importance of studying social cognition and social processes was indicated many years ago when Epictetus said "Men are disturbed not by things but by the views they take of them."

In the investigation reported here, a particular social cognitive process was studied within the context of children's friendship relations. Children's descriptions of the process of friendship formation were collected and analyzed in order to determine the utility of a model known as script theory as a general framework to describe children's understanding of this social process. These descriptions were then compared to actual behavior observed when two children interacted with each other for the first time. The major thrust of this study is an attempt to uncover not only the usefulness of script theory but to assess

the association between children's scripts and social behavior.

Theoretical foundations in support of this approach to the study of children's understanding of social interaction were taken from three sources: 1. literature related to story grammars and event schemas and their relevance for the understanding of social behavior; 2. the notion of a "script" and its role in the regulation and monitoring of behavior; and 3. metatheoretical perspectives indicated in the work of both psychologists and social philosophers.

Story Grammars and Event Schemas

Cognitive psychologists, especially psycholinguists, have proposed a theoretical structure to account for children's construction and comprehension of stories. These structures, referred to as story grammars, have been defined as the feature of a sample of discourse that gives the sample coherence (Brewer & Lichtenstein, 1980). A number of investigators have provided structural descriptions of story grammars and have tried to identify the role of these grammars in story construction, comprehension and memory. Mandler and Johnson (1977) have represented the underlying structure (i.e., the grammar) of simple stories with a tree diagram that indicates the constituents of a story and the relations among these constituents. Nodes in their conceptual tree structure are representative of either a STATE or an EVENT. They define STATES as information about either internal (i.e., having to do with the person) or external (i.e., having to do with the world) conditions and they define EVENTS as "any occurrence or happening" (p. 115). Children's nursery

rhymes are typically arranged according to a story grammar. Take for instance "Jack and Jill":

Jack and Jill went up the hill to fetch a
pail of water. Jack fell down and broke his
crown and Jill came tumbling after him.

In this story the first sentence would be designated as the STATE and the second would be regarded as the EVENT. In their structural analysis of simple stories they note that typically STATES precede EVENTS. They argue that this order (i.e., STATES before EVENTS) facilitates the comprehension of the EVENTS and the story in general. They propose that by initially describing something about the character or setting it is easier for readers to understand the subsequent events as well as to recognize the logic underlying the sequences within or between the events. That is, they claim that STATE information tells the reader about the actors' goals, needs, desires, and plans and that this information is crucial for the recognition of the logic that holds the action together.

Stein and Glenn (1979) and Stein and Goldman (1981) have proposed a similar structural model. They have postulated that stories consist of "two higher order syntactic categories: SETTING and EPISODE" (1981, p. 301). They note that the SETTING conveys information about the "protagonist and the physical and cultural context of the story" (p. 301) whereas the EPISODE consists of action

change, conflict or resolution. Like Mandler and Johnson (1977), they regard the SETTING as superordinate to the EPISODE and they point to the importance of the contextual information conveyed in the SETTING for the interpretation and comprehension of the EPISODE.

A number of studies have demonstrated the importance of story grammars for comprehension and memory: Information that is arranged in a hierarchical fashion is recalled easier than information that is presented in a nonhierarchical fashion (Thorndyke, 1977) and is more likely to be included in a summary of the story (Rumelhart, 1977); information presented in correct temporal order is better retained than information presented in an incorrect sequence (Mandler, 1978; Stein & Nezworski, 1978). Brewer and Lichtenstein (1980) have noted that "overall these results have been taken to support the position that the structural relations represented in story grammars are used to understand and remember stories." Nevertheless, these same authors (Lichtenstein & Brewer, 1980) have also argued that this form of organization is not restricted to the comprehension of stories presented in prose. They have proposed and demonstrated that people use a schema much like that of a story grammar in their organization of information presented on video tape. In a series of five studies (reported in Lichtenstein & Brewer, 1980) they focused on the question of whether story grammars might be simply a particular kind of structure they call "event schemas." They define an event schema as a set of behaviors or processes organized according to a plan of action or designed according to accomplish a goal. The results of their

investigations indicate that: 1. people can generally agree upon the structure of an event; 2. that goal direction is an important feature for memory and encoding; 3. that temporal order is a key parameter for comprehension; 4. that the temporal or plan oriented structures of information are the most salient aspects of event information. Most importantly, their studies, when considered in conjunction with investigations of story grammars, indicate that hierarchical structures may play a large role in persons' organization of information regardless of its form of presentation (e.g., prose or video). In fact, Lichtenstein & Brewer (1980) go so far as to say that story comprehension or story construction has little to do with literary skill or knowledge of linguistic conventions but has everything to do with "knowledge of the structure of naturally occurring sequences of behavioral events" (p. 442). A similar conclusion was reached by Baggett (1979).

Event Schemas and Social Understanding

It appears that the event schema concept possesses some validity as a model for understanding persons' comprehension and memory of information obtained from a variety of media. Is there reason to believe, however, that people use schemas in their understanding and organization of actual behavior and interpersonal interaction? This question was recently addressed by Stein and Goldman (1981) and they argue that the answer is decidedly affirmative. They note that in the comprehension of stories one is

called upon to perform many of the same tasks required during actual social interaction: making inferences about characters or other people; recognizing individuals' goals or intentions; comprehending or assuming other persons' perspectives; and developing expectations of persons' subsequent behavior. Stated briefly, Stein and Goldman point to the need for people to engage in social problem solving in their comprehension of stories and in their day-to-day social behavior. Drawing on a number of theoretical perspectives (DeCharms, 1968; Piaget, 1968; Heider, 1958), Stein and Goldman (1981) state that the ability to understand the behavior of another person depends on the ability of the "observer to understand the (person's) plans and actions" (p. 300). In particular, they stress the importance of a person's ability to make inferences about others and to develop expectations about others. Their assertion, then, is that schemas are valuable for the comprehension of stories as well as for the understanding of social behavior. Their conclusion is an extension of Lichtenstein and Brewer (1980) who emphasized the pervasiveness of the schema notion indicating its relevance for a broad array of events regardless of the manner in which information about the event is presented or obtained.

Script Theory

So far, the discussion of the schema process has been focused almost exclusively on the process of comprehension. Another conceptualization of the schema notion, however, includes an emphasis

on the role of schemas in the regulation and monitoring of behavior. This conceptualization, referred to as script theory, has been advanced by both social and cognitive psychologists as well as by people from the field of artificial intelligence (Schank & Abelson, 1977; Nelson, 1981; Searle, 1981, 1982; Tomkins, 1980). As Abelson (1981) has noted, scripts "embody most of the conceptual issues raised by other types of schemas, yet, they are simple and well structured enough to permit more focused analysis and experimentation" (p. 715). Indeed, scripts are a variation of the schema concept: they specify a sequence that reflects the causal or temporal relations among the actions (Schank & Abelson, 1977). Schank and Abelson also argue that people use scripts for both comprehension and in the regulation of their behavior. Moreover, they have hypothesized that scripts are "activated" in certain contexts, such as going to a restaurant or a birthday party, making a campfire or a cake or taking an afternoon nap in school. That is, they are goal dependent and they are used when they are called upon by particular demand, needs or situations.

Nelson (1981) has pointed to the value of the script concept as a useful framework from which to study children's conceptions of relationships and the routine events that they engage in. She has noted that the value of scripts lies in the dynamic structure of their composition and in the flexibility that coexists with their very concrete nature. This flexibility and structure is afforded by the inclusion of both obligatory actions (REQUIREMENTS) and optional actions (SLOTS). An example of a script for a particular context will

illustrate the concrete nature of a script as well as indicate the distinction between REQUIREMENTS and SLOTS. Consider a "going to a restaurant" script:

First you go up to the door and go in (REQUIREMENT)
 Next you wait for the hostess to bring you to a table
 (SLOT)
 and then you can sit down. (REQUIREMENT)
 Then you look at the menu (REQUIREMENT)
 and order your meal. (REQUIREMENT)
 Next you will have an appetizer (SLOT)
 and wait for the meal. (REQUIREMENT)
 When the meal arrives, you will eat it and talk to
 your companions. (REQUIREMENTS)
 When this part is finished you will order desert
 (SLOT)
 and after eating it (SLOT)
 you pay your bill and leave. (REQUIREMENT)

This simple script is representative of a young child's (age 7) description of what happens when people go to a restaurant (Nelson, 1981). Because of the inclusion of both REQUIREMENTS and SLOTS, scripts are sufficiently rigid so as to facilitate accurate and reliable expectations of events or experiences while having adequate flexibility to permit variations among people or settings (Nelson,

1981). The importance of scripts for actual behavior is that they are proposed to "govern a body of inferences" about what events will occur and the order of their occurrence" (Abelson, 1981). Schank and Abelson (1977) claim that the value of scripts lies in the opportunities they offer for prediction. Because of the opportunities, for better and more reliable prediction, they posit that people will engage in more efficient and productive behavioral selection and evaluation.

Metatheoretical Foundations

In short, scripts are purported to facilitate planning as well as comprehension. Clearly, the script model is predicated heavily on the notion that individuals play an important role in the planning and execution of their actions. This conceptualization of the role of the individual is consistent with broad theoretical descriptions of development. For example, drawing upon the TOTE (Test-Operate-Test-Evaluate) model proposed by Miller, Galanter and Pribram (1960), Forbes and Lubin (1979) have pointed to the utility of the script model as a means of conceptualizing how people plan their behavior according to their needs and environment and how they monitor the effectiveness of their actions and determine the need for further action. They note that in both the cybernetic TOTE model and in Schank and Abelson's description of how people use scripts there is a strong appreciation of the intentional or planful character of human

action. The recognition of this goal oriented aspect of human behavior has been previously emphasized in the work of both theoreticl psychologists (Werner, 1961; Piaget, 1952; Bruner, 1971) and social philosophers (Peters, 1958; Schwayder, 1965; Harre', 1974). These writers have stressed the importance of regarding individuals as agents who play a central role in the conduct of their behavioral interaction. This notion of the individual as an active organizer and constructor of the environment and of behavior is consistent with the organismic approach to human development. Jonas Langer (1969), in a discussion of the organismic model has cited the importance of considering the individual's behavior and development as part of a self directed process.

RELEVANT EMPIRICAL INVESTIGATIONS

If scripts possess some value for understanding social interaction, then empirical investigations of social behavior should yield evidence that this form of organization facilitates social relations. A number of empirical studies can be cited as evidence in support of this argument. Support will be garnered from three sources: 1. studies of social skill training programs; 2. studies of friendship formation among children; and 3. social cognitive and behavioral studies of children, especially children representing different levels of social effectiveness. In some of these investigations the results have already been interpreted in light of a

script framework, whereas in other studies, the results will be reinterpreted to indicate the salience of the script model.

Social Skill Training Programs

The results of at least two examinations of social skill training programs can be interpreted to indicate that scripts facilitate social behavior. In a well known study conducted by O'Connor (1968), children who interacted infrequently with their peers were shown a film that contained eleven modeling episodes designed to increase the children's level of interaction with their peers. The film was accompanied by a narration that was focused on the filmed characters' intentions and the positive consequences of their behavior. It also included a description of the characters' ongoing behavior. O'Connor reported that the subjects who saw this film and heard the narration become more interpersonally active than children who saw a film about children and animals or those who saw nothing. Asher and Renshaw (1981) reported that other investigators who have used this film have reported "significant increases in the children's rates of interaction immediately following viewing the film and the data with regard to maintainence are generally positive" (p. 282). They noted that this success rate compares favorably with the results of studies that used films without a narration or used a narration that did not include instructional content regarding acts and consequences like that of the O'Connor film. Stein and Goldman expressed their impression of the reason for the success of this film

when they wrote "the verbal narration makes explicit the goals, thoughts and affective relations of the characters...and the causal connections between these states" (p. 306). It would be difficult to provide a better description of what a script is supposed to do than what they said about the function of this film's narration. It is conceivable then that the narration of the O'Connor film served to provide a script for the children watching the film.

In another skill training program, Ladd (1981) selected 36 third grade children with low peer acceptance and placed each child in one of three experimental conditions: 1. a treatment condition; 2. an attention control condition; and 3. a no treatment control group. The subjects in the treatment condition were encouraged to "self-evaluate the social skill performance and peer responses " (p.172). Ladd reported that children in this condition were taught to monitor the effects of their behavior and to regulate their behavior according to their expectations of peer responses. For example, the children were encouraged to think of reasons to explain an undesirable outcome in an actual play session and to adjust their behavior accordingly. Ladd reported that children who underwent this type of treatment become more popular than children in either of the other two conditions in spite of the similarity among these groups before the study began. Although this study was not designed as a study of the role of scripts in social interaction, its results can be interpreted as support for the notion that script knowledge facilitates social interaction. That is, it is conceivable that the subjects' increased

recognition of the association between their own behavior and feelings and the behavior and feelings of others led to an improvement in their social behavior.

Scripts and Social Behavior

David Forbes and David Lubin have directly addressed the question of whether children who differ in their scripts will behave differently with their peers. In a number of unpublished studies (Forbes & Lubin, 1980, 1981) conducted in their laboratory at Harvard University, they have observed young (preschool) children interacting with their peers and conducted interviews with these same children in an attempt to assess the children's script knowledge. The interview consisted of a group of incomplete stories that the child was asked to complete. Forbes and Lubin (1981) were especially concerned with two aspects of their scripts: unity and flexibility. Unity was the extent to which the child described the individual parts of the script as forming an integrated process. Flexibility was the extent to which the child's script allowed for individual differences between other children and situations. Children whose scripts were both unified and flexible were designated as high in script knowledge whereas those whose descriptions were rigid, diffuse or both were designated as low in script knowledge. Forbes and Lubin (1981) reported that children who were designated as low in script knowledge were more likely to

spend time alone than children who were either high or average in script knowledge. They argued that children who lack the ability to understand the continuity in other people's behavior while still maintaining some flexibility will experience difficulty planning their own behavior and becoming engaged with others. Forbes and Lubin described these low script children as "out of touch" with their peers and they noted that their parents reported that at home or in their neighborhoods these children usually played with younger children. Conversely, they reported that the children who were high in script knowledge were the ones who were most actively involved with their peers and, according to parental report, these children had a preference for older playmates. They interpreted this preference for older playmates as indicating that children with well developed scripts are capable of functioning in social environments that are more sophisticated than that of their own age group. On the other hand, it appears that children who have little script knowledge have trouble functioning in the social environment appropriate for their age level. They claim that this differential level of functioning may be due to the accurate and reliable inferences that children with high script knowledge can make whereas children without much script knowledge are able to function in situations where they are called upon to make few inferences.

Studies of Peer Interaction

Behavioral studies of children's interactions with their peers also provide results that indicate the usefulness of the script model. In one investigation, Putaliez and Gottman (1981) examined the way individual children became involved in the ongoing interaction of two other children. They observed 60 second and third grade children in a laboratory setting. Children were designated as either popular or unpopular according to the number of times they were nominated by their classmates as a "friend." The children were assigned to triads that consisted of either a pair of popular or unpopular children and an additional child who was either popular or unpopular. This design provided a fully crossed 2 X 2 factorial (i.e., two levels of dyad popularity and two level of popularity for the third child). The children in the dyad were instructed to play a game together in the laboratory facility. After they began the game the experimenter explained the rules to the third child prior to bringing this child into the room. The dyad played for ten uninterrupted minutes before the third child entered. When the third child (i.e., the entry child) entered the laboratory playroom no specific direction were given. Putaliez and Gottman were interested in determining how the entry child would enter the ongoing interaction and they wanted to discover whether the unpopular child would try to enter the ongoing group in a different manner than the popular children. They reported that overall it appeared that children who successfully entered the ongoing behavior were those who were able to determine the frame of reference

common to the group members (i.e., their activities and goals) and then to establish himself or herself as sharing in this activity. That is, children who entered the group successfully were able to assess the nature and direction of the ongoing behavior and become actively involved in it. In particular, they noted that unpopular children, more so than popular children, disagreed with the two children in the dyad, tried to change the direction of the dyadic behavior or simply tried to draw attention to themselves. Overall, these children (i.e., the unpopular children) were less successful at becoming engaged in the ongoing behavior. In their discussion of these findings, Putallaz and Gottman noted that recognizing and understanding the frame of reference of a particular pattern of interaction is probably an important determinant of a child's success at becoming part of that interaction.

In a more recent investigation, Gottman (1983) studied the interaction of three- to nine- year old children as they became friends. He was specifically interested in examining the sequential aspects of their interaction. He followed 18 unacquainted dyads of children playing in their homes for three sessions. His objective was to "pinpoint a set of processes that account for variation in unacquainted children's progress toward friendship" (1983, p. 1). He reported that among pairs of children who "hit it off" (i.e., became friends) their interaction typically began with information exchange, followed by the establishment of common ground activities and then self-disclosure. It appears, then, that there is a specific pattern

in the interaction of children as they become friends. Perhaps most important for the purposes of the current investigation, the sequence of behavior reported by Gottman appears to fit the schema structures reported earlier. That is, information search appears to precede mutual activity which, in turn, appears to precede self disclosure just as STATES (or SETTINGS) precede EVENTS (or EPISODES). Moreover, this process appears to include at least three standard components that could be construed to be what Schank and Abelson would refer to as REQUIREMENTS. The order of activities that he observed is also consistent with the logic of a story grammar. For example, it is conceivable that information search may be an important prerequisite for mutual activity in order that the people engaged in the activity are able to develop inferences or expectations of the other individual and thus insure a more agreeable interaction.

Children's Descriptions of Strategies for Friendship

Studies of children's verbal descriptions of how to make friends also provide evidence of a sequential structure to the process of friendship formation. These studies also point to the differences between the friendship strategies of popular and unpopular children. For example, Gottman, Gonso and Rasmussen (1975) studied the relationship between popularity and knowledge of how to make friends among 198 third and fourth grade children. They assessed each child's popularity by administering a free-choice sociometric questionnaire. Knowledge of friendship was measured through individual interviews

with each child. The children were asked to pretend that they wanted to become a friend of a child they had just met. The experimenter asked the children to explain how they would go about doing this. The items included in their answers were coded according to a scoring system and a different number of points was given for different types of answers. Specifically, the subjects were given points for referring to particular behaviors in the following manner: 1. greeting- one point; 2. asking information- two points; 3. extending inclusion- three points; and 4. giving information- four points. Gottman et al. (1975) reported that this scheme was sufficient for the classification of the children's responses and, most importantly, children referred to these behaviors in the order in which they are listed here. They also reported that popular children received higher scores than unpopular children. In their discussion of these findings they claimed that popular children were more knowledgeable about making friends than unpopular children. Because the scoring system was dependent on both content and the sequential nature of the responses it is conceivable that these results could be interpreted as an indication that popular children have different scripts for friendship formation than their less popular peers. Taken together with the results of Gottman's recent behavioral study the results of the Gottman et. al. study indicate that there may be a certain sequence to the behavioral subcomponents of friendship formation. Moreover, it appears that the sequence of these actions is consistent with what would be expected in light of the concept of event schemas.

Summary and Hypotheses

Evidence from theory and research related to event schemas, the script concept and children's social relations has been presented. In light of this evidence, the current investigation was designed to address the following hypotheses:

1. It was predicted that children's descriptions of how they become friends with other children would fit a script model. Specifically, it is expected that:
 1. There will be standard as well as optional actions included in children's descriptions of this process.
 2. The presentation of actions will be order dependent; that is, some actions will be more likely to appear in one part of the description than another.
 3. In these descriptions, information seeking will be more likely to precede mutual activity than follow it whereas information giving will be more likely to follow mutual activity than precede it.
2. It was further predicted that popular children would have better organized scripts than their less popular peers. The better organization of these scripts will be manifested in the following ways:
 1. Popular children will include more actions in their scripts;
 2. popular children will cite a broader range of activities in their scripts;
 3. Popular children will be more likely than others to place information seeking before action and to place information giving after action.
3. It was predicted that the behavior of children during their initial interaction would resemble a script format. That is, there will be a standard order of actions which would

resemble the written descriptions of friendship formation.

4. It was also predicted that this script-like organization to the behavioral data would be most pronounced when the children were specifically given a goal of "making friends."

This investigation consists of two studies. Study One is an analysis of children's written descriptions of how they would become friends with another boy or girl. In Study Two, children were observed in a laboratory playroom as they interacted with each other for the first time. Fifth-grade children served as subjects in each of these studies. Study One is described first followed by a presentation of the results and a brief discussion. Study 2 is then presented in the same manner followed by a discussion of the complete investigation.

STUDY ONE

Method

Subjects

Fifth-grade boys (n=61) and girls (n=56) from five elementary schools in a suburban midwestern community were subjects in this study. The mean age of the subjects was 11 years, 2 months. Over 75% of the children in the classrooms chosen for this study were given permission by their parents to participate.

Procedures

The subjects were met in their classrooms at a time that was convenient for the investigator and the classroom teacher. At these meetings the investigator was assisted by a graduate and an undergraduate student. Each of the participants was asked to complete a sociometric questionnaire and to answer a question about friendship formation. The sociometric questionnaire consisted of two sections. First, the subjects were asked to choose from among the same-sex members of their school grade the three persons whom they thought of as their best friends. Second, they were asked to choose from among this same group of children the three persons whom they would not want to play with. These answers were used in the construction of four sociometric variables. First, the

number of times that an individual child was chosen as a best friend served as the child's acceptance score. Second, the number of times that a child was chosen as an undesirable playmate was used as a rejection score. These two scores were standardized (i.e., transformed into z-scores) according to the mean and standard deviation of the scores from the same-sex members of their school grade. These standardized scores were used in the construction of the third and fourth scores. The third score was created by simply subtracting a child's rejection score from the acceptance score. The difference was then standardized by gender and school. This standardized score was referred to as preference and served as a measure of a child's relative likeableness. The fourth score was the sum of acceptance and rejection. The sum was then standardized by gender and school. This standardized score was referred to as impact and it provided a measure of a child's visibility within the peer group.

Children's descriptions of friendship formation were collected by presenting the children with a situation and a question and then asking them to write a response to the question. The situation and question were as follows: "Let's pretend there is a girl named Linda who is the same age as yourself. She just moved into a house in your neighborhood. How would you try to become her friend? (Write as much as you can to answer this question).1 It took the subjects approximately 25 minutes to complete these questions.

1This was the question for girls. The question for boys was exactly the same except the name "Tom" was used instead of "Linda."

The Coding System

The children's responses were coded into eight mutually exclusive and exhaustive categories by two undergraduate assistants who were blind to the purpose of the study. The eight categories included in this scheme were: introductions/propinquity; information search; information; more introductions; ego reinforcement; play/activity involvement; friendship bid; other/miscellaneous. The coders were instructed how to use the coding scheme and were given 15 children's responses to code as part of their training. For this training different responses were used with each of the two coders. After they completed the first ten answers, the investigator compared their classifications to his own. The percent of agreement was computed and the disagreements were noted. These disagreements were discussed with the coders and they were given additional instruction with the coding scheme. With one coder, the initial percent agreement was over 90%; with the second coder the percent agreement was only 78%. After the completion of the remaining five training responses the percent agreement was computed again. At this time both coders agreed with the investigator on more than 90% of the items. Eighty-five answers were assigned to each coder. Twenty-five answers were assigned to both coders in order that inter-coder reliability could be assessed. Inasmuch as these are nominal data, the proper procedure for computing reliability is Cohen's Kappa (Cohen, 1960). This procedure provides a reliability estimate based upon both percent agreement and the amount of agreement that is expected by chance.

The investigator considered the Kappa procedure appropriate and adequate in this situation because of the nominal nature of the coding scheme. In as much as the purpose of assessing reliability was to determine the extent to which the two coders classified the statements in the same manner the Kappa computation is appropriate procedure because it is focused on the coding of particular statements. Had the investigator been interested in the agreement as to the number of times that a code was used (i.e., on agreement of frequency of occurrence only) then alternative strategies would have been entertained (e.g., Cronbach, 1970; Cronbach, Gleser, Nanda, & Rajaratnam, 1972). For the present data the percent agreement expected by chance is .16 and the Kappa value is .78, considerably higher than the .6 minimum recommended by Hartman (1977):

Results

Response Frequencies

In the first analysis of these data the number of times that items from particular categories were used in the subjects responses served as an index of the items role as either a "REQUIREMENT" or a "SLOT" in the subjects' scripts (Schank & Abelson, 1977). Lichtenstein and Brewer (1980) have previously used 75% as a criterion for the designation of items as either standard components or options in an event schema. If an item was used by at least 75% of the subjects they regarded it as a standard component whereas those that occurred less frequently were regarded as optional. Only two of the categories used

here (introduction/propinquity and mutual activity/play) were included in the responses of at least 75% of the subjects. The total number of times that responses from each of the categories was used and the number of subjects who used each is presented in Table 1.

Table 1

Response Frequencies By Category

	<u>Na</u>	<u>Total^b</u>
Introduction/Propinquity	88	107
Other Introductions	28	32
Information Search	32	52
Information Giving	35	38
Ego Reinforcement	45	52
Mutual Activity	94	137
Friendship Bid/Statement	25	27

aThis figure represents the number of subjects who used the category at least once.

bThis figure represents the total frequency of use for the category

Order of Use

Next, the order in which the different categories were used was investigated. The number of times that each type of response was used as the first, second, third, fourth or fifth items in the subjects responses was computed. The results are shown in Table 2 in three forms: 1. the absolute frequency of this category for each of the five positions; 2. a percent based on the number of times the category is used at each time relative to the number of items used overall in each position; and 3. the number of times each category is used relative to the number of times it is used overall among the first responses for each subjects.

Inspection of this table will reveal the following: First, introduction/propinquity frequency drops markedly from the first response to the fifth. Second, mutual activity is used rarely as the first item but is used very often throughout the rest of the response, particularly as the second response. Three, information giving and the more introduction categories are used more so at the end of the responses than at the beginning. Four, information searching increases in frequency and then decreases. Five, ego reinforcement and friendship statements are each used with roughly the same frequency in the beginning, middle and ends of the subjects' responses. Chi² analyses were conducted to determine whether some of the response categories were more likely to be found in one order position than another. Separate analyses were conducted for each response category. Four of the chi² computations provided significant results (i.e., $p < .05$, with four degrees of freedom). That is, of the seven categories, four were more likely to be

Table 2

Frequency of Each Category by Order

<u>Category</u>	<u>Order</u>				
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Intro/Propinquity	72/61/67	26/22/24	04/04/04	03/04/03	02/08/02
Other Introductions	01/01/03	06/05/18	09/09/28	11/14/34	05/11/15
Information Search	06/05/12	13/11/25	20/20/38	08/10/16	05/11/10
Information Giving	04/03/11	06/05/16	10/10/26	11/14/29	07/15/18
Ego Reinforcement	18/15/34	09/08/17	14/14/26	06/08/11	05/11/10
Mutual Activity	12/10/09	48/42/35	35/35/25	26/33/18	16/35/11
Friend Bid/State	03/25/11	04/04/15	08/08/30	09/11/33	03/06/11
Other	01/01/08	02/02/16	03/03/24	04/05/33	02/04/16

Note. The first figure in each column represents the number of times that category appeared in that order; the second figure is the percent of the total number of responses in that order comprised by the particular category; the third figure is the percent of the total for the particular category comprised by the number at that particular order.

found in one position than another. Specifically, introductions/proximity, more introductions, information search, and play appear to depend partially on order as a determinant of their use. The χ^2 values for these categories were 167.2, 11.4, 31.3 and 30.5, respectively, all with a probability of less than .02.

Order of Presentation for Pairs of Items

In the next analysis the order in which specific pairs of items were used was examined. Two pairs were studied: 1. Information search and mutual activity; and 2. self disclosure and mutual activity. Only those subjects who used both items in these pairs could be used in this analysis. For the first analysis, there were 26 subjects who mentioned both mutual activity and information giving. In light of the results from Gottman's (1983) behavioral investigation, it was expected that information search would be mentioned before mutual activity. The χ^2 procedure was used to determine whether information search was more likely to occur before mutual activity than after it. As described in Runyon and Haber (1971), in a situation where there is only one degree of freedom the chi square distribution is a poor approximation of the normal distribution. In order that the chi square distribution would be a closer approximation of the normal distribution .5 was subtracted from the absolute value of the difference between the observed and expected frequency for each cell. This procedure is described in Runyard and Haber (1971). Of the 26 subjects considered in this computation, 18 mentioned information search before mutual activity and eight mentioned

it after mutual activity. The χ^2 for these data was 3.115, $p < .075$. This finding was regarded as marginally significant.

Thirty subjects mentioned both information giving and mutual activity. χ^2 was computed to determine whether information giving was more likely to follow mutual activity than precede it. Twenty-one subjects mentioned mutual activity before information giving whereas only nine mentioned information giving before mutual activity. The χ^2 value for these data was 4.033, $p < .05$.

Gender Differences

Four sets of analyses were conducted to study the differences between the responses of boys and girls. First, the number of actions mentioned by each subject was used as the dependent measure in an analysis of variance with gender as the sole independent measure. The results indicated significant differences between boys and girls, $F(1,115)=14.306$, $p < .001$, with the girls ($M=4.4$) citing a greater number of actions than the boys ($M=3.5$). Next, the differential use of particular response categories was examined by computing the number of times that each subject used each individual category. These totals were subjected to a multivariate analysis of variance. In this analysis, there were seven dependent variables (i.e., all the categories but "other") and only one independent variable (i.e., gender). The results of the MANOVA computation revealed that there were differences between the responses of the boys and girls, $F(7,109)=2.57$, $p < .02$. Univariate

analyses of variance were then conducted to identify the sources of these differences. Significant differences were found for two of the categories (ego reinforcement, $F(1,115)=4.26$, $p<.05$, and mutual play, $F(1,115)=6.13$, $p<.01$) and a marginally significant difference was found for a third category (information giving, $F(1,115)=2.4$, $p<.10$). For each of these categories girls made more responses than boys (for ego reinforcement $M_s = .58$ for girls and $.34$ for boys; for mutual activity, $M_s = 1.46$ for girls and 1.0 for boys; for information giving $M_s = .48$ for girls and $.29$ for boys).

The second set of analyses was conducted to determine whether boys and girls used the same number of action types in their answers. The number of categories referred to by each subject was computed and the sum was used as the dependent measure in analysis of variance. The results indicated that boys referred to fewer categories than girls, $F(1,115)=9.557$, $p<.002$, $M_s = 3.1$ and 2.6 for girls and boys, respectively.

The focus of the third and fourth sets of analyses was directed toward the differences in the order of responses given for boys and girls. In terms of the order in which the categories were used boys and girls were nearly identical to one another. In regard to the placement of information search, mutual activity and information disclosure there were also no differences between boys and girls.

Sociometric Differences

The final group of analyses was conducted to assess the differences between children representing different levels of sociometric status. Pearson product moment correlations were computed between the four sociometric scores and the number of responses that the subjects gave and the number of categories they cited. Acceptance, rejection, and preference were significantly related ($p < .05$) to the number of items that the subjects included in their responses ($r = .17, -.15, .18$, respectively) and to the number of categories that they cited ($r = .18, -.17, .20$, respectively). Impact was not significantly related to any of the response variables. In regard to individual categories, these same scores (i.e., acceptance, rejection and preference) were significantly related to the subjects' use of information giving ($r = .2, -.2, .22$, respectively) and ego reinforcement ($r = .14, -.17, .17$, respectively). Again, there were no significant relationships for impact.

The final analysis was conducted to determine whether popular children were more likely than other children to place information search before mutual play than after it and to place information giving after mutual play than before it. Subjects were assigned to sociometric groups according to a procedure described by Newcomb and Bukowski (in press). The .10 level of probability was used for the group assignments. Of the 26 children who mentioned mutual play and information search, only 1 was from the group known as "populars" (i.e., children who have many friends

and are rarely nominated as an undesirable playmate), two were in the rejected group, and three were from the isolate group. The remaining children were from the average group. Because such a small number of children were from the non-average groups five of the eight cells in the 4 X 2 table (i.e., order by group) had only 1 or no persons in it. Because of this low representation in some of the cells an analysis of the data was abandoned.

This same problem was encountered when the data related to the order of mutual play and information giving were considered. Again, analyses of the data were abandoned because of the low representation in several of the cells. Nevertheless, inspection of the raw data indicated that subjects in the the four different groups presented theses items in approximately the same order.

Discussion

These results confirm five of the six hypotheses proposed for this study. The sixth hypothesis could not be adequately addressed because of the unavailability of a sufficient number of subjects. Specifically, it appears that: 1. some actions are more likely to be found at one stage of the subjects' descriptions than at another part; 2. the order in which informaton giving, information searching and mutual play are present relative to one another is not entirely dependent on chance; 3. there are at least two standard components (introductions/propinquity and mutual activity) to children's

descriptions of friendship formation; 4. popular children are likely to include more actions in their descriptions than their less popular peers; and 5. popular children tend to cite a greater number of category types, too.

The final two findings suggest that popular children have scripts that are more extensive and more sophisticated than those of their peers. It is conceivable that this greater sophistication may facilitate and enhance the quality of popular children's social relations and allow them to interact in agreeable manners with their peers. This interpretation bears a resemblance to Roistacher's (1973) micro-economic model of children's friendship relations. He argued that popular children attained their social success by simply recognizing and taking advantage of the social opportunities available to them. Conversely, these results may be indicative of a social cognitive deficit among less popular children. Their relatively less sophisticated scripts may make it difficult for them develop expectations of others and consequently limit their social interaction. This notion of a social cognitive deficit among children of low popularity status has been previously discussed by Asher and Renshaw (1981) and Ladd and Mize (1983). In each of these articles, the authors specifically suggest that recognizing the direction in the behavior of other individuals may be especially problematic for unpopular children. There is also empirical support for this argument. Putallaz, (in press) has recently reported that children who have difficulty entering into the ongoing behavior of a dyad of children of their own age also appear to have trouble making inferences

about the other children's behavior. She also reported that it is these same children who eventually have trouble making friends in school and they appear to be less popular in school than children who exhibit superior skills at making social inferences. Renshaw and Asher (in press) have also recently described the results of a study designed to examine children's goals and strategies in social interaction. They concluded that less popular children had different goals in social contexts than their more popular peers and these children also recommended the use of differentiated strategies in social situation. Renshaw (in press) speculated that the difference in strategies may be a function of the of the differences in their goals.

The findings pertaining to the overall content and organization of the children's descriptions are consistent with the results of the Gottman studies (Gottman, 1975, 1983; Putaliez and Gottman, 1981) and with what would be expected based on the concept of event schemas. That is, SETTING information such as introductions, establishment of propinquity and information search appears at the beginning of descriptions, typically before play. Moreover, the direction of the actions seems to go from superficial (e.g., introductions and information search) to more personal activities (e.g., mutual activity and information giving).

Overall, these results are taken as support for the script model. Nevertheless, it is important to note that there is a considerable amount of variance in these data that has not been explained by the analyses reported here.

A second study was undertaken to further explore the organization of the acquaintanceship process. A major difference between the first and second studies was the unit of analysis. In the first study it was the written responses of individual children. In the second study, it was the behavior of dyads of children. Of particular interest in the second study were three issues: 1. the different kinds of behavior that are observed at different times during two children's initial encounter; 2. the manner in which children obtained information about each other; and 3. whether the specification of a particular goal would affect the pattern and nature of children's behavior.

STUDY TWO

Method

Subjects

The participants in this study were 40 boys and 40 girls from six fifth grade classrooms in six schools. These children were randomly chosen from among 179 children who had received parental permission to take part in the study. Fifty-nine of these subjects had also participated in Study 1. The sociometric scores of the subjects who were chosen to participate were compared with the scores of the the other potential subjects in order to determine whether they constituted an unbiased representation of the entire sample. An analysis of variance revealed that the participants did not differ from the non-participants on any of the four sociometric values described earlier. The subjects' parents were contacted on the telephone in order to schedule a convenient time for them to bring their child to the laboratory.

Procedures

Children were randomly paired with a same-sex child from a different school. This provided 20 pairs of boys and 20 pairs of girls. Initially parents had been asked whether their children knew the child whom they would be paired with in order to ensure that this meeting would

be the children's first encounter. When the subjects arrived at the laboratory they were greeted by the project staff (i.e., the investigator and some undergraduate assistants) and escorted to separate waiting rooms. Caution was used to prevent the subjects from meeting or interacting before the session began. The subjects were brought individually to the playroom where they were greeted by the investigator. He asked them to enter the playroom and gave them one of two sets of instructions. One half of the subjects (10 pairs of boys and ten pairs of girls) were told "What we would like you to do is to play in this room for 30 minutes. When 30 minutes are over we will come back and then we will ask you some question." The other subjects (i.e., the other 10 pairs of boys and the other 10 pairs of girls) were told "What we would like you to do is to play in this room for 30 minutes. During this time we really want you to become friends with each other. When 30 minutes are over we will come back and then we will ask you some questions. In the mean time, we really want you to become friends." The difference in the instructions was intended as an experimental manipulation whose purpose was to alter the subjects' goal during the interaction. In this study the experimental manipulation and gender constituted two factors (each with two levels) providing a fully crossed 2 X 2 design.

The playroom was approximately 3m x 5m and equipped with two tables, four chairs, a number of toys and games, puzzles, drawing materials and a small basketball hoop that was mounted above the entranceway. One-way mirrors were embedded in the wall surrounding the room. During the 30 minute session, a Sony Betamax video camera placed

behind one of the mirrors was used to record the subjects' interaction. A microphone that was placed in the room was used to record the audio portion of their behavior.

At the end of the thirty minutes, the investigator returned to the playroom and the children were escorted to separate interview rooms. Here they were asked if they were aware that their behavior was being recorded and if they would allow the investigator to keep the recording. Also, as part of a check on the experimental manipulation, the subjects were asked to repeat the instructions they were given at the beginning of the session. All of the children gave the investigator their permission to use the recording and all the subjects but 2 correctly recalled the instructions.

Coding of Behaviors

Two coding schemes were developed for this study. The first scheme was designed as a "macro" scheme that was focused on broad categories of behavior whereas the second scheme was designed to capture the specific components of the subjects' information exchange.

Coding scheme In the first coding system, there were two categories (conversation and action) included in each coding classification. There were eight levels of the action category (mutual competitive play, mutual cooperative play, solitary play, exploration, one child explore/one child play, no activity, one child plays/one child

does nothing, one child explores/one child does nothing. Conversation and nonconversation were the only levels for the conversation categories. Information about what the dyad was doing and whether or not they were talking was included in each code. Two undergraduate coders individually watched the video tape and coded the children's behavior at eight second intervals. The coders recorded their classifications in the memory of a microprocessor designed for event recording. The event recorder also informed the coder when each eight second epoch had ended. Twenty seven tapes were assigned to each coder. The tapes that were assigned to both coders were used to determine inter-rater reliability. Again, because of the nominal character of the data Cohen's kappa was used as the reliability measure. For these data, the percent agreement for the two coders was .86 and the percent of chance agreement was .26. Consequently, kappa was .79.

For each dyad, frequencies for each code were computed for five blocks of time. Each block of time included 32 eight second epochs. In each block, then, there were five minutes and four seconds of time. The frequencies for each coding category summed across the five blocks is presented in Table 3. As illustrated in this table, the interaction of these children was dominated by cooperative play and they appeared to spend more time in conversation than they spent without talking. In order to determine how the interaction of the subjects changed across the five time blocks and to assess the effects of the experimental manipulation and those of gender, four analyses were conducted.

Table 3
Frequencies of Each Code Summed Across Blocks

<u>Category</u>	<u>With</u> <u>Conversation</u>	<u>Without</u> <u>Conversation</u>	<u>Total</u>
Play-Compete	2.6	1.8	4.4
Play-Cooperate	67.6	64.3	131.2
Solitary Play	12.4	10.2	22.6
Explore	6.4	2.6	8.9
One play/One explore	3.8	2.0	5.9
No Activity	6.1	1.3	7.4
One Play/One Nothing	5.07	1.9	7.0
One Explore/One Nothing	0.9	0.7	1.6

Note: Each unit represents one eight second epoch.

In the first analysis the dependent measure was the amount of mutual behavior. Mutual behavior was the sum of the mutual play, mutual explore, and no activity conversation codes. A 2 X 2 X 5 (gender by condition by time block) analysis of variance revealed no significant (i.e., $p < .05$) main effects and only one significant interaction (time by gender, $F(4,156) = 4.25$, $p < .01$). For the boys the mean number of epochs coded as mutual behavior for times blocks 1,2,3,4, and 5 were 32.8, 34.1, 32.2, 30.3, and 26.0, respectively, whereas for the girls the mean number of epochs was 29.7, 29.1, 28.7, 28.6, and 30.7, respectively. Next, the

exact same type of analysis (i.e., a 2 X 2 X 5 analysis of variance) was conducted with the amount of conversation as the dependent measure. This analysis revealed no significant main effects nor interactions. In the final analysis, a more specific category of behavior was used as the dependent measure. A 2 X 2 X 5 analysis of variance (gender by condition by time) was performed first with the amount of cooperative play as the dependent variable. The results indicated a significant main effect for time, $F(4,156)=2.74$, $p < .03$, ($M_s = 25.8, 29.0, 27.8, 25.0$, and 24.0 for time blocks 1,2,3,4 and 5, respectively) and a significant interaction between time and gender, $F(4,156)=3.18$, $p < .01$. In regard to the interaction, there was an average of 27.3, 30.5, 28.7, 24.0, and 21.2 epochs of cooperative play for boys in time blocks 1,2,3,4, and 5 and an average of 23, 27.5, 29.4, 26.1, and 27.3 epochs of cooperative play in these same blocks for girls.

Coding scheme Processes of information exchange were studied with the second coding scheme. This coding system was based on two aspects of the subjects' conversation. One aspect was the actual content of the conversation and the other aspect had to do with the type of statement that was used. There were nine content categories: interests (what one likes to do), school, peers, family, self-objective (e.g., name, place of birth, current residence), self-ability (i.e., someone's skills) self-personal (i.e., intimate information) and other. (Only the first eight were used in subsequent data analyses.) There were three types of statements: questions, answers to questions and volunteered information.

A transcript was made of each dyad's conversation. Two undergraduate assistants coded the statements included in the transcripts. Twenty-five transcripts were assigned to each coder. The transcripts that were assigned to both coders were used to determine the extent of inter-rater reliability. Cohen's kappa was used as the reliability measure. The percent agreement was .88 and the percent agreement expected by chance was .20, resulting in a kappa of .85. Finally, as with the first coding scheme, the dyadic interaction was divided into five five minute blocks.

The eight content categories were not subjected to any further data reduction for two reasons. First, the investigator had designed the coding scheme so as to categorize statements into categories that were both consistent with the hypotheses being considered and qualitatively distinct. That is, they were supposed to represent conceptually different types of behaviors. Second, inspection of the correlations among the classification groups revealed only small correlations (18 of 21 correlations were between $-.15$ and $.15$; the remaining 3 were less than $.25$) among the coding classifications.

Before any analyses were conducted, correlations were computed between the question and answer codes for each content category within each of the five time blocks. It was expected that because the question and answer codes were to a great extent mutually inclusive, the association between them ought to be very strong. Not surprisingly, then,

the observed correlations were rather high, (average $r = .77$ and the range was from .65 to .92). Inasmuch as it appeared that these codes were probably representing the same underlying process the investigator had to decide whether to combine these codes into a single measure or to choose one as a index of the question and answer method of information exchange. In the analyses planned for these data, the investigator wanted to compare the amount and the time related use of the question and answer format with the amount and time related use of the volunteer format. The use of a combined score was rejected because the investigator feared that it might provide an inflated measure of information exchange. The investigator chose to use the answer codes only because they were more similar in nature to the volunteer codes than were the question codes.

The data from this coding scheme were analyzed with a $7 \times 5 \times 2 \times 2 \times 2$ (content category by time block by type of statement (i.e., answer or volunteered) by condition by gender) analysis of variance. This type of analysis would reveal main effects for all the independent measures considered and indicate whether there were any interactions among them. The results indicated a significant main effect for time, $F(1,156) = 3.01$, $p < .01$ (M s for time blocks 1 through 5 were 8.6, 7.3, 4.5, 4.1, and 5.1, respectively) and for content (M s for the interests, school, peer, family, self-objective, self ability, and self-personal categories were 4.2, 9.5, 5.3, 3.2, 5.3, 2.2, and 1.4, respectively). Significant two-way interactions were observed between gender and type of statement, ($F(1,39) = 3.57$, $p < .05$, with the boys using an average of

14.7 answers and 10.7 volunteered statements and the girls using 16.6 answers and 20.0 volunteered statements), time block and type of statement, ($F(4,156)=2.53, p<.05$), content and gender ($F(6,234)=2.28, p<.03$), and type of statement by content ($F(6,234)=5.6, p<.001$). The means for the final three interactions are presented in Tables 4, 5, and 6.

Table 4

Mean Frequencies of Statement Types For Each Time Block

<u>Time Block</u>	<u>Type of Statement</u>	
	<u>Answer</u>	<u>Volunteered</u>
1	11.1	3.4
2	7.1	3.9
3	5.5	3.4
4	4.0	1.9
5	4.5	2.9

Table 5

Mean Frequencies of Content Categories by Gender

<u>Content</u>	<u>Gender</u>	
	<u>Boys</u>	<u>Girls</u>
Interests	4.8	3.6
School	6.6	12.38
Family	.8	5.7
Peer	3.9	6.6
Self-Objective	6.4	4.2
Self-Ability	1.6	2.7
self-Personal	1.3	1.4

Table 6

Mean Frequencies of Content Categories by Statement Types

<u>Content</u>	<u>Statement Types</u>	
	<u>Answers</u>	<u>Volunteered</u>
Interests	2.4	1.8
School	5.5	4.0
Peer	5.5	4.0
Family	1.5	1.7
Self-Objective	3.3	2.0
Self-Ability	.2	1.9
Self-Personal	.4	.9

Discussion

The results taken from both coding schemes indicate the following: 1. that for boys mutual behavior appears to have increased and then decreased during the course of the their interaction whereas for girls the amount of mutual interaction appears to have remained relatively constant throughout the thirty minute session; 2. that the amount of information exchange is greatest at the beginning of the interaction, apparently because at the beginning, relative to the middle and end, the children are more likely to ask many questions whereas, on the other hand, they tend to volunteer information at about the same rate throughout the thirty minute interaction; 3. that the amount of information exchange varies according to the type of information being discussed (i.e., information about school and the self was discussed more than information about peers, family and interests); 4. that the amount of information exchanged within a particular category appears to be mediated by gender, with girls being more likely than boys to exchange information about school, family and peers; and 5. that boys are more likely than girls to acquire information through questions and answers than through volunteering, whereas girls are more likely to volunteer it than acquire it through question and answers. These results are consistent with the results of the first study in that they point to the preponderance of play and mutual activity in children's social interactions, to the use of information search at the beginning of interactions whereas information giving, relative to information seeking,

is more likely to occur in the later stages of an interaction, and to the greater amount of information giving among girls than boys. these results, then, are supportive of hypothesis four stated earlier. The fifth hypothesis, however, was not supported as there were no significant differences attributable to the experimental manipulation.

DISCUSSION

These results provide support for the concept of scripts in that they generally support hypotheses that were based on script theory (Schank & Abelson, 1977; Schank, 1981; Nelson, 1981). In this sense, these findings are consistent with the notion that this event schema concept can be used to describe the processes of friendship formation among children. Moreover, the current data lend credence to the reinterpretation of previous studies according to a script model. Generally speaking, then, it appears that there is a script for children's initial social encounter with another child that can be observed in their actual behavioral interaction with another peer as well as in their descriptions of how people become friends.

Of course, a number of other issues (e. g., the association between a particular person's scripts and the person's actual social behavior, or the degree to which people with more organized or flexible script are more skillful at predicting or understanding the behavior of others) need to be addressed before the utility of the script model will be adequately understood. Nevertheless, when the data presented here are considered in conjunction with other theory and empirical work from the psychological literature, it is possible to address at least two issues related to the role of scripts in friendship development. The first of these issues is related to the role of scripts in social interaction, whereas the second has to do with whether or not persons actually use scripts in the development of friendships.

How might scripts be valuable?

The results of the studies conducted in this investigation revealed that the early stages of an interaction are typically characterized by information searching whereas later stages typically consisted of mutual activities or information giving. This pattern has been taken as evidence of a script format in that it indicates a sequential organization of the components of this type of social interaction. Along with deciding whether or not these data support the script model, it is equally important to determine what value this particular pattern of interaction has for the process of friendship formation. That is, if the script concept is to be regarded as meaningful then it should be possible to point to something other than its statistical "fit" to a set of data as support for its legitimacy. In this section, an attempt will be made to identify the ways that the concept of a script is consistent with other theories related to friendship and social interaction.

In the past decade theory related to friendship and interpersonal interaction has received a considerable amount of attention. For example, Stephen Duck, a British social psychologist, has conducted a number of empirical studies to investigate the role of similarity in interpersonal attraction and friendship formation. Overall, the results of his studies (Duck, 1982) demonstrate that

interpersonal similarity can be an important determinant of the formation and maintenance of friendships. That is, people who are similar to one another will be attracted to each other and, provided that they are similar to one another on increasingly profound issues, their relation will continue and/or become more intimate (Duck and Craig, 1978). Based on these and other findings, Duck has argued that friendship development will consist of a systematic gathering of information about a partner's personality and that people will choose as their friends those persons whom they consider themselves to be most similar to. The reason for the importance attributed to similarity is the need for individuals to find people who will reinforce their attitudes, habits, ways of thinking and living and so on. In light of this argument, it is not surprising that information searching was especially apparent at the beginning of the subjects' interaction. It may be that they were assessing the areas in which they were similar and attempting to establish a common ground activity. This search for common ground also may be an important prerequisite for the establishment of a mutual activity or a common play activity. Indeed, Gottman (1983) noted that dyads of children who were unable to establish a common ground were those who did not eventually "hit it off."

The utility of initially obtaining information about another person is also supported by recent evidence indicating that individuals use person schemas in the processing of information about other people. Cantor and Mischel (1977) have demonstrated that people appear to use person schemas in their organization of information about a particular

individual and that the initial information that one receives about the person is an important determinant for the particular schema that is chosen for this organization. For example, Cantor and Mischel (1977) have reported that information about a person is processed differently when the person was initially described as, say, an introvert relative to when the person was originally described as an extrovert. Their proposition can be interpreted as an indication that persons need information at the beginning of an interaction in order that the processing of subsequent information can be done according to schema-based fashion.

Another use of initial information may be in the development of expectations. Darley and Fazio (1980), have proposed that the "first step in the interaction sequence is the perceiver's formation of an expectancy regarding the behavior of (another) person" (p. 869). That is, during the beginning of an interaction, persons are purported to develop expectations about the specific behavior of another person or about the person's intentions or dispositions that, in turn, are used to predict the person's behaviors. Darley and Fazio (1980) cite two sources of support for this notion. First, they draw upon the results of actor/observer studies (Jones and Nisbett, 1971; Jones, 1976) indicating that observers typically make judgements about a target person's traits or motives based on their situational observation of the person even when there is considerable evidence that there are environmental or temporary factors affecting the person's behavior.

The second source of support that they cite is not related to observations of the person's behavior but instead has to do with information indicating to which class of individuals a person is assumed to belong. As both Brigham (1971) and Hamilton (1979) have shown, a person's knowledge that someone belongs to a particular racial or ethnic group may lead to expectations of how the person will behave. In addition, Snyder, Tanke and Berscheid (1977) have reported it is important to recognize, however, that, in addition to racial and ethnic stereotypes, expectations may be based on other types of information. For example, Snyder, Tanke and Berscheid (1977) have reported that people adjusted their behavior in an interaction according to the information they had been given about the person whom they are interacting with. Specifically, college men who were told they were going to interact (on the telephone) with a physically attractive woman had different expectations of this individual and subsequently interacted with her differently than men who had been told they were interacting with a physically unattractive person.

Just as there appears to be a number of reasons why an information search should be found at the beginning of an interaction there are also theoretical bases to explain the increased levels of information giving and mutual play in the later stages of an interaction. Principally, Duck and Craig (1978) have proposed that individuals follow a filtering process as their relationships develop. According to this filtering model, relationships become increasingly intimate as they

develop provided that at each stage of the relationship the dyad members are able to negotiate increasingly intimate demands. In addition, Gottman (1983) has noted that pairs of children who were unable to become engaged in a mutual activity typically did not volunteer much information to one another. Gottman interpreted this observation as indicating the importance of dyad's to establish strong ties on increasingly intimate levels before the relationship can become a friendship. Apparently, then without the ties established during mutual play self-disclosure will be unlikely. It appears, then, that there may an important reason for the order of events that was observed in the scripts provided by the subjects of this investigation. and to social interactions in general. This order appears to be consistent with theory related to friendship development and with social interaction in general.

Do people actually use scripts in friendship?

Although the data presented here are consistent with the script concept and with other theories pertaining to social interaction they provide little information about whether people actually use scripts in their behavior and they tell us very little about friendship as a special form of relationship. In this section, the issues of whether persons actually use scripts in a conscious manner and whether there is a special script for friendship formation will be discussed.

The current data generally theory related to relationship development but they are somewhat inconsistent with what one would expect in light of the results of recent studies of children's friendship expectations. Bigelow (1975, 1977), Furman and Bierman (1983) and others (Youniss, 1979; Damon, 1979) have reported that children of the same age as the subjects in this study, begin to describe friendship in terms of constructs such as intimacy, loyalty and longevity. Nevertheless, in the subjects' descriptions of how to make a friend these issues were rarely mentioned. Play, the most frequently cited component, is actually what one might expect of younger children.

A possible interpretation of this inconsistency suggests is that the children simply don't have a distinct script for friendship formation. That is, they simply do not think of the development of friendships as different from other types of relations or, alternatively, that they do not have a particular script at all for making friends. There are several reasons why this script may not exist. First, in the script concept it is implied that a pattern of behavior is goal oriented or structured around a goal. It may be that a specific script for friendship formation does not exist because friendship is not a product of a particular process but instead is something that happens when a certain set of conditions are met. That is, friendship may be more of a "happening" than the result of a particular process. It is conceivable, then, that the script concept may have greater utility for social processes that are more goal specific, such as getting to know someone,

or establishing a work relationship and so on. For this reason the script concept may be most appropriate for understanding how two persons become acquainted. Of course, at an age when friendship may not be distinct from a play relationship the script concept may have some value as a way of understanding this type of relationship.

On the other hand, it may be that the process of friendship formation is comprised of a series of subscripts. The data presented here may shed light on the subscript that has to do with the initial stage of an interaction. Perhaps after this "getting-to-know-you" script has been activated and completed, and provided that the interaction has been satisfactory, persons may begin a subsequent script to further this relationship. Perhaps this script has to do with the establishment of more intimate forms of interaction (e. g. sharing secrets), the continuation of self disclosure or the further identification of common ground. Even later subscripts may serve to maintain the relationship, add to its intimate nature or allow for conflict resolutions that will strengthen instead of weaken the relationship.

It perhaps through this consideration of subscripts that the value of Miller, Galanter and Pribram's cybernetic TOTE model is most apparent. For example, as one script has been executed a person may check to see if certain criteria have been reached (e.g., Do I feel comfortable with this person?, Do we get along easily?, Do we share any interests?, Do we have fun together?) and if so a subsequent script could be activated. If the criteria were not achieved, then the script

could be repeated, the goal modified or even abandoned. In this cybernetic fashion, a friendship may eventually develop, not out of a single goal, but rather out of the achievement of a series of smaller goals and scripts.

Just as the goal dependent character of scripts may be central to the value of scripts in the regulation of social behavior, it may also explain why some person are experience greater social success than others. If a child has a different set of goals for social interaction, then it is likely that a different set of scripts or strategies may be chosen. That is, different strategies will be used because of the differences in goals. This issue poses an important question for child-clinical psychologists who are concerned with improving the peer experiences of of rejected and neglected children. Simply coaching them on a certain set of skills or training them to follow a certain script may not be productive if consideration is not given to recognizing the child's goals or needs in social interaction. Indeed, just as goals serve as the central focus of a script, the child's own need and goal may be the starting point of understanding how they try to make friends.

Along these lines, it is important to recognize that the question of goals is central to the issue of how persons use scripts. Schank and Abelson's (1977) enthusiasm for the script concept stems mostly from the value it holds for the development of a kind of computer program known as artificial intelligence. In the past they have

programmed computers to perform a number of human-like tasks such as summarizing newspaper stories or thinking like, of all people, Barry Goldwater. They found that the use of scripts as a means of telling a computer about action and relationships was very productive. Based on their success, these authors (Schank, in particular) have argued that the script concept has enormous potential as a means of understanding the human mind and human behavior. Clearly, teaching a machine to understand newspaper stories is a pretty remarkable accomplishment. Nevertheless, in their programs there is a important feature that distinguishes them from human behavior. In programs the programmer can (and, in fact, is required to) state goals very explicitly. In human behavior the goal may be much less clear and in some instances some experiences may not be the direct result of goal oriented behavior at all. Just as persons may not have a specific goal to acquire a new cognitive structure, they may not have specific goals to develop a particular friend either. Of course, each of these may be influenced by some goal oriented actions but the actual final experience may not be.

In regard to the question of whether persons actually consciously use scripts, there is anecdotal evidence that in some instances people may be unaware of how they go about some tasks. For example, when the late Canadian pianist Glenn Gould, who is not only one of the best known musicians of the twentieth century and unquestionably among the greatest Bach interpreters of all time (Rothstein, 1982), was asked to describe his method of creativity, he replied:

That's very difficult, and it's one of those centipede questions- you know Schoenberg once said that he would not willingly be asked by any of his composition students exactly why such-and-such a process served him well, because the question made him feel like that centipede who was asked in which order it moved its hundred legs, and afterwards he could move no legs at all- there's something impotent-making about that question. I am rather afraid of it. (Gould, 1968).

Nevertheless, in his work, Gould is known to have followed a number of fairly rigid techniques to accomplish various and sundry tasks associated with the production of recordings. For each of the specific parts of making an album (the musical preparation, his performance on the piano, the editing and mixing, and the final preparation of the record for marketing) were conducted in an almost ritualistic manner. But just as Gould did not have a specific plan for making music, perhaps people do not have specific plan for becoming friends. The lack of one large ultimate goal, however, may be overcome by the successive achievement of smaller criteria.

An alternative explanation for the lack of findings indicating how friendship differs from other types of social interaction is the methodological constraints of both the studies reported here. Perhaps the written answers were an inadequate means of determining what was special about friendship in that they had to do mostly with the initiation of an interaction. The solicitation of answers having to do with the nature of relationships over a longer period of time may have been more useful for identifying the unique features of friendships. Furthermore, if there had been a question

about non-friendship relations it would have been possible to make comparisons in order to discover how these two types of relations may differ. These methodolgical changes may provide a more direct and appropriate measure of children's scripts for friendship formation.

In regard to Study Two, methodological limits may be the reason for the lack of success associated with the experimental manipulation. Although the laboratory could conceivably be a place where one could observe intimacy, it is difficult to determine how persons were to display consructs such as loyalty or longevity. The atypical setting in which the study took place (i.e., two early adolescents cooped up in a little room, isolated from everyone else and surrounded by mirrors, and then, to top it all off, a person whom neither child knows tells half of them to become friends) may have been too artificial to actually elicit what might be the behaviors of friendship formation. Indeed, one of the subjects went so far as to tell the investigator that he was crazy if he expected her to become friends with someone in "that tiny little room."

In light of these considerations it may be more realistic to consider these results reported here as providing information about how children initiate relationships instead of regarding them as telling us something about friendship formation. More generally, it may be that the script concept itself is more appropriate for the initiation of interactions than it is for explaining how relationships are maintained or further developed.

Moreover, it may be that they are most appropriate for behavioral processes that are largely governed by social conventions. As Nelson (1981) has previously noted, the most scripted events are probably those that are straight out of etiquette books or those that are highly ritualized such as a Japanese tea ceremony. Indeed, when this investigator was a young adolescent his mother gave him an etiquette book whose title was the epitome of a script. It was called Stand Up, Shake Hands and Say "How do you do?" (Young & Buchwald, 1977).

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