1986

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Running Head: OBSERVATION OF PEER RELATIONS

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In recent years, there has been a growing awareness of the importance of early peer relations in the social and emotional development of children (Hartup, 1983; Cowen, Pederson, Babagian, Izzo, & Trost, 1973; Roff, Sells, & Golden, 1972). The recognition of the contribution of peer relations to later adult adjustment has lead to a significant increase in the investigation of children's social relations. In particular, three general methodologies have been employed in these studies. First, informant reports with their origin in the sociometric tradition have utilized peer-, adult-, and self-reports to assess children's social reputations, behavioral characteristics, and self-perceptions (e.g., Coie, Dodge, & Cappotelli, 1982; Newcomb & Bukowski, 1983). Second, children's social cognitions have been evaluated to reveal age and sociometric differences in children's knowledge of social processes and conventions (e.g., Milich & Dodge, 1984; Selman & Jaquette, 1984). Third, the behavioral components of peer relations have been examined in observational investigations that have ranged from microscopic analysis in analogue settings to macroscopic analysis in naturalistic

settings (e.g., Brody & Stoneman, 1981; Barker & Wright, 1955).

The purpose of this paper is to focus on observational methodology in the study of children's peer relations. Specifically, ecological, ethological, and structural observational approaches will be examined. In considering each methodology, three elements will be reviewed: (a) theory and method of data collection, (b) strengths and weaknesses of the conceptual underpinnings and methodological approach, and (c) setting and population.

In culminating this review, a perspective for the continued examination of children's peer relations will be proposed, utilizing and incorporating the conceptual framework of the most relevant features of each observational methodology. It is anticipated that this proposed perspective will help extend the investigation of children's social interactions in a direction such that observational studies of childhood peer relations will have: (a) stronger theoretical frameworks; (b) utilize a greater variety of settings; and (c) explore more diverse populations.

Ecological Studies

Theory and Method

The purpose of ecological studies is to freeze complex behavior events in children's peer relations in order to examine the stream of behavior (Weinberg & Wood, 1975). Ecological psychology is further delineated by its attention towards both molecular and molar behavior, and towards both the psychological environment or life space of an individual and the ecological environment or real life settings within which people behave. Observation in ecological methodology is concerned with: (a) identifying the behavior with which one is interested; (b) identifying the ecological environment by breaking it down into ecological units that possess physical and temporal attributes; and (c) defining behavior settings that have structural and dynamic attributes (Barker & Wright, 1966). Data in these studies are accumulated through observational techniques such as observation logs (Campbell & Yarrow, 1961) and specimen records (Gump, Schoggen, & Redl, 1969).

Ecological methodology can be traced back to

Piaget's (1926, 1932, 1962) observational studies of children. These studies were ecological in nature in that he recorded whole episodes of behavior by noting the actors involved, the context of the precipitating events, and the consequences of the event (Renshaw, 1981). According to Renshaw (1981) observational methodology was formalized by Barker and Wright (1955) in their ecological investigation of the day to day social behavior of children and their families in a Midwestern town. In order to carry out this investigation Barker and Wright (1955) established the Midwest Psychological Field Station in their attempt to facilitate the study of human behavior and its environment in its natural surroundings (Barker, 1968). In their early work at the field station, Barker and Wright (1955) recorded long records of children's behavior in real life settings in accordance with a traditional person-centered approach. From these observations they discovered that some attributes of behavior varied less across children within settings than across the settings, themselves. They found that they could predict some aspects of children's behavior more adequately from knowledge of the behavior characteristics of the drugstores, arithmetic classes,

and basketball games the children inhabited than from the behavior tendencies of particular children (Barker, 1968).

Strengths and Weaknesses

The emphasis on the ecological environment and natural behavior settings is the most salient and persuasive feature of the ecological methodology. In all of the ecological studies reviewed (see Table 1), the stream of behavior was examined in a naturalistic setting. These settings included basketball games (Barker & Wright, 1955); a summer camp (Campbell & Yarrow, 1981 & Gump, Schoggen, & Redl, 1969); nursery schools, little league, and racially desegregated middle schools (Schofield & & Francis, 1982). The lack of restrictions imposed

Table 1. Ecological Studies of Peer Relations

Study	Subjects(N,Age, Sex,Pop)	Setting	Peer Relation Component
Barker & Wright(1955)	32,Preschool,M F, NP	NAT	Social activities & interactions
Barker & Wright(1966)	1,Schoolage,M,NP	NAT	Play interactions at home & school
Campbell & Yarrow(1961)	260,Schoolage,M F, NP	NAT	Perceptual & behavioral correlates of success in peer relations
Schofield & Francis(1982)	30,Schoolage,M F, NP	NAT	Social conversation
Gump,Schoggen, & Redl(1969)	1,9,M,ED	NAT	Play behavior & social interaction

Note: Subjects: F=Female; M=Male; NP=Normal Population; DF=Deaf; BD=Behaviorally Disturbed; AUT=Autistic; ED=Emotionally Disturbed; PROB=Problem Children

Settings: ANAL=Analogue; CLASS/STR=Classroom or Structured; NAT=Naturalistic

upon children in a naturalistic setting is important by allowing for freedom of movement and expression of behavior. Instead, there are few limitations imposed upon social behavior and those limitations often come from the environment itself. It is in this type of setting that one can observe the effect of the environment upon the individual (Lewin, 1932; Barker, 1968). For example, Rubin (1979) compared the play behaviors of and peer relations of children during free play periods in a Montessori preschool and a traditional preschool. In this study they found that Montessori students engage in significantly more solitary and parallel constructive play and significantly less cooperative functional and dramatic play; these results emphasize the effect that the environment can have on a child's social behavior.

There are four inherent problems in employing this methdology. First of all, the work is tedious and slow. It may take many years to complete a study as it did with Barker & Wright (1955). Secondly, it is extremely difficult to divide the behavior stream (Weinberg & Wood, 1975). Another practical problem in conducting ecological research occurs in identifying the natural units of the phenomenon being studied. Finally, it is

often difficult to gather accurate reliability (Weinberg & Wood, 1975). For example, in both Lippitt and Gold's (1959) and Campbell and Yarrow's (1981) studies, a type of specimen record of observation was employed. Consequently, the measures of reliability discussed the reliability with which the behavioral category judgements were made from a written narrative and not the reliability with which the narratives were taken. The narratives in these studies could have been biased (Dodge, Coie, & Brakke, 1982), and consequently, the results of these studies could have been confounded by the observational approach.

Setting and Population

As previously cited in this review, ecological investigations place a great deal of emphasis on observing their subjects in natural environments. Consequently, as illustrated in Table 1, when children's peer relations are examined with an ecological approach the context of the chosen setting is always naturalistic. This allows for the evaluation of the differential effect of various environments upon social interactions and provides behavioral settings in which behavioral restrictions come from the environment itself and not the investigator.

The subjects in ecological investigations have two primary characteristics in common. First, as seen in Table 1, they have primarily come from a normal population. Gump, Schoggen, and Redl (1969) have examined, however, the play and social behavior of an emotionally disturbed boy during a summer camp experience. The second characteristic of the subjects is that they range from preschool to middle school in age, they do not fall into one particular age group. For example, Barker & Wright (1955) examined the peer relations of children of all ages, male and female, at the Midwest Psychological Field Station. Campbell and Yarrow, on the otherhand, observed solely schoolage males at a summer camp.

In summary, application of an ecological approach to the study of peer relations allows for the true ecology of the children's social behavior to be represented. Care must be taken as to how the observations are made, what type of time frame is being used, and how reliability is being assessed. Though, it has not been used extensively in recent years, this approach has provided insights into the effects and importance of the environmental context in children's peer relations. At the same time it has placed less importance on the behaviors that form

the structure of friendship formation and how these behaviors differ across populations.

Ethological Studies

Theory and Method

Empirical studies in human ethology or employing ethological methodology have also remained few. However, those that have been conducted have created yet another view of children's peer relations. Ethological methods are characterized by: (a) an emphasis on a preliminary descriptive and observational phase; (b) the use of large numbers of anatomically described items of behavior as the raw data; (c) an emphasis on description and hypothesis generation, natural history phase as the starting point of the study; (d) a belief in the usefulness of an evolutionary framework for determining which kinds of questions need to be asked about the behaviour involved, particularly in relation to causation and survival value; and (e) a distrust of large preselected and untested categories of behavior (Blurton Jones, 1972).

Through the implementation of these ethological strategies, investigators (Blurton Jones, 1972; Currie & Brannigan, 1970; Hutt & Vaizey, 1966; McGrew, 1972a) have described and analyzed reoccurring fixed action patterns and have

classified stereotyped discrete movements exhibited by children in social interactions. In doing so, they have applied a biological approach to the observation and examination of peer relations. For example, Hutt and Vaizey (1966) in their study investigating the effects of group density upon children's social behaviors, used the hypothesis based upon animal studies that increasing group density would adversely effect the social encounters of the children. This study further illustrates the emphasis that ethological studies place upon the causal organization of children's behavior and their interactions with other individuals (Blurton Jones, 1972).

Strengths and Weaknesses

There are practical and theoretical benefits to using ethological analysis to investigate peer relations. First of all, the ethological methodology labels, describes, and defines behavior objectively in terms of body parts. Secondly, inferential and subjective labels are eschewed (McGrew, 1972a) therefore, results cannot be biased as easily as they can in ecological research. Finally, using objective categories ethologists directly record the behavior of their subjects as it occurs (McGrew, 1972a) therefore

Table 2. Ethological Studies of Peer Relations

Study	Subjects(N,Age, Sex,Pop)	Setting	Peer Relation Component
Blurton Jones (1972)	25,Preschool,M F, NP	NAT	Social interaction Rough & tumble Play
Brannigan & Humphries(1972)	20,Preschool,M F,NP	NAT	Non verbal behavior & social interaction
Connolly & Smith(1972)	62,4,M F,NP	NAT	Interaction with observer
Currie & Brannigan(1970)	1,Schoolage,F,AUT	CLASS	Social behavior
Hutt & Vaizey(1966)	15,3-8,M F, AUT+BD	NAT	Group density
Leach(1972)	24,Preschool,M F, NP+PROB	NAT	Social interaction initiations & responses
McGrew(1972a)	29,Preschool,M F, NP	CLASS	Peer entry
McGrew(1972b)	30,Preschool,M F, NP	CLASS	Social organization
Smith & Connolly(1966)	40,Preschool,M F, NP	NAT	Play behaviors & effect of age & sex
Strayer & Strayer(1976)	17,Preschool,M F, NP	NAT	Social agonism & dyadic dominance

Note: Subjects: F=Female; M=Male; NP=Normal Population; DF=Deaf; BD=Behaviorally Disturbed; AUT=Autistic; ED=Emotionally Disturbed; PROB=Problem Children

Settings: ANAL=Analogue; CLASS/STR=Classroom or Structured; NAT=Naturalistic

there is no need for the use of indirect measures such as ratings, tests, and questionnaires.

Although this methodology is characterized by being precise and scientific, it too has its weaknesses. First, in examining solely discrete behaviors the pattern and chain of interaction between the behaviors is lost. Secondly, motivational ambiguity is often not accounted for by the purely physically defined behavioral units (Smith & Connolly, 1972) thus the identified motor patterns do not account for the total social behaviors nor the quality of interactions. Finally, there is no sequencing therefore the resulting picture of children's peer relations is static not temporal.

Setting and Population

Most of the ethological studies on peer relations have

been conducted in a naturalistic or classroom setting as seen in Table 2. These settings range from nursery school classrooms (Blurton Jones, 1972) to free play periods (Smith & Connolly, 1972).

The subjects in the ethological investigations, in contrast to ecological investigations have come from a variety of populations as depicted in Table 2. Besides investigating the peer relations of normal children, ethologists have observed the social behavior of autistic (Currie & Brannigan, 1970; Hutt & Vaizey, 1966) and behaviorally disturbed (Hutt & Vaizey, 1966) children. Another characteristic of their subjects is that they have predominately been preschool age. As shown in Table 2, only Currie and Brannigan (1970) have examined the peer relations of a school-aged child.

It can be seen that ethological methodology, when utilized in exploring children's peer relations, attempts to identify precisely the motor patterns involved in children's social behavior. Little attention is given to the motivational component of the peer relations or in juxtaposition to ecological methodology - the influence of the environment. These studies have examined, however,

social behaviors across settings as well as in deviant and normal populations.

Structural Studies

Theory and Method

Much of the recent research on children's peer relations has employed a methodology that is more structural and quantitative in nature than either the ecological or ethological approaches (Ladd, 1983; Coie, Dodge, & Kuppersmidt, 1983; Dodge et al., 1983; Zental, 1980; Walton & Sedlack, 1982; Klein & Young, 1979; Doyle, Connolly, & Rivest, 1980). These studies have explored many facets of children's peer relations through the examination of the structure of friendship formation and have produced the largest data base on this domain.

Structural observations are accumulated through the use of behavior event categories (Ladd, 1981; Klein & Young, 1979; Coie et al., 1983). These categories are not defined as minutely in terms of motor patterns as they are in ethological studies and they often contain a motivational component. The behavior event categories also vary widely depending upon the topic of research. For example, in examining the acquaintanceship process associated with peer social status, Coie, Dodge, and

Kuppersmidt (1983) utilized an observational coding scheme with the mutually exclusive and exhaustive behavior categories of: (a) degree of social interaction; (b) content of interactions; (c) initiations; and (d) reactions to aversive behavior. Klein and Young (1979) on the otherhand, formulated a coding scheme of seventeen structured behavior variables designed to tap hyperactive school-aged children's social behavior with peers.

The results reported in these structural studies are in the form of frequencies, percentages, percentage time, and rate of interaction (Brody & Stoneman, 1981; Brody et al., (1982); Damon & Killen, 1982; Ladd, 1981). For example, in Ladd's (1983) study data was used to determine the percentage time that a child spent in various behaviors on the playground. The average number of peers present in each interaction and the percentage time that subjects spent in each interaction with peers of the same and different grade level and sex were also reported. Stoneman, Brody, and MacKinnon (1982) in their investigation of children's roles and activities while playing with siblings and friends reported as results: (a) the proportion of intervals each child engaged in activities; (b) the percentage of interactive intervals

in which a specific activity occurred; and (c) the frequency of occurrence for each role for each child during each child grouping.

Strengths and Weaknesses

One of the strengths of structural methodology is that in contrast to the ecological and ethological methodologies it is theoretically based from a psychological not biological or environmental viewpoint. The category

Table 3. Structural Studies of Peer Relations

Study	Subjects(N,Age Sex,Pop)	Setting	Peer Relation Component
Bakeman & Brownlee(1980)	32,Preschool,M F, NP	NAT	Parallel play & sequence of play
Brody & Stoneman(1981)	77,Kind-4th,M F, NP	ANAL	Imitation of Peers
Brody, Stoneman, & MacKinnon (1982)	22,4.5-10,M F,NP	ANAL	Role asymmetries with friends
Coie,Dodge, & Kuppersmidt(1983)	4,4th grade,M, NP	ANAL	Peer entry & social status
Damon & Killen(1982)	147,schoolage,M F, NP	ANAL	Peer interaction & moral reasoning
Dodge,Schlundt, Schocken, & Delugach(1983)	200,kindergart., M F,NP	ANAL/ NAT	Peer entry patterns
Dodge(1983)	56,7-8,M,NP	ANAL	Development of sociometric status
Dodge,Coie, & Brakke(1982)	100,3rd-5th grade, M F,NP	NAT	Entry tactics
Doyle,Connolly, & Rivest(1980)	16,Preschool,M F, NP	ANAL	Peer familiarity

Table 3. Structural Studies of Peer Relations (Continued)

Study	Subjects(N,Age, Sex,Pop)	Setting	Peer Relation Component
Gottman,Gonzo & Rasmussen(1975)	198,3rd-4th grade,M F,NP	CLASS/STR	Social skills & friendship choices
Hinde,Titmus, Eastin, & Tamplin(1985)	49,Preschool, M F, NP	CLASS/STR	Friendship
Howes(1983)	22,Preschool, M F,ED	CLASS	Patterns of friendship
Klein & Young(1979)	34,schoolage, M,H+NP	CLASS	Peer interactions & reinforcement
Ladd(1981)	36,3rd grade, M F,NP	STR/NAT	Acquaintance
Ladd(1983)	48,3rd-4th, M F,NC	NAT	Social networks
Lougee, Grueneich, & Hartup(1977)	54,Preschool, M F,NP	ANAL	Social interaction & verbal communication
Mueller & Brenner(1977)	12,toddlers,M, NP	ANAL/STR	Acquaintance
Putallaz & Gottman(1981)	60,2nd-3rd grade,M F,NP	ANAL	Initial encounters
Rubin & Beirness(1970)	72,Kindergart, M F,NP	NAT	Sociometric status

Table 3. Structural Studies of Peer Relations (Continued)

Study	Subjects(N,Age, Sex,Pop)	Setting	Peer Relation Component
Singleton & Asher(1977)	78,schoolage, M F,NP	CLASS	Interracial & intersex social interactions
Stoneman, Brody & MacKinnon(1984)	22,schoolage, F,NC	NAT	Role asymmetries with friends
Walton & Sedlack(1982)	300,schoolage, M F,NP	CLASS/ ANAL	Conflict resolution
Vandell & George(1981)	32,preschool, M F, DF+NP	STR	Initiation strategies

Note: Subjects: F=Female; M=Male; NP=Normal Population; DF=Deaf; BD=Behaviorally Disturbed; AUT=Autistic; ED=Emotionally Disturbed; PROB=Problem Children

Setting: ANAL=Analogue; CLASS/STR=Classroom or Structured; NAT=Naturalistic

sets utilized in these studies are selected from many possibilities. The categories from one study to another can be distinguished from one another and reflect dimensions of human social behavior considered to be most relevant to the problem being explored (Weinberg & Wood, 1975). This is in direct contrast to the written narratives of the ecolological methodology which do not produce data until they have been coded or rated systematically.

A second strength of structural methodology is that it makes possible the coding and counting of behaviors, events, and interaction sequences with respect to a target and the person/object with which he/she interacts (Weinberg & Wood, 1975).

Investigators employing this methodology often do not however, examine the quality, richness, or sequence of these interactions. Emphasis is placed upon the degree to which the child interacts in any way whatasoever rather than the degree to which they act in a particular way - the quality of their interactions (Asher, Markell, & Hymell, 1982). Another weakness of structural methodology is that it often ignores the effect of antecedent and consequent behaviors on the entire behavior sequence.

Setting and Population

Structural studies have primarily been conducted in an analogue setting as seen in Table 3, in which the investigator can manipulate the child's interactions and behavior. For example, in research conducted by Benson and Gottman (1981), observations were conducted in situations where the subjects choice of companions was limited to the same-aged classmate. Coie et al. (1983) observed children within the confines of a mobile laboratory. Putallaz and Gottman (1981), on the otherhand, limited subject's companions to an experimentally assigned dyad or triad partner of the same age or sex. In other studies the analogue setting has consisted of having the child perform specific tasks such as initiating play with a same aged peer (Dodge et al., 1983) or playing a popular board game with siblings and friends (Brody et al., 1982). Analogue settings allow the investigator more control of the situation and the child's behavior. But though the data may point to significant results these contrived settings may not characterize the true ecology of the child's peer related behaviors in more diverse social settings (Ladd, 1981).

The classroom or structured setting, as seen in Table 3, has also been a popular setting in structural investigations. This setting presents a less contrived situation than that of the analogue setting though it itself is still restricted. Researchers have found the classroom to be a viable setting in which in which to observe many aspects of peer relations. One obvious reason for this is that as in the analogue setting the children's behavior is partially regulated by the setting. During classroom observations subjects are often involved in teacher directed activities or structured activities (Zental, 1980; Dodge, Coie, & Brakke, 1982). These activities may range from schoolwork (Klein & Young, 1979) to the utilization of learning centers (Walton & Sedlack, 1982).

Structural studies conducted in more naturalistic settings have been much less abundant than those conducted in the more structured analogue and classroom settings, although studies completed in this type of setting are increasing (Ladd, 1983; Stoneman et. al, 1984). These recent studies utilizing a naturalistic setting as the context for observations have been primarily conducted on the playground (Ladd, 1983), in the home (MacKinnon, Brody,

& Stoneman, 1984), and during free play situations (Howes, 1983).

Several generalizations can also be made about the subjects in structural studies. First of all, as seen in Table 3, the majority of subjects in structural investigations have come from a normal population. Secondly, few studies have examined the peer relations of children from deviant populations. Finally, the subjects in these investigations have also come from a variety of age groups.

Structural studies of peer relations through the comparisons and analyses of frequencies and percentages of behaviors have yielded many valuable insights into children's, particularly normal children's friendship formation and maintenance. As shown in Table 3 many components of friendship formation have been identified and examined: role asymmetries with friends (Brody et al., 1982); peer entry tactics (Dodge et al., 1983); peer familiarity (Doyle et al., 1980); acquaintanceship (Ladd, 1981); verbal communication (Laugee et al., 1977); conflict resolution (Walton & Sedlack, 1982).

Perspective For Future Observational Investigations

As illustrated in this review, each of the three methodological approaches has it's particular strengths for studying children's peer relations and all three can be used effectively to develop an alternative perspective for the observational investigation of children's peer relations. Central to investigation in the study of childhood social interactions is a need for a temporal framework. Along these lines, a model has already been proposed for examining children's acquaintance and friendship relations (Newcomb, 1985) based on a continuum that underscores temporal and intensity variations in relationships. As seen in Figure 1, this model has the advantage of allowing for the examination of the sequence and interrelations of behavioral components of children's peer relations within a single time frame. For example, children's relationships may be observed beginning with either a peer group or dyadic entry and proceed to common ground activity or provocation and conflict. In this fashion, as in the ecological studies, the stream of behavior is being examined, thus enabling investigators to assess particular areas within the stream of social behavior in which some children are deficient.

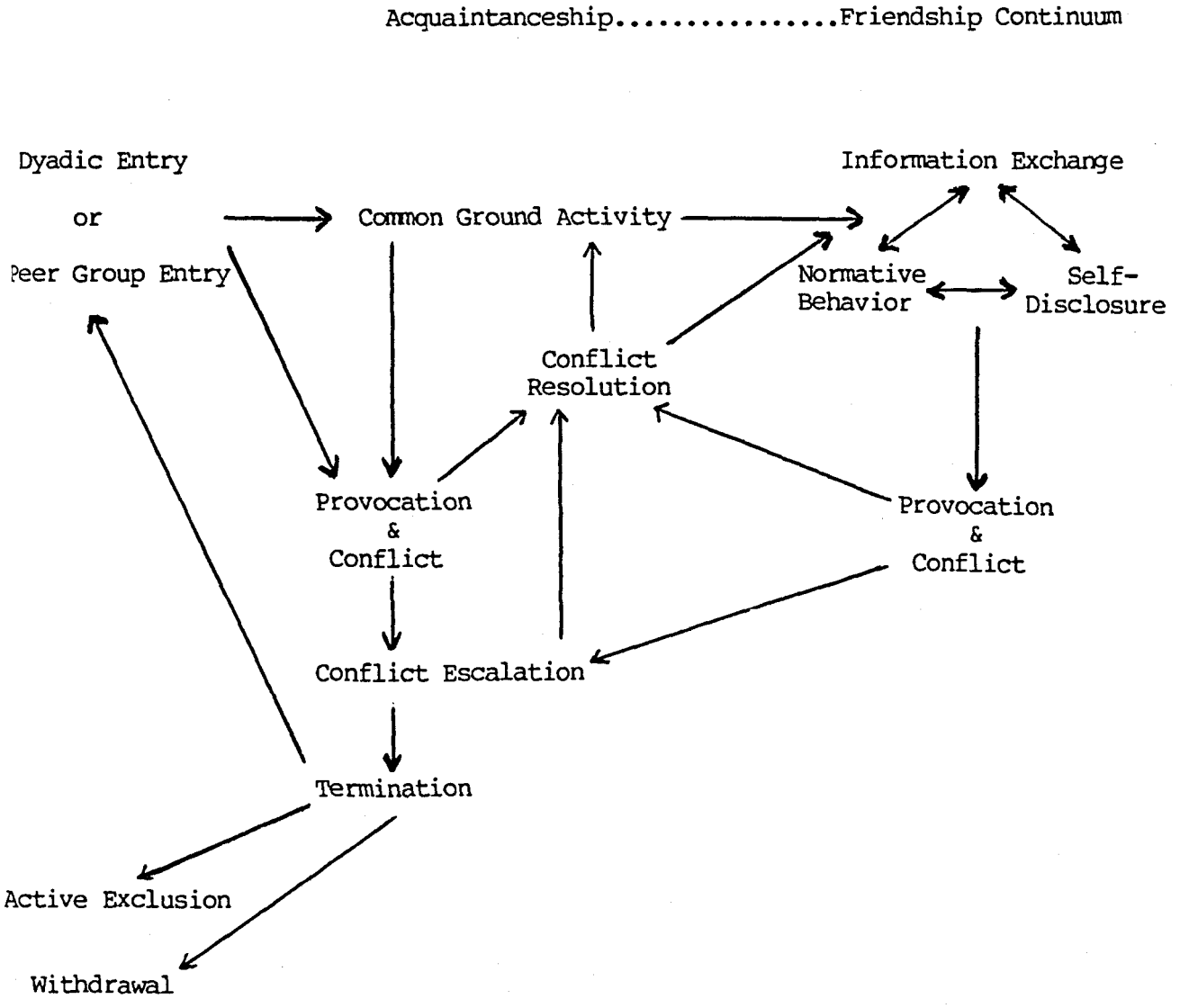

Figure 1. Model for studying peer relations (Newcomb, 1985)

Although this model allows children's peer relations to be examined from a temporal orientation, the model is not definitive. Specifically, it is lacking in an examination of method, setting, and population - elements which this literature review has deemed necessary for the continued study of children's social relations. However, these three elements can be added to the temporal perspective creating a three dimensional representation of children's peer relations (see Figure 2) in which the temporal model of children's acquaintance and friendship relations is embedded within the parameters of method, setting, and population.

As illustrated in Figure 2, the three dimensional representation of children's peer relations results in a perspective that allows for children's social behavior to be studied within the framework of the most relevant and pervasive features of the observational studies examined in this review. Children's social interactions can be examined: (a) molarly and molecularly; (b) interacting with the behavior characteristics of a particular environment; (c) biologically, without the use of subjective and inferential labels; (d) through the structured counting and coding of behaviors, events, and interaction sequences;

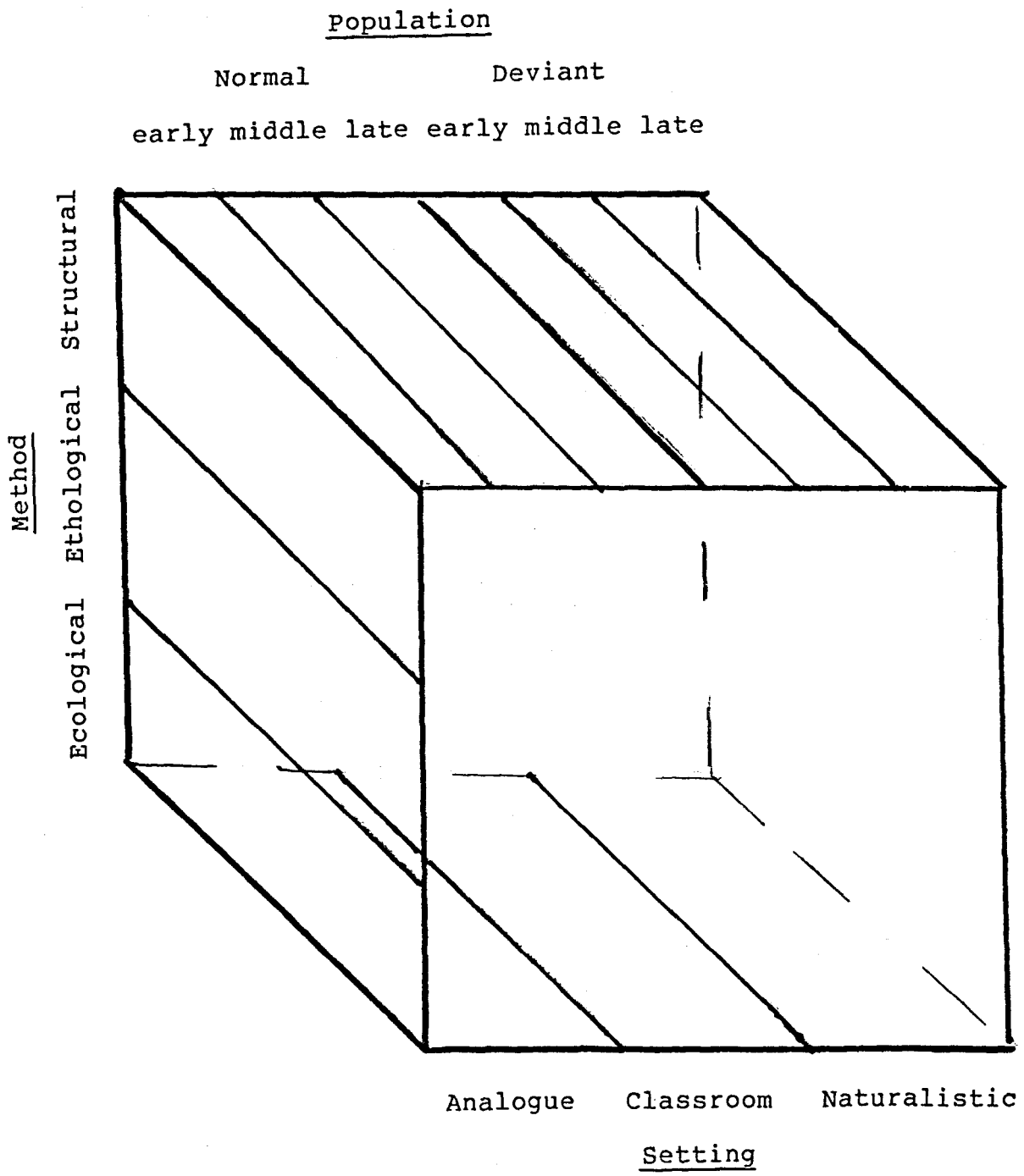

Figure 2. Temporal model for studying peer relations

(e) in a restricted, rule governed environment; (f) during teacher directed activities; (g) on the playground or in the home; and (h) across normal and deviant populations of early, middle, or late childhood aged children.

Overall, each cell (see Figure 2) in the three dimensional model represents a unique combination of method, setting, and population that can be studied within a temporal framework. As a result, future investigations should be able to expand the current knowledge base on the social and emotional development of children, particularly children from deviant populations. Ultimately, the development of a more definitive empirical data base should allow for more effective interventions for children experiencing problematic peer relations.

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