

THE EFFECT OF PLAY MATERIALS  
ON THE SUBJECT AND QUANTITY  
OF VERBALIZATION DURING PLAY

by

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## ABSTRACT

Important qualities have been attributed to play activity by educational and therapeutic play theorists. The role of play materials, however, which are relied upon to produce this activity, has been the subject of only minimal empirical investigation. Because certain types and levels of verbal output are desirable in meeting a number of therapeutic and educational goals, the effect of play materials upon players' speech was selected as the area of investigation in this study.

The research objectives were to determine the effects of play materials upon (1) the amount of players' verbalization; (2) the subject of players' verbal referents; and (3) the prevalence of literal and fantasy components in these referents. Play materials were systematically categorized, and a speech coding system was developed to analyze verbal output. Three classifications of play materials, human representative, kinetic, and construction, were selected as categories of the independent variable. The speech coding system included four types of verbal referents, those descriptive of objects, activities, self-information, and social interaction; and three dimensions, those related to the immediate play setting, to external contexts, and to fantasy elaboration.

Four subjects of preschool age comprised the two dyads which functioned as experimental units. Each dyad played for four trials with each play material category in a counterbalanced sequence.

The data were analyzed by comparing the verbal output by dyads and the referent types associated with each material category. In addition, three-way analyses of variance, for the play material, dyad, and trial factors, were computed on each of the 14 dependent variables yielded by the coding system.

Results indicated that references to external settings and self-informational verbalization were only minimally elicited by any of the materials. Play with human representative materials produced the highest levels of verbalization. These materials also significantly affected increased production of fantasy verbalization, while kinetic materials significantly increased verbal social exchange. The majority of the dependent variables were not significantly affected by differences between the material categories.

These findings imply that certain speech-related variables of interest to therapeutic and educational settings are affected by differences in play materials themselves. The study encourages continued investigation of the effect of play materials on speech by indicating that the interrelationship between these variables can be systematically examined.

Children need not only other children to talk and play with, but also an environment and play materials which encourage conversation and experience of all kinds, for an empty playroom would provide little incentive for lively and spontaneous talk and play (Cass, 1971, p.42).

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CHAPTER I

## INTRODUCTION AND REVIEW OF THE LITERATURE

### Introduction

In literature on the applications of play in child therapies, play is regarded as an active therapeutic medium (Axline, 1947; Schaefer, 1976; Winnicott, 1968). Although the role of play materials in therapeutic play has been addressed theoretically (Axline, 1947; Ginott, 1961; Moustakas, 1973; Schiffer, 1969; Slavson and Schiffer, 1976), few systematic observational or empirical studies exist to support theoretical claims and to link materials to therapeutic outcomes. As a result, after two generations of play therapy practice, ordinary preschool toys are still recommended and employed in play therapy settings, with the relationship between the materials themselves and therapy-related variables only informally determined.

One critical therapy-related variable is the client's verbalization, the expressed speech, which is also the primary medium of exchange between child and therapist in "non-play" therapies. In play therapies for both individuals and groups, the child's play activities intervene and influence the direct child-therapist communication. In the context of this study the child's interaction with a play material, whether in therapeutic

or educational play settings, is said to form a communication system in and of itself, with the physical properties and play functions of the material influencing the child's own behaviors, including verbal behaviors, in response to that material.

The empirical literature on play does provide evidence for differential play behaviors in response to various play materials (Poling, 1976; Quilitch and Risley, 1973). Do play materials affect the verbal behavior, i.e. speech, that occurs during play as well? The present study was carried out to supplement the few related studies (Beiser, 1955; Hurst and Jones, 1967; Lebo, 1955a, 1955b, 1956), to elaborate on this question, and to systematically begin to answer it.

This chapter begins by providing extensive theoretical background for the study, with discussions on the following: (a) a definition of play appropriate to research concerns, (b) play as a therapeutic medium, (c) the applications of play to therapeutic settings, (d) the role of client speech in therapy contexts, and (e) the determinants of client speech. Common to these discussions is the focus on the role of the play materials themselves. The second part of the chapter, the review of the empirical literature, discusses empirical work on the question of play materials and speech, and includes more detailed background on aspects of this study, namely, on play materials as critical variables, on the selection and categorization of



play materials, and on issues relevant to a systematic consideration of verbalization during play. A statement of the research questions concludes the chapter.

### Theoretical Background

Formulation of an operational definition of play. In the largely clinically-referenced and at times anecdotal literature on therapeutic applications of play, play therapists often ignore the problem of defining play and focus instead on the qualities of play which contribute to therapeutic change. Although it is beyond the scope of this study to verify a concept of play, a brief summary of common explanations and definitions for play will help provide a frame of reference.

Early play theorists characterized and defined play as a unique experience related to human biological and physiological evolution (Millar, 1968). Spencer, as summarized by Millar, explained play as an outcome of surplus energy in the nerve centers. In lower animals, this energy is spent for survival; however, in man, he theorized, it is available for other pursuits, making play possible. Hall developed a "recapitulation theory" of play in which the function of the child's play is "to re-enact...the interests and occupations which occurred in prehistoric and primitive times" (Millar, 1968, p.17). In yet

another explanation for play related to human evolution, Groos theorized that "animals must practice and perfect their incomplete hereditary skills before a serious need to exercise them arises. That is, they must play" (Millar, 1968, p.19).

In contrast to theories which link play to biological functions, the concept of play has also been explained and defined by play theorists as an attitude (Garvey, 1977; Millar, 1968). Building a block tower, swinging on a swing, tickling, dodgeball and so on are commonly recognized as play activities. Yet it is clear that when specific behaviors are extracted from this play (kicking, poking, balancing), the behaviors which constitute the activities need not always be "playful." Millar (1968) therefore defines play as an attitude with certain qualifications. Play, explains Millar, is associated with laughter and fun; however, there is no inevitable connection between obvious pleasure and play. Although a degree of choice and lack of constraint in handling materials are associated with play, this association is not absolute (Millar, 1974).

Garvey (1977) defines play in similar terms as (a) pleasurable, enjoyable activity, which (b) has no extrinsic goals, (c) is spontaneous and voluntary, and (d) involves active engagement on the part of the player. Garvey would add a qualification similar to Millar's, that (e) "play has certain systematic relations to what is not play" (Garvey, 1977, p.55). This qualification is important in distinguishing the attitude

of playfulness from play behaviors; however, it makes the task of formulating a working or operational definition of play, appropriate to research contexts, more difficult.

Explanations and definitions of play from the field of psychology concern intriguing aspects of the concept of play, but do not resolve the issue of an operational definition of play. The particular issue in clinical psychological explanations of play is the element of distress noted in the child's play. The concept of play as a pleasurable and voluntary activity free of extrinsic goals is challenged in the observations of the disturbed child's play. Transcribed records of play therapy sessions (Axline, 1947; Dorfman, 1951; Ginott, 1961; Moustakas, 1973) contain numerous examples in which the child repeats unpleasant experiences, and encounters distress and anxiety upon playing. Far from being free and voluntary, the child's play can be said to be influenced by unconscious controlling forces.

Freud considered this aspect of play in the classic psychoanalytic explanation for play. Freud explained play as the way to the unconscious of the child client, with important functions in the symbolic revelation of conflict. He saw play as comparable to dreams in its wish-fulfilling function in the human psyche (Millar, 1968). Ultimately he explained the function of play and the lack of a playful component in clients' play as follows:

The individual has been through a specific experience which was too difficult or too large for him to assimilate immediately. This unabsorbed, or incompletely absorbed, experience weighs heavily upon his psychic organization and calls for a new effort at handling and for a reexperience. (Walder, 1933, p.213)

While Freud would explain play in terms of emotional and psychic assimilation, Piaget (1962) explains and defines play as assimilation in the service of cognition.

Piaget postulates two processes which he believes to be fundamental to all organic development: assimilation and accommodation....Assimilation refers to any process whereby the organism changes the information it receives....Accommodation means any adjustment the organism has to make to the external world in order to assimilate information. When the two processes are in equilibrium, intelligent adaptation occurs. Where accommodation to an object or event predominates, the result is imitation. Where assimilation, changing incoming information to suit the individual's requirements, predominates, the result is play. Both play and imitation are integral parts of the development of the child's intelligence, and consequently go through stages comparable to those which Piaget posits for the growth of the child's intelligence. (Millar, 1968, p.51)

Exploratory, manipulative (practice) play begins in what Piaget terms the sensori-motor period of intelligence (birth to 18 months). At this time the child gains the motor co-ordination necessary to manipulate objects. Not unlike Freud's understanding of play as motivated by a pleasure principle, Piaget suggests that the child finds "functional pleasure" in actions which are repeated (practiced) for their own sake. Toward the end of the first year, the child becomes increasingly able to abstract, that is, to understand that an object exists even though it may be temporarily removed from sight. This leads

to a stage of symbolic play (Piaget, 1962).

In the pre-operational stage of representational intelligence, the child's thinking is pre-logical. By learning and assigning names to objects, the child develops mental schemas which are the precursors of logical thought. At this stage (age 2, to 7 or 8), symbolic or make-believe play predominates as the child's mode of assimilating experience.

In the subsequent stage of concrete operations, the child reasons through the manipulation of objects. With tangible materials before the child, the child is capable of reversing mental operations as well. At this stage (age 11 or 12) games with rules predominate as the individual's beliefs and usage of symbols become modified through contact and co-operation with others (Millar, 1968).

Basic to Piaget's theory of play is the notion that play, like thought, evolves through physical experience, first with the body itself, later in interaction with materials, and then with peers. However, the actual assimilation of experience takes place within the player him/herself. Those theories which define play in terms of its evolutionary function, or its psychological function, or as an attitude, consistently consider play as a phenomenon occurring within the player. These definitions of play are difficult to test not only because they are global and complex, but because of this focus on the player's internal processes.

A theory and definition of play which focuses instead on the behavioral interaction between the player and the play material, and specifically on the dynamics of the play material itself rather than on the player's behavior, is more readily testable and is relevant to a totally different set of problems about play. This materials-focused concept of play has received attention over the years from several play theorists and researchers.

Ellis and Scholtz (1978) have traced this concept of play as a player-play material interaction. The early childhood educator Froebel, they explain, believed that the child naturally seeks activity and that play stimulates the child's perceptions of objects and their unique attributes. Dewey, considered by Ellis and Scholtz to be a link between early and contemporary play theorists, saw play as a reciprocal relationship between the stimulus (play object) and the player's response to it, the player being motivated to continue to respond to the stimulus by the pleasure experienced in interaction with it. In contrast to evolutionary, psychological, or Piagetian explanations for play, which posit the motivation for play in a need of the player, Karl Buehler, writing in the 1930's, focused on the sensory stimulation provided by materials- visual, tactile, auditory, and kinaesthetic- as the motivation for and essence of play behaviors. For Buehler, "to play is to investigate the properties of objects with all one's

senses" (Ellis et al., 1978, p.30).

More recently, Ellis and Scholtz (1978) have themselves described play as an example of arousal- or stimulus-seeking behavior, which maintains the interest and activity of the individual; that is, it prevents boredom, offers a degree of pleasure, and therefore has a greater likelihood of recurring. The motivation for seeking stimulation, they theorize, lies less within the player's playful attitude, need to experience pleasure, or need to reduce drives or assimilate reality, and more likely in the tendency to seek stimulation and assimilate information. In play, the source of this stimulation is the play material itself. Play to Ellis and Scholtz therefore consists of the exploration, investigation, and manipulation of materials and their properties.

Support for this materials-focused concept of play can be found in a specialized area of play theory to which the intent of this study applies, that of play therapy. In discussions of clinical practice, play theorists and psychologists (e.g., Jackson and Todd, 1950) note that frequently an emotional disturbance is so severe that the child is not capable of play. By play at this point they refer to a basic physical manipulation of materials. Similarly, when severely disturbed clients ritually and mechanically twirl or wave objects, this physical handling of the object constitutes for the moment the extent of the child's play (Frank, 1955; Jackson and Todd,

1950).

Freud has also stressed the role that materials have in the child's play activities.

The child differentiates his play world from reality very well, in spite of all the affective cathexis, and gladly lets his imaginary objects and relationships depend upon the tangible and visible things of the real world. Only this dependence differentiates the 'play' of children from 'fantasying.' (Walder, 1933, p.223)

The psychologist Adolf Woltman (1952) would define play for therapy settings with reference to the materials themselves.

Play in the context of play therapy has a specific meaning. It is limited to the structuring of activity patterns which involve toys, dolls, puppets, and blocks. (Woltman, 1952, p.278)

Within the context of this study play is operationally defined as the free physical interaction of the child with specific materials. These materials are normally associated with elements of enjoyable attention on the part of the child. This definition, which expresses the complex phenomenon of play in terms of a common behavioral denominator, has a clear advantage for research purposes. It sets the stage for the analysis of differential behaviors, in this case, the player's verbalization (spoken words), in response to the properties of the materials themselves. Although this definition is a simple expression of a behavioral "denominator," the effect of the child's interaction with materials is not at all simplistic. To further appreciate



the role which materials may have in the child's play activities, it is important to consider not only what play is, but what play does; that is, its value particularly in therapeutic settings.

Play as a therapeutic medium. In therapeutic and educational play sources, play is assumed to have benefits for the child independent of the teacher's or the therapist's input. Play theorists often speak of play in enthusiastic terms, ascribing to play impressive qualities; for example, to educational play theorists, "play is as necessary and important to a child as the food he eats, for it is the very breath of life to him, the reason for his existence and his assurance of immortality" (Cass, 1951, p.11).

Playtime aids growth. Play is the most pliant medium for feeling one's way,...is a dynamic way of learning,...builds personality, social development and creativity, and counteracts helplessness. (Caplan, 1976, pp.x-xiv)

In play therapy literature, the benefits of play are summarized in equally optimistic terms: "play is the child's natural medium of expression" (Axline, 1969, p.9); "play is the child's first great cultural achievement" (Ekstein, 1966, p. 197); "play is a universal concept which of itself facilitates growth and therefore health" (Winnicott, 1968, p.598). Similarly, to Erikson (1940) "play action is as self-healing to the disturbed child as a deep restful sleep" (p.578).

What qualities of play lead theorists to attribute such significance to the child's play? Play therapists ascribe to play emotional benefits first of all by virtue of the physical activity and even exertion expended (Ginott, 1961; Schiffer, 1969; Slavson et al., 1976).

A child puts forth his most strenuous energies in moments of play. He concentrates his whole being and acquires emotional satisfactions which he cannot get from other forms of activity. (Caplan, 1973, p.36)

Transcripts of therapeutic play sessions (Axline, 1947; Ginott, 1961) contain numerous examples of the emotional release or catharsis experienced by children as they actively use and abuse (smash, pound, and smear) play materials.

Second, through the mechanism of projection, the child at play invests actual materials with roles, identities and qualities (Frank, 1948). In this way the child can represent details of real problems and experiences, experiment with solutions, and invest play objects and events with fantasy content in order to avoid, escape, or work through stressful reality situations.

Finally, play has therapeutic value as a medium of expression on a number of levels. The child's initial ability to interact with materials and sustain play activity is considered expressive of the degree of disturbance, with the lack of play activity understood to signify severe emotional disturbance (Caplan, 1973; Ekstein, 1966). Play therapists (Axline, 1947;

Ginott, 1961; Jackson et al., 1950) also consider the child's approach to materials (cautious or aggressive), style of play (calm or phrenetic), setting of play (center or corner of the playroom) and so on as meaningful expressions of the child's problem. The child's choice of materials (messy or ordered) and usage of them (restrained or spontaneous) can also be symbolic expressions of the child's difficulty. For example, two blocks being struck together may represent a conflict which the child is fearful of expressing more directly, as with dolls, or more literally, through words. In addition, play, it is commonly assumed, is expressive because it can act as a stimulus for direct verbal communication with the therapist. It was this aspect of the child's play which prompted early child therapists to include play materials in therapy settings, when they noted the initial difficulty of engaging the young child in verbal free associations and direct conversation (Klein, 1963).

Applications of play in therapeutic settings. The introduction of play materials to a therapeutic approach can be considered to qualitatively change the therapy process by virtue of these benefits of the play activities themselves. However, play materials are not unilaterally applied and utilized in child therapy settings; and it is of interest to the present study to briefly survey the applications of play, emphasizing the role of the materials in those settings.

Child therapies lacking a play component are largely verbal with the therapist's style and use of speech the sole stimuli for the child's speech. A "non-play" therapy can be said to engage the child client directly. The therapist may modify details of the child's environment to effect behavioral changes, may be didactic (as in rational-emotive therapy), challenging and deeply personal (existential therapy), analytic, or neutrally empathic (non-directive therapy). That is, in non-play therapies the child may be guided on the level of behavior, intellect, cognition and/or affect, but is not provided with immediate outlets or stimuli for his/her own expression outside the therapist-child relationship. Therapies with a play component add additional or intervening stimuli to the child's (and therapist's) behaviors including, potentially, verbal behaviors.

In behavior modification play settings, the playroom and play materials constitute a selection of stimuli for behaviors from which target behaviors may be selectively reinforced (White, 1959).

In non-directive play therapy the playroom and materials serve as an arena for experiences of self-expression (verbal and non-verbal) and self-direction, as the child's play behaviors and/or speech are verbally reflected by the therapist (Axline, 1947).

In psychoanalytic child therapies, which use both structured and unstructured (free) play settings, the usage of play materials by the therapist characterizes the therapeutic technique and, relevant to the present study, influences the style and degree of verbal communication between therapist and child. In the structured play interview the analytic therapist uses small family character dolls primarily for diagnostic work. The therapist directs a verbal interview with the child using the dolls to reenact the details of a particular problem (Conn, 1938, 1939). In another structured play strategy the therapist is also represented by a doll in order to ameliorate the child's resistance and to facilitate child-therapist communication (Solomon, 1955). Play materials are also used in an acting out rather than an interpretive form of analytic therapy called release therapy, which allows for direct release of emotion through particular materials, the use of dolls to act out standard emotionally charged themes, and the representation of specific individual conflicts (Hambridge, 1952; Levy, 1939). In other analytic therapy settings, the client is allowed free play with a variety of materials, with client activities interpreted psychoanalytically (Schiffer, 1969).

When unstructured free play is applied to groups, the therapist concentrates on analytic interpretations of the behavior and speech of individual clients (Schiffer, 1969; Slavson et al., 1976). Activity group therapy, a modification of

group play therapy, uses craft and skill materials instead of nursery toys with a small group of eight- to twelve-year-olds. This form of play therapy is intended to be non-verbal, an experiential therapy of social and material mastery (Slavson et al., 1976). In activity-interview group therapy, an intermediate form of analytic group therapy, periods of craft activity for physical and emotional release alternate with both impromptu and scheduled group therapy discussions. In this form of therapy the media, materials, activities, explanations, and interpretations are such that the therapist is constrained to respond verbally (Slavson et al., 1976).

To summarize, play materials, when introduced into the therapy room, in a general sense change the therapy from a direct therapist-child intervention to one in which the benefits of play and the stimuli of materials intervene. The materials can be variously applied and emphasized in therapies which are experience-, activity-, insight-, or relationship-focused. Specifically, the introduction of materials to the therapy setting (a) can offer substitutes for direct therapist-child communication, (b) can affect the style of therapist-child, or with groups, peer communication, and (c) can aid direct communication by providing stimuli for therapist-selected or child-proffered themes for discussion.

The role of client speech in therapy contexts. According to the child psychologist and play therapist Dell Lebo (1958), much

of therapy has come to be synonymous with speech. Consideration of the literature shows this to be true with regard to the function which language can serve in the therapy process, the prevalence of communication-related difficulties in the emotional disorders of children, and the attention given to client speech by particular therapeutic approaches, with or without a play component.

In a discussion of the role of client speech in psychoanalytic contexts in particular, Rudolf Loewenstein (1956) discusses general functions of language, which are applicable to most therapeutic approaches. Language in therapy contexts is important for what he terms "discharge" and "binding." By discharge he refers to the cathartic value of speech, as repressed memories and emotions are brought to the surface and released through words; protests of anger, expressions of fear and guilt, indicate that through speech the client is released from stressful experiences. An expressed threat, for example, can potentially release the individual from the need to carry out the action in reality. By binding Loewenstein refers to the commitment which the spoken word creates. Once the client's emotions are discharged, they are bound by words in the here and now. Speech brings material in the ego into connection with memory, traces of visual and auditory perception (Loewenstein, 1956). When the unconscious is expressed in words, it becomes

subject to secondary processes of thought and understanding. Verbalization through binding and discharge, therefore, is an essential step in the formation of insight, important in most therapies, and is equally important as a substitute for action. These functions of client speech are as relevant for child clients as for the adult clients with whom Loewenstein was primarily concerned.

For many children receiving therapy, the capacity and willingness to verbalize are often integrally associated with their difficulties. The normal child, by contrast, divulges concerns more readily and converses spontaneously with a therapist (Ginott, 1961; Moustakas, 1973). Severely disturbed children may be entirely non-verbal or may have symptoms which carry with them communication related difficulties, as for example in the case of extremely withdrawn or very aggressive children.

In the case of the withdrawn child Schiffer (1969) explains that

Verbalization is often frightening...because it is the equivalent of physical contact or aggression; and these are experiences for which the withdrawn child is not yet adequately prepared. Even when a withdrawn child begins to move from isolation he avoids speech. He may draw the worker's attention to his need for an item by gesture. When this happens the worker should respond to the



request without comment and not attempt to elicit conversation. When it becomes evident that a child has moved from self-protecting isolation and is maintaining contact, the worker may then begin to communicate more directly. Such children eventually provide appropriate signals of their tolerance for both verbalization and relationships. (p.57)

With autistic children, initial verbal utterances often constitute a therapy goal in and of themselves (Ekstein, 1966).

The aggressive child is also likely to have communication related difficulties. Ginott (1961) has summarized the communication needs of these contrasting client types.

The greatest affliction of [over-inhibited children] is social isolation, and their greatest need is for an opportunity for free, safe and respectable interpersonal communication....[The greatest defect of the acting out child] is...proneness to discharge emotional stress in physical acts, and their greatest need is for diminution of inner tension and enhancement of controls (Ginott, 1961. p. 73).

With very young clients, Ginott (1961) adds, intervention through speech is appropriate because these clients tend to be impulsive in their behaviors and need assistance and encouragement in verbalizing their concerns. In general, the inhibited child must be led to more rigorous forms of expression, and the acting out child to more focused, modulated expression. Though Ginott may be referring in part to physical expression through movement and symbolic expression, his discussion certainly includes the importance of guiding the child client to appropriate verbal communication.

The various therapeutic approaches emphasize and utilize client speech differently. With cognitive oriented therapies certain verbal referents may be selected as goals for the client independent of the etiology of the problem. In non-directive settings the therapy process relies on a technique of the therapist's verbal reflection, intended to increase the client's own verbalizations. "By merely reflecting what a child says, the therapist sets the stage for continuing communication with the child without blocking or redirecting associated content" (Slavson et al., 1976, p.387).

In analytic therapies the therapist attempts to engage the child in guided conversation through tactful questions and probing, while the therapist's proffered insights and the child's spontaneously shared insights and associations rely on speech as the primary medium of exchange (Millar, 1968; Schiffer, 1969). "The essential factor in the investigative and therapeutic function of psychoanalysis is based upon the use of speech between patient and analyst" (Loewenstein, 1956, p.467).

In group therapies as well the child's willingness and capacity to speak are necessary in developing peer relationships. As the group develops, members' verbal input to peers becomes critical as clients take on the role of "auxiliary therapists," advising and encouraging their peers (Ginott, 1961; Schiffer, 1969).

The importance of client speech in play therapy contexts requires qualification since play therapy, recognized as a projective technique (Woltman, 1952), can be a non-verbal therapy and can be effective with non-verbal clients. "It is possible for play therapy to be therapeutic even though the child does not speak" (Lebo, 1958, p. 28). This is possible because first, as detailed above, the child's play can be therapeutic of itself; second, the therapist can rely upon gesture, body language, and other elements of non-verbal communication; and third, the therapist can respond to the child's play activities as a symbolic expression of difficulties.

Disturbed children's immediate need is to give their feelings active outlet....The communicative process and the discharge of feelings occur in the main through play, fantasy, and motor ability. (Slavson et al., 1976, p.30)

That is, discharge does occur for the child non-verbally.

Although the play therapy process does have these non-verbal components, client speech is recognized in the literature as important in initiating and maintaining therapeutic contact. Early in the play therapy process, the child is often hampered by an inability to communicate on verbal levels, as the child's vocabulary is often inadequate and unused to the expression of complex emotions and attitudes (Schiffer, 1969).

One may assume that the beginning months of psychotherapy will show an overwhelming use of action and play, a lesser use of pure fantasy, and a very moderate use of secondary thought processes....As the months go on, however, one may be certain that the amount of play action will decrease and will be taken over more and more by verbal communication typical for the chronological age of the patient. (Ekstein, 1966, p.185)

Slavson et al. (1976) have also observed this in clinical practice. "With the assurance and support provided in the transference, symbolic play material now becomes translated into direct language" (Slavson et al, 1976, p.363); and "language assumes increasing usefulness in the overall communication between the child and the therapist" (Slavson et al., 1976, p.370).

Solomon (1955) considers the growth of the child's verbalization in therapy from his/her concentration on play activities a significant sign of personality growth and organization.

Another important integrative process...is the change that is afforded the child where there is a conversion from perceptual thinking to conceptual thinking. Through the use of the play medium the perceptual threats [of repressed experience] become translated into ideas or concepts which have verbal representatives. As verbal concepts the thinking processes are routed through higher cortical channels, hence constituting a function of the well-organized ego. (p.595)

At a later stage in therapy, when the child feels more comfortable speaking to the therapist, s/he may begin to show an interest in actively pursuing meanings by asking the therapist for explanations (Slavson et al., 1976). It is of critical

importance for the emotionally disturbed child "to be able to express in safety some of the feelings which were repressed or blocked during earlier developmental periods" (Schiffer, 1969, p.9). When the child can express concerns directly to the therapist, without catastrophic consequences, the result is often a corrective emotional experience (Solomon, 1955). Empirical evidence that play materials stimulate verbalization or differentially affect aspects of verbalization, it was theorized, would have important implications for the communicative process in these therapeutic settings.

Determinants of client speech. "The first functional distinction regarding the use of language is that between speaking and keeping silent" (Garvey, 1977, p.14). Given the importance of client speech across client types and therapeutic approaches, the question arises as to what variables determine the client's readiness and willingness to speak; that is, what prompts the client to move from silence to speech. In child therapy literature, the variables affecting client speech are largely implied rather than explicitly stated. Drawing from general therapeutic descriptions, determinants of speech in both non-play and play contexts can be classified as genetic factors, experiential factors, and immediate stimulus factors of the therapeutic setting.

The genetic factors can be identified as the child's age, hearing, and basic verbal ability, i.e., ability to produce

intended sounds (Slavson et al., 1976). Experiential factors include the child's background (emotional and intellectual environment of the home), specific past experiences, and relationship to parents. "The child who learns language from parents whom he basically cannot trust will not rely on speech as a means of orienting himself to reality and is apt to...regress in later life to pre-verbal forms of communication" (Ekstein, 1966, p.172).

Within the therapy setting, immediate stimulus factors refer to child- and therapist-focused variables: the child's problem dynamics, personality and temperament; the therapist's theoretical approach and its emphasis on client speech; the therapist's own style and personality; and the therapist's timing of input according to the child's readiness to understand or respond (Schiffer, 1969). In group therapy settings, the number of peers, the composition of the group as to sex and problem type, and each member's ease in social relations, are additional variables affecting the child's speech (Ginott, 1961).

However, the play materials which are introduced into therapy settings for individuals or groups, as this study explored, may act as determinants of the child's speech as well. The premise, implied in an earlier discussion, is not an unfamiliar one as it underlies the very rationale for play therapy. "The metaphoric expression of intimate experiences in

free play 'loosens communicability' of these same experiences" (Erikson, 1951, p.55). Materials may act as determinants of speech and "loosen communicability" by virtue of the child's familiarity with the materials, his/her experiences and associations with them. Of central importance to this study was the possibility that the physical properties and play functions of the materials may also influence the content (subject and quantity) of actual verbal output.

#### Review of the Empirical Literature

Play materials as critical variables. The operational definition of play advanced in the preliminary theoretical discussion focused on the player's direct interaction with materials. Play materials have been considered on a theoretical level as critical variables affecting the child's play behaviors in a quantitative and a qualitative sense. The quantitative influence of materials refers both to the amount of time the child spends in interaction with materials and to the important role of materials in the child's development.

Van Alstyne (1932), in a two-year observational study of the play patterns and behaviors of 146 preschoolers, found that the preschool child plays directly with peers (as opposed to parallel play) less than 50% of the time. However, in isolate or parallel play, the child is engaged with materials (as distinct

from play unrelated to materials, such as dramatization) 98% of the time. Although Van Alstyne's is the only study quantifying the child's engagement with materials, from the general treatment of play in the literature and from observations of play, it is reasonable to conclude that the young child's attention, during solitary play at least, is largely directed to a play material.

Play materials have also been considered as important in the child's development. In stages which parallel Piaget's stages of play, Garvey (1977) has discussed the child's growth in terms of the changes which occur in the child's object relations. In early years, objects receive diverse physical treatment, which is then refined to sophisticated and purposive manipulation. Later the child's imagination and intellectual curiosity affect this interaction with materials, as the child begins to assign to objects roles, identities, and elements of fantasy. As the child grows and assimilates experience, awareness, and ability for social contact, more "meaningful associations accrue to objects" (Garvey, 1977, p. 57), and play with objects is combined with other aspects of play (i.e., interaction with peers).

Materials have been considered qualitative critical variables insofar as the physical properties and play functions of particular materials, or categories of materials, act as stimuli which differentially affect the child's play behaviors.



How is the qualitative influence of play materials commonly recognized and described in play literature?

In the clinical literature on play there is a general understanding that play materials affect the child's or a group's behaviors in the playroom. According to Schiffer (1969), therapeutic practice with children is markedly influenced by the play materials provided, which are in a sense the functional tools of the therapy. In group play practice, both Ginott (1961) and Schiffer (1969) note that the social interaction of the group is significantly affected by variations in activities and materials. However, attention to this influence of materials seldom exceeds generalities:

The microsphere (i.e., the small world of manageable toys) is a harbor which the child establishes....But the thing world has its own laws. It may resist construction, or it may simply break to pieces.  
(Erikson, 1950, p.221)

Similarly, according to Ginott (1961), "play materials have behavior propelling qualities of their own" (p. 55).

In discussing play materials appropriate to instructional settings, Gehlbach (in press) provides more detailed consideration of the role of play materials as critical variables. He describes the child's play as a system of mutual feedback. That is, the physical behaviors of the child upon the play material are influenced in turn by the play material itself, whose qualities and behaviors actively affect and operate on the child as consistently as the child operates on

the material. In play experience, he continues, the child utilizes whatever may be available for his play as one focus of this process in which he is both agent and respondent. "The attributes and behaviors of the plaything constitute critical clusters of variables" (Gehlbach, in press).

The play material can be said to act as a unit of information which variously affects the senses (Millar, 1968; Ellis et al., 1978). Is the material malleable or resistant? heavy or light? fluid? noisy or quiet? Is it attractive to the child? colorful?

The play material may also dictate information in terms of the physical movement required to play with it.

Experimentation with the form of the play object (regardless of its symbolic function or meaning), its relationship to the background and its capacity for producing patterns takes place. Changing patterns immediately lead to motions which adapt themselves to the motility patterns of the child's body. (Bender and Woltman, 1941, p.22)

At the basic physical level any material forces the child to distinguish whether the material is to be explored in its own right, to be used in construction, to be manipulated, or to be employed to help the child (Hartley, Frank and Goldenson, 1952).

In addition to this sensory information, materials may influence play behaviors according to play functions, i.e., what they require for active physical engagement. For example, does the object resemble a real life object and therefore invite dramatization of settings and fantasies? Is the material

composed of parts which have no intrinsic play value, eliciting purposive construction activity? Does the material require the thoughtful concentration and full attention of the player? That is, what are the specific properties and functions of the material which may influence player behavior?

The composite and comparative information of the properties and functions of play materials has been termed by Berlyne the collative properties of the material (Ellis et al., 1978). Collative refers to the nucleus of traits which a material provides, their variation and complexity, as well as contextual variables not explored in this study, such as novelty, placement, and player preference. In their comprehensive volume on children's play materials, Hartley et al. (1952) discuss numerous play materials in terms of their comparative physical properties, play functions, and associated play behaviors. A comparison of two materials not used in this study, clay and finger paints, will illustrate the material-player interaction as the collative, or composite and comparative, properties of the materials are discussed.

With clay, the visual stimulation in relation to finger paints is diminished, as the colors of clay are generally less vibrant than finger paints. The excitement, novelty, and absorption of the direct mixing of colors is also diminished with clay. The range of physical behaviors which clay directly elicits is limited (poking, rolling, smacking), but is more

varied than the simple spreading of paints. Since clay offers more resistance than finger paints, it requires more physical and intentional input on the part of the player to change and mold the medium. Because clay makes possible three-dimensional forms, the child's creative input can result in a product, in contrast to a completed painting, which can in turn be used for play.

From this comparison it is evident that just as the properties of materials may elicit and evoke certain actions, behaviors, and responses on the part of the player, they may also limit and restrict the player's behaviors. The product resulting from play with paints cannot be reformed and reworked as with clay, for example. Woltman (1952) has discussed this point with reference to materials which are miniature representations of real life objects.

Toys are miniature replicas of real objects and carry their functional values. This sets up limitations if one wants to stay within the realm of functional and interrelated reality. (Woltman, 1952, p.281)

In an unsophisticated but relevant example he continues, "A toy bathtub usually does not fight and shoot; an airplane usually is not used as a house" (Woltman, 1952, p.281). In the same way, play materials which are not necessarily miniaturized objects restrict certain play behaviors as well. In the Montessori system, for example, materials are designed and provided to increase task- and learning-oriented activity, while the

materials preclude interpretive, fanciful responses which might effect error (Lillard, 1972).

Is there empirical evidence that the physical properties and play functions of materials differentially affect play behaviors? Focusing on manipulating the attributes of play materials, Ellis et al. (1978) considered the physiological correlates of play, namely the state of physical arousal (heart and respiratory rate) in response to the behaviors stimulated by various play materials. In a series of unpublished experiments,

Toys were presented which were presumed to vary in the information they presented. One toy had obvious task demands that would require little investigation. Some of the toys also presented more manipulative opportunities. These qualities of the toys were varied independently although with five toys the variations were not completely balanced. Nevertheless these qualities were identified beforehand and their variations in the two attributes [manipulability and task demands] was expected to modify the kinds of information carried by the toys and the way the children played with them. (Ellis et al., 1978, p.109)

They were able to conclude that by manipulating the selection of play materials, the child's state of arousal is in fact modified. Their finding implies that at the level of basic physical response, materials differentially affect play behaviors.

Ellis et al. (1978) cite as well numerous studies in which the physical attributes of the material (color, manipulability, encapsulation) have been shown to affect initial preference for or usage of materials. Systematically altering the attributes of

a single material, Gramza (1976) found that an unattached rope sustained play interest more than an attached rope. When colored blocks were presented to players in a jumbled pile, as opposed to color sorted, children were prompted to use a variety of colors in their constructions, although they favored only one or two colors when blocks were presented in an orderly fashion (Gramza and Witt, 1969).

A qualification concerning the relative impact of play materials is appropriate. In studies like the present one, in which materials were presented to subjects jointly, the materials may not be the only critical variables of the play situation; and the influence of social and contextual variables should be identified.

Supporting the theme which claims that the setting is an important determinant [the authors] found that peers were the most important influence. Time and again the physical attribute of the environment was modified, often quite drastically, and time and again the concurrent manipulation of the social setting ran away with the variance. (Ellis et al., 1978, p.100)

On one hand this could be explained by considering the relative appeal for the child of play objects as opposed to peers. On the other hand, relevant to this study, is an underlying issue- the degree to which various play materials act as critical variables or differential stimuli for social play behavior.

Play materials have been considered in both experimental and observational play settings as variables affecting the incidence of social play behaviors. With reference to social or co-operative versus isolate or aggressive play, results (Gump and Sutton-Smith, 1955; Hulson, 1930; Parten, 1932; Poling, 1976; Quilitch and Risley, 1973; Turner and Goldsmith, 1976; Van Alstyne, 1932; Wolff, 1977) support De Stefano's conclusion (1976) that "the child's social play is largely a function of child-object relations."

The variety of materials used in these studies and the number of definitions of "social play" or "social value" of play objects make generalizations difficult. However, blocks, games and high-activity materials (see-saws, wagons, "kiddie kars," trucks) appear to induce co-operative play. Materials involving minimal physical activity and a degree of concentration (paper and scissors, clay, puzzles) have prompted isolate play or "passive co-operation" (Van Alstyne's term, 1932).

The physical characteristics of play materials, just as they have been shown to stimulate or limit certain play behaviors, this study explored, should stimulate and limit the speech that occurs during play.

Selection criteria for playroom materials. Given the critical role of play materials in influencing play behaviors, and potentially speech elicited during play, it is reasonable to assume that educational and therapeutic play sources would be

exacting in their discussions of selection criteria for these materials. However, for educational settings, Weininger (1972), a play advocate, admits that the selection criteria for play materials in schools have been poor, such that Gehlbach (1976) notes that the selection of materials for educational settings has been based on popularity and "educated guesses." Brief examples of these "educated guesses" follow.

Any well-equipped playroom will contain a wide range of materials that enable children to play freely and creatively....Each playroom should provide the full range of activities. (Cass, 1971, p.139)

"The challenge is to find and provide a properly balanced assortment of playthings to meet each child's many needs" (Caplan, 1973, p.176).

In play therapy sources as well the link between therapy process or goals and the materials recommended is often vague. In psychoanalytic sources, "libido-evoking" materials, for representing bodily preoccupations, are recommended. However, Slavson et al. (1976) recommend such diverse materials as water, water colors, plasticene, and materials for representing interpersonal relations, such as dolls. For activity-interview therapy, materials of a "therapeutically advanced nature" are recommended but are not specified. According to Schiffer (1969), play materials have therapeutic value if they promote interaction and satisfy creative needs. Ginott (1960) recommends that appropriate materials meet such critical goals as to



facilitate relationship formation, insight, reality testing, catharsis, and opportunities for sublimation.

With reference to the child's verbal expression in particular, selection criteria are poorly defined for both educational and therapeutic contexts. "Children need not only other children to talk and play with, but also an environment and play materials which encourage conversation and experiments of all kinds, for an empty playroom would provide little incentive for lively and spontaneous talk and play" (Cass, 1971, p.42). Materials, according to Ginott (1960), must allow growth in the repertoire of self-expression, and elicit the expression of the child's needs and problems. Similarly, according to other clinicians (Schiffer, 1969; Slavson et al., 1976) play materials should be a vehicle of communication.

Only Schiffer (1969), however, has given the communication potential of materials more detailed attention. He has suggested assigning what he terms a "valence" to play materials as a measure of the potential an item possesses for inducing communication. Schiffer has stated that projective items such as dolls are high valence items, while craft materials are low valence items. However, Schiffer did not empirically explore this concept and has not described a method for assigning to materials a numerical value that would be useful in selection.

In actual practice, ordinary preschool toys comprise the bulk of therapy playroom equipment. Playroom selection has

varied little from Axline's list (1947), which was an elaboration of Melanie Klein's earlier criteria (Klein, 1963), that toys be simple, nonmechanical, and of a good variety.

The evaluation criteria for these recommended materials have been as poorly substantiated as the selection criteria. Ginott (1961), for example, has suggested that play therapists evaluate materials by considering their effects on the inner processes of therapy. Similarly, Axline (1947) has reported that the materials which she recommends have been used with "varying degrees of success" (p. 56). It was considered within the scope of this study that empirical investigation of the influence of play materials on verbalization would provide meaningful objective criteria for the selection and evaluation of materials for therapeutic and educational play settings.

Speech during play. Systematic efforts to evaluate play materials as variables affecting the child's speech rest on the premise that children are likely to speak when playing. Certainly in educational and therapeutic play sources, play theorists assume from the course of their observations that speech during play is the rule.

Four to six year olds are capable of manipulating, exploration, social relation. [They have] more confidence in words and sentences and they verbalize as they reenact in their play their varied adventures.  
(Caplan, 1973, p.216)

According to Despert (1940), "verbal expression is as readily available as motor expression if the child is placed in such

play situations" (p. 28). In a similar unsubstantiated observation, Frank (1955) has concluded that

Non-syntactical sound effects are particularly likely to accompany play activity....Children's spontaneous play is usually accompanied by verbalizations of more or less appropriate words. (Frank, 1955, p. 586)

From both educational and therapeutic play contexts, empirical work to substantiate these observations has been minimal and unfocused in terms of the speech-related variables studied. In an early systematic observation of children's free play within an educational setting, Van Alstyne (1932) considered the "conversation value" of play materials as a simple index of the number of children with whom a child spoke when playing with a given material. The child's self-talk, of interest in this study, was recorded but was not considered a component of the conversation value. Van Alstyne found that of the four most popular materials- blocks, clay, painting, and the doll corner- all but painting increased in conversation value from ages three to five. However, this finding is more likely a reflection of developmental changes in the child's capacity for speech and social play than the relative impact of specific materials. Van Alstyne was also able to rank materials, for combined subject ages, as to their conversation value as follows: dishes, hollow blocks, doll corner, wagon, parallel bars, telephone, blocks, colored cubes, balls, crayons, and clay.

Hurst et al. (1967) considered the verbalization influence of specific materials for instructional purposes. They presented three types of stimulus play objects or tasks to 20 preschool aged subjects who played alone and in dyads for sessions of up to an hour. The stimulus objects which they used were the following: a variety of play materials (doll and crib, fire engine, coloring book and crayons, male puppet, and toy telephone); picture books; and a tell-a-story technique. Subjects were then encouraged to elaborate on their play activity. The disappointing findings suggested that stimuli which held the child's attention did not necessarily generate spontaneous speech.

The systematic observations of the Russian L.S. Slavina (El'Konin, 1971) successfully illustrated qualitative changes in the player's speech in response to play material characteristics.

In her experimental observations young preschool children were given for play some objects that do not have a rigidly fixed method of activity, for example, blocks and small plates. The child began to manipulate these objects as he was prompted by their physical characteristics....When asked what they were playing the children replied: 'With blocks,' 'With pebbles,' 'It's so simple.' Not one of the children performed actions that were characteristic of role playing. Then playthings were introduced into the play situation which suggested a definite subject to the children and the possibility of playing a role. The introduction of these new objects immediately changed the character of the play, although the child did not use them directly.... The activities with the original playthings acquired a different meaning. Instead of playing 'with blocks' or 'with pebbles,' the child now played 'cook' or

'mama.'(p. 229)

That is, the child's play activities were influenced by the objects present, and the speech in turn influenced by the activities which those objects suggested.

In an experimental study, Scanlon (1977) inadvertently illustrated that play materials act as critical variables in the general production of speech in the young child. While examining such social and environmental influences on language development as the child's health, native language, hearing and motor skills, as well as the mother's health, occupation, and interaction with her child, Scanlon found that the only outstanding variable in the production of speech of English preschoolers was the presence of play materials in the home. Those children who possessed toys for constructive play (arts and crafts materials) scored higher on measures of verbal comprehension and expressive language than those with toys encouraging physical activity (outdoor play equipment).

In the play therapy literature, the child psychologist Dell Lebo has been most concerned with an empirical basis for the selection of playroom materials, and specifically with reference to the capacity of materials to elicit verbalization. Several published studies have been derived from the 60 hours of play therapy sessions which he conducted with 20 subjects, ages 4 through 12. These 60 hours of sessions were recorded and the speech transcribed.

His initial analysis (Lebo, 1955a) of the resulting 4,692 statements cast doubt on the overall value of toys within the therapy process. In this data analysis he considered commonly recommended toys, non-recommended toys, and no toys at all as inducers of client verbalization. Lebo's results challenged lists of recommended play therapy materials and underscored Lebo's concern, expressed in that study, that materials may do little more than make the therapy hour more enjoyable for the child. He found, first, that questions about the play setting and self-informational statements were most likely without any play materials; second, that although relationship related statements and play narrative statements were more likely with play materials, commonly recommended toys were no more effective in eliciting speech than non-recommended ones; and third, that when statements were further analyzed as to degree of affective revealingness, the use of no toys was as effective as recommended toys in revealing children's feelings, with non-recommended toys least effective.

In a subsequent data analysis (Lebo, 1956), the same 4,692 statements were analyzed as "significant" (affective or informational) in terms of the therapy relationship or "insignificant" (narrative only of play activity). He found no difference in the verbalization of significant statements with or without play materials. Though these two studies are a challenge to sources (cf., Scanlon, 1977) which attribute to

play materials an important role in eliciting the child's speech, Lebo's findings do not contradict the possibility that specific materials may differentially affect the player's verbalizations.

In later work Lebo (1958) developed a formula to determine the expressive value of specific recommended and non-recommended play materials. The formula summed the percentages of statements falling into 23 speech categories relevant to play therapy process (known as the Borke categories; Lebo, 1955b). Lebo termed the resulting figure a Verbal Index (VI) and ranked materials as follows according to this VI: doll family and furniture, paints and brushes, sandbox, blackboard and chalk, caps and guns, coloring books, hand puppets, balloons, and baby bottles. The five lowest ranking of the 62 materials studied were checkers, a shovel, masks, toy soldiers, and water colors.

Beiser's (1955) study, which examined the play preferences of 100 clients in diagnostic play sessions, is the only attempt in play therapy literature to consider the communication value of materials by first grouping the materials according to their properties and functions. The "communication value" which Beiser considered was not a measure of verbalization per se but a ratio of an object's popularity value (preference rank) in relation to the number of dynamic interpretations (uses, both symbolic and verbal) to which a play object was put. Materials with the highest communication value were the following: Nok-Out bench (a

type of pounding board), doll family, gun, soldiers, paper and crayons, clay, large baby doll, and animals. Those with the lowest ranks were the toy telephone, doll furniture, crayons and pencil. The latter two materials were found to have zero communication value.

Generalizations cannot, and in fact should not, be drawn from these studies because the indices and methods for determining the verbalization influence of materials vary among the studies. Recommendations by play therapists that research in general is needed on the influence of specific materials (Beiser, 1955; McNabb, 1975) and lacking in particular with reference to speech-related variables during play, in therapeutic and other play contexts, (Hutt, 1966; Poling, 1976; Quilitch and Risley, 1973) underscored the need for a systematic evaluation of the verbalization potential of materials in order to supplement these few existing studies.

Categorization of play materials. Play materials, when categorized for a variety of purposes, consistently fall into similar groupings which formed precedents for the categories of materials used in this study, namely, Human Representative, Kinetic, and Construction materials. For educational settings Garrison (1926) categorized materials according to the type of play they stimulate: miniature reproductions, which she believed stimulate play of rehearsal, and toys of skill for co-ordinating the senses. Categorizing materials in terms of their effects on



social, physical, and intellectual development, Kawin (1934) identified categories comparable to Garrison's. When materials have been categorized in terms of assumed therapeutic benefits (Schiffer, 1969; Slavson et al., 1967), similar categories have evolved. According to Schiffer (1969), for example, the natural categories of materials are the following: objects representing persons, which he suggests help reveal feelings about others; plastic media, which stimulate interaction and communication; craft materials, which promote experiences of mastery; and recreational supplies, which promote contact.

Van Alstyne (1932) relied on the weak operational definitions of material categories established by Bott (1928): household toys (no definition; these included dishes, dolls, doll corner, telephone); locomotor toys, or "those that grossly elicit this function with respect to both material and child"; and pattern toys, "those whose manner of physical construction more or less definitely conditions the manner of their use to whatever degree of complexity this be carried" (Bott, 1928, p. 74).

Beiser (1955) in turn based her criteria for categorization on those of Van Alstyne (1932) and Bott (1928). As the Beiser study is similar in principle to the present one, it is important to note that in her data analysis of toy preference and usage dimension, Beiser found that "toy categories are not so critical as the communication possibilities of individual

toys" (Beiser, 1955, p.769). However, the selection of toys within her categories was not consistent. The doll play grouping included such related but dissimilar items as telephone and toy gun, yet only one item comprised the pattern and mechanical categories. In addition many of the factors which she considered were defined and analyzed in terms of the child's toy preference, a complicating factor.

The coding of speech. The systematic evaluation of the verbalization influence of materials required not only the categorization of materials but also a means of evaluating verbal output. Few precedents for the coding of speech during play exist (Simon and Boyer, 1970), with most systems focusing on the style of play or social interaction rather than the subject of the verbal referent. Updegraff and Herbst (1933) coded peer conversations within social play as to monologue, attention to play materials, discussions of material usage, and discussions of unrelated matter. Marshall (1961) coded verbalization in relation to degrees of social interaction for suggestion, imitation, agreement, and hostility across dimensions for dramatic play language, reality language, and direct social interaction.

A few speech coding systems have been devised to evaluate client changes in play therapy by analysis of verbalization. Lebo (1955b) has described unpublished material of Borke and has slightly revised (Lebo, 1958) her speech categories which

attended to elements of the therapeutic process (such as relation to and interest in the therapist) expected to be reflected in the client's speech. A speech coding system for the play therapy process was also devised by Withee (1976) for verbal descriptions of play, sound effects, mumbling, and response to counselor. However, her system appears uneven, arbitrary, and like the Borke categories, suitable for coding speech only when a therapy intervention is planned. Similarly, Moustakas, Sigel, and Schalock (1956) developed a detailed coding system which focused on the climate of verbal exchanges between therapist and client (elements of co-operation, hostility, attention).

None of these earlier systems offered a direct precedent to the system developed for this study, although components of some of them (e.g., Borke, Updegraff et al.) have been rearranged and in a sense streamlined to represent the use of language increasingly removed, literally or through fantasy, from the child-object interaction. The theoretical discussion which follows provides background for the present coding system which distinguishes object, activity, self-informational, and social interaction verbal referents, with or without a fantasy component (see Appendix A).

In a discussion on the exploratory behaviors of children, Hutt (1966) distinguishes attention to objects, to activities or movement, and to social contact. Initially, Hutt explains, the

child explores his/her capacity for movement, later explores physical objects, and then explores social relationships. Introducing her study (1966) to distinguish the child's exploratory from general play behaviors, Hutt finds common ground between these behaviors, which emphasizes this object/activity/social distinction in the child's activities.

The category of play commonly includes bodily activities, activities involving inanimate objects (investigation or games), [and] involving animate objects (social play)....Exploration in turn includes topographical, object, and social exploration. (Hutt, 1966, p.235)

These distinctions in the child's activities, it follows, should be reflected in verbal references to play materials, descriptions of physical activities, and attention to social contact.

Theoretical parallels to the speech coding system can also be found in discussions on the general functions of language. According to Karl Buehler, as summarized by Loewenstein (1956) and Ekstein (1966), language has first of all a function of representation. Through words, external objects, activities, events, and their interrelationships are identified and described. Second, language has an expressive function for identifying and communicating of personal thoughts and feelings. Finally, Buehler theorizes, language has a function of appeal for signalling a desire for social contact and exchange of communication. These functions of representation, expression,

and appeal are reflected in the object, activity, self-informational, and social interaction referents of the present coding system.

Substantiation for the present system is also found in a similar source, in a discussion on the role of language in human development. Bruner (1972) notes the simultaneous appearance in man of the use of tools and the use of speech. He proposes a central hypothesis that "the initial use of language was probably in support of and closely linked to action" (Bruner, 1972, p. 700). Elaborating this point, Bruner suggests that the present syntax of human language is not at all arbitrary. "It consistently reflects agent, action, and object" (Bruner, 1972, p. 700). With reference to the development of the child's speech, "whatever the language, agent-action-object is the form soon realized by the young speaker" (Bruner, 1972, p.700). Although the coding system used in this study was not directly concerned with syntactical variables, it was concerned with evaluation of the subject of speech, whether the agent, actions, or objects (both play materials and peers) were being described.

The self-informational category was included in the system in response to observations made in play therapy literature: that the child does speak of personal concerns and experiences in therapeutic settings is widely substantiated in transcripts of play therapy sessions. In non-directive settings in particular, where the therapist's input is intentionally neutral

(Axline, 1947; Moustakas, 1973), child clients are reported to divulge considerable personal information in addition to expressions of interest in the play materials and activities.

The coding system in its dimensions considered the fact that the child's verbal referents may extend beyond the objects, activities, and social contacts of the immediate play setting (immediate dimension) to objects, activities and relationships removed in time and space. These events may be unavailable to the child in a literal sense (distal dimension) or removed from immediate experience and unavailable through the element of fantasy (fantasy dimension).

A distal dimension was included because it is inherent in the general function of language. In the child's development, the use of language evolves from the naming of objects present and becomes increasingly removed from the presence of objects (basic to Piagetian theory). That is, the child becomes able to comprehend that objects and events removed from his/her presence continue to exist and that words can represent them (Caplan, 1973; Garvey, 1977). "The use of language permits human beings to give actuality to events that are remote in time and space, and yet to distinguish them from those which exist here and now" (Loewenstein, 1956, p.466).

Levin and Wardwell (1962), who were concerned primarily with doll play, noted this immediate versus distal distinction in play: "The basic question that has influenced the

understanding of doll play is whether the child is telling about events and hopes and plans which are available to him in his day to day world or whether his act in this [play] setting are otherwise unavailable" (Levin and Wardwell, 1962, p. 51). The child's speech during play, it was theorized, should reflect this immediate-distal distinction.

The speech coding system attended to the element of fantasy because fantasy is an important element in the child's play behavior (Ekstein, 1966; Frank, 1948; Millar, 1974; Singer, 1973). Fantasy play encompasses a wide range of play styles from day-dreaming and make-believe to dramatic role play (Garvey, 1977). In therapeutic contexts in particular, the varieties of fantasy play are recognized by these same play theorists and clinicians as having important therapeutic functions in the expression and resolution of conflict. Evidence that materials differentially affect degree of fantasy verbalization would be of value in these settings.

With reference to the determinants of fantasy play, the tendency to engage in fantasy play has been suggested as a personality trait, affecting the child's capacity for imagery, tendency to be reflective as opposed to impulsive, and the ability to "de-center" and adopt new roles (Singer, 1973). Constitutional factors, affecting mobility and exploratory activity, as well as environmental factors, such as parental encouragement and even modelling of fantasy play, have been

considered as influences in the child's tendency to engage in fantasy play (Fineman, 1962; Singer, 1973). However, the physical properties of play materials themselves have been shown to differentially affect degree and style of fantasy play behavior (Pulaski, 1970). The analysis of players' verbalization (i.e., evidence of immediate, distal, or fantasy components) was to provide further information on the influence of materials with regard to prevalence of fantasy.

Play materials and predicted verbal referent. Predictions about the kinds of verbal referents play material categories were likely to elicit cannot be easily derived from the clinical and general literature. Most sources link specific materials or categories of materials to types or styles of play: realistic versus fantasy, social versus isolate, co-operative versus aggressive. In some cases conclusions based on clinical experience have been in accord with experimental outcomes (e.g., the high correpondence of aggressive play behaviors in the presence of materials like guns and toys soldiers; Turner et al., 1976; Wolff, 1977). In most cases, there are no consistent trends.

There is much uncertainty in the literature, for example, as to how the degree of realism of play materials affects the incidence of fantasy play. Garvey (1977) believes that the play objects available influence the roles that are adopted by the child. In play with small dolls (Human Representative



materials), it is generally assumed that fantasy will be an integral component (Despert, 1940). The underlying issue is the degree to which the play object lends itself to symbolic or literal use (Ekstein, 1966). A discussion of this question by Singer (1973) illustrates the difficulty of linking the play materials used in this study to behavioral outcomes, with predictions about verbal behaviors in particular even more difficult.

The availability of at least some toys at a relatively early age should undoubtedly enhance the likelihood of make-believe play for the young child by providing additional complex stimuli which can be part of the assimilation process when the child is alone. Obviously toys that involve some resemblance to living objects are specially helpful since they require less of a great leap for the child and have an immediate appeal for it. At the same time it seems generally to be the case that the favorite toys of young children are not excessively specific in their function.

There is probably a subtle and curvilinear relationship between the degree of realism of a toy and its usefulness in stimulating imaginative behavior on the part of the child. (Singer, 1973, p. 239)

It is my guess that such relatively non-specific and flexible toys lend themselves best of all to long-term use and can stimulate make-believe play if mixed with fairly specific playthings such as dolls and other human-like objects. (Singer, 1973, p. 240)

Unlike Singer, who states that realistic materials help the child make a "fanciful leap," Bender et al. (1940) have observed that these materials prompt realistic play because "these toys represent real objects in diminutive form" (p. 32). Having experimentally considered structured versus unstructured

materials, Pulaski (1970), as summarized by Singer (1973), concluded that when there are no strict functions of the toys that are available to them the children make up more different kinds of make-believe play games, at least in the case of solitary play studied in her investigation.

In addition to being associated with fantasy play, Human Representative materials have been linked in clinical sources to self-informational statements: "objects representing persons help the child reveal feelings and attitudes about parents, siblings, and others," and "in spontaneous role enactment with projective materials the therapist learns more about interaction in families and about children's attitudes" (Schiffer, 1969, p.79). In Despert's clinical experience as well (1940), identification of the child and family members has occurred consistently in play with dolls (cf., immediate and distal self-informational referents of the present study).

No general predictions could be made concerning Kinetic (or Construction) materials. Scanlon (1977) concluded that materials stimulating physical activity were less effective than arts materials in eliciting speech. However, she was referring to gross motor apparatus, such as swing and slide sets. In other studies (Hulson, 1930; Parten, 1932; Van Alstyne, 1932) materials of a recreational nature were associated with social or co-operative play. These findings tentatively suggested that social interaction referents would predominate with these

materials.

These observations, conclusions, and speculations are not included in order to support specific hypotheses, but to re-emphasize the lack of empirical precedents on the verbalization influence of materials, and to illustrate the difficulty in formulating predictive hypotheses for the play materials included in this study. In the face of such sparse, inconsistent, and unsupported generalizations in the literature, the hypotheses for this study were stated as comprehensive questions. These general questions were intended to explore more thoroughly and consistently than previous efforts the relationship between play material category and verbalization during play.

Statement of the research questions. Do play materials, when grouped according to their physical properties and play functions, differentially affect verbalization during play? Specifically, do play materials differentially affect the following: (1) the quantity of players' verbalizations, defined as the total number of words included in the referents analyzed; (2) the subject of the verbal referents, whether descriptive of the play material, play activity, personal state, or social interaction; and (3) the prevalence of immediate, distal, or fantasy elements in these referents?

CHAPTER II

## METHOD

### Subjects

Subjects were drawn from a university children's center, a facility which provides day care services for preschool-aged children of faculty, staff, and students. Three girls and one boy, ages 3.4 to 4.6, were selected from an initial subject pool of 17 preschoolers, ages 3 to 5, whose parents had provided written consent for participation in the study. The subject pool was screened by the use of several formal and informal measures, experimenter observations at the day care center, and pilot play sessions.

Two informants completed the Verbal Language Development Scale (VLDS; Mecham, 1958) on the entire subject pool. These informants were substitute teachers who had known the preschoolers for 4 and 18 months respectively. A Pearson's product moment correlation coefficient showed an interrater agreement of  $r = .78$  on these scores. Individuals with extreme scores on the VLDS were then eliminated from the subject pool. The same informants then completed a social play profile for the remaining subject pool.

The experimenter spent five hours at the day care center during the week preceding the pilot sessions, observing the

children and minimally interacting with them. The purpose of these observations was to observe their interactions and to gain basic acquaintance so that shyness and/or calls for attention would be minimized in the initial experimental play sessions. During these observations it became apparent that some of the children receiving middle- and high-range VLDS scores were not at all talkative. It was thought that the informants had used the VLDS to evaluate each child's ability to speak rather than his/her inclination to speak.

The same informants were then asked to estimate each child's actual talkativeness using a talkativeness scale formulated for the purposes of this study. A Pearson's product moment correlation coefficient showed an interrater agreement of only  $r = .67$ . However, when the scores on the two verbal measures were ranked, eight preschoolers received consistently high scores on both measures. Six of these higher scorers participated in the pilot sessions, during which two preschoolers were eliminated.

The VLDS, talkativeness scale, and social play profile therefore provided descriptive background on subjects, but scores on these measures did not constitute actual criteria for selection. Each child's attendance record, observed talkativeness in the presence of a stranger (the experimenter), and the clarity of each child's speech were also taken into consideration.

An additional subject descriptor, the Fantasy Interview (Singer, 1973), was administered by the experimenter to each of the four subjects. This was done at the conclusion of the study because it was thought that the explicit references to fantasy images or persons, elicited during the interview, could have influenced the fantasy content of the experimental play sessions. The interview was administered by the experimenter, and the questions were rated by two independent raters. Percentage of agreement between these raters was calculated from the fraction of the four questions on which the raters agreed. These percentages were calculated for each subject, with the average percentage for all subjects indicating 70% rater agreement. All subject background data from the entire screening procedure are summarized in Table A of Appendix B.

### Instruments

Subject screening. The subject screening measures are identified as the following: a measure of verbal ability (VLDS); a rating of talkativeness tendency, the talkativeness scale, formulated for screening purposes; an informal descriptor of social play tendencies, the social play profile, formulated for the study; and an informal descriptor of fantasy play tendencies, the Fantasy Interview (Singer, 1973). Detailed information on these measures is found in Appendix B.

Speech coding. The speech coding system developed for the study was composed of four referent types which concerned the topic of the player's speech: objects, activities, self-information, or social interaction. These referents were further classified along three dimensions, which concerned the proximity of the verbal referent to the actual play setting: immediate, distal, and fantasy dimensions. Figure 1 illustrates the cells of the speech coding system.



Figure 1

Diagram of the Speech Coding System

Dimensions	Referent Types			
	Object	Activity	Self- Information	Social Interaction
Immediate	Immediate Object	Immediate Activity	Immediate Self- Information	Immediate Social Interaction
Distal	Distal Object	Distal Activity	Distal Self- Information	Distal Social Interaction
Fantasy	Fantasy Object	Fantasy Activity	Fantasy Self- Information	Fantasy Social Interaction

Operational definitions for the four major referent types follow: Object referents name, identify, or describe the physical properties and functions of play materials; Activity referents describe play activities and processes beyond the simple identifying of materials; Self-Informational referents provide information about the child's personal state; Social Interaction referents signify social exchange and contact.

A complete description of the referent types and

dimensions, with examples, is found in Appendix A. Aside from references to the experimental setting and procedure, which did not figure in the timing of sessions, or mumbling and singing, which were intentionally not coded, the referent types were intended to be exhaustive and mutually exclusive.

### Setting and Materials

The experimental play sessions took place in a small room, approximately 12 ft. by 14 ft., normally used for play, in an unoccupied day care center near but not adjacent to the subjects' own center. A low table containing the experimental materials was situated in a windowless corner of the room. Subjects sat on cushions at the table. Curtains minimized visual distraction, and chairs set around the play area confined all play to one corner of the room. Occasionally noise from an adjacent day care center could be heard in the experimental room. It was thought that subjects would not take notice of this kind of background noise to which they are accustomed. On only one of the 24 experimental sessions, a subject remarked about an unusual noise, and this referent was not coded. The experimenter sat in a corner opposite the play area and operated audio- and video-tape equipment. Aside from the play materials and the taping equipment, the room was otherwise stimulus free.

The materials that were presented to subjects were categorized according to physical properties and play functions. They represented several of the most common groupings of materials in play literature (see Chapter I). For the purposes of this study the material categories were identified and operationally defined as follows:

Human Representative- play materials with overt human facial characteristics and a degree of human form.

Kinetic- play materials whose parts require interactive and repeated movements and/or which elicit unique physical and repetitive movements on the part of the player.

Construction- play materials composed of numerous similar parts which require and elicit assembly to form a product. The resulting product may itself be used as a new object for play. (In illustrative figures, these material categories are abbreviated as HR, K, and C respectively.)

The selection of materials within each category was based on categories used in previous studies (e.g., Beiser, 1955) as well as on original consideration of the play functions and properties characteristic of the materials. Table 1 summarizes the comparative properties and play functions of the materials used in the study.

Table 1

Comparison of the Physical Properties and Play Functions  
of the Experimental Play Materials

		Material Categories	
	<u>Representative</u>	<u>Kinetic</u>	<u>Construction</u>
	Human small figures dolls puppets	pounding board slinky tops ball	Tinker Toys Lego blocks beads
Major Similarities Within Category	All materials have human faces, represent human figures, and po- tentially invite assignment and adoption of roles.	All materials require a unique physical activity to engage the object in play.  Pronounced move- ment by the play- er is evident in play with each material.	All materials re- quire attention to form and fitting or combining of compo- nent parts to create a larger object.  All materials re- quire mental con- centration and physical dexterity in play.
Major Differences Within Category	Some items are sex-stereotypic.  Puppets require special hand movements and are not literal miniatures.	Movement required for play varies with each material.	Wooden blocks do not require fitting as do the other materials.  Sizes and shapes of component parts vary between materials.

An assortment of materials within each category was provided in order to minimize problems of toy preference and sharing. The play materials used were considered appropriate to both sexes. Where the presence of certain materials suggested a sex-stereotypic preference (e.g., dolls, Lego), alternatives such as toy soldiers and beads were provided.

In order to avoid Beiser's (1955) difficulty with material categories (see Chapter I), an attempt was made to keep the internal consistency within each category high. Certain props were included in the Human Representative category, because it was expected that only dolls would offer little stimulus for play (as reported by Beiser, 1955). For the most part, the materials presented to subjects were among those frequently recommended for therapeutic play settings. The slinky, a potentially novel material, was the only exception, and was included because the selection of Kinetic play materials appeared too small to sustain eight to ten minutes of play.

The Human Representative category was composed of 2 dolls, 2 hand puppets, 3 miniature people, 11 small workmen, 13 small cowboys, and 6 toy soldiers.

The Kinetic category was composed of a ball, a pounding board and mallet, two tops, and a slinky.

The Construction category was composed of basic Lego pieces, wooden and plastic blocks, wooden and plastic beads, and Tinker Toys.

Further descriptions of all the experimental play materials can be found in Appendix C. The selection presented to the subjects remained constant throughout the experimental sessions. That is, the complete assortment in each category was presented to the subjects when play with a particular category was scheduled.

### Research Design

The play materials were presented to each dyad for 12 experimental play sessions in the counterbalanced order depicted in Table 2. Each dyad, therefore, played with each of the three complete categories four times. While a random assignment of materials could have resulted in the same categories for play on consecutive days, this presentation of materials allowed each category to follow and precede the other categories at least once.

Table 2

Order of Experimental Intervention					
Session			Play Material		
1	2	3	HR	K	C
4	5	6	K	C	HR
7	8	9	C	HR	K
10	11	12	C	K	HR

This study contained aspects of both intensive (small N) and factorial design. As an intensive design, it called for four exposures to three experimental conditions, replicated by a second dyad. Described factorially, the study employed a three-way factorial design (2 x 3 x 4), with the factors being dyads (2), play materials (3), and trials (4). Figure 2 illustrates the basic research design.

Figure 2

Graphic Depiction of the Research Design

Play Materials

	Human Representative	Kinetic	Construction
DYAD A	Trials 1,2,3,4		
DYAD B			

Procedure

Pilot sessions. Four pilot sessions, as practice run-throughs with materials, taping equipment, and the day care schedule, were carried out two weeks before the actual experimental taping. During these sessions adjustments were made with respect to subject selection and assignment.

Assignment. Assignment to the experimental groups, two dyads, A and B, was originally random, and then modified during



the pilot sessions. Six pre-schoolers, two boys and four girls, were randomly assigned to triads for the pilot sessions. Three participants were then eliminated because of shyness and attendance problems. In DYAD A a new subject was introduced. In DYAD B the two subjects remaining from the triad formed the dyad.

Experimental play sessions. Each dyad was taken in turn from their day care center to the experimental play room for what they were told would be a special play time with special toys. After the first three play sessions, subjects were told that it would be "a surprise" as to when they would see the various toys again. Subjects were also told that while they played the experimenter was going to do some homework. The experimenter then turned on the audio- and video-tape equipment and pretended to read, or filled out a log on the sessions. Taping sessions lasted eight to ten minutes. The 10-minute play sessions proved long for the subjects' attention span. Occasionally when interest in the materials waned, subjects were told that they should play "just a little longer." The presence of the experimenter was established in the agreement to use these pre-schoolers as research subjects. When occasionally addressed by one of the subjects, the experimenter responded with a neutral remark which discouraged contact, such as, "I can't talk to you right now because I have to do my homework." After the play sessions, the children were returned to the day

care center by the experimenter. Because of occasional subject illness and unavoidable delays, the 12 experimental sessions took place over a 4-week period for DYAD A and a 5-week period for DYAD B.

Data collection. All sessions were video- and audio-taped. The 24 sessions were then transcribed, and the first seven minutes of each recording were coded. Time spent in interaction with the experimenter or in chance interruptions was subtracted from the first seven minutes of the tape and was not coded. Equal time from the same play session was added to the transcript to compensate for these interruptions. This resulted in uniformly codable data, representing seven minutes of play with and attention to materials for all 24 tapes, with the exception of Session 9 for DYAD B, which was 6 minutes 50 seconds. The verbalizations in the resulting 168 minutes of transcription were then coded according to the speech coding system developed for the study (see Appendix A). Coding of the transcribed sessions was completed by the experimenter, with a hired independent coder used to establish interrater agreement.

Rater training. The rater, who coded independently of the experimenter, was trained by the experimenter to use the coding system. Rater training consisted of five hours of instruction and practice on unrelated transcripts and a run-through of an experimental tape.

CHAPTER III

## RESULTS

This chapter describes the results of the descriptive and inferential tests carried out on the experimental data. preliminary adjustments to the data including the revisions of the dependent variables are discussed. Interrater agreement data for the coding procedure are also presented. The statistical analyses carried out are identified and the results of descriptive and inferential tests on the data are presented for each dependent variable in turn. A summary of the major findings concludes the chapter.

### Preliminary Treatment of the Data

The original coding system contained 12 cells (see Figure 1 in Chapter II): four referent types across three dimensions. Preliminary inspection of the raw totals within the 12-celled system showed an exceptionally small number of distal referents for the 24 experimental sessions: 48 of 1,214 referents for DYAD A, and 6 of 673 referents for DYAD B. These figures translated into percentages of 0.04% and 0.01% for the dyads respectively. The distal dimension was subsequently collapsed with the fantasy dimension because both distal and fantasy referents described objects and activities outside the immediate play setting.

The data therefore were analyzed and are reported using an eight-celled coding system which yielded four immediate referents and four fantasy referents. The single dependent variables formed by the cells of this system were the following: Immediate Object (IO), Immediate Activity (IA), Immediate Self-Informational (IS), Immediate Social Interaction (ISI), Fantasy Object (FO), Fantasy Activity (FA), Fantasy Self-Informational (FS), and Fantasy Social Interaction (FSI). Six additional combined variables were also analyzed so that global referent types could be examined. These combined variables were created from additive combinations of the cells of the coding system. Four of the combined variables were created by combining related referent types: Object referents (OBJ), combined IO and FO; Activity referents (ACT), combined IA and FA; Self-Informational referents (SELF), combined IS and FS; and Social Interaction referents (SOC), combined ISI and FSI. The two other combined variables were created by collapsing the referent types across each dimension: Immediate referents (IMM), combined IO, IA, IS, and ISI; and Fantasy referents (FAN), combined FO, FA, FS, and FSI.

Preliminary inspection of the graphed raw totals of each referent per dyad indicated that the use of raw frequencies resulted in a misleading representation of the data because DYAD A produced consistently greater numbers of each referent type than DYAD B. The proportion of referent type per total number of

referents uttered (per subject per trial, and for each play material) was considered a more appropriate way to represent the data for purposes of analysis. The descriptive and inferential analyses reported have all been computed using these proportions, with the exception of the figures for total verbalization, which are reported as a straight word count.

#### Interrater Agreement

The level of agreement between the coding of the experimenter and the hired coder is reported as a percentage of agreement figure. This percentage of agreement figure was obtained by first determining percentage of agreement between the experimenter and the independent coder within each coding cell and then averaging these figures across the eight cells of the coding system. Within each cell, percent agreement was calculated by placing the highest frequency coder's score below the lowest frequency coder's score and converting the resulting fraction to a numerical percentage by multiplying by 100.

Using this method of computation, percentage of agreement averaged across the eight cells on a practice transcript was 77%. When three tapes were randomly selected from the first, third, and fourth quarters of the 24 experimental sessions, the following average percentages of agreement were obtained for the sessions respectively: 67.88%, 73.69%, and 74.62%.

Several factors independent of the sensitivity of the coding system may have contributed to the relatively low average percent agreement of 72.06%: the small number of hours spent in training of and practice for the second coder; incomplete instruction of the rater during training; and floor effects on the computational procedure employed. That is, according to the computations described above, coding cells which contained zero referents for any given coder counted as 0% agreement, whether the second coder's figures differed by 1 or more. This probably resulted in a conservative percentage figure. Regardless of the external factors influencing agreement, the sensitivity of the coding procedure, as established in interrater agreement, was not higher than 73%. Results of the study should be interpreted with appropriate caution.

### Descriptive Statistics

Dyad production of referent types. The means and standard deviations of the proportions were calculated for all 14 variables within each level of the independent variables of the study (play material, dyad, and trial). The accompanying Figures 3 through 16 depict the mean proportions for each material and for each dyad over the period of the experiment. Table 3 summarizes the means and standard deviations of the proportions for the dyads across trials for the play materials. Appendix D

contains tables of the proportions of each referent type for each trial.



Table 3

## Means and Standard Deviations of Referent Proportions across Trials

Referent	Play Material Categories					
	HR		K		C	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Dyad A						
IO	.10	.08	.12	.05	.15	.01
IA	.10	.07	.19	.06	.17	.08
IS	.02	.01	.04	.05	.06	.02
ISI	.16	.10	.33	.10	.27	.07
FO	.07	.03	.03	.03	.06	.03
FA	.52	.21	.17	.10	.15	.07
FS	.01	.01	.01	.01	.01	.01
FSI	.02	.01	.10	.07	.13	.12
OBJ	.17	.06	.13	.07	.21	.03
ACT	.61	.14	.37	.08	.32	.01
SELF	.03	.01	.05	.05	.07	.03
SOC	.19	.11	.43	.05	.40	.07
IMM	.39	.23	.69	.14	.64	.13
FAN	.62	.23	.31	.14	.34	.10
Dyad B						
IO	.17	.04	.08	.04	.11	.02
IA	.21	.03	.24	.10	.45	.10
IS	.05	.02	.07	.03	.04	.03
ISI	.25	.10	.40	.10	.24	.09
FO	.07	.04	.04	.05	.09	.11
FA	.23	.13	.11	.13	.08	.05
FS	.01	.10	.02	.02	.00	.00
FSI	.03	.03	.05	.05	.00	.00
OBJ	.24	.03	.12	.07	.20	.40
ACT	.43	.11	.34	.10	.52	.05
SELF	.06	.03	.10	.03	.04	.03
SOC	.27	.07	.45	.06	.24	.09
IMM	.67	.16	.79	.17	.83	.15
FAN	.33	.16	.21	.17	.17	.15

IO. Proportions of this variable occurred with only slightly greater frequency with Construction than with Kinetic materials, with levels for DYAD A consistently exceeding levels for DYAD B with these two materials (see Figure 3). With Human Representative materials, DYAD B did not replicate the trial averaged responses of DYAD A.

IA. The dyads produced varying and inconsistent amounts of this referent for the material categories (see Figure 4). Specifically, in DYAD B there was a negligible difference in IA proportions with Human Representative and Kinetic materials, and more marked change with Construction materials. In DYAD A these trends were roughly reversed.

IS. Very low levels of proportions of this variable were produced by the dyads, with the material categories affecting negligible changes in the levels (see Figure 5).

ISI. Production of ISI referents was influenced markedly by the three material categories, with the responses of DYAD A roughly replicated by DYAD B (see Figure 6). Play with Kinetic materials produced higher levels of the ISI variable than Human Representative materials for both dyads. However, in DYAD A proportions of ISI referents with Construction materials exceeded levels for Human Representative materials. The opposite was true for DYAD B.

FO. The play material categories produced small differences in the proportions of FO referents. This finding was replicated

by DYAD B (see Figure 7).

FA. Minimal differences in proportions of FA referents were elicited by the three materials in DYAD B. In DYAD A, however, FA referents were produced nearly three times as frequently with Human Representative materials as with the other material categories (see Figure 8).

FS. Proportions of this variable were extremely low, never exceeding 2% for the dyads (see Figure 9).

FSI. In DYAD A play with Kinetic materials produced slightly more FSI referents than with Human Representative materials. This finding was replicated by DYAD B. With Construction materials the effect upon the dyads was contradictory (see Figure 10).

Figure 3

COMPARISON BY DYADS OF  
IO REFERENT PRODUCTION

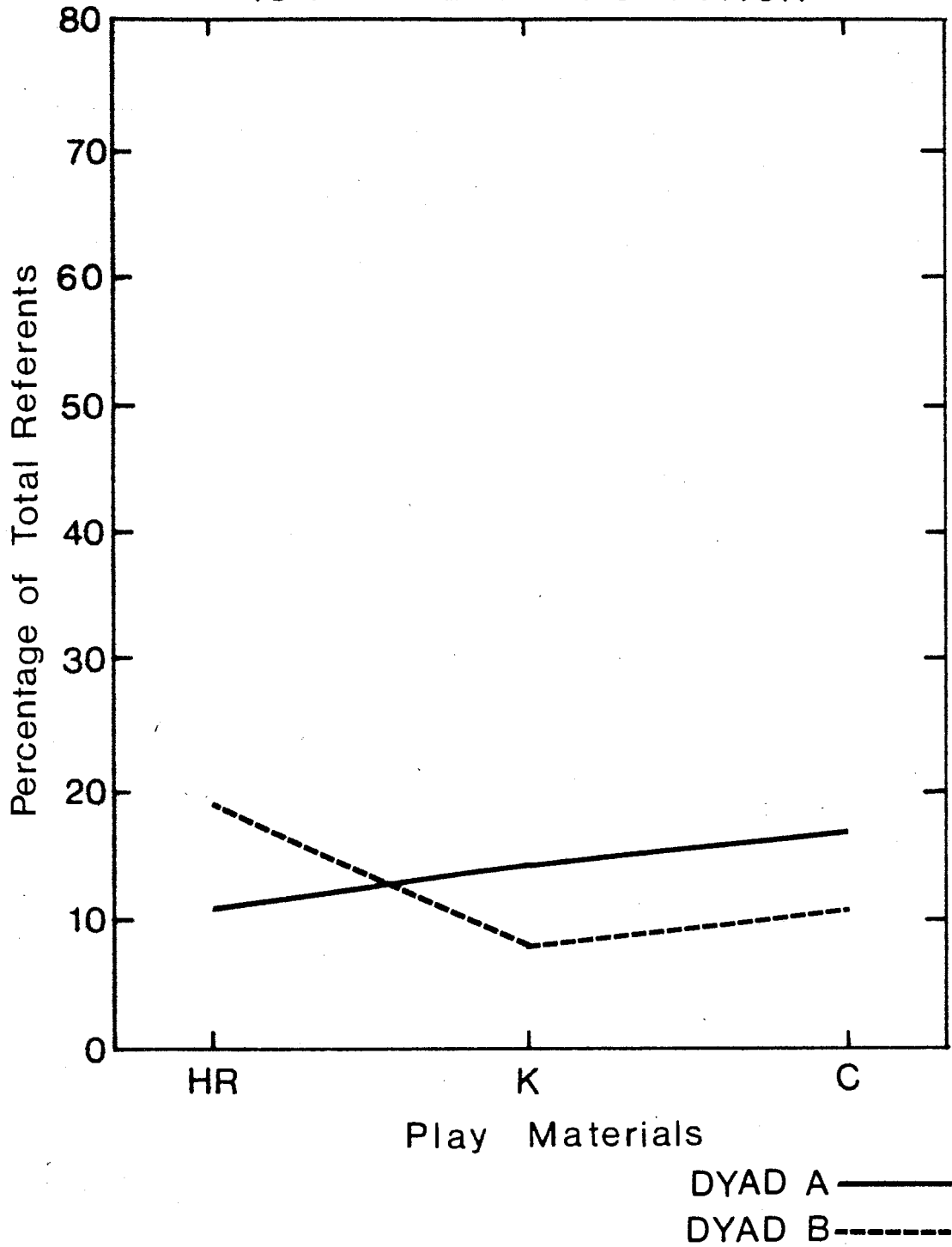


Figure 4

COMPARISON BY DYADS OF  
IA REFERENT PRODUCTION

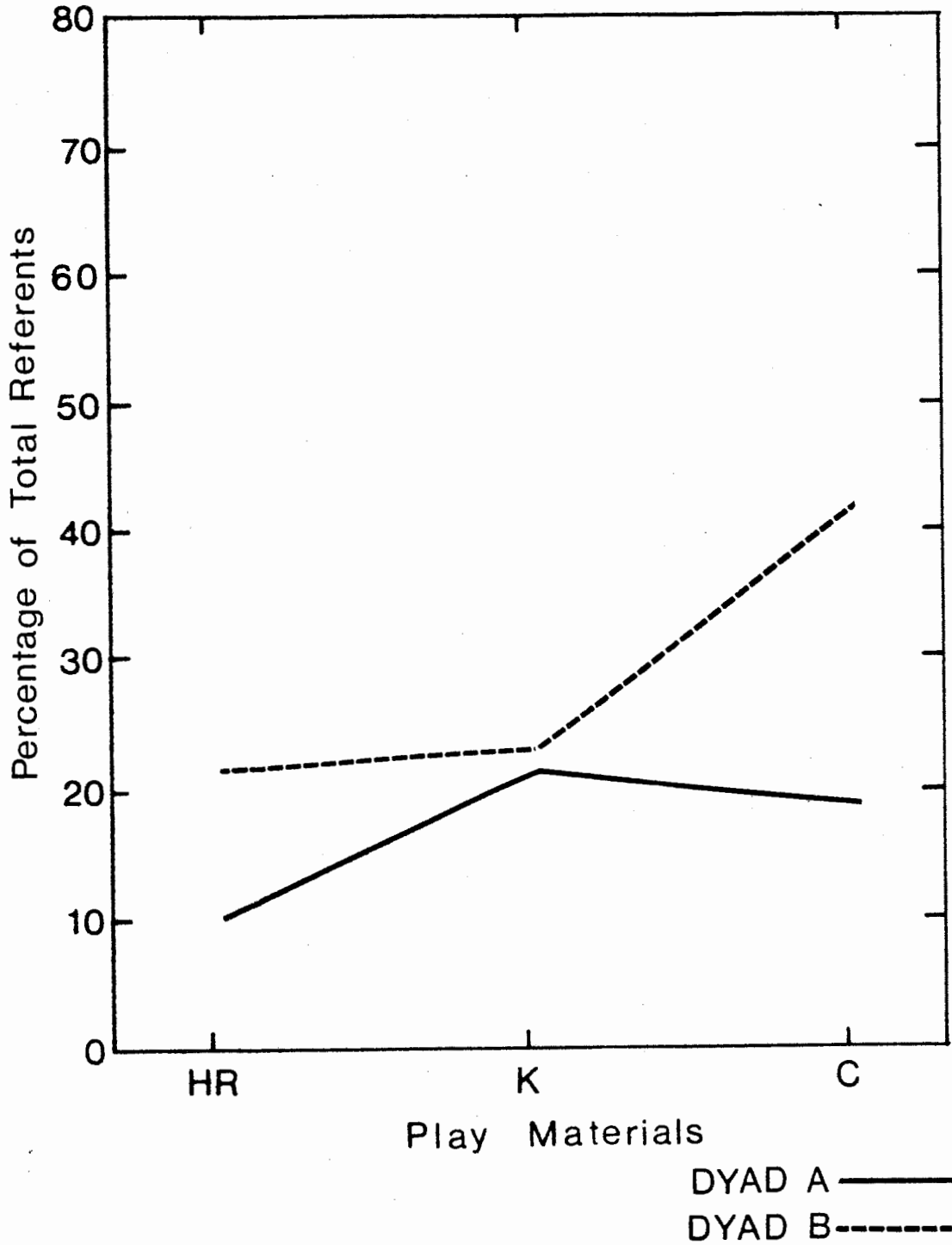


Figure 5

COMPARISON BY DYADS OF  
IS REFERENT PRODUCTION

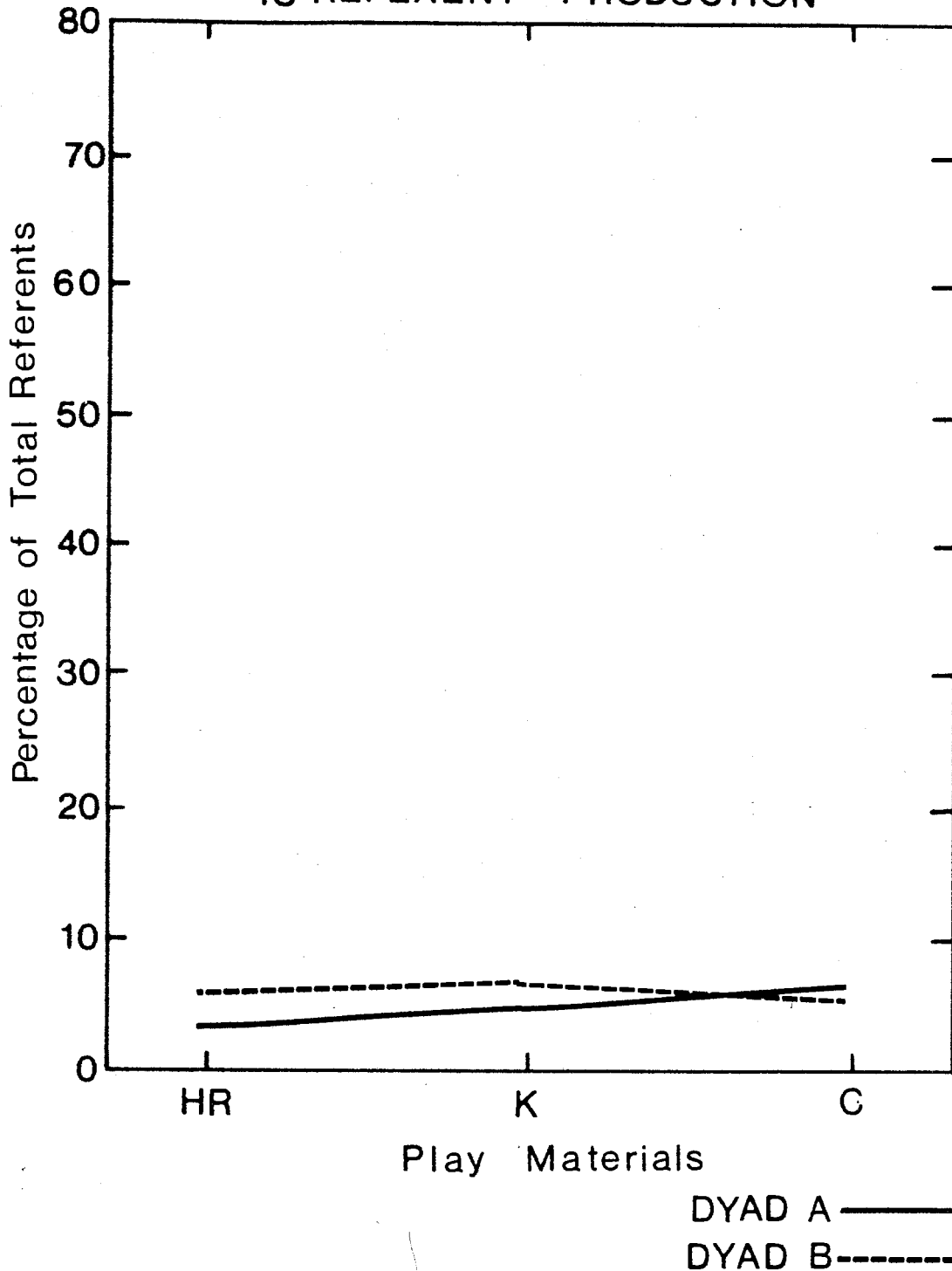


Figure 6

COMPARISON BY DYADS OF  
ISI REFERENT PRODUCTION

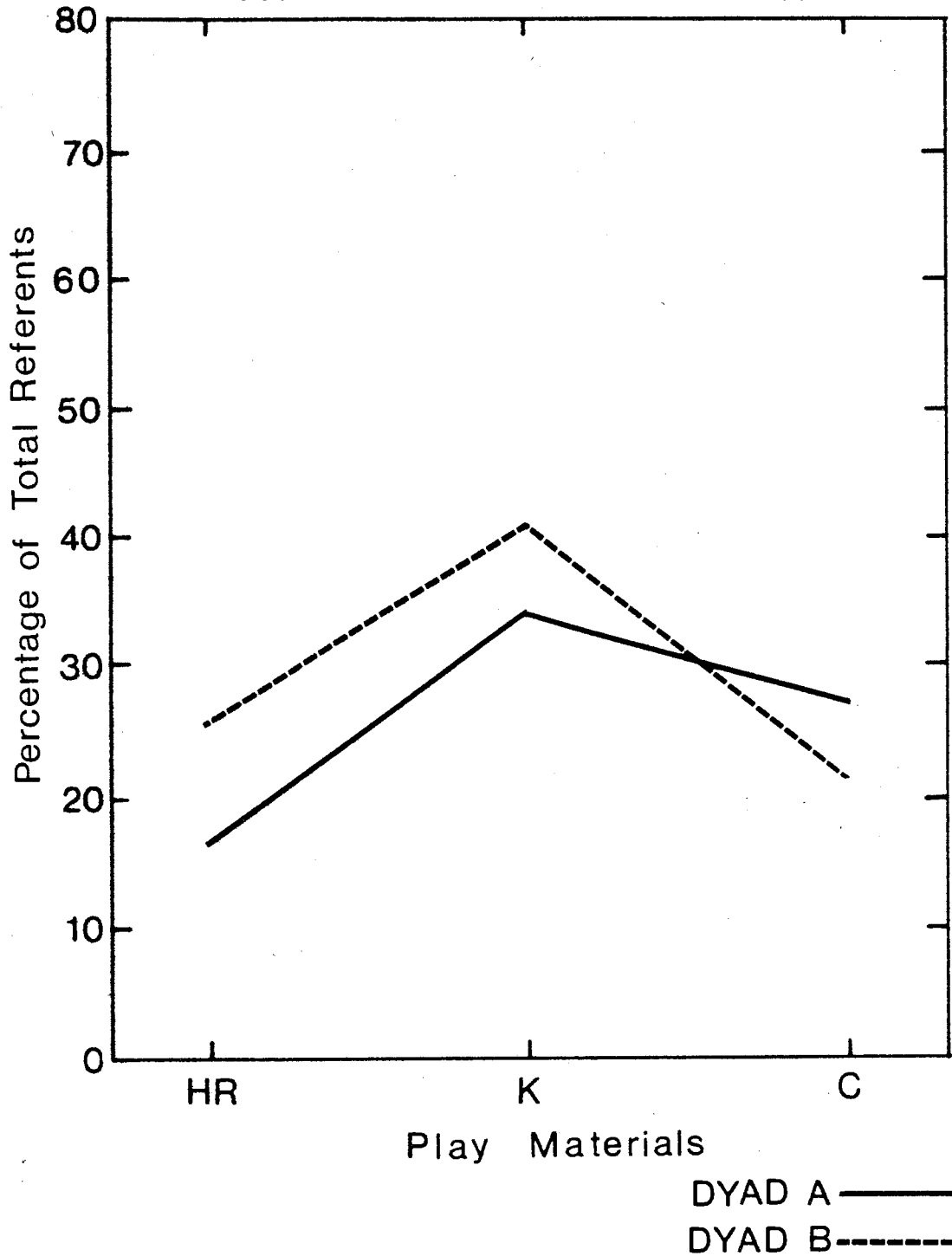


Figure 7

COMPARISON BY DYADS OF  
FO REFERENT PRODUCTION

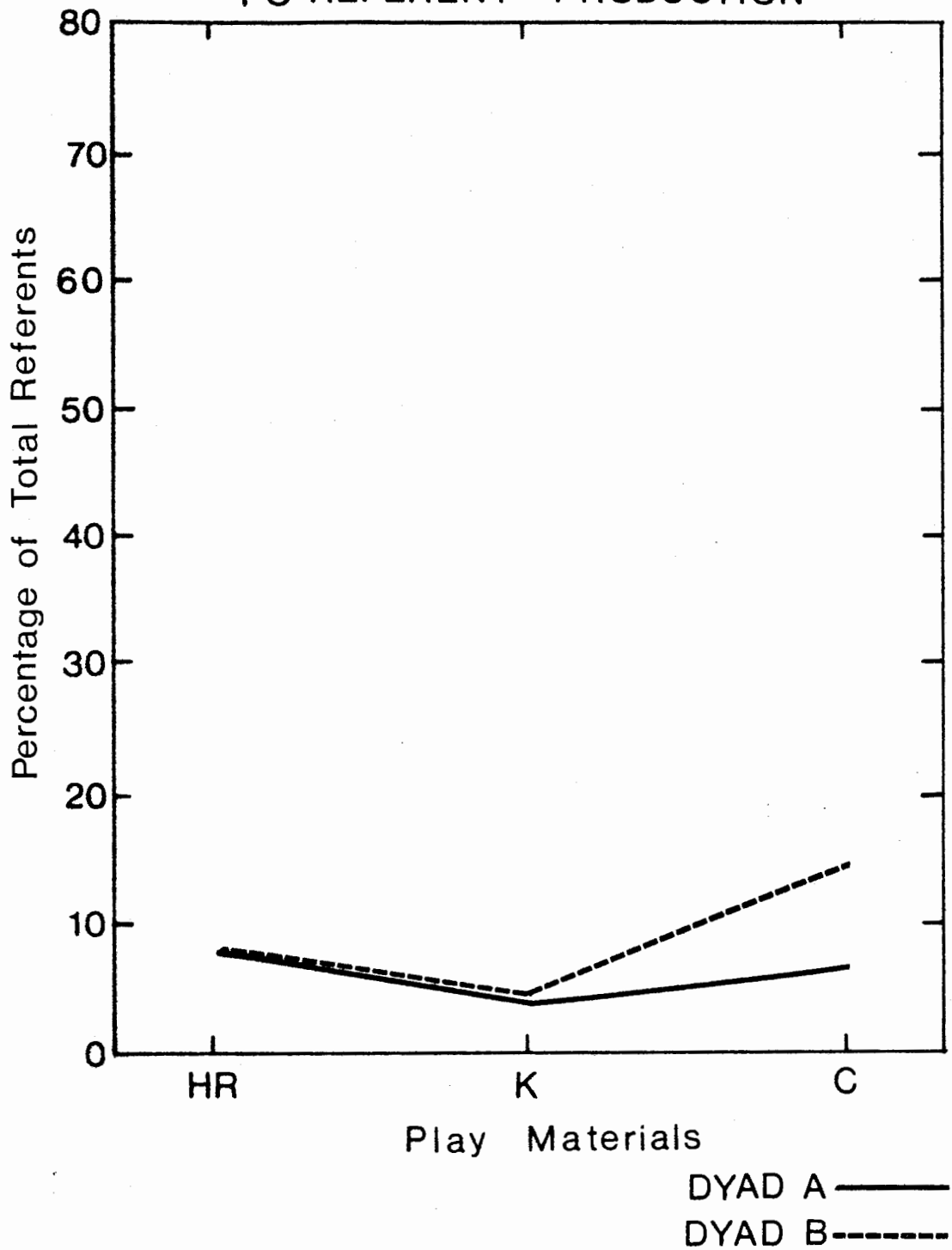




Figure 8

COMPARISON BY DYADS OF  
FA REFERENT PRODUCTION

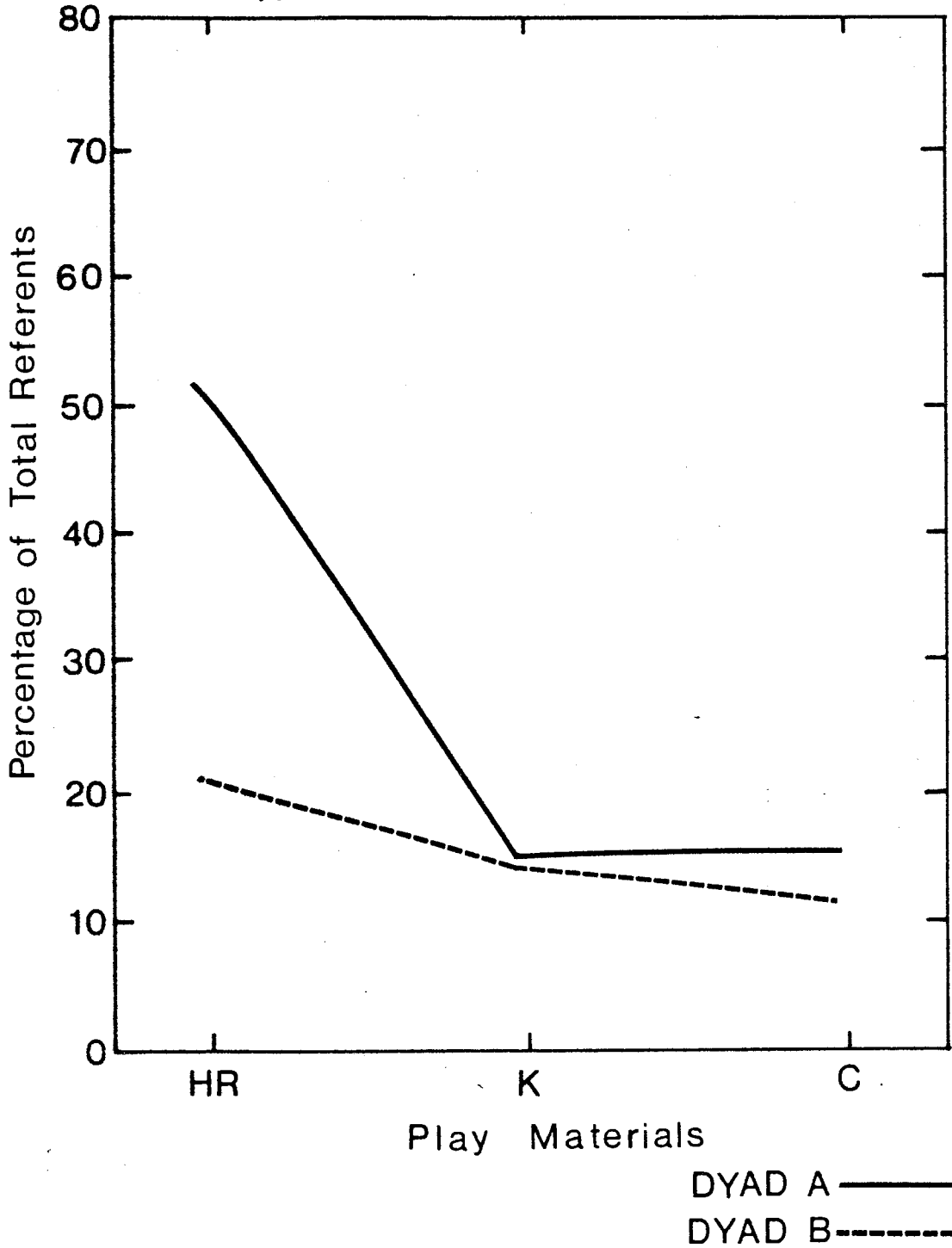


Figure 9

COMPARISON BY DYADS OF  
FS REFERENT PRODUCTION

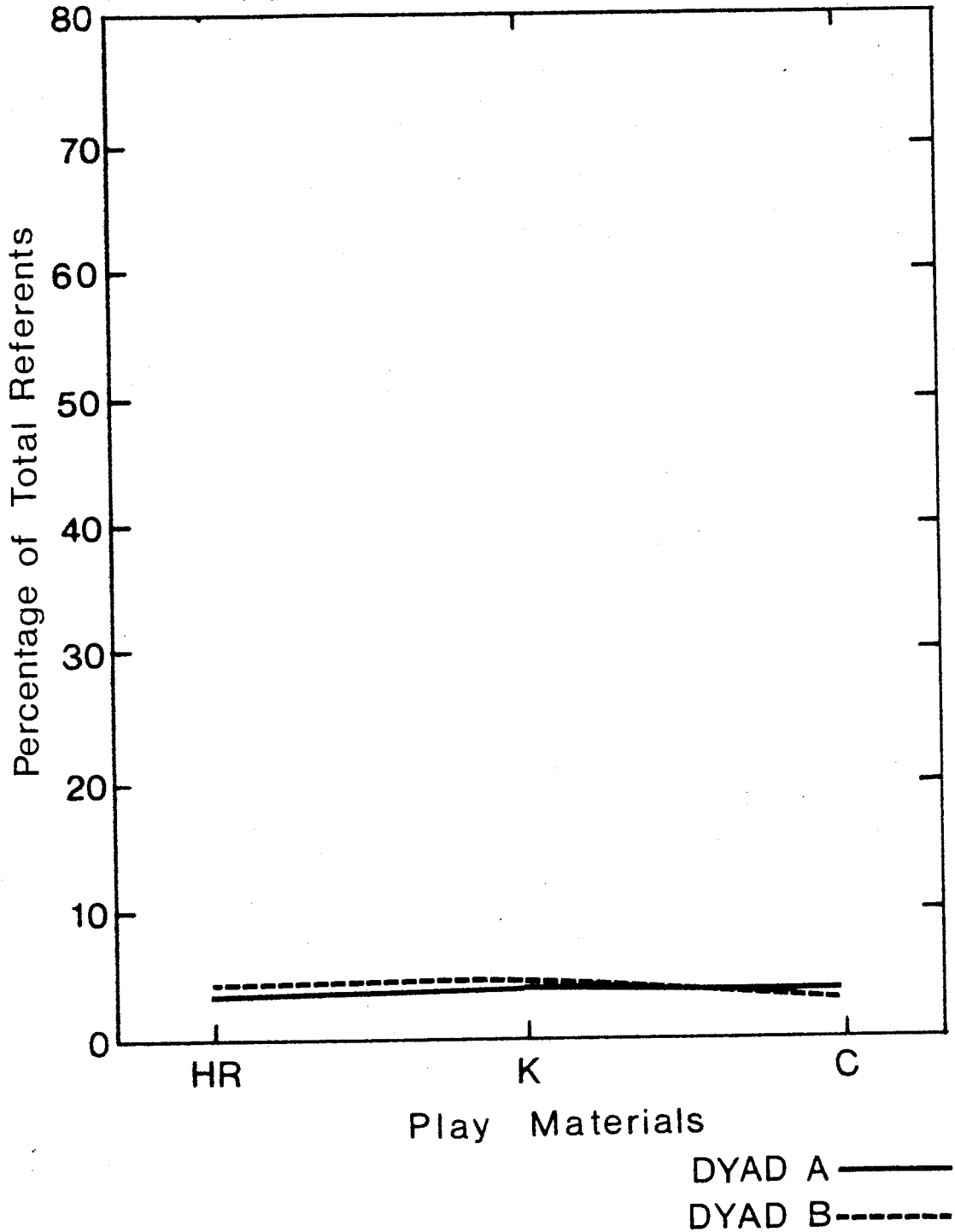
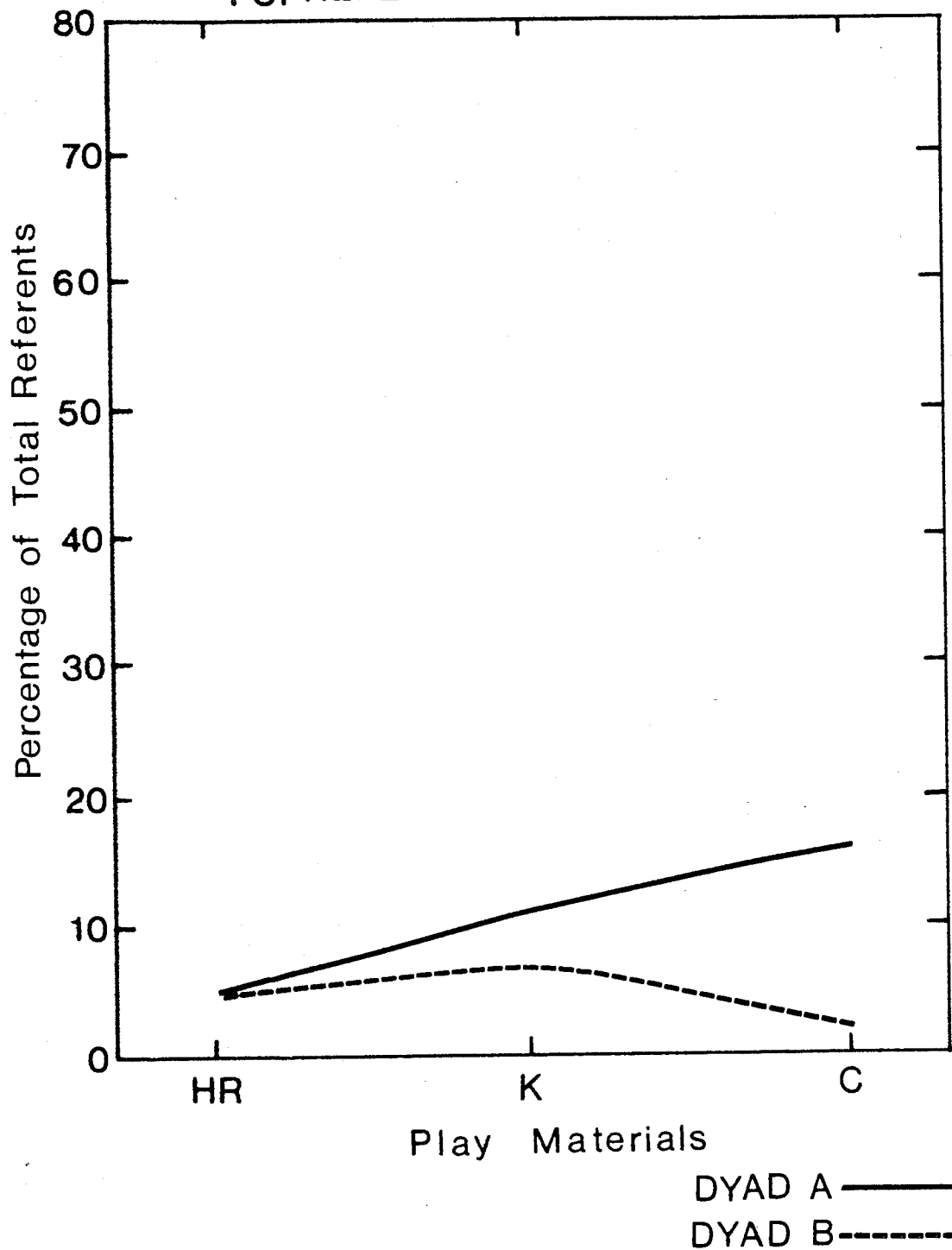


Figure 10

COMPARISON BY DYADS OF  
FSI REFERENT PRODUCTION



OBJ. The three material categories affected the dyads differently in the production of OBJ referents. In DYAD A, changes in proportions of the referents were minimal. For DYAD B, production of OBJ referents decreased markedly with Kinetic materials (see Figure 11).

ACT. These referents were produced in greater proportions in play with Human Representative materials than with Kinetic materials, with the responses of DYAD A roughly replicated by DYAD B (see Figure 12). However, with Construction materials, DYAD A produced proportionately fewer ACT referents, although DYAD B produced more with these materials.

SELF. Low percentages of this variable occurred for both dyads (see Figure 13). In play with Human Representative and Kinetic materials, the responses of DYAD B exceeded and paralleled those of DYAD A. With Construction materials, the dyads responded differently, with a slight increase in SELF referents for DYAD A and a slight decrease for DYAD B.

SOC. Kinetic materials were associated with greater proportions of SOC referents in DYAD A, and this finding was replicated by DYAD B. With Construction materials, the two dyads differed considerably in the levels of SOC referents (see Figure 14).

IMM. In DYAD A slightly higher proportions of IMM referents were produced in play with Kinetic materials than with Construction materials. In DYAD B levels of IMM referents were

roughly equivalent for these two materials (see Figure 15). Kinetic materials also appeared to elicit more IMM referents than Human Representative materials in DYAD B, although this difference was more pronounced in DYAD A.

FAN. In DYAD A proportions of FAN referents occurred least with Kinetic materials, particularly in contrast to FAN referents in play with Human Representative materials. In DYAD B levels of FAN referents for the three material categories were roughly equivalent. The contrast between the responses of the dyads was most marked in the Human Representative and Kinetic categories (see Figure 16).

Figure 11

COMPARISON BY DYADS OF  
OBJ REFERENT PRODUCTION

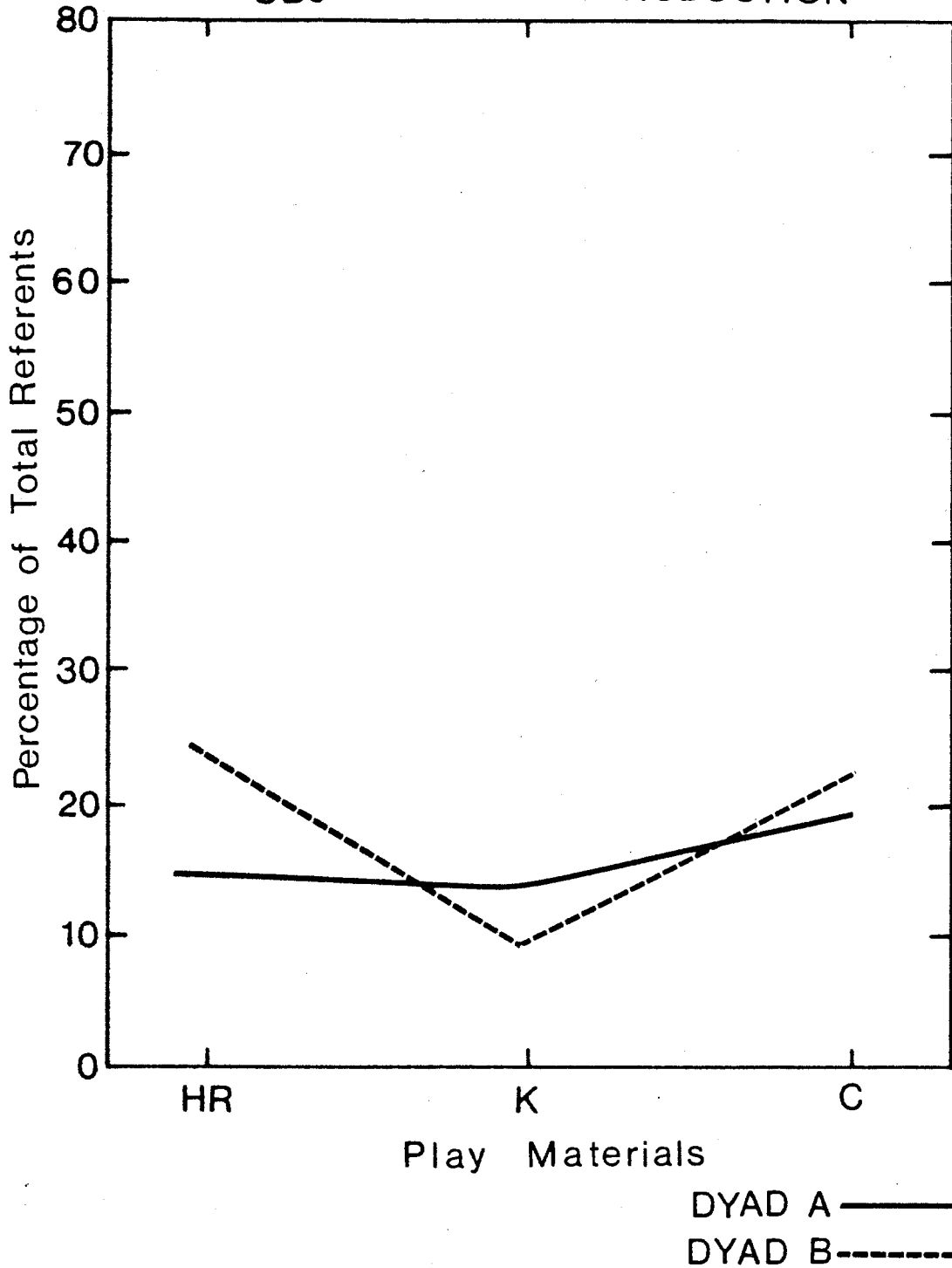


Figure 12

COMPARISON BY DYADS OF  
ACT REFERENT PRODUCTION

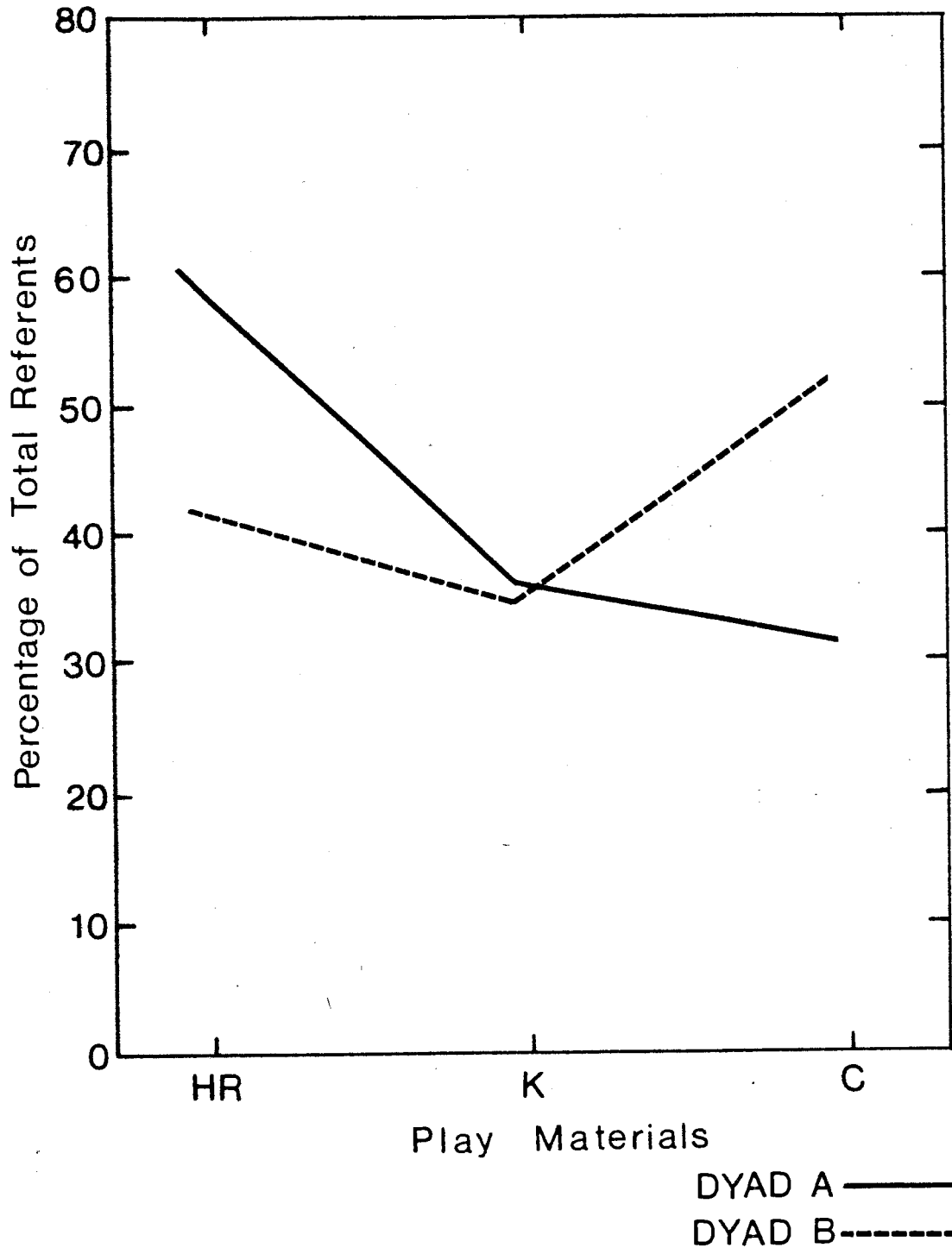


Figure 13

COMPARISON BY DYADS OF  
SELF REFERENT PRODUCTION

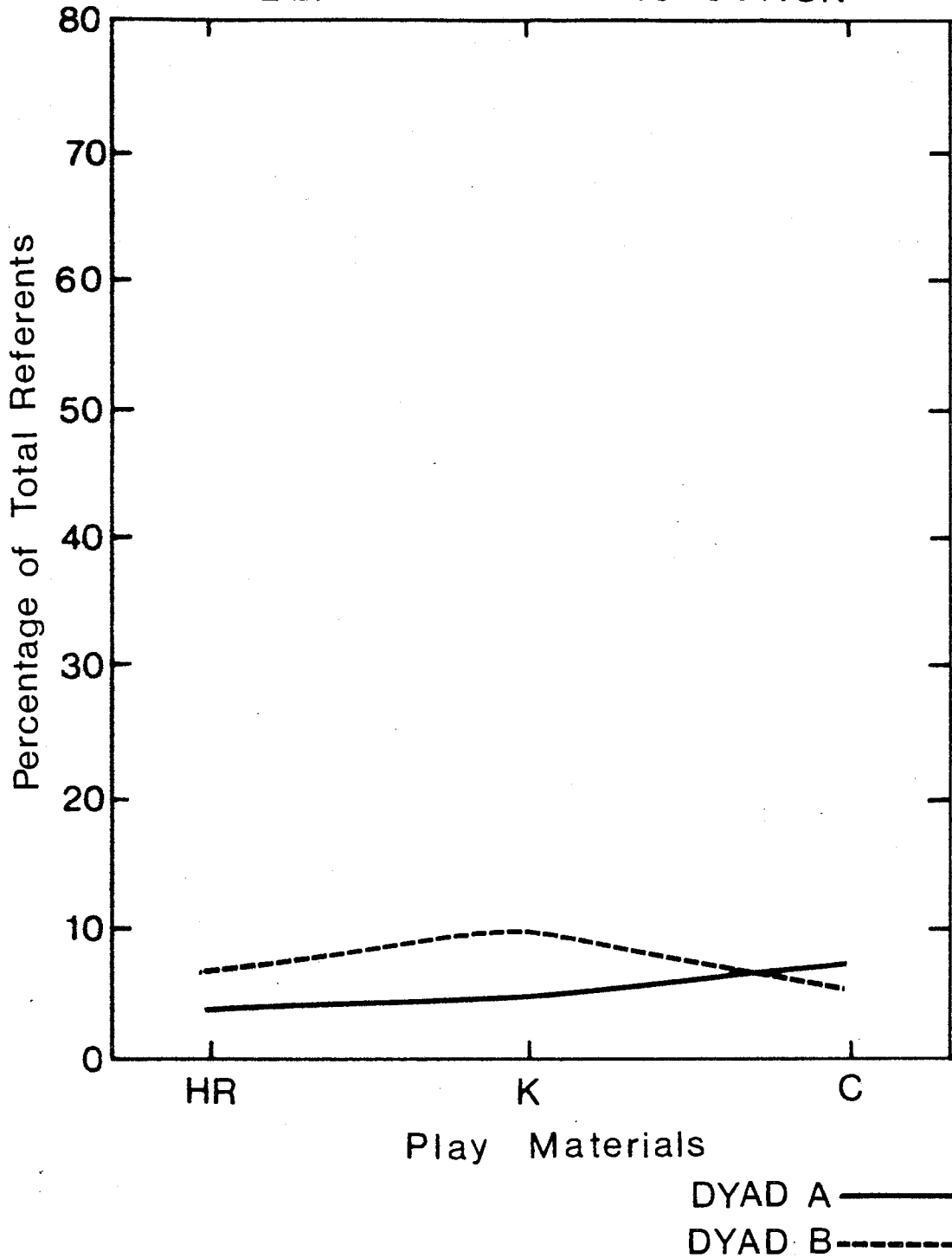




Figure 14

COMPARISON BY DYADS OF  
SOC REFERENT PRODUCTION

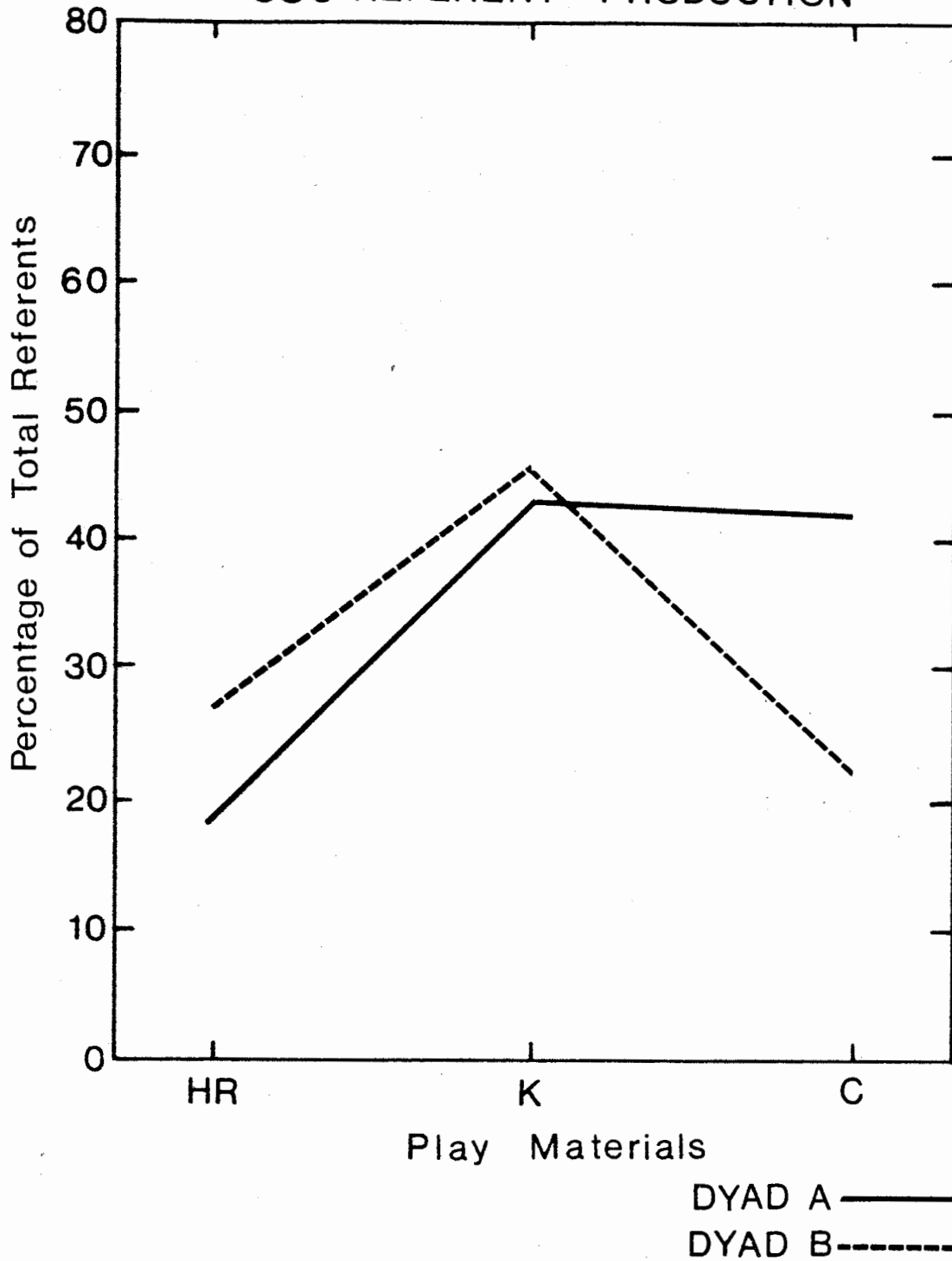


Figure 15

COMPARISON BY DYADS OF  
IMM REFERENT PRODUCTION

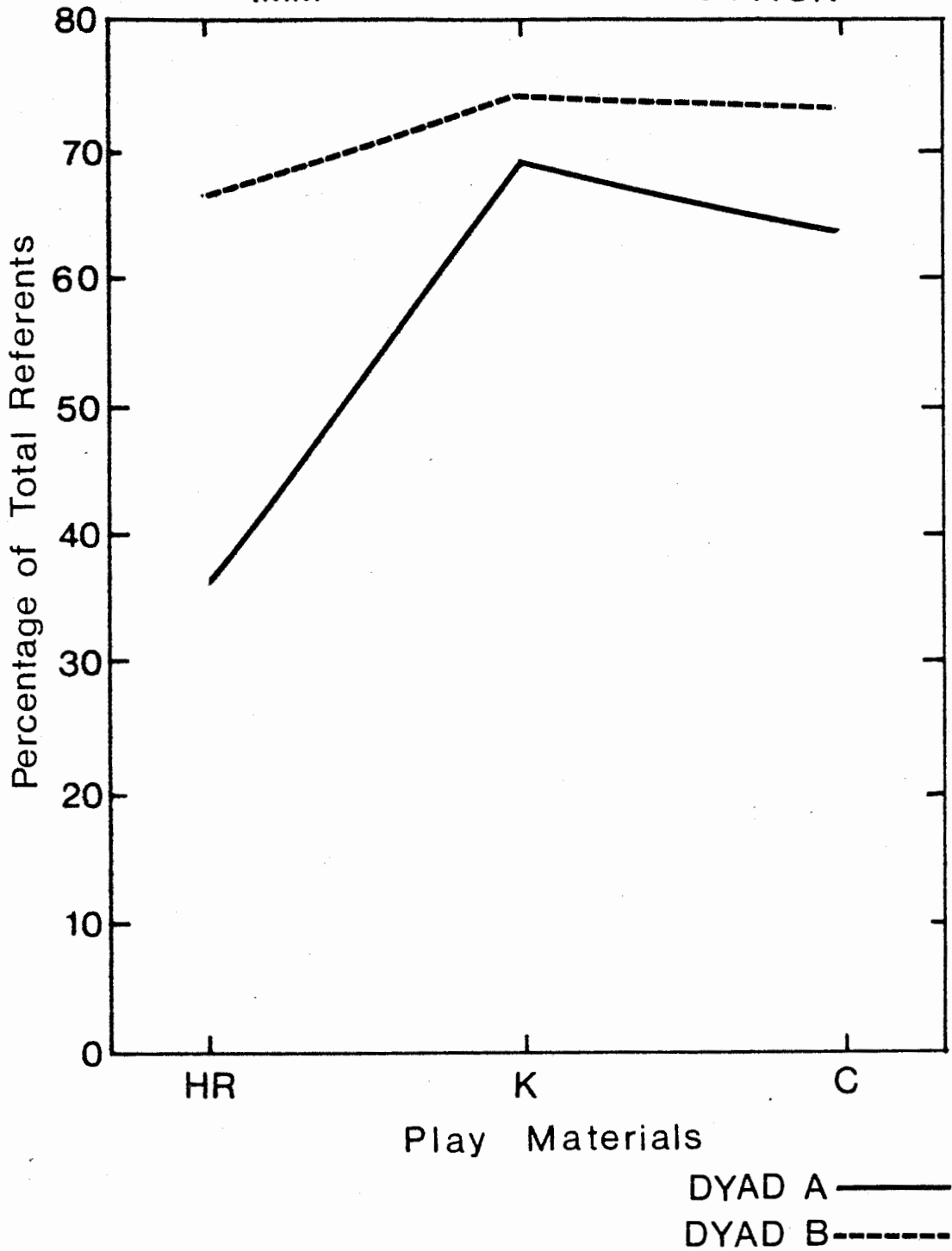
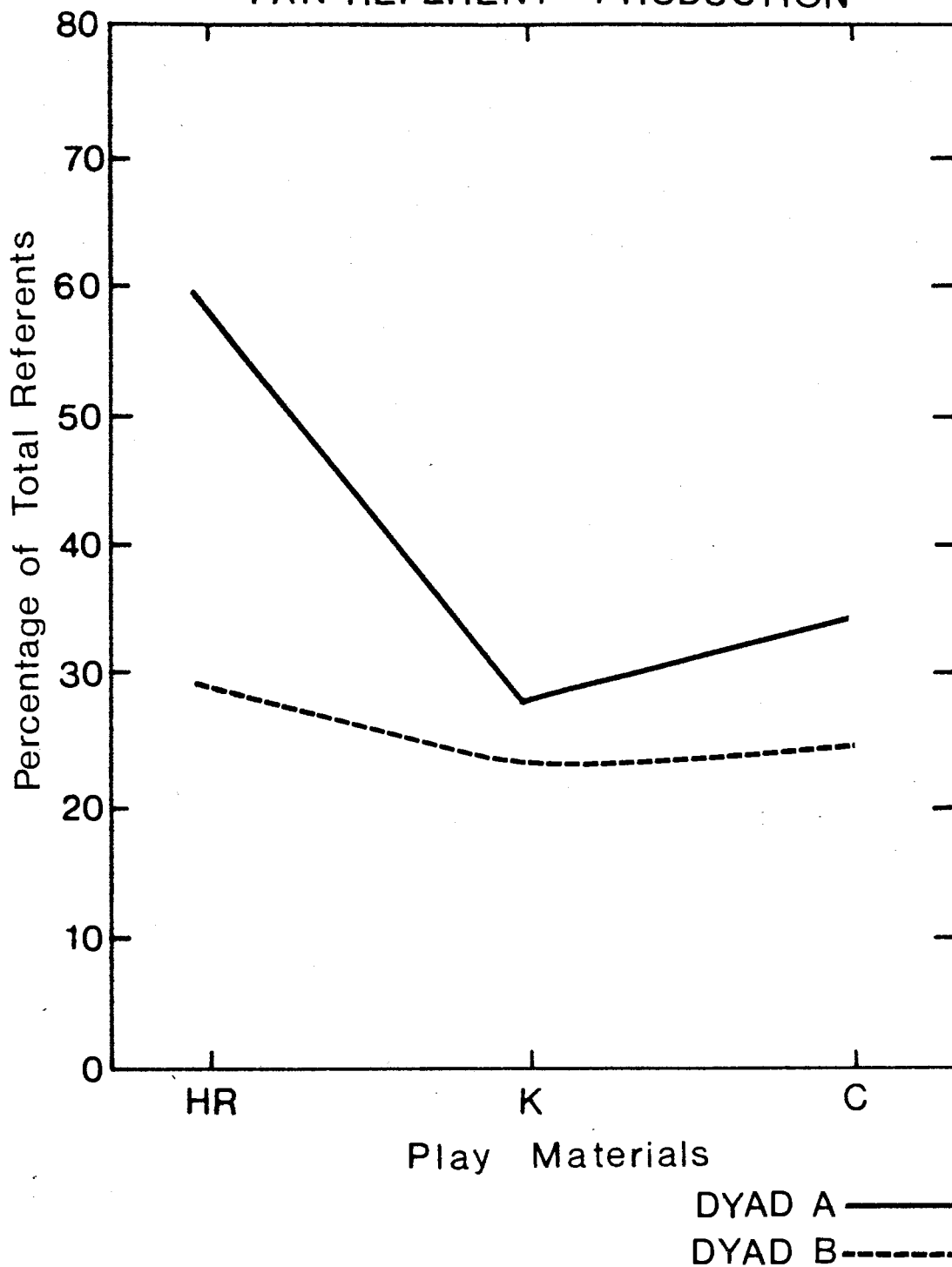


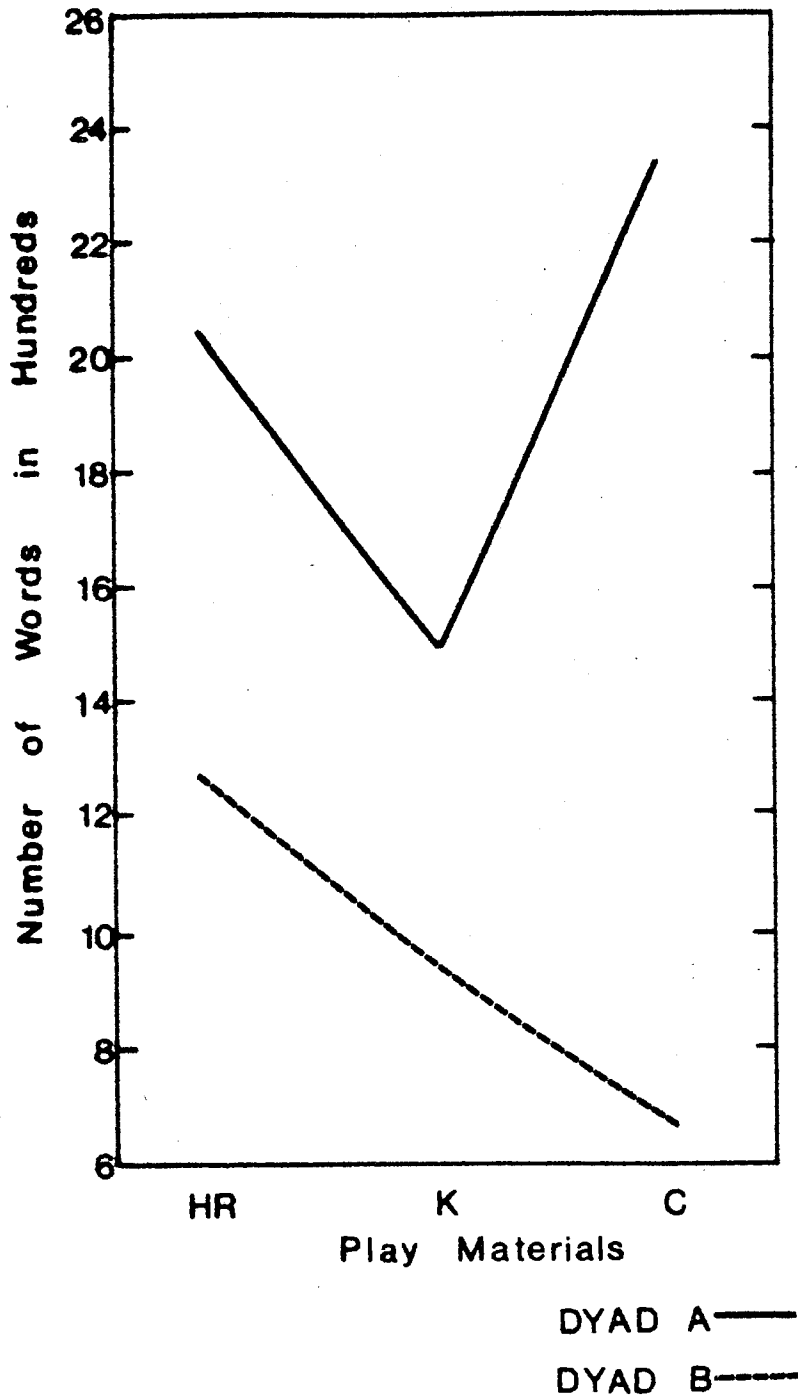
Figure 16

COMPARISON BY DYADS OF  
FAN REFERENT PRODUCTION



Total verbalization. For both dyads more verbalization occurred in play with Human Representative materials than with Kinetic materials. In DYAD A, 2,044 and 1,486 total words were uttered in play with the two materials respectively (see Figure 17). For DYAD B the word count was 1,251 and 918 words uttered in play with Human Representative and Kinetic materials respectively. From this same figure, it is evident that in play with Construction materials, the effect upon the dyads' verbalization was inconsistent. Figure 17 also illustrates the preliminary finding mentioned previously, namely, the consistently higher levels of verbalization across materials for DYAD A.

Figure 17  
COMPARISON OF  
TOTAL VERBAL OUTPUT



Comparative descriptions by play material. In a further description of referent production, referent types and dimensions most and least frequently elicited with each material category were compared. Figures 18 through 23 illustrate the comparative proportions of referent types produced by the dyads in play with the three material categories.

For DYAD A, in play with Human Representative materials (see Figure 18), FA referents predominated (52% of all referents produced), with FS referents being least frequent (0.5%). Replication by DYAD B for these materials was only partial with ISI referents predominating (25%) and FS referents least frequent (1%). When the data for the two dyads were averaged for each of the eight single variables, FA referents occurred most (36.5%) and FS referents occurred least frequently (0.75%). For the combined variables (see Figure 19) ACT referents predominated for both dyads, constituting 51.5% of referents produced by the dyads, with SOC referents 23%, OBJ referents 21.5%, and SELF referents 4.5%. With respect to fantasy or immediate elements associated with these materials, the responses of the dyads were contradictory.

In play with Kinetic materials DYAD B closely replicated the response patterns of DYAD A (see Figure 20). ISI referents were produced most often in play with these materials (38% for the dyads combined), with FS referents fewest (1.5% combined). With respect to the combined variables, proportions of referents

were also similar for both dyads: SOC referents predominated (44% for the dyads averaged). These were followed by ACT referents (35.5%), OBJ referents (13.5%), and SELF referents (6.5%). IMM referents were produced most often with Kinetic materials (73.5% for the dyads averaged; see Figure 21).

The two dyads differed somewhat with respect to the referent types most often produced in play with Construction materials. In DYAD A, ISI referents predominated (27%), followed by IA referents (17%), with FS referents fewest (1%). In DYAD B, IA and ISI referents occurred most frequently (40% and 21% respectively) with FS and FSI referents least (0%) for each type (see Figure 22). Averaging the referent percentages for the two dyads, IA referents can be said to predominate slightly with these materials (28.5%), followed by ISI referents (24%), with the average figures for the FSI and FS variables 7% and 1% respectively. With respect to the combined variables, a lack of agreement between the dyads occurred for SOC and ACT variables (see Figure 23). Averaged for the dyads, ACT referents predominated (41%), followed by SOC (31%), OBJ (22.5%) and SELF (6%). For both dyads, IMM referents were associated nearly twice as frequently as FAN referents (65% to 35% for DYAD A; 75% to 25% for DYAD B; with the dyad averages of 70% and 30% for IMM and FAN respectively; see Figure 23).

Figure 18  
 PROPORTIONS OF THE SINGLE VARIABLES  
 PRODUCED WITH  
 HUMAN REPRESENTATIVE MATERIALS

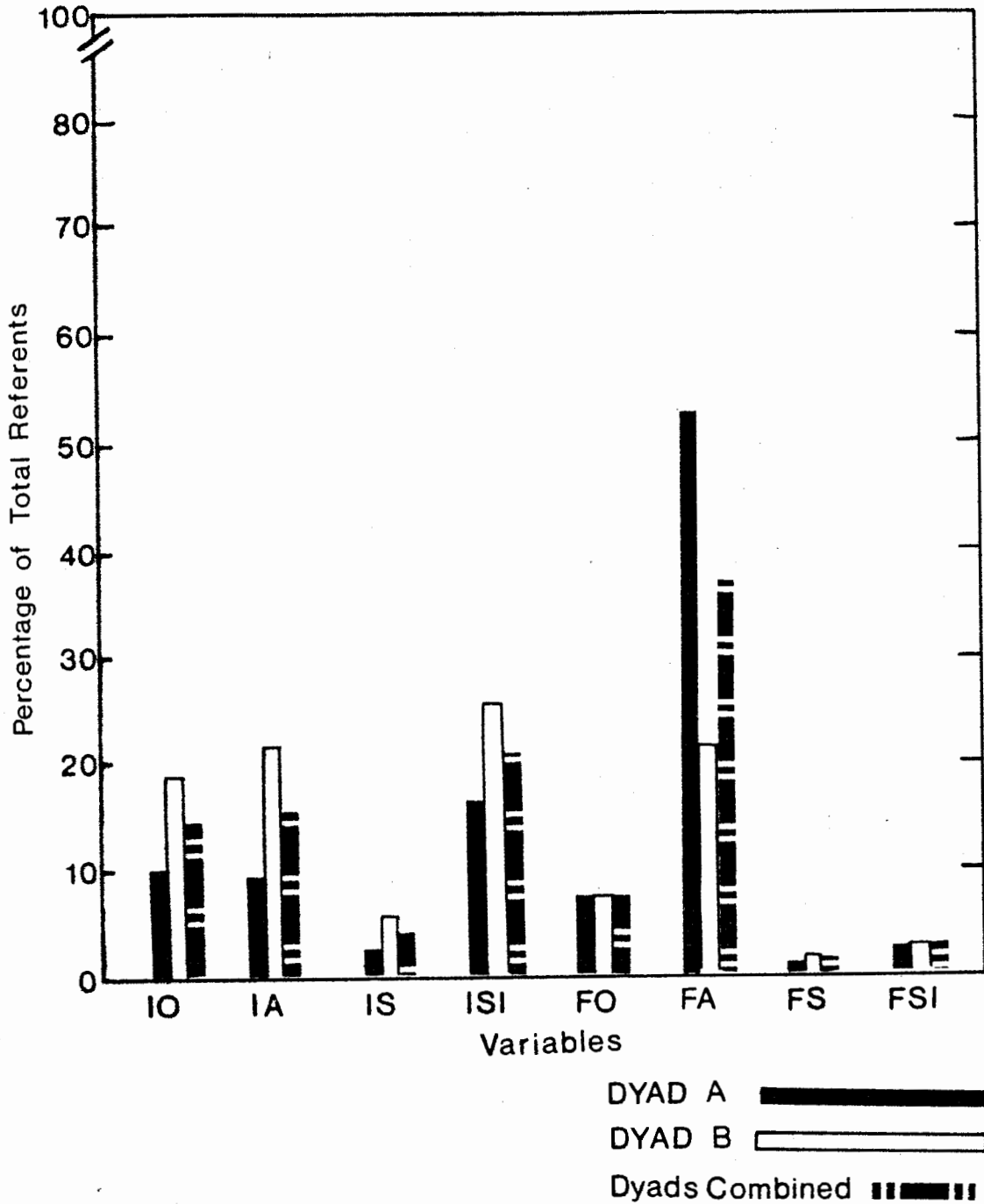




Figure 19  
 PROPORTIONS OF THE COMBINED VARIABLES  
 PRODUCED WITH  
 HUMAN REPRESENTATIVE MATERIALS

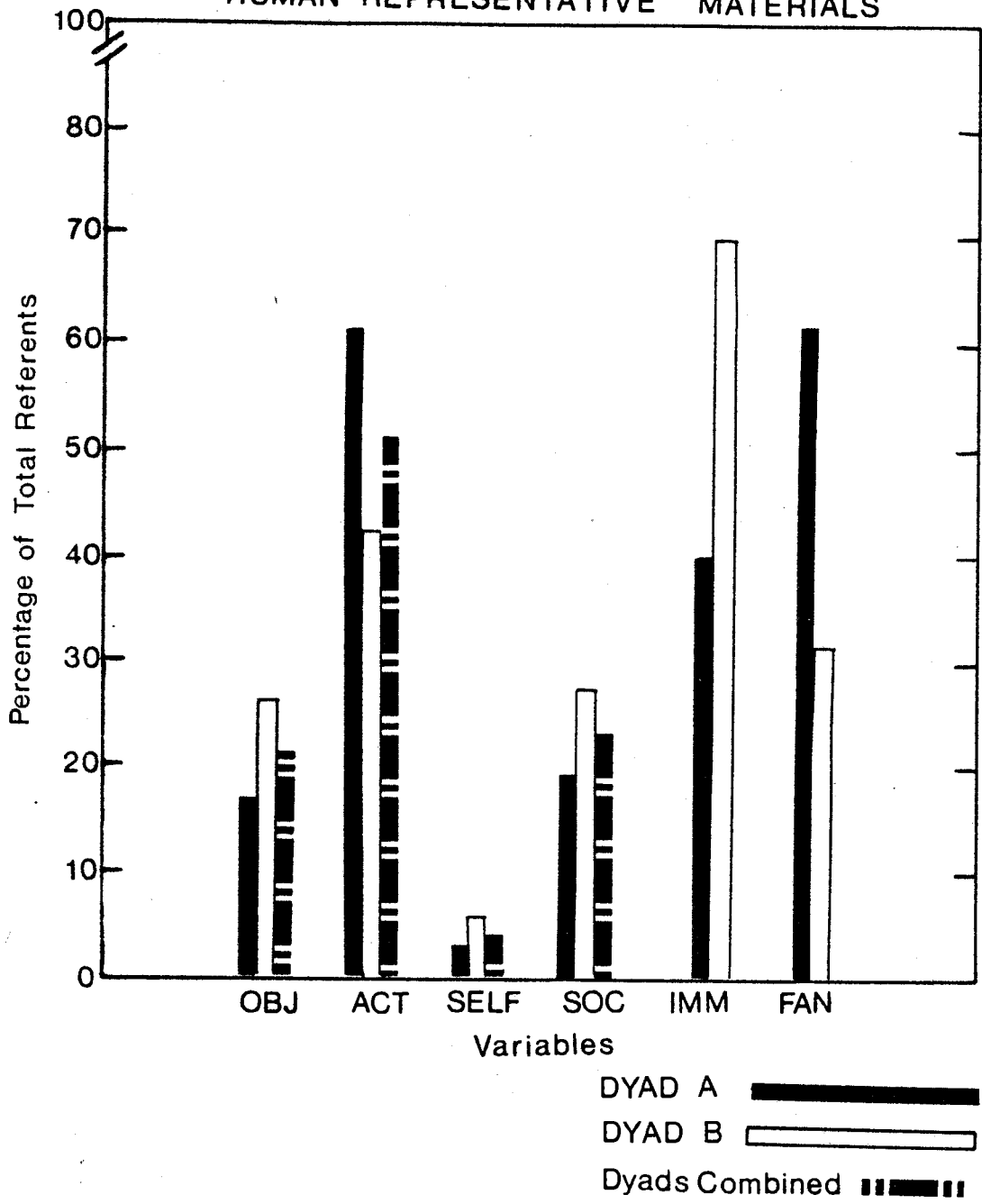


Figure 20  
 PROPORTIONS OF THE SINGLE VARIABLES  
 PRODUCED WITH  
 KINETIC MATERIALS

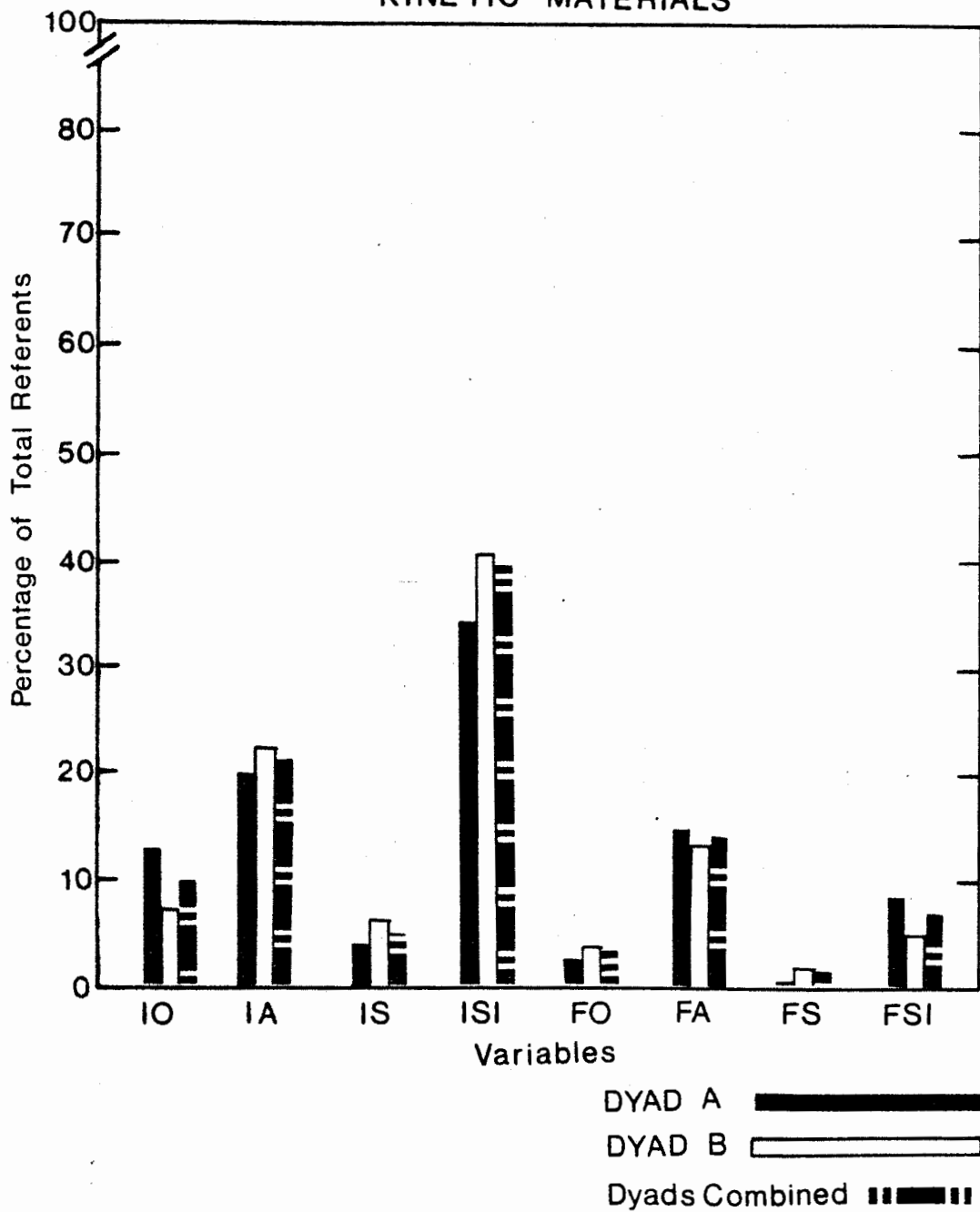


Figure 21  
 PROPORTIONS OF THE COMBINED VARIABLES  
 PRODUCED WITH  
 KINETIC MATERIALS

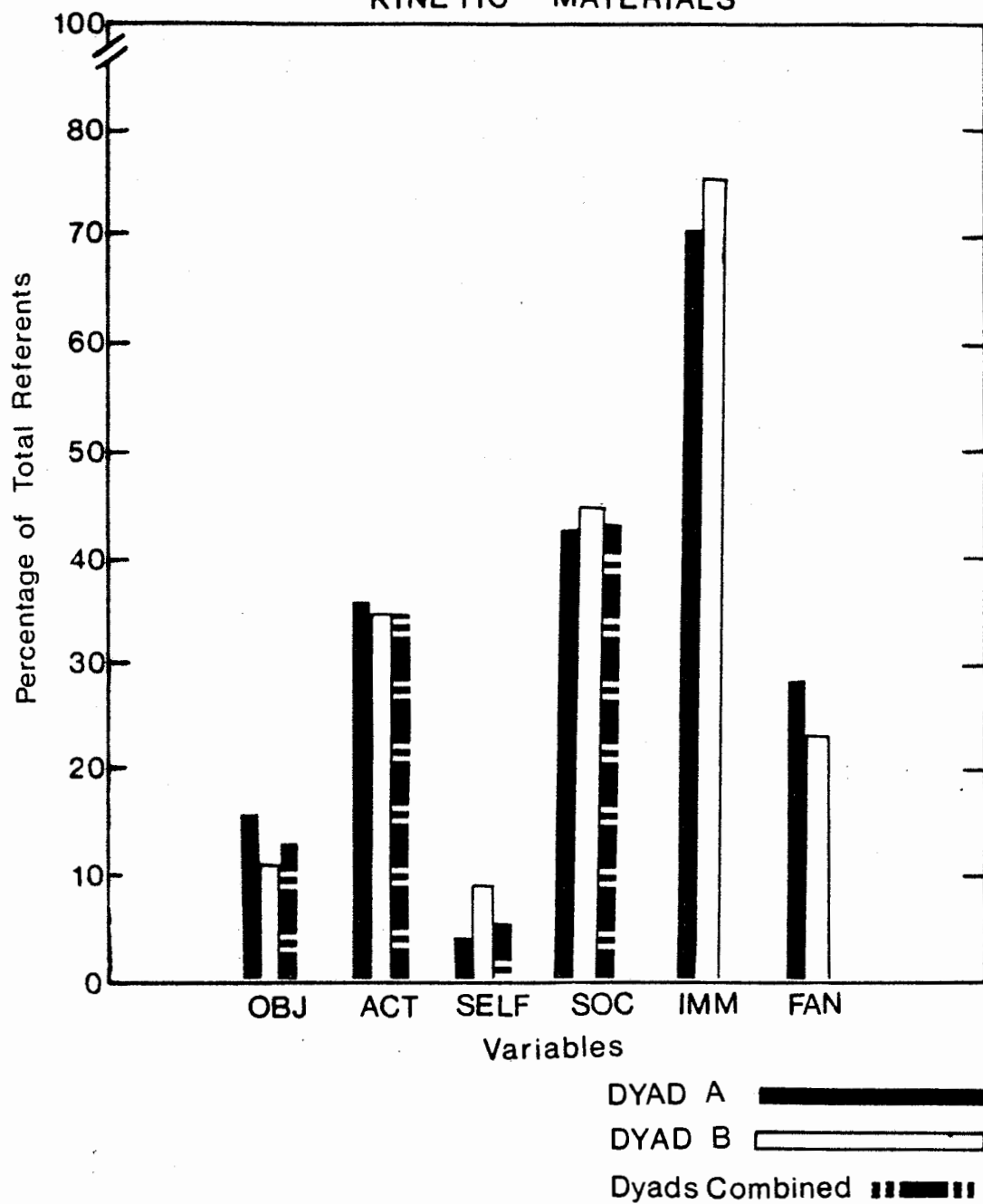


Figure 22  
 PROPORTIONS OF THE SINGLE VARIABLES  
 PRODUCED WITH  
 CONSTRUCTION MATERIALS

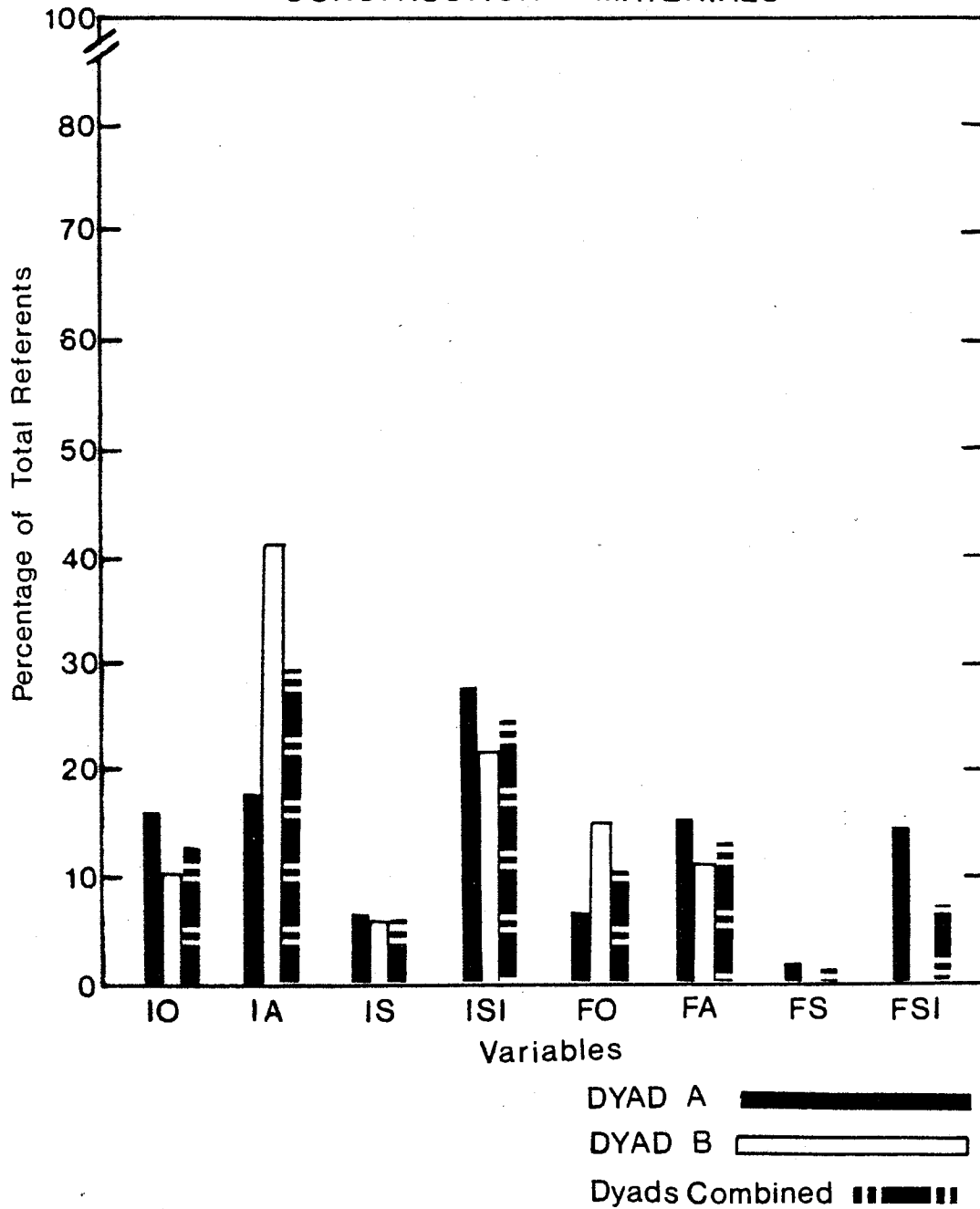
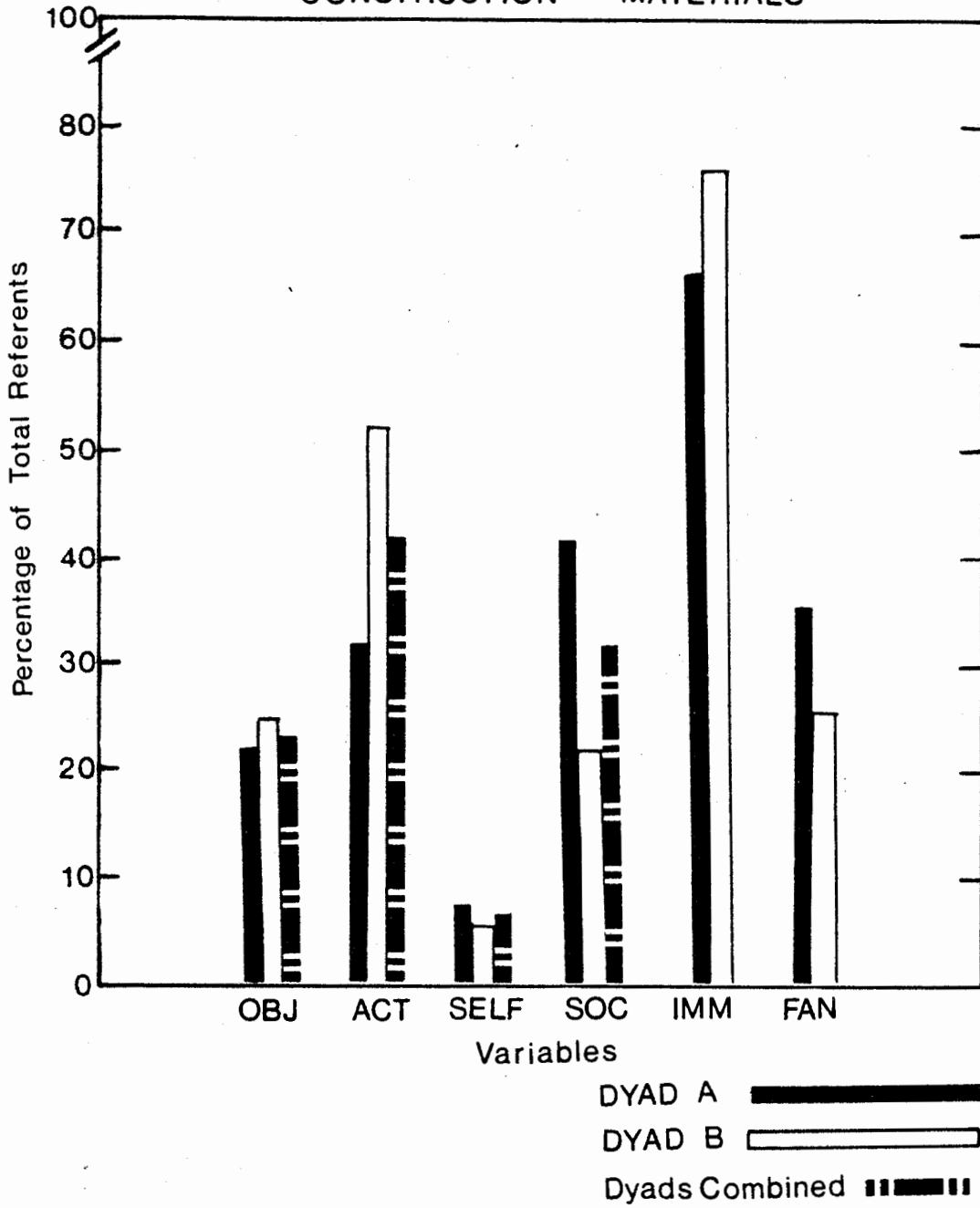


Figure 23  
 PROPORTIONS OF THE COMBINED VARIABLES  
 PRODUCED WITH  
 CONSTRUCTION MATERIALS



## Inferential Statistics

Three-way ANOVAs (play material by dyad by trial) were carried out on the experimental data for each of the 14 dependent variables. Because proportionate figures rather than raw totals were analyzed in these ANOVAs, a Kolmogorov-Smirnov goodness-of-fit test was carried out to determine normality of the distribution for each variable and for each trial. The results of these tests indicated that only one of the 14 variables, the FS referents for which there were extremely small raw totals and proportions, did not meet goodness-of-fit assumptions. A Newman-Keul's test at  $\alpha=0.05$  was carried out for each of the significant main and interaction effects yielded by the ANOVAs.

No statistically significant main or interaction effects at  $p < .05$  resulted for two of the single variables (IO and IA) and for three of the combined variables (OBJ, ACT, and SELF). For FO a three-way interaction effect (play material by dyad by trial) was found to be significant at  $p < .05$  ( $F_{6, 47} = 1.2381$ ), but was not interpretable in any substantially meaningful way. Results of the ANOVAs for the remaining eight single and combined variables were as follows.

IS. The three-way ANOVAs on the IS proportionate data showed no significant main effect for play material, dyad, or

trial at  $p < .05$ . However, a dyad by trial interaction effect, significant at  $p < .05$  ( $F_{3, 47} = 3.8901$ ) did occur for ISI referents (see Figure A, Appendix E). A comparison of the means by trial using a posteriori Newman-Keul's contrasts, did not provide consistent or meaningful data for this interaction effect (see Table 4). (All two-way interaction effects, significant at  $p < .05$ , are graphed for all dependent variables in Appendix E.)

ISI. The three-way ANOVA on the proportions of the ISI variable resulted in a relatively large and significant main effect for play material ( $F_{2, 47} = 9.7707$ ,  $p < .05$ ), but no other statistically significant main or interaction effects. The Newman-Keul's test indicated that Kinetic materials were associated with more ISI referents than Human Representative materials, with the respective means of the proportions being .37, .25, and .20 for Kinetic, Construction, and Human Representative materials (see Table 5).

FA. The three-way ANOVA on the FA data yielded a significant main effect for play material ( $F_{2, 47} = 21.6223$ ,  $p < .01$ ) and a significant main effect for dyad ( $F_{1, 47} = 15.8504$ ,  $p < .01$ ). Statistically significant interaction effects occurred for play material by trial ( $F_{6, 47} = 3.2560$ ,  $p < .01$ ) and for dyad by trial interactions ( $F_{3, 47} = 3.2560$ ,  $p < .01$ ; see Table 6).

A posteriori Newman-Keul's contrasts on the main effect for materials indicated that FA referents were produced in play with Human Representative materials nearly three times as frequently as in play with Kinetic or Construction materials (respective proportionate means were .37, .14, and .11). Again using Newman-Keul's contrasts, DYAD A was found to produce these referents nearly twice as often as DYAD B (the respective means were .28 and .14).

Although the main effect for trials was not significant at  $p < .05$ , the graphed interaction of material by trial factors indicated in general that trials with Human Representative materials were associated with more FA referents than the other play materials over trials (see Figure B, Appendix E). For Kinetic and Construction materials the graphed interaction did not show any clear or consistent pattern. Consideration of the dyad by trial interaction (see Figure C, Appendix E) indicated only that DYAD A over trials produced more FA referents than DYAD B over trials.

FS. Results for this variable are put forward with caution because this variable did not meet goodness-of-fit assumptions. At  $p < .05$  the three-way ANOVA on the very small FS proportionate data yielded no significant main effects for play material, dyad, or trial factors. A significant material by dyad interaction effect did occur ( $F_{2, 47} = 6.3394, p < .05$ ). The graph (see Figure D, Appendix E) indicates only that the dyads



responded differently in interaction with the materials in producing these referents. Specifically, for DYAD A proportions of these referents did not vary markedly. For DYAD B Kinetic materials were associated with FS referent production more than Human Representative and Construction materials for that dyad (the means were .02, .01, and .00 for Kinetic, Human Representative, and Construction materials respectively). For the complete ANOVA statistics for the FS variable, see Table 7.

FSI. A three-way ANOVA on the FSI proportionate data yielded no main effect for play material, but significant main effects for dyads ( $F_{1, 47} = 14.6295, p < .01$ ) and for trials ( $F_{3, 47} = 10.1611, p < .01$ ). The play material by dyad interaction was significant at  $p < .05$  ( $F_{2, 47} = 5.7088$ ). The interaction effects for play material by trial ( $F_{6, 47} = 7.7649$ ) and dyad by trial ( $F_{3, 47} = 8.9760$ ) were both significant at  $p < .01$  (see Table 8).

Using Newman-Keul's contrasts, DYAD A was found to produce slightly more FSI referents than DYAD B (respective means were .08 and .02). The main effect for trials showed relatively low differences in the trial means (.05, .05, .02, and .09 respectively). These figures did not translate into meaningful or readily generalizable information.

The Newman-Keul's contrasts for the interaction effects indicated that DYAD A in interaction with the three materials produced consistently higher proportions of FSI referents than

DYAD B across materials (see Figure E, Appendix E). The same a posteriori consideration of the material by trial interaction effect (see Figure F, Appendix E) and dyad by trial interaction effect (see Figure G, Appendix E) did not yield meaningful information. The three-way interaction of material, dyad, and trial factors was found to be statistically significant ( $F_{6, 47} = 3.3542, p < .05$ ), but was not considered a useful finding because of the impossibility of making a meaningful interpretation of this effect.

SOC. The three-way ANOVA for the SOC variable resulted in no significant main effect for either the dyad or the trial factors. However, the main effect for materials ( $F_{2, 47} = 12.4791$ ) was significant at  $p < .01$  (see Table 9). Using Newman-Keul's a posteriori contrasts, Kinetic materials (mean of .44) were associated with more SOC referents than were either Construction (mean of .32) or Human Representative materials (mean of .23). No statistically significant interaction effects were found for SOC referents at  $p < .05$ .

IMM. The three-way ANOVA for the IMM variable resulted in a main effect for play material ( $F_{2, 47} = 9.7941, p < .05$ ), a main effect for dyad ( $F_{1, 47} = 18.7024, p < .01$ ) and two significant interaction effects, for material by trial ( $F_{6, 47} = 5.4344, p < .01$ ) and for dyad by trial ( $F_{3, 47} = 6.3311, p < .01$ ; see Table 10). The three-way interaction effect was also significant at  $p < .05$  ( $F_{6, 47} = 3.6362$ ).

Using Newman-Keul's contrasts, analysis of the main effects indicated that Kinetic and Construction materials were virtually equivalent (means of .74 for both materials) in the production of IMM referents in comparison with Human Representative materials (mean of .53). Similar inspection of the main effect for dyad indicated that DYAD B more frequently produced IMM referents than DYAD A (the respective proportionate means were .76 and .57).

According to the Newman-Keul's a posteriori contrasts, in general Kinetic and Construction materials in interaction with the trial factor produced more IMM referents than Human Representative materials (see Figure H, Appendix E). The same a posteriori contrasts for the dyad by trial interaction showed marked differences in the dyads for each trial, with DYAD B exceeding DYAD A over trials (see Figure I, Appendix E); however, no meaningful trends were discernible for the three-way interaction effect.

FAN. The three-way ANOVA for the FAN variable data resulted in a significant main effect for play material ( $F_{2, 47} = 10.1674, p < .05$ ) and for dyad ( $F_{1, 47} = 17.3365, p < .01$ ; see Table 11). The interaction of these two factors was not statistically significant at  $p < .05$ . However, two significant interaction effects did result, for play material by dyad ( $F_{6, 47} = 4.8891, p < .01$ ) and for dyad by trial ( $F_{3, 47} = 7.1193, p < .01$ ). The interaction of the three independent factors was also

significant ( $F_{6, 47} = 3.3525, p < .05$ ), but did not yield clearly interpretable or meaningful data.

Using Newman-Keul's a posteriori contrasts to examine the significant main effects, Human Representative materials (mean of .47) were found to elicit more FAN referents than Kinetic materials (mean of .26) and Construction materials (mean of .25). Similar analysis of the main effect for dyad showed DYAD A (mean of .42) exceeding DYAD B (mean of .24) in the production of FAN referents across play material categories. Analysis of the interaction effects showed that trials in interaction with Human Representative materials produced more FAN referents than trials with the other materials (see Figure J, Appendix E). Though DYAD A exceeded DYAD B in the production of FAN referents, no consistent or meaningful trend was observable in the interaction of dyad and trial factors (see Figure K, Appendix E).

Table 4

## Analysis of Variance for Proportions of the IS Variable

Variable	Sums of Squares	F Ratio	df	Significance Level
Play Material	411640.6666667	.6477	2	.5595
Dyad	161936.3333333	.5096	1	.5069
Play Material x Dyad	668404.1666667	1.0516	2	.4076
Trial	426069.0833333	1.3064	3	.3030
Play Material x Trial	412722.6666667	.6327	6	.7039
Dyad x Trial	1268684.1666667	3.8901	3	.0262
Play Material x Dyad x Trial	1167585.8333333	1.7900	6	.1574
Subjects	1906771.2500000	2.9233	6	.0359
Error	1956807.7500000	-	18	-
Total	8380621.9166667	-	47	-

Table 5

## Analysis of Variance for Proportions of the ISI Variable

Variable	Sums of Squares	F Ratio	df	Significance Level
Play Material	21875959.541667	9.7077	2	.0138
Dyad	2021302.083333	1.7940	1	.2280
Play Material x Dyad	3083648.291667	1.3684	2	.3245
Trial	4521085.750000	.9066	3	.4592
Play Material x Trial	9780399.125000	.9806	6	.4672
Dyad x Trial	9751692.416667	1.9554	3	.1559
Play Material x Dyad x Trial	7348544.708333	.7368	6	.6281
Subjects	6760394.000000	.6778	6	.6708
Error	29921852.000000	-	18	-
Total	95064877.916667	-	47	-

Table 6

## Analysis of Variance for Proportions of the FA Variable

Variable	Sums of Squares	F Ratio	df	Significance Level
Play Material	65807281.166667	21.6223	2	.0022
Dyad	24120180.750000	15.8504	1	.0075
Play Material x Dyad	12556351.500000	4.1256	2	.0745
Trial	3046138.000000	.9528	3	.4378
Play Material x Trial	20819772.500000	3.2560	6	.0240
Dyad x Trial	19861377.583333	6.2123	3	.0045
Play Material x Dyad x Trial	12641063.166667	1.9769	6	.1222
Subjects	9130453.250000	1.4279	6	.2578
Error	19182725.750000	-	18	-
Total	1.871653E+08	-	47	-

Table 7

## Analysis of Variance for Proportions of the FS Variable

Variable	Sums of Squares	F Ratio	df	Significance Level
Play Material	95048.041667	5.0817	2	.0513
Dyad	6580.083333	.7036	1	.4376
Play Material x Dyad	118573.291667	6.3394	2	.0335
Trial	60654.166667	.7422	3	.5435
Play Material x Trial	122470.458333	.7494	6	.6191
Dyad x Trial	50795.416667	.6216	3	.6134
Play Material x Dyad x Trial	209485.208333	1.2818	6	.3143
Subjects	56112.250000	.3433	6	.9045
Error	490305.750000	-	18	-
Total	1210024.666667	-	47	-



Table 8

## Analysis of Variance for Proportions of the FSI Variable

Variable	Sums of Squares	F Ratio	df	Significance Level
Play Material	2021011.791667	3.4657	2	.0996
Dyad	4265572.520833	14.6295	1	.0089
Play Material x Dyad	3329062.041667	5.7088	2	.0412
Trial	3126852.729167	10.1611	3	.0004
Play Material x Trial	4778949.708333	7.7649	6	.0003
Dyad x Trial	2762160.395833	8.9760	3	.0008
Play Material x Dyad x Trial	2064351.791667	3.3542	6	.0214
Subjects	1749437.875000	2.8425	6	.0397
Error	1846361.625000	-	18	-
Total	25943760.479167	-	47	-

Table 9

## Analysis of Variance for Proportions of the SOC Variable

Variable	Sums of Squares	F Ratio	df	Significance Level
Play Material	35073765.541667	12.4781	2	.0079
Dyad	414222.520833	.2947	1	.6104
Play Material x Dyad	12452726.291667	4.4304	2	.0658
Trial	6292336.895833	1.1363	3	.3617
Play Material x Trial	3078462.291667	.2780	6	.9392
Dyad x Trial	6153041.729167	1.1111	3	.3713
Play Material x Dyad x Trial	5554570.208333	.5015	6	.8001
Subjects	8432594.375000	.7614	6	.6106
Error	33226616.125000	-	18	-
Total	1.106782E+08	-	47	-

Table 10

## Analysis of Variance for Proportions of the IMM Variable

Variable	Sums of Squares	F Ratio	df	Significance Level
Play Material	46557282.166667	9.7941	2	.0135
Dyad	44452101.333333	18.7024	1	.0053
Play Material x Dyad	7100061.166667	1.4936	2	.2979
Trial	4998586.083333	1.2774	3	.3122
Play Material x Trial	42529607.166667	5.4344	6	.0024
Dyad x Trial	24773869.166667	6.3311	3	.0041
Play Material x Dyad x Trial	28456789.833333	3.6362	6	.0154
Subjects	14260884.250000	1.8222	6	.1507
Error	23478089.750000	-	18	-
Total	2.366073E+08	-	47	-

Table 11

## Analysis of Variance for Proportions of the FAN Variable

Variable	Sums of Squares	F Ratio	df	Significance Level
Play Material	48766943.625000	10.1674	2	.0125
Dyad	41576602.687500	17.3365	1	.0062
Play Material x Dyad	7175187.375000	1.4959	2	.2974
Trial	5737759.062500	1.4803	3	.2530
Play Material x Trial	37900864.375000	4.8891	6	.0041
Dyad x Trial	27595010.729167	7.1193	3	.0024
Play Material x Dyad x Trial	25988725.958333	3.3525	6	.0214
Subjects	14389253.375000	1.8562	6	.1439
Error	23256465.125000	-	18	-
Total	2.323868E+08	-	47	-

## Summary of Major Findings

A summary of significant main and interaction effects for all 14 dependent variables is found in Table 12.

Preliminary Finding 1. Verbal referents which describe materials, activities, and persons outside the immediate setting, i.e. distal referents, were the least frequently produced dimension across the three play material categories.

Preliminary Finding 2. Self-Informational verbal referents, particularly those with fantasy content, were the referent type least frequently elicited in play with any of the three material categories.

Preliminary Finding 3. Activity or Social Interaction referents were the referent type most frequently elicited in play with the three materials overall. Activity referents predominated with Human Representative and Construction materials. Social Interaction referents, particularly Immediate Social Interaction referents, predominated with Kinetic materials.

Preliminary Finding 4. Immediate referents predominated with both Kinetic and Construction materials.

Research Question 1. The play materials were found to differentially affect total verbal output. More total verbalization was elicited in play with Human Representative

materials than with Kinetic materials.

Research Question 2. For a minority of the referent types, the play materials were found to have differential effects on the subject of verbalization. The play materials were found to have no statistically significant effect on the production of Object referents OBJ, IO, and FO; Activity referents ACT and IA; Self-Informational referents SELF, IS, and FS; and Fantasy Social Interaction referents.

Human Representative materials significantly affected production of more Fantasy Activity verbalization than the other play material categories.

Kinetic materials significantly affected more verbalization reflective of Social Interaction (specifically SOC and ISI referents) than the other materials. Materials significantly affected Fantasy Social Interaction verbalization only in interaction with trial or dyad factors.

Research Question 3. The play materials were found to differentially affect production of immediate and fantasy verbalization. Kinetic and Construction materials significantly affected production of more verbal referents related to the immediate play setting than Human Representative materials. Conversely, Human Representative materials significantly affected more fantasy verbalization than the other play material categories.

The dyads themselves differed significantly in the production of fantasy-related referents, particularly FA and FSI referents, with DYAD A exceeding DYAD B in fantasy oriented speech.

In general, trials were found to affect only Fantasy Social Interaction verbalization. That is, the production of no other verbal referent was found to be significantly affected by exposure over time alone.

Table 12

Summary of Significant Main and Interaction Effects

Referent

	Play Material	Dyad	Trial	Play Material by Dyad	Play Material by Trial	Dyad by Trial	Play Material by Dyad by Trial
IO	--	--	--	--	--	--	--
IA	--	--	--	--	--	--	--
IS	--	--	--	--	--	*	--
ISI	*	--	--	--	--	--	--
FO	--	--	--	--	--	--	**
FA	**	**	--	--	*	**	--
FS	--	--	--	*	--	--	--
FSI	--	**	**	*	**	**	*
OBJ	--	--	--	--	--	--	--
ACT	--	--	--	--	--	--	--
SELF	--	--	--	--	--	--	--
SOC	**	--	--	--	--	--	--
IMM	*	**	--	--	**	**	**
FAN	*	**	--	--	**	**	**

Key to Symbols: \*  $p < .05$   
 \*\*  $p < .01$



## Generalizability

Generalizability of these data is determined to a lesser degree by considering the extent of replication across the dyads and primarily by considering the results for the dyad factor on the three-way ANOVAs. Graphs of the data, Figures 3 through 16, indicate that DYAD B replicated the response patterns of DYAD A only partially and inconsistently for the following materials and variables: replicated for Human Representative and Kinetic materials were variables FS, FSI, ACT, SELF, and (SOC); replicated for Kinetic and Construction materials were variables (IO), (FA), (IMM), and (FAN); replicated for Human Representative and Construction materials, (IA); replicated for all three play materials were IS, ISI, (FA), (IMM), and (FAN). There was no replication for the OBJ variable. The parentheses around these abbreviations indicate that the extent of replication is open to interpretation.

Because these replication results were only partial and inconsistent, the inferential data provided more meaningful generalizability information. In general, the dyad factor in the ANOVAs was considered as an interfering, but critical variable. That is, the combination of significant main and interaction effects involving the dyad factor indicated that the results for a particular variable were specific to the individual dyads, and

that the results for that variable may not be generalized beyond this study (FS and FSI). For all other variables (underlined in the preceding paragraph), either the dyad factor and its interaction were not statistically significant or the dyad factor did not cloud the interpretation of the other main effects. The results for the following variables, according to the inferential data, can be considered generalizable from this study: IO, IA, IS, ISI, FO, FA, OBJ, ACT, SELF, SOC, IMM, and FAN.

CHAPTER IV

## DISCUSSION

In this chapter the major findings of the study and their implications and applications are discussed. Where appropriate, the findings of the study are linked to consistent trends in the existing literature on play, educational play, and play therapy. Speculative explanations for some of the findings are included. A brief statement of the limitations of the study and relevant procedural concerns prefaces the discussion, and recommendations for directions in future research on play materials concludes the chapter.

The results of the study are discussed with cautions in mind regarding the limitations of the study. First, the small sample of only two dyads, with only partial and inconsistent replication, is an understood limitation affecting generalizability. Second, the speech coding system employed was developed for the purposes of the study, and as a new instrument, with relatively low interrater agreement, constitutes an additional limitation. A final limitation is related to the intent of the study. That is, this study was designed to explore whether categories of play materials, grouped according to their properties and functions, do in fact effect changes in the subject of players' verbal referents. The

study does not, however, isolate specific properties within the material categories which may effect change. For this reason, this discussion must at times rely on speculation as to the properties of the materials that influenced changes in verbalization.

A procedural concern relevant to most studies on children's play should be identified at this point. Any experimental study on play must cope with a certain artificiality of the experimental setting and its demands, which affect an activity (play) which is usually associated with spontaneity and freedom from obvious external control. In this study, the experimenter relied upon subjects' assumed natural interest in the materials to compensate for this artificiality. Fortunately, subjects' attention span and boredom with materials did not prove to be a serious problem in the course of this experiment. Another procedural detail, namely, delays in scheduling between sessions, probably helped alleviate boredom with the experimental materials.

Stated in the most general terms, with appropriate qualifications to follow, categories of play materials were found (1) to differentially affect the amount of player verbalization, (2) to differentially affect the subject of player verbalization, and (3) to differentially affect aspects of the immediate or fantasy content of the verbal referents. It must be emphasized, however, that these conclusions are not

applicable to all three play material categories, and that the play materials were found to significantly influence only a few of the referent variables considered.

Human Representative materials were associated with the highest levels of player verbalization. This finding is consistent with results from earlier studies (Beiser, 1955; Lebo, 1958; Van Alstyne, 1932) which reported high levels of communication or conversation with similar materials. Kinetic play materials, by contrast, were associated with less total speech. There is a remote parallel between this finding and the results of the study by Scanlon (1977), in which gross motor play apparatus was found to produce less speech (than crafts materials). However, in general, there are no trends in play literature to which the present finding can be linked. It is possible that the concentration and co-ordination of movement required by Kinetic materials as opposed to the diversity of roles and events prompted by Human Representative materials may account for the differing levels in verbalization with these two materials. The fact that in this study two categories of materials have been shown to differentially influence the amount of verbalization is of interest in therapeutic and educational settings, where increased verbalization can be used for relevant communication or instructional goals.

The association of Fantasy Activity verbal referents with Human Representative materials supports the tentative claims of

Singer (1973) and contradicts those of Bender et al. (1940) that such materials would tend to be associated with fantasy play behaviors. Although a large number of Fantasy Activity referents would not be expected with Kinetic materials, as these materials involve the player in continued movement, it is interesting to note that Construction materials, which allow for imaginative and creative interaction with parts, did not stimulate pre-schoolers to verbalize around fantasy topics.

The Human Representative materials used did not significantly affect production of self-informational statements, with which these materials are often associated in the therapeutic play literature (e.g., Schiffer, 1969). Evidently, the self-informational speech reported in clinical use with these materials is a result of the interpersonal variables of a play therapy context.

Kinetic materials were found in this study to elicit verbalization reflective of social interaction. This finding parallels the results of studies using larger sorts of kinetic materials (as wagons, trucks, playground equipment, in studies by Hulson, 1930; Parten, 1932; Van Alstyne, 1932). In these studies social interaction behaviors were prompted by activity-oriented play equipment. Why these materials in particular, which involve individual contact with a material, should elicit more social interaction verbalization is not known. Nevertheless, a small number of studies, including the

present one, indicate that in settings where social exchange among young children is sought, these materials supplement rather than detract from verbal social contact.

Though a form of activity referents predominated with both Human Representative and Construction materials, it is interesting to note that social interaction referents did constitute a relatively large proportion of the total referents for these same materials. This could indicate that although Kinetic materials in particular stimulated more verbal social interaction, social interaction did in fact occur in play with the other materials as well.

Descriptions of immediate play activity were most frequently associated with Construction materials, although the effect of these materials on these referents was not statistically significant (relative to the other material categories). Though not a particularly meaningful finding, it should be noted that descriptions of activity (ACT referents) resulting from the use of these (Construction) materials predominated over the descriptions of the components (OBJ referents) of the material.

Clinically relevant conclusions can be drawn from aspects of the data not necessarily subjected to statistical analyses. The preliminary consideration of the data indicated that the participants of the study were inclined to speak about topics related to the present setting, with or without fantasy content,



rather than introducing references to persons or events outside the play setting. For therapeutic and educational play settings, where more personal details of the child's life are sought, this finding tentatively indicates that play with these three material categories cannot be relied upon to produce speech on topics outside the immediate setting. Similarly, the extremely small number of Self-Informational referents for all three play material categories was a surprising finding. With reference to therapeutic play settings, it would appear that variables independent of the play materials, namely, those concerning the therapeutic relationship, account for the personally disclosing speech reported in play therapy literature. There are no trends in the literature to support this supposition; however, Lebo (1955b) did find that the absence of play materials was as effective as the use of recommended materials in producing self-informational statements. While statistically significant and/or clinically useful information was found for the Social Interaction, Fantasy, and Self-Informational statements in particular, the majority of referent types examined in this study were not significantly affected by the differences between the play materials. Descriptions of the play materials themselves (Object referents), for example, were not found to be influenced by the various materials.

The influence of the trial factor in this study, or exposure to materials over time, is of interest to therapeutic

and educational play practitioners who seek verbal communication with children over prolonged contact. For the only variable in which the trial factor was statistically significant, Fantasy Social interaction, no consistent increase or decrease was noted over the four trials. All that can be reasonably and tentatively concluded is that large fluctuations are likely to occur with this variable in small group play for the three materials. Certainly, such factors as variations in mood, temperament, and style of play, whether parallel, associative, or co-operative, could account for these fluctuations.

Related to the element of fantasy, but only indirectly of interest to the aim of the study, was the marked difference in levels of fantasy speech between the dyads. Though not directly examined in this study, this observation suggests that the players in each dyad shared a level of fantasy play verbalization. Put forward with caution, this observation tentatively supports Singer's (1973) claims of fantasy play predisposition for individual players.

In conclusion, the present study, despite the limitations cited, was nevertheless significant in considering play materials in relation to speech produced during play. At a practical level, the study has illustrated not only that a small number of speech-related variables were affected by play materials, but in addition that the interrelationship between play materials and speech can be systematically examined. On a

theoretical level, the player and play material interaction has been found once again to be a meaningful area of the psychology of play to be explored. Of particular interest to applied settings are the findings concerning level of verbalization, verbal social interaction, and the fantasy content of verbalization. In evaluating the effect of play materials on these variables, meaningful though often tentative empirical background information has been provided to aid in the selection and usage of materials for a variety of play settings and therapeutic objectives.

Certainly the question of play materials and related speech is in need of continued research. The previous studies which have dealt with this question either directly or tangentially have all been, like the present study, unique and one-time-only efforts. Future efforts may modify the present format by using a larger number of triads so that interpersonal variables among the three subjects could offset idiosyncracies that might result with dyads. Another meaningful approach might compare responses of subjects alone and in small groups with the same play materials; or a time frame and research design could be employed which would increase generalizability. As a new instrument, the coding system received only 70% interrater agreement. Viewed in another light, two independent coders agreed that the system adequately accounted for 70% of participants' speech and therefore merits attention for future studies. Future studies

must ultimately consider the interrelationship between play materials and speech by focusing on one play material at a time, in this way helping to identify the physical properties which account for the changes in verbal referents. With the present study, emphasis on global interrelationships resulted in general though practical initial data for a small number of clinically relevant variables.

APPENDIX A

## THE SPEECH CODING SYSTEM

The immediate dimension is composed of references literally descriptive of objects, activities, the player's self-state, and social interaction as they exist within the immediate play setting.

Immediate Object referents include:

1. Simple descriptions of play objects and their actual physical properties.

Example:

This is gooey.

This is the biggest block.

This wrench is broken.

This is crooked.

This puppet has a funny face.

These soldiers are dirty.

This is a terrible color.

2. Identification and literal naming of play materials.

Examples:

Here's the Lego.

This is my doll.

That's Bobo the Clown.

More marbles.

That's not a cowboy.

3. Questions about identification and physical properties of play materials.

Examples:

Why is this so slippery?

Where is the baby doll?

Is this purple or violet?

Which is my prettiest picture?

4. Simple statements and questions of possession.

Examples:

This is mine.

Is this yours?

This picture isn't mine.

5. Counting of play objects, including counting with errors, but with no exaggerated or fantasy intent.

Examples:

1, 2, 3, 4, 7, 8, 10. [attempt at true counting]

Eleventy-one, eleventy-two, eleventy-three beads.

[attempt at true counting]

Immediate Activity referents include:

1. Descriptions of on-going play activity, with no imagined or fantastic content.

Examples:

This is fun.

That tower is going to fall.

Here comes the red car.

I had this first.

I've got four red wheels.

I'm building a big tower.

2. Statements of decision and intent regarding play activities.

Examples:

I'm going to build a tower first.

I have to change her dress.

I'm going to smash this up.

I'll win it back.

Immediate Self-Informational referents include:

1. Expressions of self-concept, or sincere estimations of ability or self-concept.

Examples:

I can do that.

I'm good at these marbles.

I know how to do that.

I guess I'm just lazy.

2. Statements of literal or non-fantastic role assumed during play.

Examples:

I'm the one who decides.



I'm acting pretty silly now.

3. Statements of immediate play-related interests, tastes, likes, and dislikes.

Examples:

I don't want to get dirty.

I'm having fun.

4. Statements of immediate play-related wants and needs.

Examples:

I need a red one.

I want this one.

5. Statements of affect with no elements of exaggeration.

Examples:

That really makes me mad.

I'm going to cry.

Immediate Self-Informational referents must be verifiable from the video-tape; for example, a referent such as "I'm too stupid to do this," if verified from the coder's observations, would qualify as an immediate self-informational referent. "I'm the dumbest one in the world" would not be verifiable from the tape and would be coded otherwise (see Fantasy Self-Informational referents).

Immediate Social Interaction referents include:

1. All statements of direct address to another player.

Examples:

Watch me do this.

See.

Did you ever play with this?

Just call me lazy.

2. Statements which signify on-going interaction, or seeking of interaction, attention, or relationship.

Examples:

Let's be friends, OK?

Let's play with this now.

What should we pick now?

This is for you.

You take part, and I'll take the rest. [The second clause constitutes an activity referent.]

3. Direct questions to another player.

Examples:

Are you going to take this one?

What are you doing?

Do you like this?

Do you want this?

Because members of the dyads frequently address all verbal referents to each other, syntactical cues can be used to identify social interaction referents. For example, in a

referent such as "Look at this yukky one," the player is said to be speaking to the second player directly, and so the referent is coded ISI. In referents such as "This is yukky" or "I think this is yukky," the player is said to be speaking at the second player so that other referent types apply.

The distal dimension includes references to real objects, activities, experiences of self, and social interaction existing in external contexts and assumed to be true.

Distal object referents include:

1. Identification and description of play objects present with reference to play objects in other settings.

Examples:

This is like the one I have at home.

This truck isn't as good as the one I got for Christmas.

2. Statements of naming, descriptions, and possession of objects in other settings.

Examples:

There are rocking horses at day care.

We got a new swing set.

Sub-categories of Immediate Object referents apply, with the qualification that Distal Object referents must contain references to other settings.

Distal Activity referents include:

1. Descriptions of play activities in contexts removed from the immediate play setting.

Examples:

I built a big tower at day care and then knocked it down.

I'm going to build a snowman tonight.

2. Descriptions of non-play activities in contexts removed from the immediate play setting.

Examples:

I'm going ice-skating.

We went to the planetarium.

I think it's going to snow.

We went to Disneyland.

Sub-categories of Immediate Activity referents apply, with the qualification that Distal Activity referents must contain references to other settings.

Distal Self-Informational referents include:

1. Statements of ability or self-concept in other settings.

Examples:

I'm too dumb to learn to read.

I was the best one in swimming.

2. Statements of roles assumed in other settings.

Examples:

I was the captain in red-rover.

I was the princess in the play.

3. Statements of likes and dislikes related to other settings.

Examples:

I don't like it when teacher gets mad.

I liked going to the zoo.

4. Statements of affect, wants, and needs related to other settings.

Examples:

I want to be a fireman when I grow up.

I got angry when she hit me.

I cried all night.

Distal Social Interaction referents include:

1. Statements which signify on-going interaction, relationships, and relationship seeking in contexts removed from the immediate setting.

Examples:

Jamie and I played last night.

Me and Tina are buddies.

2. Descriptions of persons with whom the player interacts in other settings.

Examples:

My dad got the flu.

My mom baked me a chocolate birthday cake.

The fantasy dimension includes references to objects, activities, self-state, and social interaction with elements of make-believe, exaggeration, role adaptation and assignment. Descriptions unverifiable from the video-tape and assumed to have small likelihood of ever being experienced are also included in this dimension.

Fantasy Object referents include:

1. Descriptions of play objects which attribute unreal, false, or fantastic qualities to the objects.

Examples:

This is gooey wormy clay.

This is the best picture in the world.

This is the best picture I ever drew.

This is the scariest face I ever saw.

2. Attribution of false, imagined, or exaggerated identities to play objects.

Examples:

This is a real fighting army, you know.

He is a Mister Magoo.

Here's a magic wand.

Sub-categories of Immediate Object referents also apply, qualified to include elements of fantasy, make-believe, and exaggeration.

Fantasy Activity referents include:

1. Descriptions of on-going play activity which reflect fantastic, exaggerated, or unverifiable experiences.

Examples:

I'm building the biggest tower in the whole world.

This is magic.

2. Descriptions of on-going play activity which reflect imagined or exaggerated details of the activity or an imaginary setting.

Examples:

Ice cream for sale.

It's time for the dolly to have some supper.

Now the men are fighting hard.

Then the drivers crash into the wall.

3. Statements of play decisions and intent which contain a fantasy component.

Examples:

Now I'm going to kill that baby.

I have to fix the machine gun.

4. Fantasy narratives or story units in which the child speaks

for play objects to which s/he attributes roles or qualities.

Examples:

Where's the billy goat? I'm going up the hill says the billy goat. Here comes the farmer to look for the goat. Where are you goat? Here I am.

Where's the cop? Attention all policemen. Here comes the cop car. Out jumps Kojak.

Who wants to play with William? I do, say all the children. But mean George won't play with William. Why not, say Mom and Dad.

5. Fantasy narratives or story units in which the player speaks for two imagined characters.

Example:

I'm going to the store. Me too. And I'll buy some spaghetti but no meat balls. Don't forget the dessert. O.K. I'll buy chocolate pudding.

If two players shared the statements in the latter example, the verbalizaion units (see below) are coded individually according to the coding criteria described.



Fantasy Self-Informational referents include:

1. Statements which express exaggerated, fantastic, or unverifiable self-concept.

Examples:

I'm the strongest boy.

I can do anything.

2. Statements which describe fantastic or exaggerated role adopted during play.

Examples:

Crazy George, that's me.

I'm the captain of the ship.

I'm supposed to be the racing car.

3. Statements of exaggerated or fantastic affect.

Examples:

I'm madder than a cuckoo nut.

I love this dolly more than anything in the whole world.

Fantasy Social Interaction referents include:

1. Statements in which address to the other child suggests assignment of fantastic roles or unrealistic, exaggerated identities.

Examples:

Hey, you dumb-dumb.

Jump over the bridge, Evil Knieval.

2. Statements which signify on-going interaction, or seeking of interaction or relationship in a mutually shared fantasy setting.

Examples:

You're R2D2.

Now we mad drivers crash into the alley.

Now you sell me some ice cream.

You take \$80,000.

3. Direct questions to another player which reflect assigned roles or shared fantasy settings.

Examples:

Did you steal this from him?

Are you going to bomb that now?

When players' verbalization does not fit these detailed sub-categories, coders must determine on reasonable qualitative grounds whether the verbal referent is descriptive primarily of objects, activities, players' personal state, or social interaction. In some cases, verbal cues, such as syntax or parts of speech, may be helpful.

With Object referents, such syntactical forms as "It's a...," "This is a...," "Here's a...," and "looks like..." are possible cues.

With Activity referents, specific syntactical or word cues are not helpful, as these referents will contain both "I" and "it" referents.

With Self-Informational referents, "I" references are possible cues.

With Social Interaction referents, direct address to another player is the principle cue.

The coding of players' speech is carried out on segments of speech termed verbalization units. These segments are not based on number of utterances or such factors as inflection, stress, or pause. The verbalization units were determined according to descriptive information offered by the speaker and according to syntactical structure. The following guidelines and examples illustrate the verbalization units used for coding:

1. Simple sentences or noun-verb clauses constitute a single unit.

Examples:

Now you have seventy.

I can see your face.

Give that back.

2. Individual words or groups of words which do not form a phrase or clause but which offer substantive descriptive

information constitute a single unit.

Examples:

Stupid George.

One wheel.

Red truck, purple truck. [two units]

The fattest one.

3. In cases where a simple sentence is accompanied by a conditional or explanatory clause which expresses a new thought or new information, the clauses are coded as separate units.

Examples:

You'll never hurt me because I'm on the other side. [two units]

Give me that one because I had it before. [two units]

I don't care if you only got two 'cause I got two steering wheels. [three units]

No, you don't. You took it from me so now I've got it back. [three units]

4. In some cases, a reasonable decision by the coder is required to determine whether an additional clause or phrase adds substantive descriptive information.

Example:

Red truck, blue truck, dump truck. [three units]

5. When subject, verb, or object of a sentence or clause is

repeated, repeated words are excluded and coding is carried out for the descriptive information expressed.

Examples:

Give me a wheel, wheel. [one unit]

Just show me two wheels, show me them. [one unit]

I'm George, George, George of the Washington.

[Intermediate names are not coded.]

You're going to get a smack, a big smack, a hard one.

[one unit]

6. Prepositional phrases uttered alone are coded as single verbalization units. As with noun-verb clauses, uninterrupted repeated phrases are coded only once for the information expressed.

Examples:

Up the hill, up the hill, up the hill. [Only one phrase is coded.]

Up the hill, down the hill, down the hill. [The latter repeated phrase is not coded; the first two phrases constitute separate units.]

7. When novel phrases, clauses, or words interrupt repeated speech, the subsequent repeated speech is coded as a new unit.

Examples:

Up the hill, up the hill, down the hill, up the hill.

[Only the second phrase is not coded.]

The pony is flying, now he's landing, landing, landing, now he's flying again. [Each clause constitutes a separate unit, with the repeated words, "landing," not coded.]

Coding was not carried out for the following: single words which do not add information, selected phrases which were considered superfluous in players' speech, and any references to the experimenter or to the experimental procedure. Words excluded from coding did not constitute interruptions when words, phrases, or clauses were repeated.

Examples:

Yes. No. Never. O.K. There. Now.

Excuse me. Darn it. Thanks. Sorry. Please. So what.

Direct address by name.

Is it time to go back yet?

In some cases, sentences, clauses, or phrases were completed by the coder if the content was clear from the video-taped material.

Examples:

I did not [take that].

Don't you dare [touch another truck].

Yes, I will [take another one].

APPENDIX B

## THE SUBJECT SCREENING INSTRUMENTS

The VLDS is an extension of the communication section of the Vineland Social Maturity Scale. The VLDS relies on the informant interview method, with the preferred informant being an adult, parent or teacher, who knows the child intimately. The 50-item instrument includes Speech (S), Language (L), Writing (W), and Reading (R) related questions, with both ability and readiness factors for ages 1 to 15 considered in these four sub-sections. However, 33 of the 50 items pertain to the up to five-year-old level appropriate to this study. (A copy of the VLDS items is included at the end of this appendix.)

This measure was selected because the items concern the child's ability to produce verbal sounds, to manipulate simple objects, to recognize and name simple objects and their physical properties, and to generate spontaneous vocabulary- all important factors in a study of play and attendant speech.

The VLDS manual (Mecham, 1958) cites a split-half reliability of .98 at  $p < .05$ , generalized from norming carried out with 120 children. Subsequent reliability data for the VLDS are limited. In usage primarily with speech-, hearing-, or mentally-impaired youngsters, the following reliability figures have been reported: a split-half reliability of .989; a rank-order correlation of .911 at  $p < .005$ , when scores were



compared with clinicians' ratings of subjects' speech; and an item validity significant at  $p < .001$ , in distinguishing the grade levels of 140 subjects (all reliability figures from Mecham, 1960). In two other studies, the Language Age (L.A.) equivalents were sensitive in distinguishing primary grade levels (Williams, 1960; Bown and Mecham, 1960).

The talkativeness scale formulated for the study was a Likert-type scale of ten gradations, 1 to 10, with 1 being Very Quiet and 10 being Very Talkative.

The social play profile was an informal measure of social play tendencies formulated for screening purposes. Individuals who received "yes/no/no" comments from the informants were preferred in the selection of subjects. The social play profile consisted of the following questions:

1. Does the child play by him/herself, alongside others, and co-operatively with equal ease?
2. Is the child exceptionally out-going, aggressive, or withdrawn in the day care setting?
3. Does the child have unusual difficulty in sharing play objects?

The Fantasy Interview (Singer, 1973) consisted of the following four questions, with alternatives in wording as suggested by Singer:

1. What is your favorite game? What do you like to play most?

2. What game do you like to play best when you're all alone? What do you like to do best when you're all alone?

3. Do you ever have pictures in your head? Do you ever see make-believe things or pictures in your mind and think about them? What sort of things?

4. Do you have a make-believe friend? Do you have an animal or toy or make-believe person you talk to or take along places with you?

Singer (1973) recommends scoring of the five possible points of the interview as follows. Each question is to be scored 0 for an answer with no fantasy or make-believe content, or 1 for an answer with a fantasy component. A score of 2 constitutes the cut-off score in the description of subjects; that is, scores of 0 and 1 are said to indicate low-fantasy predispositions, while scores of 2 or more, as Singer has observed (1973), indicate high fantasy prediposition.

Although reliability data are not available for the interview, in experimental studies of fantasy play, Singer (1973) reports, high and low scorers have been found to differ significantly in ability to tolerate waiting, contact with

parents, and creativity and imaginativeness in story-telling.

Table A

## Subjects' Scores on Screening Instruments

Subject	VLDS		Instrument	
			Talkativeness Scale	Fantasy Interview
	M	L.A.	M	Raw Scores
Dyad A				
1	32.75	4.91	6.5	3-4
2	29.50	3.90	6.0	1-2
Dyad B				
1	36.25	5.81	8.0	1-2
2	(28.50)	(3.70) <sup>a</sup>	(5.0)	3-4

## Notes:

The ranges and means of VLDS scores were 22.00 to 38.50 ( $\bar{x}$  of 31.64) for Rater 1; and 28 to 39 ( $\bar{x}$  of 32.00) for Rater 2.

The ranges and means of the Talkativeness Scale ratings were 2 to 8 ( $\bar{x}$  of 5.2) for Rater 1; and 1 to 10 ( $\bar{x}$  of 6.3) for Rater 2.

L.A. refers to Language Age equivalent, determined from the scale suggested in the VLDS Manual (Mecham, 1958).

a. Parentheses indicate that the figure represents the score of only one rater.

The following are the items of the Verbal Language  
Development Scale (Mecham, 1958):

#### **0-I Year Level**

Crows: laughs or smiles  
Produces consonant sounds reflexively  
Talks; imitates sounds  
Responds to name and "no-no"  
Comprehends "bye-bye" and "patacake"  
Echoes words or sounds (dada or mama)  
Follows simple instructions

#### **I-II Year Level**

Expressive vocabulary of at least two words  
Marks with pencil or crayon  
Recognizes names of familiar objects  
Recognizes hair, mouth, ears, and hands  
when they are named  
Expressive vocabulary of at least 25 words  
Uses names of familiar objects  
Identifies common pictures when they are named  
Talks in short sentences  
Names Common pictures

#### **II-III Year Level**

Verbalizes toilet needs  
Asks for "another"  
Uses plurals  
Speaking vocabulary of 50 words or more  
Uses I, me, you, etc., in his speech  
Expresses vocally a desire to take turns  
Identifies action in pictures  
Names one color  
Names almost all common pictures

#### **III-IV Year Level**

Says full name  
Relates experiences  
Says at least one nursery rhyme  
Recites poem from memory or sings a song  
Names all colors

#### **IV-V Year Level**

Reads by way of pictures  
Draws with pencil or crayon  
Prints simple words

#### **V-VI Year Level**

Relates fanciful tales  
Names penny, nickle, dime  
Recites numbers to thirties  
Asks meaning of words

#### **VI-VII Year Level**

Makes telephone calls  
Can tell familiar story  
Reads on pre-primer level  
Writes numbers from one (1) to fifty (50)

#### **VII-IX Year Level**

Names quarter, half-dollar, dollar, etc.  
Writes with pencil  
Reads on own initiative  
Writes occasional short letters

#### **IX-XV Year Level**

Can retell short story that he has read  
Answers ads; purchases by mail  
Enjoys books, newspapers, magazines  
Writes by letter  
Follows current events and discusses them

APPENDIX C

2

## THE EXPERIMENTAL PLAY MATERIALS

### Human Representative Materials:

The dolls, 9 in. and 7 in., had little girl features and came with simple outfits. Props consisted of a tiny baby bottle, plate, spoon, and a scarf-sized piece of fabric as a blanket for each doll.

The hand puppets consisted of one female character and one cowboy, each with plastic heads and fabric bodies.

The adventure people were each 2 1/2 in. The figures, one man, one woman, and one boy, were made of molded plastic and had moveable joints.

The workmen, 2 1/2 in., were of red, yellow, or blue plastic. They came with tiny saws and axes that fit into the hands of these free-standing figures.

The cowboys were free-standing, 2 1/2 in., of red or green plastic.

The toy soldiers were free-standing, 5 in., of beige, blue, or yellow plastic.

### Kinetic Materials:

The ball, known commercially as a Nerf ball, was 3 1/2 in. in diameter and of a blue spongy material.

The wooden pounding board and mallet, with pegs to be hammered

in, were the type known commercially as a "cobbler's bench." The tops were of metal, painted with cartoon-like characters, and were 8 and 5 1/2 in. high respectively. A slinky, the commercial name, was an expandable coil of wire.

#### Construction Materials:

The Lego pieces used were the basic plastic rectangular shapes of several colors.

The wooden blocks of various geometric shapes were colorful and no larger than 3 1/2 in. long.

The interlocking blocks were of red, blue, or yellow plastic, each 2 in. high.

The assortment of colorful medium-sized wooden beads (with string) were no larger than 2 in. each.

The small plastic beads (with twine) were brightly colored and no larger than 1/4 in. each.

Tinker Toys, the commercial name, were a basic set of variously shaped wooden and plastic pieces which fit together.



APPENDIX D

TRIAL MEANS AND STANDARD DEVIATIONS

Table B

Means and Standard Deviations of the Proportions  
of IO Referents for each Trial

Trial	<u>Play Material Categories</u>					
	<u>HR</u>		<u>K</u>		<u>C</u>	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Dyad A						
1	.21	.01	.05	.07	.15	.00
2	.09	.05	.17	.04	.15	.02
3	.01	.01	.14	.10	.15	.01
4	.11	.00	.13	.01	.14	.02
Dyad B						
1	.16	.02	.08	.05	.09	.05
2	.23	.00	.11	.09	.10	.14
3	.14	.02	.09	.03	.12	.12
4	.16	.02	.02	.03	.14	.20

Table C

Means and Standard Deviations of the Proportions  
of IA Referents for each Trial

Trial	Play Material Categories					
	HR		K		C	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Dyad A						
1	.20	.04	.27	.03	.07	.05
2	.06	.02	.19	.09	.07	.03
3	.08	.05	.18	.02	.25	.15
4	.06	.02	.13	.11	.19	.14
Dyad B						
1	.17	.07	.19	.07	.31	.13
2	.12	.08	.23	.05	.53	.19
3	.21	.22	.38	.07	.45	.14
4	.23	.12	.15	.03	.50	.71

Table D

Means and Standard Deviations of the Proportions  
of IS Referents for each Trial

Trial	Play Material Categories					
	HR		K		C	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Dyad A						
1	.01	.02	.01	.02	.04	.01
2	.01	.01	.01	.02	.04	.00
3	.03	.03	.12	.06	.06	.03
4	.03	.01	.03	.04	.08	.06
Dyad B						
1	.03	.01	.07	.03	.07	.02
2	.08	.01	.12	.10	.04	.06
3	.06	.00	.06	.08	.03	.05
4	.04	.05	.06	.02	.00	.00

Table E

Means and Standard Deviations of the Proportions  
of ISI Referents for each Trial

Trial	Play Material Categories					
	HR		K		C	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Dyad A						
1	.31	.02	.44	.08	.26	.01
2	.06	.02	.26	.07	.26	.03
3	.14	.12	.39	.01	.36	.12
4	.14	.05	.24	.00	.20	.06
Dyad B						
1	.18	.09	.54	.20	.23	.13
2	.35	.06	.34	.05	.33	.11
3	.15	.05	.41	.03	.11	.16
4	.31	.04	.32	.20	.29	.40

Table F

Means and Standard Deviations of the Proportions  
of FO Referents for each Trial

Trial	Play Material Categories					
	HR		K		C	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Dyad A						
1	.04	.05	.04	.02	.05	.02
2	.11	.04	.00	.00	.10	.05
3	.09	.01	.08	.06	.05	.01
4	.05	.01	.02	.02	.05	.05
Dyad B						
1	.09	.13	.01	.02	.17	.12
2	.02	.00	.12	.04	.00	.00
3	.06	.00	.00	.00	.19	.14
4	.11	.05	.04	.01	.00	.00

Table G

Means and Standard Deviations of the Proportions  
of FA Referents for each Trial

Trial	Play Material Categories					
	HR		K		C	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Dyad A						
1	.21	.01	.11	.05	.16	.01
2	.62	.15	.23	.02	.22	.06
3	.64	.20	.07	.01	.15	.13
4	.60	.11	.29	.17	.06	.01
Dyad B						
1	.34	.81	.12	.10	.14	.20
2	.08	.01	.00	.00	.00	.00
3	.32	.20	.02	.03	.09	.08
4	.16	.08	.29	.23	.07	.10

Table H

Means and Standard Deviations of the Proportions  
of FS Referents for each Trial

Trial	Play Material Categories					
	HR		K		C	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Dyad A						
1	.00	.00	.02	.00	.00	.00
2	.02	.03	.00	.00	.01	.02
3	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00
Dyad B						
1	.00	.00	.00	.00	.00	.00
2	.02	.03	.02	.03	.00	.00
3	.00	.00	.03	.04	.00	.00
4	.00	.00	.04	.01	.00	.00



Table I

Means and Standard Deviations of the Proportions  
of FSI Referents for each Trial

Trial	Play Material Categories					
	HR		K		C	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Dyad A						
1	.03	.02	.06	.05	.17	.05
2	.03	.02	.15	.06	.06	.00
3	.01	.02	.02	.00	.00	.00
4	.04	.04	.16	.06	.26	.09
Dyad B						
1	.04	.05	.00	.00	.00	.00
2	.01	.01	.07	.03	.00	.00
3	.06	.08	.02	.03	.00	.00
4	.00	.00	.10	.04	.00	.00

Table J

Means and Standard Deviations of the Proportions  
of OBJ Referents for each Trial

Trial	Play Material Categories						
	HR		K		C		
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
<hr/>							
Dyad A							
	1	.24	.06	.08	.08	.20	.02
	2	.20	.09	.07	.04	.24	.07
	3	.09	.01	.22	.05	.19	.02
	4	.15	.00	.15	.04	.19	.07
<hr/>							
Dyad B							
	1	.25	.15	.09	.07	.25	.08
	2	.25	.00	.23	.05	.10	.14
	3	.19	.03	.09	.03	.32	.26
	4	.27	.06	.06	.04	.14	.20

Table K

Means and Standard Deviations of the Proportions  
of ACT Referents for each Trial

Trial	Play Material Categories					
	HR		K		C	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Dyad A						
1	.41	.04	.38	.07	.23	.04
2	.67	.13	.42	.07	.39	.03
3	.72	.15	.25	.01	.39	.17
4	.65	.09	.43	.07	.25	.04
Dyad B						
1	.51	.01	.30	.17	.45	.07
2	.30	.09	.23	.05	.53	.19
3	.54	.11	.40	.09	.54	.06
4	.39	.03	.44	.26	.57	.61

Table I

Means and Standard Deviations of the Proportions  
of SELF Referents for each Trial

Trial	Play Material Categories					
	HR		K		C	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Dyad A						
1	.01	.02	.04	.02	.04	.01
2	.04	.04	.01	.02	.05	.01
3	.03	.02	.12	.06	.06	.03
4	.03	.01	.03	.04	.11	.09
Dyad B						
1	.03	.01	.07	.03	.07	.02
2	.10	.03	.14	.07	.04	.06
3	.06	.00	.08	.12	.03	.05
4	.04	.05	.09	.01	.00	.00

Table M

Means and Standard Deviations of the Proportions  
of SOC Referents for each Trial

Trial	Play Material Categories					
	HR		K		C	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Dyad A						
1	.34	.04	.50	.14	.45	.06
2	.09	.00	.41	.01	.32	.03
3	.15	.14	.41	.01	.36	.12
4	.17	.08	.40	.07	.45	.03
Dyad B						
1	.22	.15	.54	.20	.23	.13
2	.36	.05	.41	.03	.32	.11
3	.21	.04	.43	.05	.11	.16
4	.31	.04	.41	.24	.29	.40

Table N

Means and Standard Deviations of the Proportions  
of IMM Referents for each Trial

Trial	Play Material Categories					
	HR		K		C	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Dyad A						
1	.73	.03	.77	.01	.52	.06
2	.22	.05	.62	.04	.61	.03
3	.26	.18	.83	.07	.82	.02
4	.33	.07	.53	.08	.61	.06
Dyad B						
1	.53	.16	.87	.12	.70	.32
2	.87	.01	.80	.02	.99	.00
3	.56	.29	.94	.01	.71	.23
4	.73	.04	.54	.18	.93	.10

Table O

Means and Standard Deviations of the Proportions  
of FAN Referents for each Trial

Trial	Play Material Categories					
	HR		K		C	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Dyad A						
1	.27	.03	.23	.01	.40	.06
2	.78	.05	.38	.04	.39	.03
3	.74	.18	.17	.07	.19	.01
4	.67	.07	.47	.08	.39	.06
Dyad B						
1	.47	.16	.13	.12	.30	.32
2	.13	.01	.20	.02	.00	.00
3	.45	.29	.06	.01	.29	.23
4	.27	.04	.46	.18	.07	.10

APPENDIX E



SIGNIFICANT MAIN AND INTERACTION EFFECTS

FIGURE A. IS REFERENTS,  
DYAD BY TRIAL INTERACTION EFFECT.

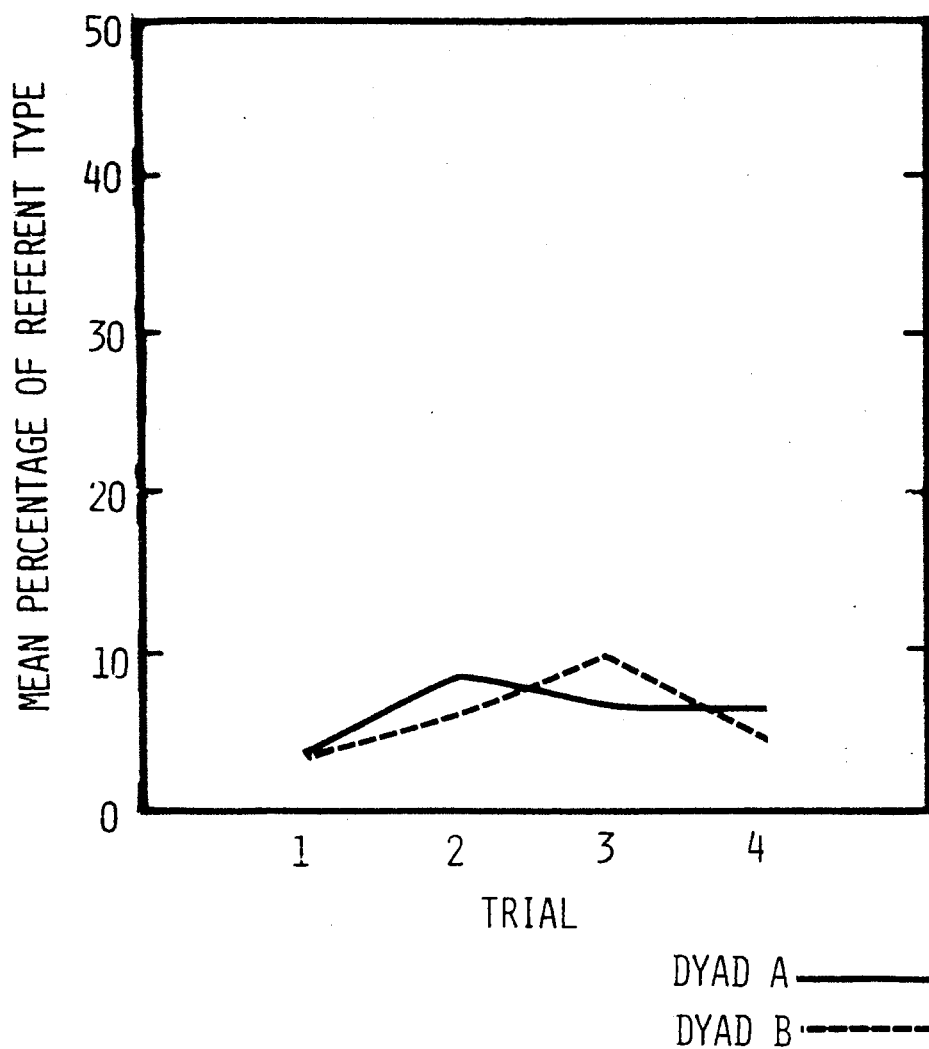


FIGURE B. FA REFERENTS,  
MATERIAL BY TRIAL INTERACTION EFFECT.

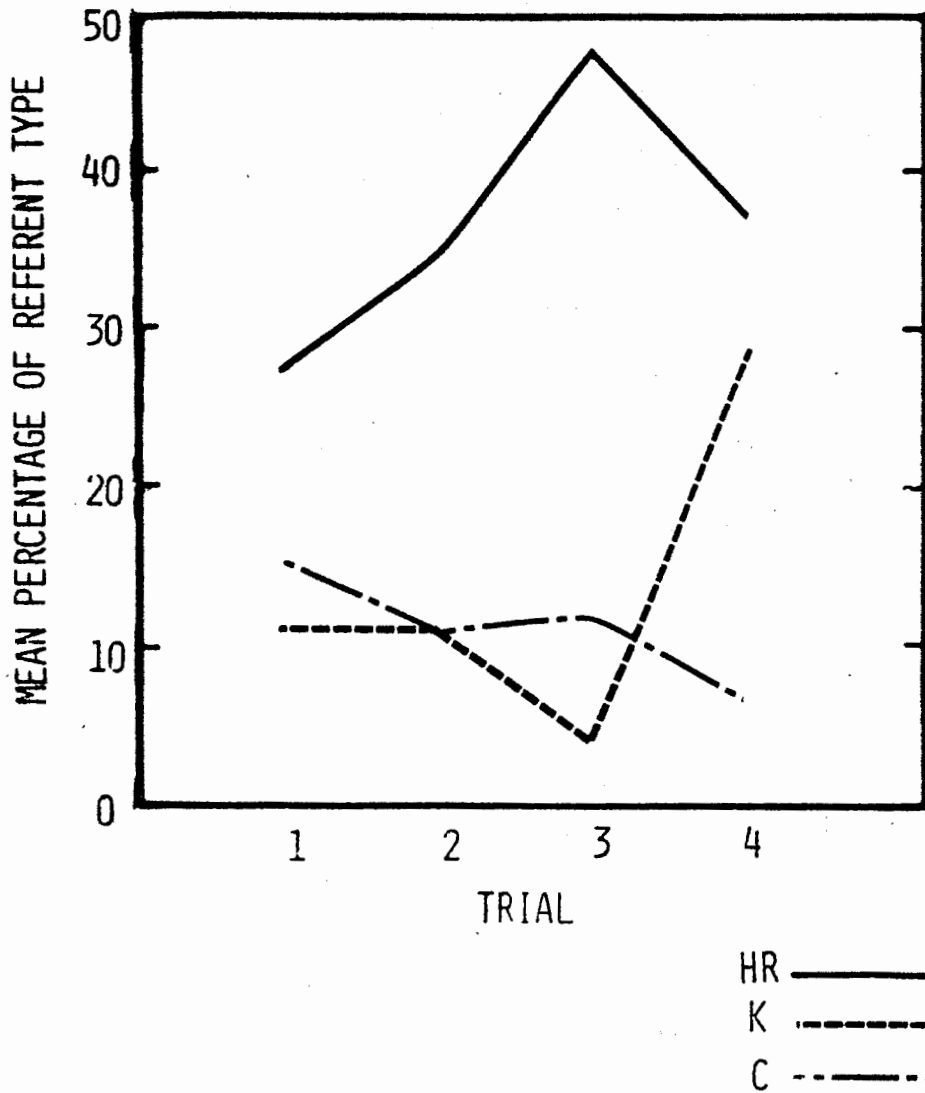


FIGURE C. FA REFERENTS,  
DYAD BY TRIAL INTERACTION EFFECT.

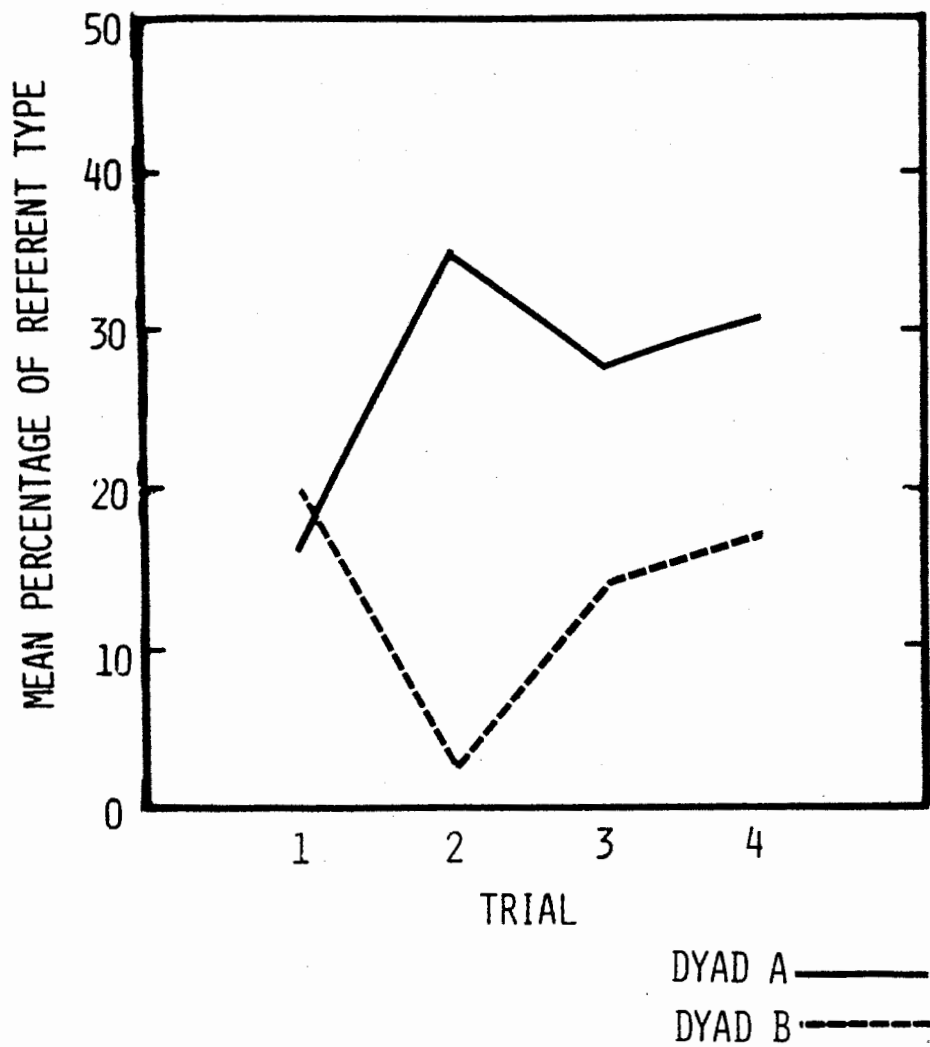


FIGURE D. FS REFERENTS,  
MATERIAL BY DYAD INTERACTION EFFECT.

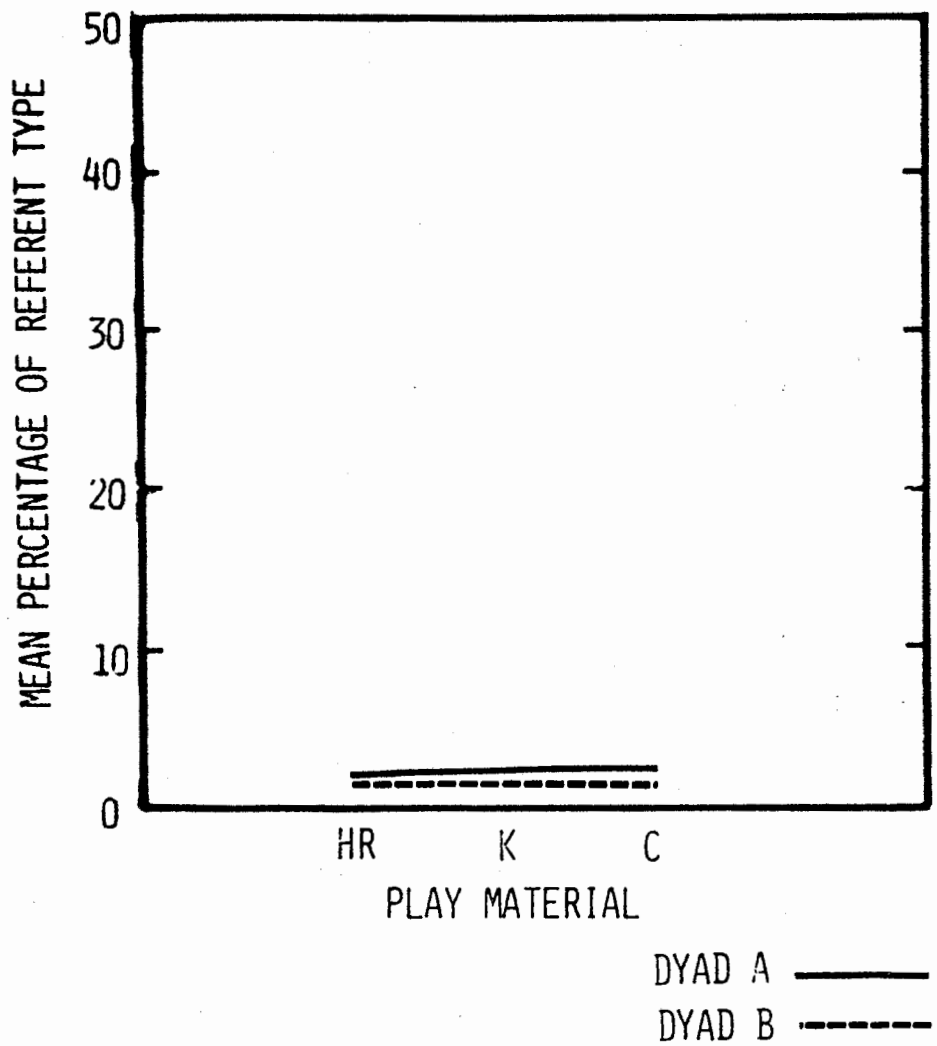


FIGURE E. FSI REFERENTS,  
MATERIAL BY DYAD INTERACTION EFFECT.

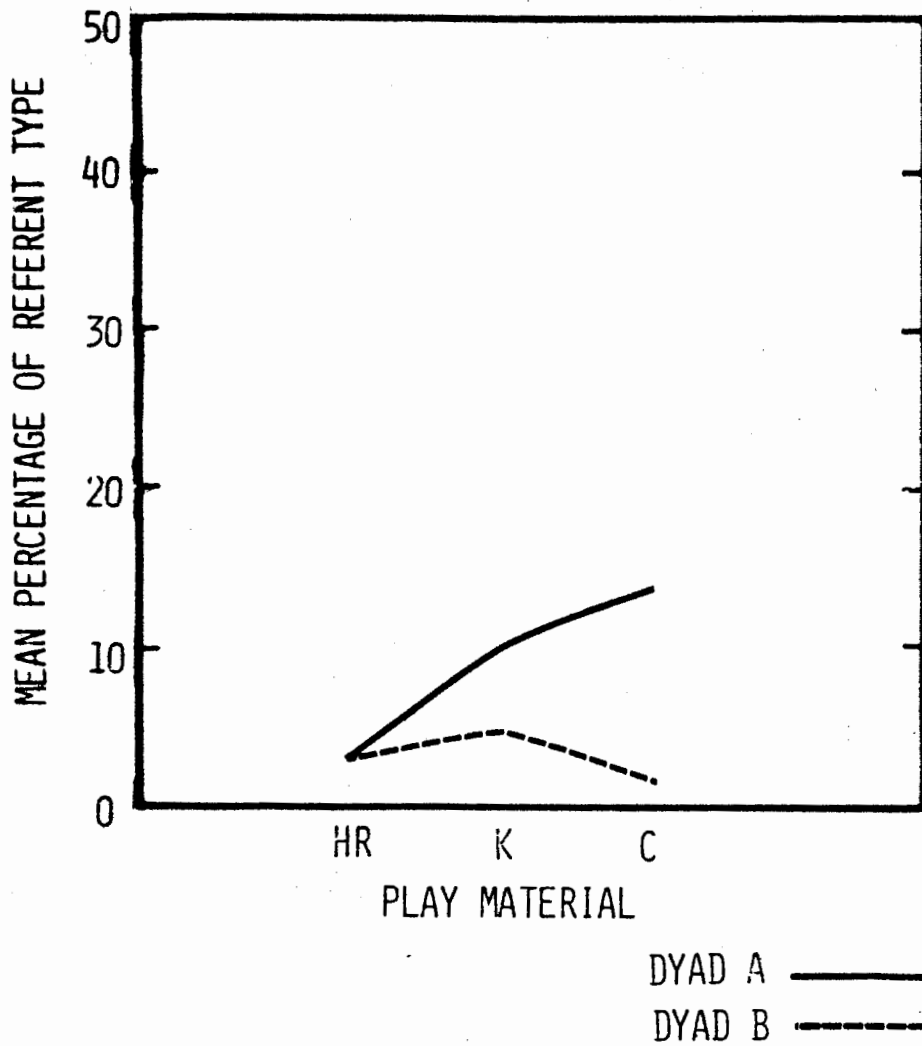


FIGURE F. FSI REFERENTS,  
MATERIAL BY TRIAL INTERACTION EFFECT.

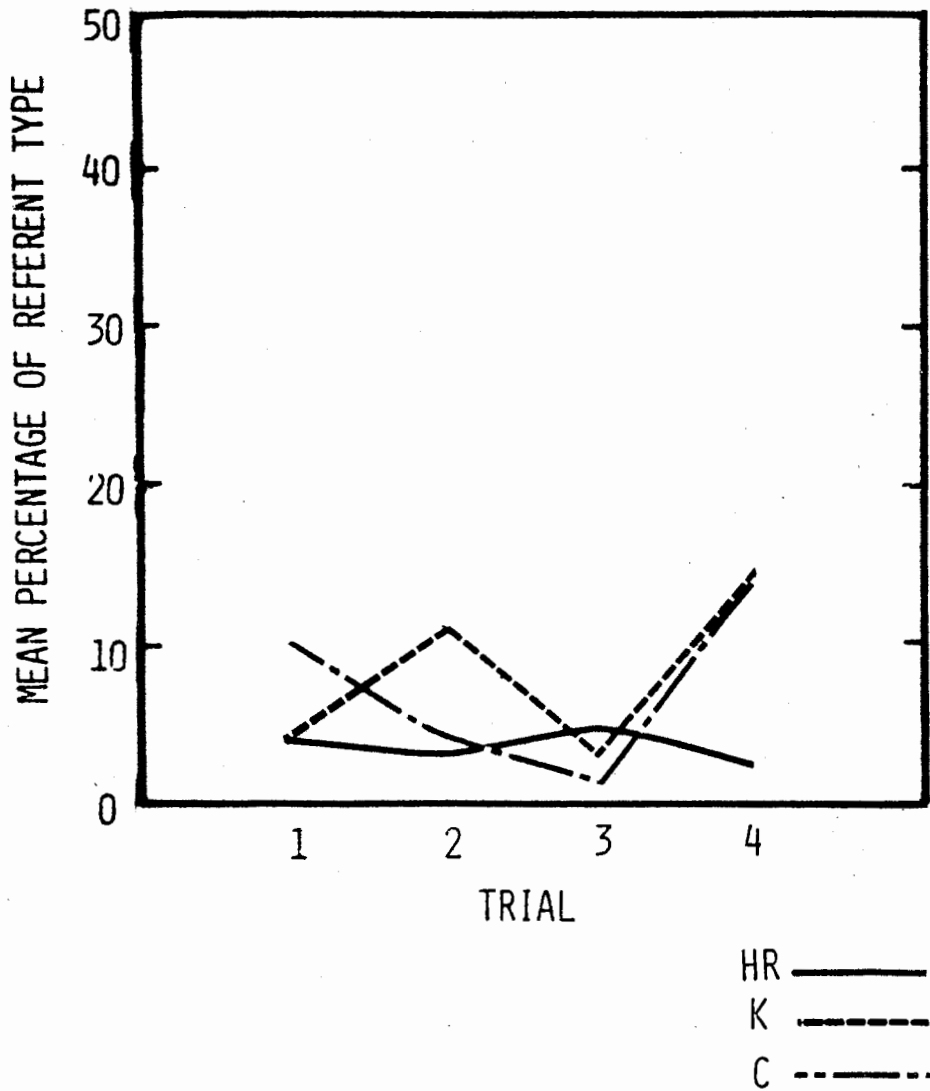


FIGURE G. FSI REFERENTS,  
DYAD BY TRIAL INTERACTION EFFECT.

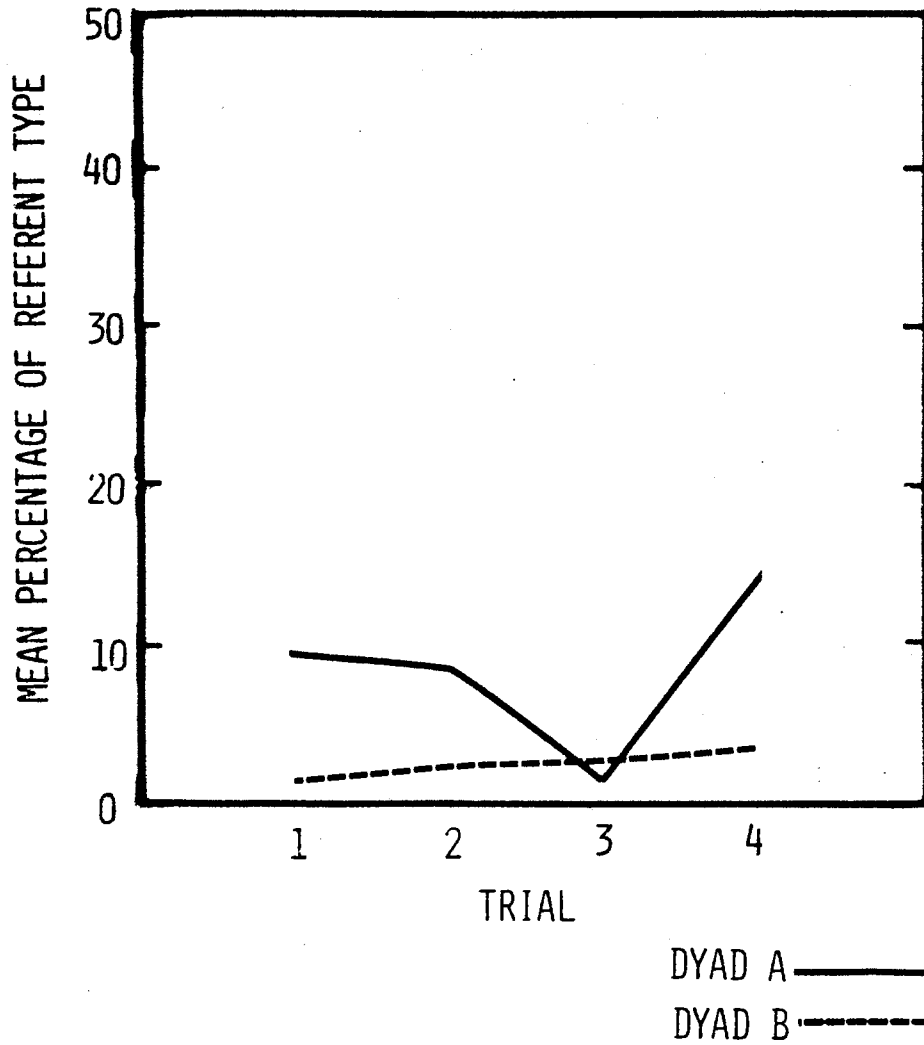


FIGURE H. IMM REFERENTS,  
MATERIAL BY TRIAL INTERACTION EFFECT.

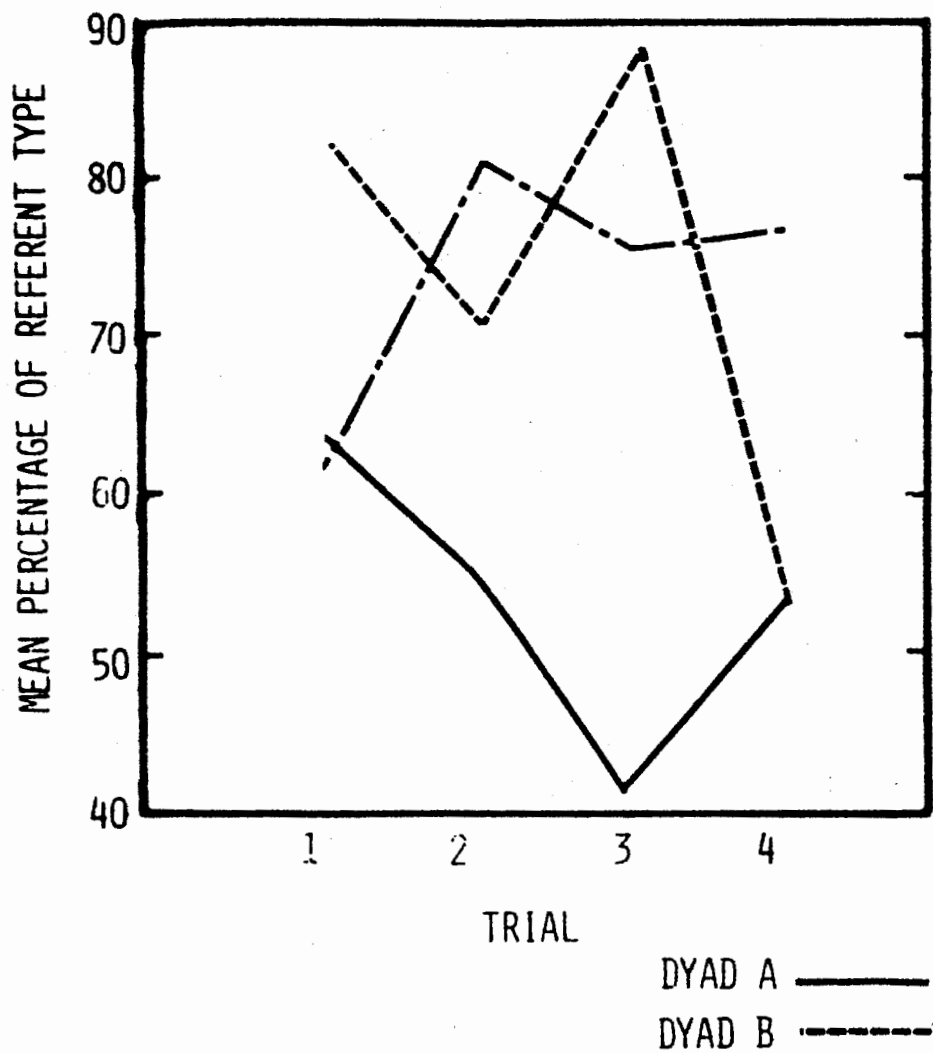




FIGURE I. IMM REFERENTS,  
DYAD BY TRIAL INTERACTION EFFECT.

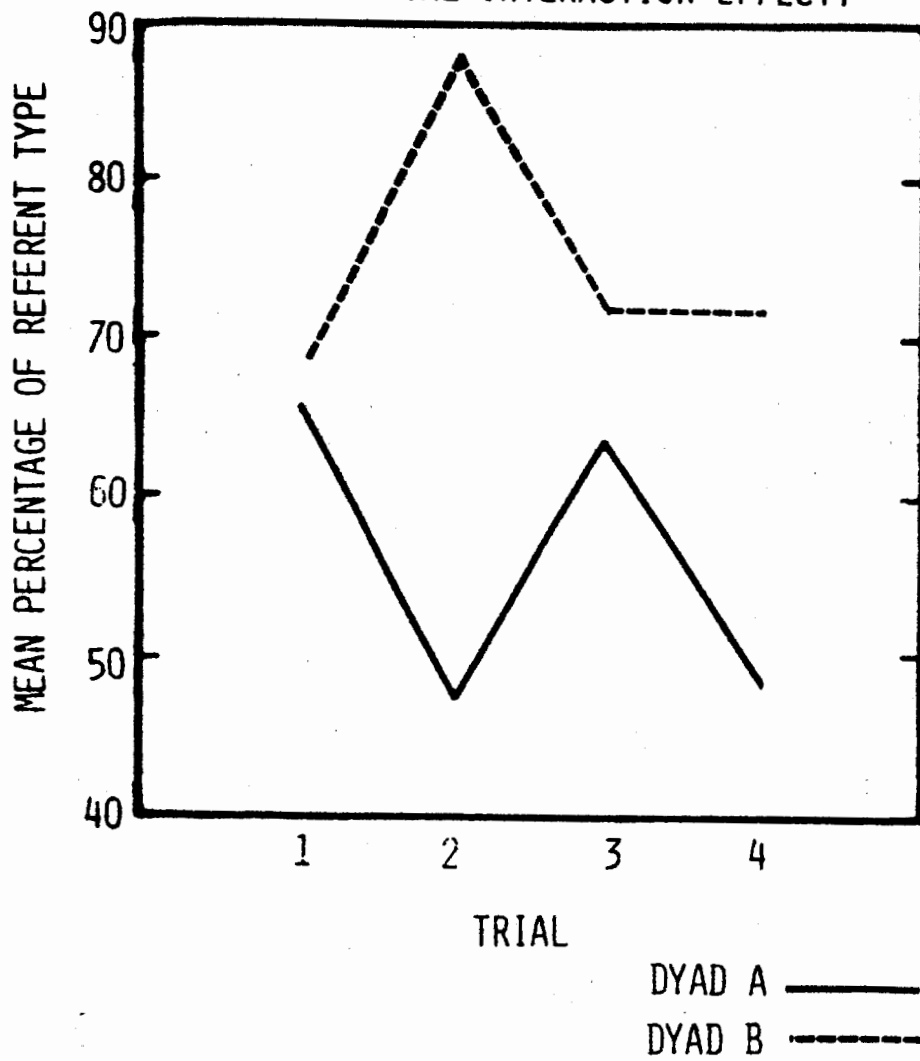


FIGURE J. FAN REFERENTS,  
MATERIAL BY TRIAL INTERACTION EFFECT.

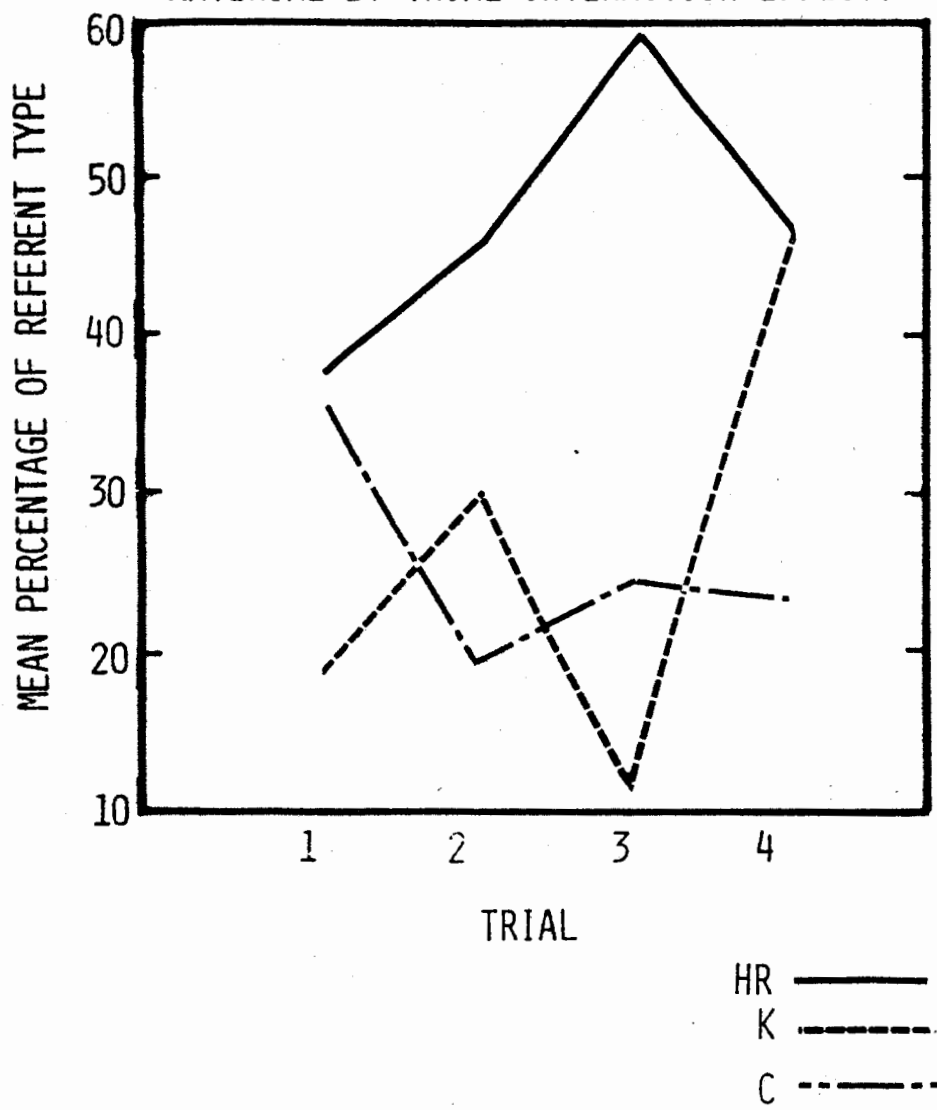
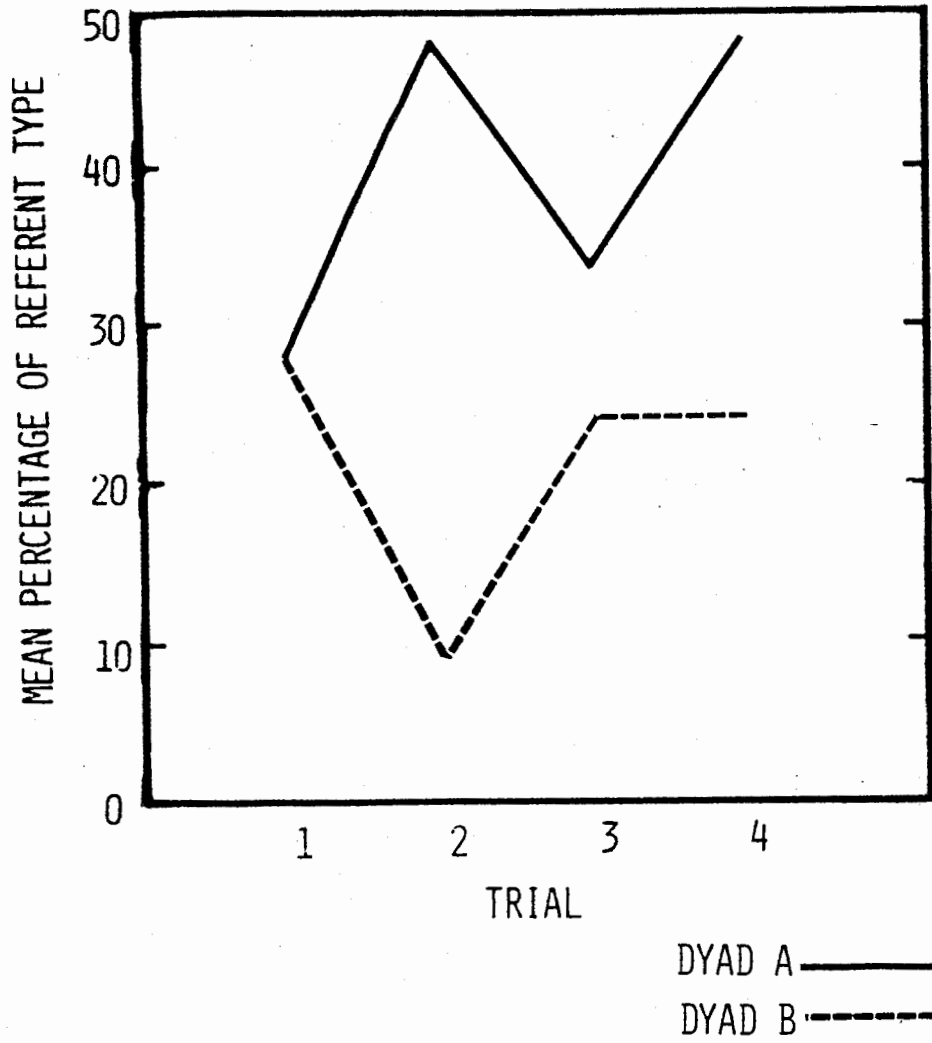


FIGURE K. FAN REFERENTS,  
DYAD BY TRIAL INTERACTION EFFECT.



## BIBLIOGRAPHY

- Axline, V. Play therapy. New York: Ballantine Press, 1947.
- Beiser, H. R. Play equipment for diagnosis and therapy. American Journal of Orthopsychiatry, 1955, 25, 761-770.
- Bender, L. and Woltman, A. Play and psychotherapy. Nervous Child, 1941, 1, 17-42.
- Bott, H. Observation of play activities in a nursery school. Genetic Psychology Monographs, 1928, 4, 44-88.
- Bown, J. C. and Mecham, M. J. The assessment of verbal language development in deaf children. Volta Review, 1961, 63, 228-230.
- Bruner, J. The nature and uses of immaturity. American Psychologist, 1972, 27, 687-708.
- Caplan, F. and T. The power of play. New York: Anchor Press, 1973.
- Cass, J. The significance of children's play. London: Batsford, 1971.
- Conn, J. H. The child speaks to the psychiatrist: An introduction to the method of the play interview. Occupational Therapy, 1938, 17, 231-244.
- Conn, J. H. The play interview: A method of studying children's attitudes. American Journal of Diseases of Children, 1939, 58, 1199-1214.
- Despert, J. L. A method for the study of personality reactions in preschool children by means of analysis of their play. Journal of Psychology, 1940, 9, 17-29.
- De Stefano, C. T. Environmental determinants of peer social behavior and interaction in a toddler play group. Dissertation Abstracts International, 1976, 36 (11-B), 5861-5862. (Abstract)
- Dorfman, E. Play therapy. In C. R. Rogers, Client-Centered therapy. Boston: Houghton Mifflin, 1951.
- Ekstein, R. Children of time and space, action and impulse. New

- York: Appleton-Century-Crofts, 1966, 167-284.
- Ellis, M. and Scholtz, G. Activity and play of children. Englewood Cliffs: Prentice Hall, 1978.
- El'Konin, D. Symbolics and its functions in the play of children. In R. E. Herron and B. Sutton-Smith, Child's play. New York: Wiley and Sons, 1971, 221-230.
- Erikson, E. H. Studies in the interpretation of play. Genetic Psychology Monographs, 1940, 22, 557-671.
- Erikson, E. H. Childhood and society. New York: Norton, 1950, 194-246.
- Erikson, E. Sex differences in play configurations of pre-adolescents. American Journal of Orthopsychiatry, 1951, 21, 667-692.
- Fineman, J. Observations on the development of imaginative play in early childhood. Journal of the American Academy of Child Psychiatry, 1962, 1, 167-181.
- Frank, L. K. Projective methods. Springfield: Charles C. Thomas, 1948.
- Frank, L. K. Play in personality development. American Journal of Orthopsychiatry, 1955, 25, 576-590.
- Garrison, C. Permanent play materials for young children. New York: Scribner, 1926.
- Garvey, C. Play. Cambridge: Harvard University Press, 1977.
- Gehlbach, Roger. Instructional play: Some theoretical prerequisites to systematic research and development. (1976) Unpublished manuscript.
- Gehlbach, R. D. Instructional play: Some theoretical prerequisites to systematic research and development. (revision; in press)
- Ginott, H. A rationale for selecting toys in play therapy. Journal of Consulting Psychology, 1960, 3, 243-246.
- Ginott, H. Group psychotherapy with children. New York: McGraw Hill, 1961.
- Gramza, A. F. Responses to manipulability of a play object.

Psychological Reports, 1976, 38, 1109-1110.

Gramza, A. F. and Witt, P. A. Choices of colored blocks in the play of preschool children. Perceptual and Motor Skills, 1969, 29, 783-787.

Gump, P. and Sutton-Smith, B. Activity and social interaction: A field study. American Journal of Orthopsychiatry, 1955, 25, 755-760.

Hambridge, G. Structured play therapy. American Journal of Orthopsychiatry, 1955, 25, 601-618.

Hartley, R. E., Frank, L. K., and Goldenson, R. M. Understanding children's play. New York: Columbia University Press, 1952.

Hulson, E. L. An analysis of the free play of ten 4-year-old children through consecutive observations. Journal of Juvenile Research, 1930, 14, 188-208.

Hurst, C. G. and Jones, W. L. Generating spontaneous speech in the underprivileged child. Journal of Negro Education, 1967, 36(4), 362-267.

Hutt, C. Exploration and play in children. In P. A. Jewell and C. Loizos (Eds.), Play, exploration, and territory in mammals. New York: Academic Press, 1966.

Jackson, L. and Todd, K. Child treatment and the therapy of play. New York: Ronald Press Co., 1950.

Kawin, E. The function of toys in relation to child development. Childhood Education, 1934, 4, 122-124.

Klein, M. Psychoanalysis of children. London: Hogarth, 1963, 1-209.

Lebo, D. The expressive value of toys recommended for non-directive play therapy. Journal of Clinical Psychology, 1955a, 11, 144-148.

Lebo, D. Quantification of the non-directive play therapy process. Journal of Genetic Psychology, 1955b, 86, 375-378.

Lebo, D. The question of toys in play therapy- An international problem. Journal of Education and Psychology, Baroda, 1956, 14, 66-73.

Lebo, D. A formula for selecting toys for non-directive play

- therapy. Journal of Genetic Psychology, 1958, 92, 23-34.
- Levin, H. and Wardwell, E. The research uses of doll play. Psychological Bulletin, 1962, 59(1), 27-56.
- Levy, D. M. Release therapy. American Journal of Psychotherapy, 1939, 9, 713-736.
- Lillard, P. P. Montessori: A modern approach. New York: Schocken Books, 1972, 50-70.
- Loewenstein, R. M. Some remarks on the role of speech in psychoanalytic technique. International Journal of Psychoanalysis, 1956, 37, 460-467. 460-467.
- Marshall, H. R. Relation between home experiences and children's use of language in play interactions with peers. Psychological Monographs, No. 509, 1961.
- McNabb, O. A compilation of selected rationale and research in play therapy. Dissertation Abstracts International, 1975, 36(5-A), 2637. (Abstract)
- Mecham, M. J. Verbal language development scale, manual of item definitions. Minnesota: American Guidance Services, 1958.
- Mecham, M. J. Measurement of verbal language development in cerebral palsy. Cerebral Palsy Review, 1960, 21, 3-4.
- Millar, S. The psychology of play. Baltimore: Penguin, 1968.
- Moustakas, C. E. Children in play therapy. New York: Jason Aronson, 1973.
- Moustakas, C. E., Sigel, I., and Schalock, H. An objective method of the measurement of the analysis of child-adult interaction. Child Development, 1956, 27, 109-134.
- Parten, M. B. Social play among preschool children. Journal of Abnormal and Social Psychology, 1933, 28, 136-147.
- Piaget, J. Play, dreams, and imitation in childhood. New York: Norton, 1962.
- Poling, A. The effects of particular toys on the social play of preschool children. Mental Retardation Bulletin, 1976, 4(2), 85-93.
- Pulaski, M. Play as a function of toy structure and fantasy

- predisposition. Child Development, 1971, 41, 531-537.
- Quilitch, H. R. and Risley, T. R. The effects of play materials on social play. Journal of Applied Behavior Analysis, 1973, 6, 573-578.
- Scanlon, P. A study of some environmental influences in language development. Child Care, Health, and Development, 1977, 3(3), 149-164.
- Schaefer, C. E. (Ed.). Therapeutic use of child's play. New York: Jason Aronson, 1976.
- Schiffer, M. The therapeutic play group. New York: Grune and Stratton, 1969, 1-114.
- Simon, A. and Boyer E. (Eds.). Mirrors for behavior, Vol. A., An anthology of observation instruments. Philadelphia: Classroom Interaction Newsletter, 1970.
- Singer, J. The child's world of make-believe: Experimental studies of imaginative play. New York: Academic Press, 1973.
- Slavson, S. R. and Schiffer, M. Group psychotherapies for children. New York: International Universities Press, 1976, 1-423.
- Solomon, J. C. Play technique and the integrative process. American Journal of Orthopsychiatry, 1955, 25, 591-600.
- Turner, C. W. and Goldsmith, D. Effects of toy guns and airplanes on children's antisocial free play behavior. Journal of Experimental Child Psychology, 1976, 21(2), 303-315.
- Updegraff, R. and Herbst, E. K. An experimental study of the social behavior stimulated in young children by certain play materials. Pedagogical Seminary and Journal of Genetic Psychology, 1933, 42, 372-391.
- Van Alstyne, D. Play behavior and choice of play materials of preschool children. Chicago: University of Chicago Press, 1932.
- Walder, R. The psychoanalytic theory of play. Psychoanalytic Quarterly, 1933, 2, 208-224.
- Weininger, O. Help stamp out playlessness. Educational Courier, 1972, 42(6), 8-15.



- White, J. G. The use of learning theory in the psychological treatment of children. Journal of Clinical Psychology, 1959, 15, 229-233.
- Williams, W. G. An appraisal of the adequacy and usefulness of an objective language scale when administered to elementary school children. Journal of Educational Research, 1960, 54, 30-33.
- Winnicott, D. W. Playing: Its theoretical status in the clinical situation. International Journal of Psychoanalysis, 1968, 49, 591-599.
- Withee, K. L. A descriptive analysis of the process of play therapy. Dissertation Abstracts International, 1976, 36(12-B), 6406. (Abstract)
- Wolff, C. M. The effects of aggressive toys on aggressive behavior in children. Dissertation Abstracts International, 1977, 37(5-B), 2487. (Abstract)
- Woltman, A. G. Play and related technique. In Brower, D. and Abt, L. (Eds.), Progress in clinical psychology. New York: Grune and Stratton, 1952, 278-289.