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By

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ABSTRACT

THE INFLUENCE OF COACHING BEHAVIORS
ON YOUNG ATHLETES' PERCEPTIONS
OF COMPETENCE AND CONTROL

By

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Based on a review of the research from several fields, a theoretical model was developed which delineated the processes through which coaching behaviors may influence young athletes' perceptions of competence, control and motivation in athletic achievement areas. A field study was then conducted to test two components of the proposed model. Specifically, the associative relationship between coaches' perceptions of players' ability and their subsequent behavior towards individual athletes was examined. Secondly, changes in players' psychological responses over the competitive season were examined as a function of exhibited coach-athlete interactions. Seventy-two female junior high softball players and their coaches participated as subjects in this study. The Coaching Behavior Assessment System (Smith, Smoll & Hunt, 1977) was used to record individual coach-athlete interactions. Pre-season and post season assessments of coaches' expectations concerning players' ability and players' perceptions of their competence and control were also conducted.

Multivariate analyses indicated that coaches do exhibit differential patterns of behavior to individual athletes based on their perceptions concerning players' ability. However, the demonstrated effects were found only in relation to coaches' behavior in games. Examination of the direction of these effects suggested that these differential patterns of behavior may reflect coaches' attempts to individualize instruction rather than their biased behavior towards athletes with high ability. Multivariate regression analyses additionally revealed that a small but significant portion of the variance in players' psychosocial growth over the season could be predicted by measures of the players' attained skill level and the behaviors of their coach in response to that performance. Although the level of attained skill was the most consistent predictive variable, certain coaching behaviors (e.g., reinforcement, nonreinforcement, and punishment) were also influential in predicting changes in players' perceptions of competence and control. The salience of these particular coaching behaviors was discussed in light of their contingency to players' performance and their role in providing players with clear, consistent evaluation of their performance. It was concluded that the proposed coaching effectiveness model may be a viable means of designing and formulating future research in coaching effectiveness.

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REVIEW OF RELATED LITERATURE

The growing popularity of competitive youth sport programs has generated considerable controversy regarding the influence of organized sport participation on the psychological development of young children (Martens, 1978). Proponents of youth sport programs assume that participation by children in competitive sport will "build character" by teaching young children responsibility, task persistence, cooperation, conformity to team rules, and self-discipline. In contrast, critics contend that participation in competitive athletics by young children promotes the development of such negative psychological traits as competitive anxiety, fear of failure, low self-esteem, aggression, and anti-social behavior. Research, however, has failed to support either position. A number of investigators and reviewers have concluded that sport participation has not been consistently found to either facilitate or deter positive psycho-social growth in youth sport competitors (Ash, 1978; Gelfand & Hartman, 1978; Scanlan & Passer, 1978; Simon & Martens, 1979).

Several writers have suggested, however, that participation in competitive sport has the potential to exert either a positive or negative effect on the psychological development of the young child, depending on the quality of the program itself (Alley, 1974; Martens, 1978). A key factor in determining whether sport participation will be a positive or negative experience is the quality of the adult leadership. Both Martens (Note 1) and Gould (Note 2), for example, have recently emphasized the role which coaches can play in influencing

young athletes' cognitive perceptions and attitudes towards athletic participation. Gould (Note 2) further recommended that coaches should actively plan and initiate coaching strategies designed to facilitate children's perceptions of competence and self-worth in athletic endeavors.

While these individuals have suggested that relationships exist between coaching behaviors and the psychosocial growth of young athletes, sport psychologists have just begun to empirically examine this issue. For example, a series of studies recently conducted by Smith and Smoll and their associates (Smith, Smoll & Curtis, 1979; Smith, Smoll & Hunt, 1977; Smoll, Smith, Curtis & Hunt, 1978) was designed to investigate the influence that coaching behaviors exert on young athletes' attitudes and self-esteem. The results of this longitudinal research project provided support for the contention that the success of a sport program in facilitating positive player attitudes and increased measures of self-esteem is significantly influenced by the behavior of the coaches towards the players.

This demonstrated saliency of coaches' behavior in regard to athletes' psychosocial growth is consistent with research results from developmental psychology concerning patterns of psychosocial development in children. Most of this research indicates that the behaviors of parents, teachers, and other significant adults influence the development of such attributes as achievement motivation, and self-concept in young children (Harter, 1978; Maccoby & Jacklin, 1974; Mussen, Conger, & Kagan, 1974; Stein & Bailey, 1973).

It seems logical, then, to presume that coaches can and do influence the psychosocial development of their young athletes. However, much more specific information concerning this relationship needs to be acquired. From a practical standpoint, there exists a need to identify which coaching behaviors are most facilitative of the child's growth. Theoretically, it is necessary to ascertain how these particular coaching behaviors influence the child's development. These two issues provide the basis for the present investigation which was specifically designed to empirically assess the relationship between the instructional behaviors exhibited by coaches and the corresponding psychosocial responses exhibited by their young athletes. To provide a framework for this proposed relationship, a model, based on a review of the related literature, was developed to delineate the process by which coaching behaviors may influence the growth of young athletes. This first chapter, then, contains a survey of the available literature which was used to formulate the coaching effectiveness model. The investigation itself was conducted to assess certain aspects of the developed model.

Although very little research has been reported in the sport scientific literature relative to coaching effectiveness, researchers in the parallel field of teacher education have developed, within the past decade, some very practical research techniques which have allowed them to acquire a sizable amount of information concerning the instructional behaviors which most effectively facilitate students' academic and psychosocial development. Initial, but limited, attempts to apply

these research methods to the study of instructional effectiveness in motor skill settings have also yielded some practical knowledge concerning effective instructional behaviors (Smoll et al., 1978; Tharp & Gallimore, 1976; Yerg, 1981). Therefore, the review of the relevant literature for this paper focused on the methodology and findings of the research which has been conducted in the field of teacher education, and to a lesser extent, in the area of physical education.

Although it is recognized that coaches operate in a considerably different setting than do academic and physical education classroom teachers, it is also apparent that the procedural methods developed and utilized in these two parallel fields of study may be highly applicable to the study of coaching effectiveness even though the results may be unique to the particular situation. Additionally, coaches as well as teachers share a common goal -- to facilitate student learning and performance. Therefore, due to the lack of previous research in coaching effectiveness, the literature relating to instructional effectiveness in both academic and motor skill settings was reviewed to provide the procedural and theoretical background for the present research investigation. In this context, instructional effectiveness was defined as those behaviors which have been shown to be most facilitative of student performance and/or psychosocial development.

In addition, several theoretical models were reviewed, each of which may be utilized to explain the causal mechanisms underlying the empirical link between instructional behaviors and optimal student development. This literature was examined because a complete

understanding of teaching and coaching effectiveness must include information concerning the processes through which instructional behaviors facilitate children's growth. Finally, the results of the empirical and theoretical literature examined in these first two sections were summarized and integrated for the purpose of developing a theoretical model which can be used to guide present and future research in teaching/coaching effectiveness. This model was designed in order to both predict and explain the relationship between teaching/coaching behaviors and students'/athletes' psychosocial growth.

Research on Instructional Effectiveness

An historical examination of the research in teaching effectiveness reveals considerable variation among researchers in their conception of what constitutes effective instruction. Such variation in the definition of the area under study is reflected both in the methodology a particular researcher utilizes to determine the correlates of effective instruction and in the validity of the research results obtained. Medley (1979) has recently identified four broad but distinct conceptual definitions of teaching effectiveness which have been used to guide research in this area. Understanding these paradigms is necessary if one is to utilize past research in teaching effectiveness to guide future investigations.

The first of these four conceptual definitions assumed that the effectiveness of a teacher in promoting students' achievement was dependent on the personality traits of the individual teacher. This conceptual orientation generated research designed to identify those personality traits which were characteristic of the "good" teachers and which distinguished them from the "poor" teachers. Because this orientation romanticized teaching as an art rather than a science, very little useful information concerning effective instruction was obtained.

The second conceptual definition of teaching effectiveness was more oriented toward teaching method or style. Specifically, teaching effectiveness was investigated in terms of the comparable effects which

certain teaching techniques exerted on students' achievement. Such research compared students' gains in learning as a function of teaching method (e.g., "open" versus "structured", "teacher-dominant" versus "guided discovery"). Because such research did not consider the effect of the individual teacher in the administration of such methods, this approach did not produce consistent results.

The third conceptual definition of teaching effectiveness is the one which has been most utilized within the past several years. Measures of effectiveness focus on actual instructional behaviors and their effect on the learning rates of students. This research is usually referred to as "process-product" research and is oriented to the observation of teachers' behavior in actual classroom situations. This methodological and conceptual approach has produced some consistent and generalizable results concerning the relative effectiveness of teachers in promoting student learning.

The fourth research orientation is an extension of the process-product paradigm and is the approach advocated by leading researchers in the field today. This approach views effective teaching as the acquisition of effective instructional competencies and differs from the third in recognizing that a specific set of teaching behaviors cannot be identified which will be effective in all situations and with all students. Rather, the effective teacher has any number of behavioral competencies but utilizes the appropriate one dependent upon the situation. Medley (1979) suggested that research in teaching effectiveness is currently entering this fourth phase. The methodology

utilized with this type of conceptual orientation is the process-product paradigm with the added stipulation that effective instructional behaviors are identified according to the particular situation for which they have been demonstrated to be effective.

Several major reviewers (e.g., Brophy, 1979; Gage, 1979; Locke, 1977) have advocated the utilization of the process-product research paradigm as the most valid and reliable method for the investigation of teaching effectiveness. For this reason, the review of the research pertaining to instructional effectiveness was limited to those research projects which have employed process-product methodologies. Specifically, this methodology utilizes measures of classroom processes (i.e., actual, observable teaching behaviors), as well as measures of educational product (i.e., assessments of student gains in achievement and psychosocial growth) to determine the correlates of effective instruction.

While a substantial amount of process-product research has examined students' academic growth as a function of teachers' behavior, few of the reported research projects have included assessments of students' growth in both areas -- academic achievement and psychological development. Those researchers who did include both types of assessment (Evertson, Anderson, Anderson & Brophy, 1980; Good & Grouws, 1977; Peterson, 1977; Solomon & Kendall, 1976), reported that the instructional behaviors which are most effective in promoting students' academic growth are not the same instructional behaviors as those which are facilitative of students' psychosocial growth. For

these reasons, teaching and coaching effectiveness relative to each of these product measures was discussed separately.

Instructional Behaviors and Children's Achievement

Although many process-product research efforts were conducted during the 1970's (see reviews by Good, 1979; Good, Biddle & Brophy, 1975; Brophy, Note 3), integration of the accumulated findings was difficult due to methodological inconsistencies in study design and execution. However, several large-scale, correlational research projects (Brophy & Everston, 1976; Good & Grouws, 1976; Soar and Soar, 1976; McDonald and Elias, Note 4) conducted in the last half of the decade were specifically designed to provide more rigorous and controlled testing of effective teaching behaviors. Each of these reported field studies collected data through extensive observation of classroom processes. Brophy and Evertson (1976), for example, conducted a longitudinal project using 31 second and third grade teachers from both low and high socioeconomic school districts. Regular observation of teachers' and students' behaviors was conducted over a period of two years, and teachers' attitudes and cognitions were assessed via interviews and questionnaires. Similar methodologies were reported by additional investigators (Good & Grouws, 1977; Soar & Soar, 1976; McDonald & Elias, Note 4; Stallings & Kaskowitz, Note 5), each of whom collected information concerning actual instructional behaviors through observation of classroom activities. Product measures, assessing students' achievement gains, were also collected,

and each set of researchers correlated these product measures with the observed teaching behaviors for the purpose of determining those instructional behaviors which were most highly associated with students' achievement. Although each of these investigations have differed somewhat in methodology and instrumentation, there is enough similarity among them to provide some valid and replicative information relative to teaching effectiveness. Integration of findings obtained from these process-product research projects has resulted in the identification of certain instructional behaviors which seem to be most effective in promoting students' achievement in elementary classrooms.

Specifically, three categories of teaching behavior have been cited by a number of reviewers (Brophy, 1979; Gage, 1979; Good, 1979; Rosenshine, 1979) as indicators of teaching effectiveness in the elementary classroom. These categories include: (1) efficient classroom managment skills which can generally be defined as those which keep students actively and constructively involved in academic work for the greatest share of classroom time; (2) direct instructional skills which include all teaching behaviors which maintain an academic and teacher-centered focus allowing little student choice of activity; and (3) positive teacher attitudes and expectations concerning both the instructor's ability to teach as well as the students' capability to learn the skills.

While these three general categories of instructional behavior have been identified as most effective in facilitating students' performance, two qualifications concerning these conclusions must be

made. First, the identification of these correlates of effective teaching has been made on the basis of correlational evidence (i.e., an associative relationship between these behaviors and high levels of students' achievement). A causal relationship cannot be inferred from such findings, no matter how consistently they are found. However, experimental research has recently been initiated to determine if such behaviors can cause significant increases in students' learning. Such studies, using the effective behaviors identified in early correlational field studies, have found that elementary classroom teachers trained in such behavioral techniques are more successful in producing high academic achievement than are control teachers who do not consistently employ such "effective" behaviors (Anderson, Evertson & Brophy, 1979; Good & Grouws, 1979). This initial evidence, then, does support the contention that these three categories of instructional behaviors are most facilitative of elementary students' academic achievement.

The second qualification to be made regarding the identification of these effective teaching behaviors concerns the generalizability of these findings. Almost all of the process-product research on which these conclusions are based, have been conducted in elementary classrooms and have primarily investigated teaching effectiveness in terms of students' acquisition of basic academic skills. In addition, this instructional effectiveness has been determined by using students' scores on standardized achievement tests as the product measure. Therefore, generalization of these findings cannot be made to

instructional effectiveness in upper grades, in teaching more advanced academic skills, or in facilitating students' attitudinal or psychological growth. In fact, process-product research conducted in academic situations other than those previously researched has demonstrated that these identified effective behaviors cannot be completely generalized. That is, several sets of researchers have demonstrated that contextual factors (factors specific to certain classroom situations) systemmatically influence the effects of certain teacher behaviors (see, Good, 1979; Peterson & Walberg, 1979; Rosenshine, 1979).

Of the contextual factors identified to date, most researchers cite students' socioeconomic status (SES) as the major variable that mediates the effectiveness of certain teaching behaviors. Based on the results of two correlational research projects (Brophy & Evertson, 1976; Soar & Soar, 1972), it seems that different instructional and motivational teaching behaviors are facilitative of academic success with low and high SES students. Similarly, students' grade level and the specific academic task requirements (i.e., the type of subject and the level of cognitive demand) have been identified as factors which influence teaching effectiveness (Flanders, 1970; Soar & Soar, 1976; Brophy, Note 3).

In addition to the contextual factors already identified, Brophy (Note 6) has convincingly argued that additional factors may also be influential in determining effective teaching behaviors. Several categories of contextual variables which Brophy has suggested may

mediate instructional effectiveness include teacher-related factors (attitudes, perceptions, values), student-related variables (age, sex, race, cognitive style, personality attributes), and environmental variables (subject matter, task objectives, time of year). Some of these variables have already been investigated and have been found to influence variation in teaching effectiveness (Brophy & Evertson, 1978).

Based on this evidence, it is apparent that instructional effectiveness cannot be defined as the acquisition of a number of generic teaching behaviors which will be effective in all instructional situations. For this very reason, Medley (1979) suggested that teaching effectiveness has entered into its fourth conceptual stage. That is, effective teaching is now defined as the acquisition of a variety of teaching behaviors and the ability to employ the particular behavior appropriate for specific teaching situations. Therefore, research in teaching effectiveness is now oriented towards the identification of effective instructional behaviors within specific contextual situations.

Instructional Effectiveness in Motor Skill Settings

The reported literature concerning teaching and coaching effectiveness in motor skill instructional settings has resulted in very little valid information. In fact, Locke (1979) referred to research in teaching physical education as a "dismal science."

Certainly some of this lack of valid information can be attributed to the fact that the process-product paradigm has been only sparingly used to investigate instructional behaviors. A review of the reported research concerning instructional behaviors in motor skill areas, for example, indicates that most of the studies can be classified into two groups on the basis of the methodology employed. These include teacher training/modification studies and descriptive studies concerning exhibited teaching behavior.

The first of these two groups of research is oriented toward the training and modification of teachers' and coaches' behavior. These studies attempt to show that certain instructional behaviors can be induced, either through teacher training procedures or through behavior modification techniques (e.g., Darst, 1976; Rushall & MacEachern, 1977; Rushall & Siedentop, 1976; Rushall & Smith, 1979; Mancini, Note 7). Although these studies have consistently demonstrated that teacher/coach behaviors can be modified, they have failed to show that such instructional behaviors are associated with optimal learning or performance. The behaviors advocated in such studies are based either on theoretical discourses concerning effective teaching behaviors or on research concerning effective teaching in academic classrooms (e.g., behaviors recommended by Flanders, 1970). In either case, this class of studies fails to provide empirically-based information relative to those instructional behaviors which are most facilitative of students' performance.

The second general class of studies in the literature concerning teaching/coaching effectiveness presents descriptive data identifying the instructional behaviors which are most commonly exhibited in motor skill instructional settings (e.g., Bain, 1976; Danielson, Zelhart & Drake, 1975; Nygaard, 1975; Keane, Note 8). The Danielson et al. (1975) study was one of the most comprehensive of this category. These researchers asked 160 male hockey players, ages 12-18 years, to list the coaching behaviors most commonly exhibited by their coaches. Data analyses resulted in the identification of a number of behavioral categories which players perceived their coaches to employ most frequently in game and practice situations. While studies such as these provide a clearer picture of the types of behaviors commonly emitted by coaches/teachers during instruction, they do not provide any information concerning the effectiveness of such behaviors, as the relationship between these instructional orientations and players' performance gains was not examined.

It is apparent that neither of these two research approaches utilizes the process-product paradigm which is so consistently advocated in the literature pertaining to effective instruction in academic classrooms. Locke (1977), who recommended the methodology associated with the process-product paradigm, suggested that the only research which deserves to be identified as research in teaching physical education is that which includes direct observation of teaching behaviors in naturalistic situations.

Using Locke's definition of research in teaching effectiveness, only two lines of investigation can be found in the reported literature. The first, a rather unusual approach to the study of instructional effectiveness, was that conducted by Tharp and Gallimore (1976). Identifying then-U.C.L.A. basketball coach, John Wooden, as one of the most successful coach-teachers in the history of college athletics, Tharp and Gallimore (1976) attempted to identify the teaching behaviors commonly employed by this "master teacher." Coding and analyzing behaviors exhibited by Wooden during practice sessions, Tharp and Gallimore recorded more than 2000 acts of teaching over the course of 30 hours of observation. Data analyses revealed that the teaching behaviors coded as "instructions" accounted for 50% of the total exhibited behaviors. In addition, it was found that at least 75% of Wooden's teaching acts carried information relating to skill development -- information that tended to be highly repetitive.

These researchers also found that praise as a teaching behavior was rarely given by Wooden. In fact, he was coded to give twice as many "scolds" as "praise." However, the majority of Wooden's scolds were accompanied by remarks containing additional instruction and were not equally distributed to the various athletes.

Although the results of this study are based on the observation of only one teacher/coach, descriptive evidence is provided concerning specific instructional behaviors which have been associated with consistent gains in players' performance. However, Tharp and Gallimore (1976) emphasized that the generalizability of this information is

certainly limited by the case study approach, as well as by the use of elite, college-level athletes who are both highly motivated and highly skilled.

Perhaps the most valid of the reported research projects in teaching effectiveness in physical activity settings was conducted by Yerg at Florida State University. Her initial study (1977) was designed to measure the effectiveness of selected instructional behaviors on the motor performance of children in grades three to six. On the basis of research from motor learning which differentiates the instructional needs of learners according to skill level (Gentile, 1972), Yerg selected three teaching behaviors which she assumed would have the most impact on the performance of children at a certain stage of skill development. The skill she chose to use in this study was the cartwheel. Assuming that children in grades three to six would have already mastered the basic skill components and were at the stage of refining these previously learned patterns, she selected the three instructional behaviors which would be most appropriate for this stage of skill development. These instructional behaviors included clarity of task presentation, guided and supported practice, and specific, task-related instructional feedback. The frequencies of these instructional behaviors were assessed through observation of a series of simulated instructional sessions during which teachers were assigned to teach a group of children the cartwheel. In addition to measuring children's post-instructional task performance, Yerg also

assessed the pre-instructional performance of the teacher and the child.

Regression analyses indicated that the only significant contributor to post-instructional performance was the child's initial task ability. However, additional analyses revealed that the amount of practice time given students was positively correlated with the level of achievement attained while the amount of time spent in teacher talk was negatively correlated with attained performance. Interestingly, Yerg (1977) also found that the lesser skilled teachers (those who themselves performed the skill poorly) tended to emit significantly more instructional talk than those who were more highly skilled.

In a subsequent discussion concerning these findings, Yerg (1981) made some important observations concerning the investigation of teaching effectiveness in physical education settings. She indicated that the instructional behaviors she had selected for investigation had been chosen on the basis of their assumed impact on the performance of students who had mastered the basic skill components of the cartwheel. Initial, pre-instructional assessment of the children's cartwheel abilities, however, showed that the majority of them were actually beginners. Therefore, Yerg (1981) hypothesized that the selected teaching behaviors may have been ineffective for this skill level. She further suggested that future researchers in teaching effectiveness must recognize the influence that skill level exerts on the effectiveness of teaching behaviors. This observation coincides with the conclusions made in the literature pertaining to instructional

effectiveness in academic classrooms (Brophy, 1979; Gage, 1979), that contextual factors, as well as student variables, will mediate the correlates of teaching effectiveness.

In summary, additional process-product research across a wide range of contextual situations is needed to identify the correlates of effective instruction. Recently, more interest has been generated in research areas related to instructional effectiveness (e.g., behavior modification, reinforcement and feedback, modeling, and teacher training programs) in physical activity settings, but these research findings are not based on actual observation of instructional behaviors in classroom situations. Generally, the research orientation which has been predominantly utilized in the teaching/coaching effectiveness literature corresponds to Medley's (1979) second stage of research, where teaching effectiveness is defined as the implementation of certain instructional styles or methods. This research orientation does not recognize that such factors as students' age, skill level, self-concept, and achievement motivation may influence the effectiveness of such methods.

Instructional Behaviors and Children's Psychosocial Development

On the basis of the available literature concerning teaching effectiveness, it does appear that certain instructional behaviors have been identified which are consistently associated with maximum gains in academic achievement by students, although such effective behaviors are

limited by the contextual situation. Unfortunately, considerably less process-product research has been conducted to investigate the types of teaching behaviors which are most facilitative of psychosocial growth in children. The lack of research in this area has most often been attributed to the inherent difficulties in attempting to measure change in self-concept, values or attitudes (Brophy, Note 6) and to the primary emphasis in American educational systems on students' attainment of basic academic skills rather than on their psychosocial development (Good, et al., 1975).

A few investigators, however, have included measures of psychosocial development in their examination of effective teaching behaviors (Good & Grouws, 1977; Peterson, 1977; Solomon & Kendall, 1976; Stallings & Kaskowitz, Note 5). Results from these process-product studies have provided about the only information relevant to the association between instructional behaviors and students' psychosocial responses. The comprehensive, observational study of classroom processes conducted by Stallings and Kaskowitz (Note 5), for example, has provided some initial information relating to teaching effectiveness and the affective responses of students. These two researchers collected observational data on children's achievement-related behaviors in the classroom and correlated these with observed instructional behaviors. Regression analyses indicated that the frequency with which students exhibited such positive behaviors as independence, task persistence, cooperation, and question

asking was significantly related to such instructional behaviors as individualized teacher attention (one-on-one instructional situations), adult response to student questions, and frequent and friendly teacher interaction with individual students.

Thus, this research revealed that the instructional behaviors which were most closely associated with higher frequencies of achievement orientations in students can be characterized as indirect instruction. The effectiveness of indirect instructional behaviors in facilitating positive attitudes in students was also demonstrated in several other research studies (see reviews by Flanders, 1970; Peterson, 1979; Rosenshine, 1973), although the number of process-product research projects on which this conclusion is based is considerably smaller than that used to identify the correlates of effective instruction in terms of students' academic achievements.

A second category of instructional behaviors which has been examined in relation to its effect on students' attitudes and affective responses includes teachers' reinforcement patterns. Cooper and Good (in press), for example, reported on the association between teachers' feedback and students' self-efficacy scores. They found that teacher criticality was negatively correlated with students' self-efficacy, while frequency of public, teacher-initiated interactions was positively correlated with such affective measures. Flanders (1969) and Rosenshine (1973) both concluded that teacher praise is significantly related to positive student attitudes and that critical teacher statements are negatively correlated with such attitudes.

Dunkin and Biddle (1974), however, caution that teachers' praise is not indiscriminately associated with positive affect, but that the use of discriminatory, performance-contingent, positive instructional reinforcement may be influential in increasing students' attitudes. Furthermore, a few recent writers have indicated that the effectiveness of a teacher's praise may be dependent both on the situational context (Brophy & Evertson, 1978) and on the teacher's intent in administering such reinforcement (Brophy, Note 9). Therefore, the actual value of a teacher's use of praise in facilitating positive attitudes among students has not been accurately measured.

Because so little process-product research has been conducted to measure the association between instructional behaviors and students' psychosocial growth, very little consistent information is available. However, on the basis of initial evidence, it seems that the teaching behaviors which are most conducive to positive student attitudes and cognitions are those which are characteristic of the indirect style of teaching (e.g., teacher warmth, praise, individualized instruction). This is in contrast to those teaching behaviors identified as effective in promoting academic achievement (i.e., direct instructional techniques). Consequently, some reviewers (Peck, 1976; Brophy, Note 4) have suggested that this opposition may eventually result in the necessity for teachers to engage in "trade-offs" (e.g., being forced to choose between promoting students' academic achievement or their psychosocial growth). More research is needed, however, before the conclusion can be made that these goals are incompatible.

Additionally, future process-product research designs should provide for the simultaneous collection of numerous product assessments (i.e., measuring students' gains both in academic achievement as well as in psychosocial development) and the analyses of such results through multivariate procedures.

Psychosocial Growth in Motor Skill Settings

The importance of the athletic coach's role in facilitating positive psychosocial growth in young athletes has received considerable emphasis in the sport psychological literature (Singer & Gerson, 1980; Martens, Note 1; Gould, Note 2). However, very little empirical research has been conducted to specifically identify effective instructional behaviors in motor skill settings.

Martinek (1981) has recently reported the results of a number of studies designed to investigate his theory that teachers' expectations influence both their actual instructional behaviors as well as the subsequent growth of students. In each of these studies, significant differences were found between the behaviors which physical education teachers exhibited toward their high ability as compared to their low ability students. Specifically, Martinek and Johnson (1979) demonstrated that students who were expected by teachers to attain the highest levels of physical achievement were given more praise and supportive encouragement than their low expectancy peers.

Based on such expectancy effects, Martinek and his associates then examined the relationship between these differential instructional behaviors and various psychosocial measures taken on both high and low expectancy students. It was found that high expectancy students, who received more praise and encouragement from their teachers, developed greater gains in self-concept measures over the course of a 16-week semester than did their low expectancy classmates (Martinek & Johnson, 1979). It was also reported, however, that a significant teacher by expectancy group interaction occurred, indicating that expectancy group self-concept differences were specific to only three of the five classes. Therefore, the relationship between teachers' expectations and students' self-concept cannot be generalized to all classrooms and all teachers.

In a related study, Martinek (1980) also found that third and fourth grade children's expectations concerning their own physical skill ability could be predicted by assessing both the child's self-concept as well as the teacher's expectations concerning students' ability. Although Martinek's study was extremely limited in scope (one teacher and 63 students), his results suggested that teachers' expectations account for the greatest amount of the variability in young children's self-expectations concerning their motor performance.

Based on the results of these studies, Martinek (1981) has contended that teachers' expectations concerning students' ability may influence the instructional behaviors exhibited towards individual students. This differential behavior, in turn, affects both the

performance and psychosocial responses of young children. Although there is sufficient evidence in the teacher education literature to support his proposal, the research findings revealed in his reported series of studies are based only on correlational data analyses, and a causal relationship between teaching behaviors and students' cognitions has not been established in the physical education classroom.

A series of studies recently conducted by Smith and Smoll and their associates, however, has provided evidence to show that coaching behaviors do influence the cognitions and attitudes of young male athletes. This project began with the development of the Coaching Behavior Assessment System (CBAS) (Smith et al., 1977). This instrument was designed to measure the behaviors of coaches towards their players in both contest and practice situations. The CBAS consists of a number of behavioral categories which were derived on the basis of empirical observation of coaches as well as on theoretical principles identified in the sport psychological and social psychological literature.

Following the development and validation of the CBAS, Smith and Smoll and various associates conducted a two-phase investigation examining the relationship between coaching behaviors and players' attitudes and self-concept (Smith, Smoll & Curtis, 1979; Smoll et al., 1978). In the project's first phase, the researchers observed and categorized the coaching behaviors of 51 Little League coaches over the course of an entire playing season. At the end of the season, the 542 male players, ages 8 to 15, were interviewed and their attitudes

towards their teammates, the sport, and their coaches were measured. In addition, both general and athletic self-concept measures were taken. Data analyses revealed that those coaches who exhibited the highest frequencies of behaviors categorized as "technical instruction," "reinforcement," and "mistake-contingent reinforcement" were evaluated more positively by their players than those coaches who scored low in these categories. Furthermore, players of these highly reinforcing and instructive coaches attained significantly higher post-season self-esteem scores and had more positive attitudes toward participation than did players of coaches who did not consistently exhibit these behaviors (Smoll et al., 1978).

In Phase 2 of this project, these researchers (Smith et al., 1979) utilized an experimental approach by manipulating the behavior of some of the coaches and then measuring the subsequent effects of this manipulation on players' attitudes and perceptions. An educational program, administered to the experimental group of coaches, utilized three behavior-modification techniques, and was designed to teach coaches to exhibit the effective coaching behaviors identified in the previous study. Following this instruction period, behavioral data was collected in a manner very similar to that done in Phase 1. Data analyses revealed that significant differences were evident between the coaching behaviors of the experimental and the control groups, with the experimental coaches exhibiting more of the desired behaviors (encouragement, reinforcement, technical instruction). The athletes who played for the experimental coaches also rated their coaches

significantly higher in knowledge and teaching technique and expressed a greater degree of enjoyment than did players of control group coaches. Finally, children who played for the trained coaches evidenced significant increases in self-esteem scores over the course of the playing season while players of control coaches did not show comparable changes.

In summary, the results of this multi-year project, encompassing both observational and experimental research designs, demonstrated that specific coaching behaviors are related to children's attitudes toward participation as well as their attraction towards coaches and teammates. In addition, the level of the athletes' self-concept was found to be influenced by specific types of behaviors exhibited by the coaches. Thus, this series of studies provided support for the theoretical position that coaches' behavior can affect the psychosocial development of young athletes.

Instructional Effectiveness: Summary and Research Implications

On the basis of information obtained from a review of the research in instructional effectiveness, it is apparent that the behaviors exhibited by instructors in both academic and motor skill instructional settings can influence the course of student growth in academic, physical, and psychosocial areas. Theoretically, then, it should be possible to identify those instructional behaviors which will most effectively facilitate the achievement performance and psychosocial development of young children. Numerous research projects conducted in

both academic and athletic settings, however, have shown that contextual factors such as student type, subject area, and grade level mediate the effectiveness of many instructional behaviors. Therefore, although a few generic instructional behaviors have been identified as effective across a variety of teaching situations, the majority of the effective instructional behaviors will have to be identified in situation-specific contexts. This specificity of instructional effectiveness implies that the course of future research lies in the empirical investigation of process-product relationships in specific contexts.

Gage (1979) theorized that the identification of effective instructional behaviors will result in a hierarchial structure. At the base of the structure will be those few general behaviors which are effective across all contextual situations. However, the next hierarchical level will contain those instructional behaviors which are most effective in a more limited context (i.e., at a certain age level). Each successive hierarchical level will consist of those behaviors which have been identified as effective in increasingly more specific situations. Thus, the top of the structure will include those instructional behaviors which have been designated as effective for certain students in certain grade levels for a specific academic skill. The identification of such a hierarchy of effective teaching behaviors will require considerable and continued empirical field work. A particular methodology appropriate for research in teaching effectiveness has been outlined by Yinger (Note 10) and has

been termed "grounded theory research." This methodology requires the researcher to conduct process-product, observational research in a specific contextual situation. On the basis of these findings, the researcher begins to identify effective instructional behaviors and then tests whether such behaviors are generalizable to similar contexts (i.e., through replicative studies). Finally, theories relative to instructional effectiveness can be drawn. This approach to research in teaching, then, emphasizes the development of theory through field-based research rather than "proving" theory through empirical investigation.

As Gage (1979) has recognized, the task of identifying the correlates of effective instruction is formidable considering the variety of contextual factors which influence teaching effectiveness. Nowhere is this more true than in the motor skill instructional setting where a very small research base has so far been established. Locke (1977), in his editorial emphasizing the lack of research in teaching effectiveness, also recognized that the task facing researchers is monumental. To make the task considerably easier and less prone to "trial and error" influences, Locke suggested that physical educators and researchers should explore the literature in such related areas as sociology and psychology of learning to identify existing theories which may be used to guide process-product research in teaching physical education. Locke's recommendation concerning the use of theory-guided research was proffered with the cautionary note that such theories must guide research which is ultimately based on observation

of teachers in naturalistic situations. This approach to the study of teaching motor skills seems a most logical and reasonable way to begin the search for effective instructional behaviors. Therefore, in the following section, some existing theories from the social and developmental literature were outlined. Each of these theories was chosen for its relevance to the study of instructional effectiveness in motor skill settings.

Theoretical Models: Explaining Instructional Effectiveness

In the previous section it was demonstrated that the instructional behaviors utilized by teachers and coaches influence students' academic and psychosocial development. This link between instructor-related variables and student development, however, has been demonstrated only through empirical methods. That is, correlational studies (Brophy & Evertson, 1976; Good & Grouws, 1977; Soar & Soar, 1976; Yerg, 1977) showed that certain teaching behaviors were associated with maximal gains in student learning. More recently several experimental studies (Anderson, Evertson & Brophy, 1979; Good & Grouws, 1979; Smith et al., 1979) have indicated that manipulation of instructional behaviors induces corresponding changes in students' attitude and/or achievement. In contrast to such demonstrated empirical relationships, theoretical relationships have not been generated to explain the link between classroom processes and educational product. As several reviewers (Cooper, 1979; Good, 1981; Brophy, Note 6) have indicated, little is known about why or how instructional behaviors influence student growth.

The establishment of causal mechanisms to explain empirically-demonstrated links between instructional behaviors and student growth would not only contribute to the explanation of these relationships but would also serve as a guide for future research in instructional effectiveness. Moreover, unique theoretical mechanisms do not necessarily need to be generated to explain these relationships.

As Locke (1977) has suggested, utilization of existing theories from related fields of study may result in more valid research in teaching effectiveness. Two such theoretical formulations are available which may apply to the study of instructional effectiveness in motor skill areas. One of these formulations can be found in the teacher behavior literature and suggests that teachers' expectations influence classroom processes to the extent that the course of student growth is affected. The other set of theories has been developed in the social and developmental psychological literature and postulates that differential rates of student achievement can be attributed to their individual perceptions of control. These perceptions, then, become the link between teachers' behavior and students' performance.

Expectation Theories

Expectation theories postulate that the perceptions which teachers hold concerning the achievement potential of each of their students are communicated to individual students through differential teaching behaviors. Such communicated expectations influence students to behave in ways which conform to the teacher's original expectations. Consequently, the expectations of teachers are predicted to influence students' performance. Two specific models, each of which has specified in sequential observable steps the relationship between teachers' expectations and students' growth, have been developed.

Model for Academic Expectancy Effects

The first of these models was advanced by Brophy and Good (1974) and was utilized as a guide for the initiation of subsequent research concerning expectancy effects in the classroom. This model consists of the five sequential steps outlined in Table 1.

TABLE 1. Model for Academic Expectancy Effects

STEP 1:	Teachers form differential expectations regarding the achievement potential of individual students.
STEP 2.	Teachers' behavior in the classroom towards individual students reflects these differential expectations.
STEP 3.	Differential instructional behaviors convey to the student the type of behavior and achievement expected from him or her.
STEP 4.	Because this information is available to the student, it influences his or her motivation, self-concept, and level of aspiration.
STEP 5.	If such differential teaching behavior is consistent over time, and if the student does not resist, his or her subsequent performance and behavior may conform to the teacher's expectations.

Brophy and Good, 1974

Despite the fact that this model outlines in clearly observable steps, the sequential connection between instructional expectations and students' subsequent classroom performance, most of the research conducted to test its behavioral predictions has focused on Steps 1 and 2. However, the sequential nature of the model was used to summarize the research pertaining to expectancy effects in instructional settings.

Step 1: Instructional Expectations. Much of the early research in relation to expectancy theory was conducted to test whether expectations are viable in academic situations. The results reveal that teachers do form expectations about the future academic achievement of their students and that these expectations are formed on the basis of information from a variety of sources. These sources include such student-related variables as socio-economic status (Rist, 1970; Goodwin & Sanders, Note 11), sex (Kehle, 1974; Palardy, 1969), physical attractiveness (Clifford & Walster, 1973; Dion, 1972), and attained scores on standardized tests (Cooper, 1979; Willis, 1972).

Although teachers use such pre-observational information as SES, race, sex, and previous academic achievement as cues for predicting achievement potential, it is equally true that initial classroom contact with students causes the teacher to form first impressions concerning academic ability. Willis (1972) for example, asked first grade teachers who were unfamiliar with their in-coming students to rank order them in terms of expected achievement after only one week of school. Teachers were found to use students' attentiveness,

self-confidence, and independent work habits as cues for the formation of ability expectations. It was also found that teachers used race, physical attractiveness, and physical size as informational cues, but to a lesser degree than the other factors. Finally, in another investigation, Long and Henderson (Note 12) found that students' attentiveness and attained scores on a school readiness tests constituted salient cues for teachers' expectations.

The results of these studies indicate that teachers utilize information from a number of sources, including such student-related variables as membership grouping (sex, SES, race), physical characteristics (size, attractiveness, dress), and attained performance scores to make judgments concerning their students' abilities. But, the specific antecedents of teacher expectations may be very difficult to determine. Finn (1977) has suggested that naturally-formed teacher expectations cannot be simply explained by examining only one or two specific information sources but are probably based on a complex interaction of factors and influenced by teacher as well as student characteristics.

Assuming that teachers do form expectations concerning the academic potential of their students on the basis of information from many sources, the next logical question concerns the stability and accuracy of such teacher perceptions. Willis (1972) examined this issue by measuring teacher expectations after only one week of classes, and then repeating this procedure several weeks later and again at the end of the semester. She found that the stability of teachers'

expectations was quite high over the course of the semester (correlations ranging from .56 to .86). In addition, teachers' expectations, measured at all three time periods, were also significantly correlated with actual student test scores (.56 to .80), although these predictions increased in accuracy after teachers were provided with readiness test scores. Similar estimates of the stability of instructional expectations were reported by Evertson, Brophy, and Good (Note 13).

Instructional expectations have also been examined in motor skill settings. Two laboratory studies (Hatfield & Landers, 1978; Rikli, 1976) revealed that expectations concerning children's performance could be induced in "observer-evaluators" by providing them with false information relating to the performer's motoric ability. These manipulated expectations influenced the performance rating which the observer-evaluator assigned to individual children, with high expectancy children receiving correspondingly higher performance ratings.

Expectancy effects have also been demonstrated in competitive athletic field settings. Scheer and Ansorge (1975) found that gymnastics judges used the order of performance in a meet (i.e., whether a performance occurred early or late in competition) as a source of information by which to evaluate the performance. It was suggested that the common practice of placing highly skilled performers later in the match order induces judges to expect better performance

from later competitors. Such expectations, then, influenced performance ratings.

Student gender has also been found to be a viable factor in the formation of teachers' expectations concerning students' physical achievement potential. Crowe (1977) found that both male and female teachers expected significantly better performance from boys than from girls in their junior high physical education classes. However, Martinek and Johnson (1979) found that student gender had no effect on teacher expectations in third grade physical education classes. It may be that physical education teachers' expectations are influenced by the students' gender only at higher age levels and in certain sport skill areas.

In summary, it is apparent that academic and physical education teachers do form differential expectations concerning the academic and physical ability of individual students, but this does not automatically imply that such differential expectations adversely affect the student. If teachers' expectations are used to design and implement individually-based learning experiences, they can, in fact, assist the teacher to provide optimal instruction for all students. The model advanced by Brophy and Good (Table 1), however, implies that such formed expectations result in differential teacher- student interactions in the classroom which actually enhance, or at least maintain, disparities in students' achievement.

Step 2: Differential Instructional Behaviors. The link between an instructor's expectations and his or her teaching behavior has been

more extensively studied than any of the other components of the expectation model. Literature reviews by a number of writers (Brophy & Good, 1974; Cooper, 1979; Dusek, 1975; Good, 1981) have shown that teachers form expectations concerning the academic abilities of students and that these expectations influence the interactions that teachers have with individual students.

These expectancy effects are not universally found among all teachers, however. All teachers may form expectations concerning students' performance, but not all teachers allow these expectations to influence their classroom behavior. Rosenthal's (1976) meta-analysis of the literature relating to expectancy effects gives some indication of the variability among teachers in relation to their susceptibility to expectancy effects. Of the expectation studies which reported individual teacher data, 70% of the participating 340 teachers showed significant differential treatment of high and low expectancy students. Some of the sampled teachers, then, did not allow their expectations to influence their behavior with individual students.

Recognizing that not all teachers exhibit such expectancy effects, a survey of the literature indicates that many instructors do show differential behaviors toward high and low expectancy students. It would be difficult to summarize all the process variables (teacher-student interactions) which researchers in the last decade have shown to be associated with expectancy effects. However, Rosenthal (1974) has identified four categories of instructional behaviors (climate, input, output, and feedback) which can be used to

classify the teaching behaviors that have been associated with expectancy effects across a large number of studies.

First, several studies have reported that teachers tend to provide a warmer socioeconomic climate for their high, as compared to their low, expectancy students. This warmer climate has been found to be facilitated by such non-verbal instructional behaviors as smiling, head nodding, and leaning towards the student (Chaikin, Sigler & Derlega, 1974; Kester & Letchworth, 1972; Page, 1971).

Secondly, a number of studies suggest that teachers provide more input, in terms of learning material for high expectancy as compared to low expectancy students. That is, teachers have been found to ask more difficult questions of the high expectancy students (Mendoza, Good & Brophy, Note 14), to allow bright students a longer time to respond with an answer (Rowe, 1974), and to persist longer in attempting to extract a correct answer from the bright student (Brophy & Good, 1970). These studies show, then, that the quality of the individual teacher-student interaction can be affected by the teachers' expectations.

The third factor, verbal output, is defined as the frequency of interactions between teachers and individual students. The majority of studies indicate that high expectancy students will seek more interactions with the teacher than do low expectancy students (see Brophy & Good, 1974). However, in studies which analyze teacher-initiated contact, conflicting expectancy effects have been found. Some teachers tend to initiate more contact with high

expectancy students (Kester & Letchworth, 1972; Good, 1970), while others interact more frequently with low expectancy students (Mendoza, Good & Brophy, Note 14). It appears, then, that teachers' expectations influence the frequency of teacher-student interactions, but there are differences between teachers in the direction of the effect. As indicated by Brophy and Good (1974), these differences could be a function of grade level, as well as other situational factors such as teaching style and/or class structure.

Finally, considerable research has been conducted to determine whether teachers' reinforcement patterns (evaluative feedback) towards individual students are influenced by their expectations. Although these studies have differed considerably in methodology and instrumentation, they consistently show that teachers tend to provide more praise per correct response for high expectancy students and more criticism per incorrect response for low expectancy students (Brophy & Good, 1970; Cooper & Baron, 1977; Firestone & Brody, 1975; Meichenbaum, Bowers & Ross, 1969), thus demonstrating that the evaluative feedback that teachers provide to students may be dependent on their expectations concerning the students' ability.

This brief summary of the research pertaining to expectancy effects in the classroom indicates that the quantity as well as the quality of individual teacher-student interactions occurring in the classroom may reflect the teachers' expectations concerning individual students. It is important to note, however, that these four categories represent a summary of the preferential behaviors which teachers across

a variety of studies have been found to exhibit. A comprehensive meta-analysis by Smith (1980) provides more specific information relative to the strength of the demonstrated expectancy effects as investigated in a variety of instructional situations. This analysis revealed that a modest relationship exists between teacher expectations and teacher behavior. Specifically, high expectancy students were consistently found across all studies to receive more learning opportunities while low expectancy students, in contrast, were ignored more often than their classmates. In regard to the effect of teachers' expectations on product measures, Smith reported that student achievement and affect were related to teachers' expectations but few expectancy effects were found relative to students' IQ scores.

Within the past few years, several research attempts have been initiated to apply these expectation theories and procedures to the study of expectancy effects in physical education classrooms and athletic settings. The results of these studies suggest that the same processes identified in the academic setting are also viable in motor skill instructional settings. For example, Crowe (1977) asked four junior high physical education teachers to rank their students according to expected physical achievement potential. Observation of teacher-student interactions showed that high achievers received significantly more affirmation and praise than did low achievers and were generally treated more warmly and given greater opportunity to respond to teacher-initiated contacts. Such tendencies on the part of the instructor to give more praise and encouragement to high expectancy

students were also found by Martinek and Johnson (1979) in elementary school physical educators.

Only one study has been reported in the literature which examines expectancy effects in the athletic setting. Rajeski, Darracott, and Hutslar (1979) observed individual coach-athlete interactions in practices and game settings, using 71 children and 14 coaches in a youth sport athletic league. Comparison between high and low expectancy athletes, in terms of coach-athlete interactions, revealed two significant findings. First, high expectancy athletes received more reinforcement from their coaches than did low expectancy athletes. Secondly, coaches also showed a significant tendency to provide more general technical instruction to low expectancy athletes as compared to their high expectancy peers.

Although researchers have been slow to investigate teacher behavior in physical education/athletic settings, initial evidence indicates that expectancy effects exist and do influence the quantity and quality of the teacher-student interactions in the gymnasium. It seems likely that the expectation-performance process in motor skill settings may parallel that found in the literature pertaining to expectancy effects in the academic classroom.

Step 3, 4, and 5: Student Growth. The last three steps in the model proposed by Brophy and Good (1974) postulate that the differential behaviors exhibited by instructors influence the academic and psychosocial growth of the students. This link between instructional behaviors and students' achievement-related growth has

been discussed at length in the previous sections. Enough research does exist to show that the behaviors of teachers and coaches influence the course of student growth. What has not been demonstrated, however, is that the differential instructional behaviors which are attributable to expectancy effects actually influence the academic and psychosocial growth of children. The independent links between expectations and instructional behaviors, as well as those between instructional behaviors and students' responses have been established, but the entire causal chain has not been adequately examined.

While the relationships implied by steps 3, 4, and 5 have not received much investigatory attention, considerable research interest has been paid to examination of the direct link between Step 1 (teacher expectations) and Step 5 (student achievement). Interest in this relationship was generated by a much publicized study conducted by Rosenthal and Jacobson (1968) appropriately titled, "Pygmalion in the Classroom." These investigators induced positive but false expectations in classroom teachers concerning the academic potential of certain of their students. When such students exhibited significantly higher gains in academic achievement over the course of the school year than did their classmates, Rosenthal and Jacobson concluded that these gains were due to the expectations induced by their teachers.

Following the publication of this study, many investigators began to examine whether teachers' expectations can actually bias student performance. However, extensive reviews of this research by Brophy and Good (1974) and Dusek (1975) revealed considerable inconsistencies in

the reported literature concerning the validity of expectancy effects in the classroom. These reviewers indicated that teachers' expectations can influence student achievement, but that expectancy effects cannot be adequately investigated without also assessing classroom processes. That is, the relationship between teachers' expectations and student performance cannot be reliably assessed unless it can be demonstrated that high and low expectancy students do receive differential educational experiences in the classroom.

The Brophy and Good model for the investigation of teacher expectations in the classroom was based on this valid observation. However, as Good (1981) indicated in his recent review of expectancy effects, very little research has been generated to assess the relationship between all facets of this model.

Summary

While considerable research has been initiated to investigate expectancy effects in instructional situations, the influence which such expectations exert on students' growth has not been clearly determined. It seems apparent that teachers' expectations do affect their instructional behavior in the classroom. However, the causal link between these differential instructional behaviors and the disparity in the performance of low and high expectancy students has not been adequately assessed. Cooper (1979) suggested that this relationship has been difficult to determine because a causal mechanism has not been identified to explain this link. The model specified by Brophy and Good (1974) postulates that differential instructional

behaviors affect student achievement both directly and indirectly. As a direct effect, high expectancy students may actually be provided with a better opportunity to learn (i.e., higher performance standards set, more difficult materials given, more opportunity for input provided). Indirectly, teachers may communicate differential expectations of students. Low expectancy students who perceive the teacher's lower perceptions of their academic potential may exert less effort after failure, accept failure more quickly, and subsequently aspire to lower achievement standards than their high expectancy classmates. However, the sequential explanation of this relationship does not specify exactly how students' perceptions of teachers' expectations actually influence their performance.

Re-formulation of the Expectation Model

Cooper (1979), in an effort to identify more clearly the causal mechanisms underlying the expectation process, has reformulated the Brophy and Good model. Drawing on principles derived from the social psychological literature, Cooper (1979) hypothesized that the concept of personal control can be used to explain much of the variation in human behavior, including that exhibited by both students and teachers in instructional settings. The Expectation Communication Model consists of five sequential items and is outlined in Table 2.

Cooper and his associates (Cooper & Good, in press) have begun research efforts designed to validate the relationships between the model components. However, in general, these efforts have met with only limited success, particularly in regard to the influence which

TABLE 2: Expectation Communication Model

STEP 1. Teachers form differential expectations concerning students' performance potential.

STEP 2. These formed expectations, along with classroom contexts, influence teachers' perceptions of control over students' learning behavior.

STEP 3. Teachers' perceptions of control influence instructional behavior towards individual students in the classroom. Because teachers perceive less control over the performance of low expectancy students, the teacher tends to discourage interactions with such students in low control situations (i.e., in public, student-initiated situations). Conversely, the teacher encourages such situational interactions with high expectancy students because he or she perceives greater control over their performance. Therefore, teachers give significantly different feedback to low than to high expectancy students.

STEP 4. These differences in teachers' feedback influences the students' own perception of control concerning their performance outcome. Low expectancy children receive significantly more non-contingent feedback which reduces their perception of personal control. In contrast, high expectancy students receive performance-contingent feedback because teachers do not need to use feedback to control public interactions.

STEP 5. Low perceptions of personal control result in decreased achievement task effort, persistence, and performance.

Cooper, 1979

teachers' perceptions of control are predicted to exert on their classroom behavior. In commenting on this lack of support, Good (1981) observed that teachers' interactional contacts with individual children in the classroom are influenced by any number of teacher beliefs and attitudes which may be specific to the individual child or may reflect a more generalized attitude concerning teaching and children. Therefore, Good suggests that more precise information might be obtained if a greater number of instructional attitudes, in addition to teacher perceptions of control are measured.

Although Cooper's theory may not be entirely functional, one facet of the model -- that pertaining to students' perceptions of control -- does deserve further investigation. Cooper's model hypothesizes that differential teacher feedback to individual students may influence students' perceptions of performance control. Moreover, Cooper and Good (in press) have demonstrated that aspects of teachers' feedback to students are associated with students' perceptions concerning their control and academic success and failure. Therefore, to better understand how instructional feedback influences student achievement, a second set of theoretical formulations focusing on the development and maintenance of an individual's perceptions of control in achievement situations was also examined.

Perceptions of Control

Perceptions of control can best be defined as the extent to which an individual perceives him or herself to be a causal agent in the

effort-outcome sequence. In an achievement setting, then, the individual who perceives high levels of personal performance control assumes that effort and outcome will co-vary (e.g., "If I try hard, I will succeed."). In contrast, lower levels of personal control result in perceptions of independence between effort and outcome (e.g., "If I try hard, it won't make any difference.").

Two recent developments in the literature concerning children's perceptions of performance control may be used to provide the necessary causal link between instructional behaviors and subsequent growth by children in both achievement and psychosocial areas. The first research development links children's perceptions of control to various achievement behaviors. This literature implies that the degree to which the child assumes responsibility for his or her academic success or failure may predict many other achievement-oriented behaviors, such as success expectancy, increased effort and persistence at a task. Secondly, evidence also exists to show that children's perceptions of control can be influenced or affected by the feedback which adults provide relative to children's achievement task performance. While initial research efforts in these areas seem promising, both of these issues need to be examined for their applicability to instructional effectiveness.

Perceptions of Control and Achieving Behaviors

Research from the social psychological literature has consistently revealed an associative relationship between an individual's perceptions of personal control and various achieving behaviors.

Specifically, an internal perception of control (i.e., the belief that effort and outcome covary) has been correlated with high levels of achievement orientation, whereas low levels of achievement motivation were found to be associated with lower internal perceptions of performance control.

Further evidence concerning the relationship between perceptions of control and achievement-oriented behaviors comes from the psychological literature, which implies that the development of an individual's perception of control is associated with his or her cognitions concerning the causes of achievement task success and failure. That is, attribution of successful performance to ability (an internal cause) induces the individual to assume that he or she is personally responsible for that success and to expect success in future achievement attempts, whereas attribution of success to luck or task ease reflects an external perception of outcome control and low expectancy of future success (Weiner, 1974). Similarly, in the case of failure, ascription to lack of effort is associated with the belief that performance failure is still under personal control, and success can be achieved in future performance attempts (McMahan, 1973; Weiner, Nierenberg & Goldstein, 1976). Attribution to lack of ability, however, induces the individual to perceive that he or she cannot avoid future failure no matter how much personal effort is exerted (Covington & Omelich, 1981).

This association between attributional patterns and perceptions of performance control has been demonstrated in the research pertaining to

learned helplessness, a state of depression arising from an individual's perception that his or her response will be ineffectual in obtaining reinforcement (Abramson, Seligman & Teasdale, 1978). The most recent theory pertaining to the development of learned helplessness suggests that attribution of continued failure at an achievement task to lack of ability (e.g., "trying does not work because I lack ability") is a causal factor in the development of feelings of helplessness (i.e., low perceptions of personal control) (Abramson et al., 1978; Covington & Omelich, 1981). Such perceptions of helplessness have been shown to result in decreased effort and persistence at the particular achievement task, in addition to significant decreases in the individual's self-concept (see review by Abramson et al., 1978).

This relationship between perceptions of control and various achievement behaviors has also been examined in academic settings. Dweck and Reppucci (1973), for example, found that children who tended to "give up" following achievement task failure could be identified by their low scores on the Intellectual Achievement Responsibility (IAR) test (Crandall, Katovsky & Crandall, 1965). That is, children who scored low on items assessing personal responsibility for academic success and who attributed failure to lack of ability were significantly more apt to respond to failure with decreased effort than those children who reported higher levels of personal responsibility for academic success and who ascribed failure to lack of effort. Similarly, Johnson (1981) has recently demonstrated that children's

perceptions concerning the degree to which they were responsible for achievement failure were significant predictors of their academic self-concept. In general, these studies do provide support for the contention that children's cognitions concerning the degree to which they can control academic outcome influences such achievement-oriented behaviors as task persistence, increased effort, high success expectancies, and increased task performance.

Perceptions of Control and Instructional Behaviors

Based on this demonstrated association between children's perceptions of control and their subsequent academic behavior, a number of writers have begun to emphasize the need for teachers to implement instructional strategies designed to increase the individual student's perception of control in academic achievement areas (Covington & Beery, 1976; Thomas, 1980; Weiner, 1976). However, the specific instructional behaviors which may be most effective in facilitating children's perceptions of internal control have not been identified. Nevertheless, there is some information available which suggests that students' cognitions concerning performance control in instructional situations may be highly influenced by the informational and evaluative feedback which they receive from significant adult figures.

First, results from laboratory studies pertaining to the phenomenon of learned helplessness indicate that non-contingent reinforcement (reinforcement given in a random manner) can be used to induce the perception of independence between effort and outcome in

subjects (see reviews by Abramson et al., 1978; Maier, Seligman & Solomon, 1969; Seligman, 1975). Similarly, Dweck and Reppuci (1973) showed that behaviors associated with learned helplessness (e.g., decreased performance, lessened personal responsibility for performance outcome, decreased expectancy for future success) could be induced in some children by subjecting them to continued and non-contingent failure at an achievement-oriented task. Dweck (1975), however, also found that this process could be reversed. That is, children identified as learned helpless (those who perceived academic failure to be insurmountable), could be trained by an adult to assume responsibility for failure through attribution of such failure to lack of effort. Such a training program resulted in significant increases in actual academic performance as well as greater persistence following failure.

Although the contingency of reinforcement administered by adult evaluators has been shown to influence students' perceptions of control, other instructional behaviors have also been associated with such perceptions. Cooper (1977) reported that students who received the greatest amount of criticism in classroom situations exhibited lower perceptions of effort-outcome covariation than their peers who received less teacher criticism. Although there is some controversy regarding the effects of teachers' praise and criticism on student growth (Brophy, Note 9), Cooper's results indicated that the reinforcement patterns used by teachers need to be further investigated

in regard to their influence on students' perceptions of performance control.

Finally, some evidence exists to show that the content of teachers' evaluative feedback may also influence students' perceptions of control. Dweck, Davidson, Nelson, and Enna (1978), who were interested in sex differences in achievement-oriented behavior, observed actual classroom events for a period of time and recorded the content and contingency of the evaluative feedback given by teachers. These researchers found that male and female students received equal amounts of failure feedback; however, the boys' failure was more often accompanied by attributions to lack of motivation whereas girls' failure was almost exclusively attributed to lack of competence or ability. Dweck et al. (1978) used this evidence to theorize that teachers' evaluations in the classroom contribute to the lower academic achievement orientation of females and also explains the greater tendency of girls to exhibit learned helpless behaviors in academic situations. Additional research to support this contention has not yet been reported, although Cooper (1979) indicated that teachers' attributional feedback may be important in determining instructional behaviors which influence children's perceptions of control.

Summary

Recent evidence from the literature in social and developmental psychology reveals that the behaviors exhibited by significant adult evaluators do influence children's perceptions of performance control. Specific adult behaviors identified which have been found to be related

to children's perceptions of control include: (a) contingency of reinforcement; (b) degree of teacher praise and criticism; and (c) attributional ascriptions for student performance. Enough evidence also exists to show that individuals' perceptions of control are associated with various achievement-oriented behaviors. This evidence provides support for the contention that the link between instructional behaviors and the academic, physical, and psychosocial growth of young children may, in large part, be explained by perceptions of control. That is, the instructional behaviors exhibited by teachers and coaches may influence the individual child's perception of performance control in a particular academic or athletic area. This perception, then, determines the child's subsequent behavior in future task performance, as well as his or her cognitions concerning personal ability and efficacy.

These causal links between adult behaviors, children's perceptions of control, and positive psychosocial growth have been specified by Harter (1981) in her recently formulated model explaining the development of achievement motivation in children. Harter has designed a three-stage developmental model based on White's (1959) theories of competence motivation. The third stage of Harter's Model identifies the child's perception of control as the middle link in the chain between adult evaluation and various correlates of children's motivation in achievement task situations. Thus, this model draws together the constructs just identified in the previous section, and examination of the model may be particularly useful in providing a

theoretical framework for investigations designed to identify those coaching behaviors which will facilitate athletes' psychosocial growth.

Harter's Developmental Model

Harter's (1981) major concern in formulating this developmental model of competence motivation was to provide an explanation for the differential levels of motivation exhibited by children in achievement situations. That is, there are differences among children both in the degree to which they choose to participate in highly achievement-oriented activities and the affective and cognitive reactions they exhibit following success or failure at the activity. Harter theorized that these differences among children in motivational orientation can be attributed to certain antecedent conditions in the child's social environment which have either facilitated or attenuated the development of such intrinsic motivation. The three-stage model which Harter designed to explain the processes by which children develop an intrinsic achievement orientation is based, in part, on social learning theory which contends that such behaviors are learned by the child through the observation of role models and through the reinforcement of social agents, such as parents and teachers. Although this model actually consists of three stages, only the third is detailed in this review as the first two stages pertain to the correlates of motivation for infants and very young children.

Stage 3 (detailed in Figure 1), is applicable, as Harter indicates, for children who have attained the Piagetian stage of concrete operational thought (beginning around ages 5 or 6).

Stage 3 of Harter's (1981) developmental model (see Figure 1) begins with the child's attempted performance at an achievement task which is labelled in Figure 1 as mastery behaviors (Component A). The product of the child's mastery behavior is generally identifiable as either a success or a failure (Component B of the model), and the particular outcome has two implications. First, the performance outcome induces certain affective reactions (Component C), such as pride, shame, and anxiety. Additionally, the outcome of the child's performance often generates an evaluation (Component D) of the performance by an observer. If the observer is a "significant other" figure in the child's social environment, this evaluation is presumed to directly influence the child's sense of competence or ability at this achievement task (Component E). However, evaluation of the child's performance also indirectly affects his or her perceived competence through a developmental process which Harter identifies as the internalization of cognitive-informational structures (Component F). That is, older children (above the age of 6), who have developed the capacity to think logically and in terms of cause-effect relationships begin to internalize aspects of the evaluative feedback. Thus, through socialization processes (modeling, instruction, and direct reinforcement), the child begins to adopt the performance standards of significant others (particularly parents and teachers) in

his or her environment. This internalization process actually consists of the development of cognitive systems which allow the child to judge how much he or she values achievement in a particular area (system of mastery goals) and what level of performance connotes success (system of self-reward criteria).

Contingent on the consistency and appropriateness of the acquired, internalized performance standards, the child also develops a perception concerning the degree to which he or she can control performance outcome (Component G). Harter (1981) theorized that a strong internal perception of control (i.e., the belief that he or she is responsible for and in control of personal performance) is dependent upon the type of internalization structures gained through socialization processes. If a child has been given clear, consistent, and realistic evaluation about his or her performance, then the child will develop consistent and realistic internalization structures and will perceive an internal source of performance control. Inconsistent or unclear evaluation of performance will lead the child to perceive that control for his or her performance lies with powerful others or with an unknown source.

The next step in this model specifies that the child's perception of performance control directly influences the degree of competence (belief that he or she has capability for performance success) the child perceives in relation to achievement task performance (Component E). A high degree of perceived control results in high perceptions of competence, whereas the belief that powerful others are responsible for

his or her performance leads to low perceptions of ability. For a younger child (below the age of 5), the link from adult evaluation to the child's perception of competence is a direct one. However, with increasing cognitive maturity, the influence of adult evaluation is mediated through internalization structures (Component F) which includes perceptions of control.

For Harter (1981), the resulting strength of the child's perception of competence is central to the development and maintenance of various other achievement-oriented traits and behaviors, including intrinsic motivation, self-efficacy, self-worth, and anxiety controls. If a child perceives that he or she is capable in a particular activity, then he or she will develop strong feelings of self-worth (Component H), exhibit lower levels of performance-related anxiety (Component C), and will be intrinsically motivated to continue to pursue success in this achievement activity. Harter has redefined this intrinsic motivation as competence motivation (Component I) to reflect the connection between the child's perception of competence and his or her subsequent desire or motivation to continue to demonstrate competence in this activity. High levels of competence motivation are reflected in continued participation in the activity at higher levels of skill (i.e., continued exhibition of mastery or achievement behaviors), and the achievement process continues.

One aspect of Harter's (1981) model that distinguishes it from many of the other theories relating to achievement motivation is that this model has been designed to be applicable in four independent

domains. That is, the various components which constitute the model (e.g., perceptions of control, perceived competence, and competence motivation) do not represent global or unitary psychosocial traits. Rather, each of these constructs has been defined in four domains: cognitive, which pertains to academic competence; physical, which refers to sports and outdoor game participation; social, describing competence in peer relationships; and general, which measures a general feeling of personal worth rather than an actual competency. The model, as specified in Figure 1, then can be applied to competence in each of the three independent achievement domains.

Because none of the existing devices for assessing psychological development were adequate for testing these concepts of competence and motiviation, Harter and Connell (in press) began the process of developing and validating instruments to assess the various psychosocial attributes implied in their model. Each of the developed instruments (e.g., Perceived Competence Scale) actually consists of four subscales -- each one measuring perceived competence in a different achievement domain (cognitive, social, physical, and general). Harter has recognized, then, that a child may feel highly competent in one achievement area but not in another, and that measures of competence and control perceptions must reflect such differentiated motives.

Following the development and validation of these instruments, a series of research studies designed to test the implied links between the model's components was initiated. Although many of these studies

are still in progress, initial results indicate that the implied relationship between children's perceptions of competence and their intrinsic motivation in achievement situations has been empirically validated. High levels of perceived competence have been shown to be statistically associated with measures of children's motivation in academic activities (Harter, 1981). Additionally, a causal relationship between perceptions of control and perceptions of competence has been identified. That is, the degree to which children perceive control over their academic performance determines their sense of competence in that achievement domain (Harter, 1981; Harter & Connell, in press).

The link between childrens' perceptions of competence and their motivational orientation has also been tested in the competitive athletic setting by Roberts, Kleiber, and Duda (1981). These researchers found that young sport participants obtained significantly higher scores on the perceived competence scale as measured in the physical domain than did their non-participant peers. In addition, children who exhibited higher levels of perceived competence also exhibited a greater tendency to respond to competitive athletic situations with such achievement oriented behaviors as continued persistence following failure and higher expectancies of success than did their peers who exhibited lower perceptions of competence. This study, then, has provided initial support for the viability of Harter's model in competitive athletics and indicated that perceptions of

competence may be a central concept in terms of an athlete's psychosocial status. That is, the degree to which the child feels competent in a given area may be a determinant of his or her achievement behavior in that situation. Therefore, it would seem highly desirable to determine how perceptions of competence can be facilitated in the young athlete.

According to the model's specifications, a child's level of perceived competence is directly and causally influenced by his or her perceptions of performance control in a particular achievement situation. Furthermore, Harter's (1981) model specifies that the evaluation of significant others concerning the child's performance attempts contributes to the child's internalization of control perceptions. To date, however, no reported research has been conducted to specifically investigate the extent of the influence which social agents are presumed to exert on the child's perceptions of control and competence. Nevertheless, the application of this model to the investigation of coaching effectiveness appears quite tenable. Harter (1981) has recently emphasized the contributions that adult evaluation and feedback can make to the development of the child's perceived competence in the physical domain. She noted that although children often link their perceptions of physical competence to basic mastery of sport skills, adult evaluation of their performance can either facilitate or denigrate the child's sense of competence and control in athletic areas.

Because perceived competence has been demonstrated to be an important mediator of many other achievement behaviors in both academic and athletic situations, the present investigation was designed to identify those facets of coaching behavior which facilitate the development of the young athlete's perceptions of control and competence. Harter's model, (1981) was used as a framework for the investigation of coaching effectiveness. However, since the review of the previous literature revealed that the link between instructional effectiveness and children's psychosocial growth is complex and influenced by a number of factors not discussed by Harter, a revised model was developed. This model integrates facets of the literature previously reviewed (e.g., expectation theory, attribution theory) which appear to be applicable to the investigation of coaching effectiveness.

An Integrated Model of Instructional Effectiveness

The integrated model designed to guide this investigation of coaching effectiveness is contained in Figure 2. In a manner similar to Harter's formulation, the processes specified in this model begin with the child's performance behavior in an achievement domain (Component A). This performance attempt can be categorized as either a success or a failure (Component B) and influences the child's state of affect (pride, shame, joy) and also his or her perceptions of anxiety (Components C and D). Again, as in Harter's model, the child's

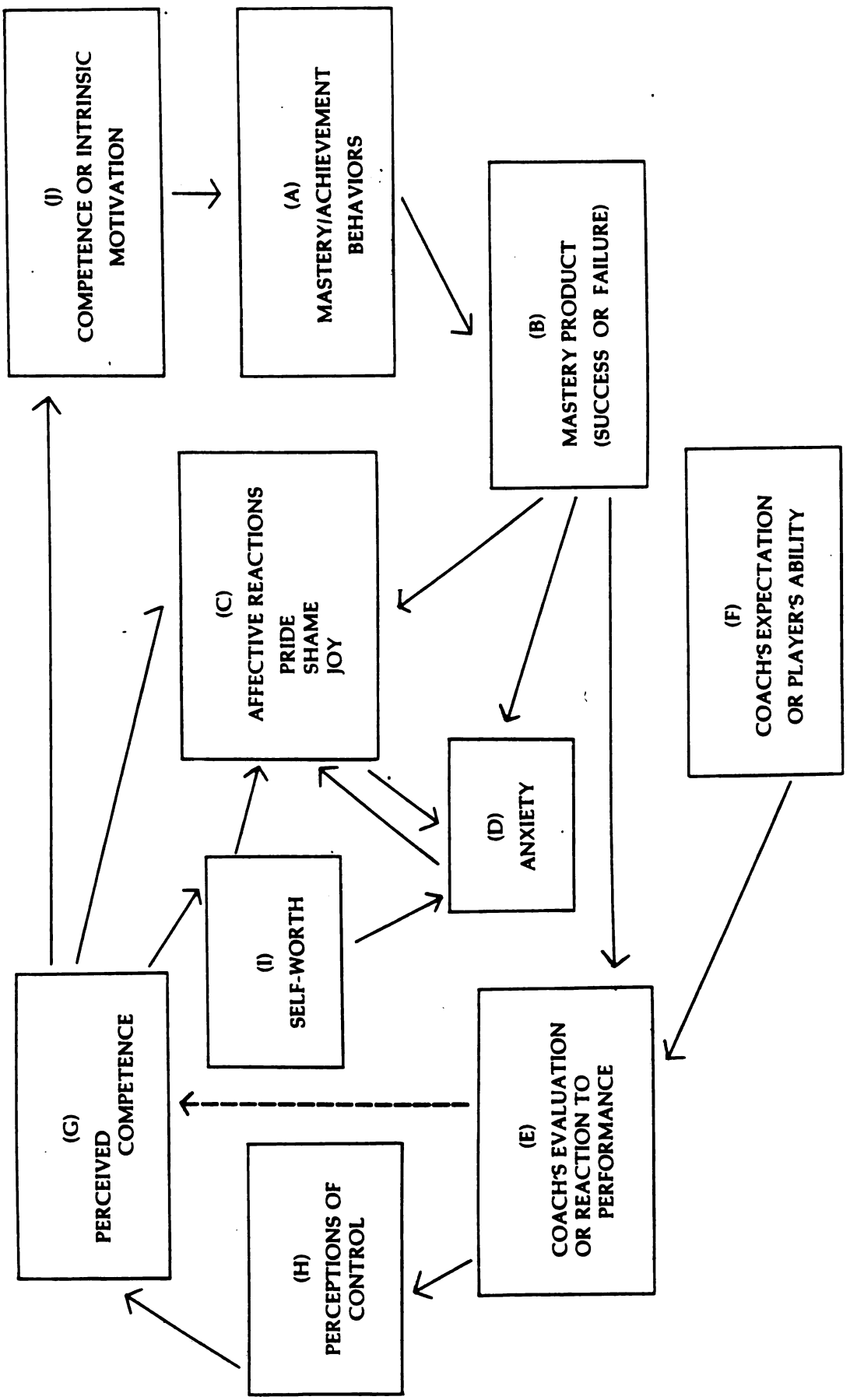

Figure 2. Proposed model for coaching effectiveness.

performance outcome is often evaluated by a significant other adult, in this case the coach or sport leader (Component E).

Based on the literature pertaining to expectancy effects, it is postulated that the quality of the coach's response to and evaluation of the young athlete's performance are influenced by the coach's perceptions concerning the child's ability at the sport activity (Component F). These perceptions are formed on the basis of a complex interaction of information from a variety of sources including player-related factors (sex, SES, past performance record, physical attributes, related performance records), coach-related factors (past competitive experience, sex, role definition, goal orientation) and, situational factors (task type, task demands, program goal, extrinsic pressures).

These coaching expectations or perceptions may influence the quantity and the quality of the instructional behaviors which are exhibited to individual athletes in response to their athletic performance. High expectancy athletes may receive higher frequencies of performance-contingent information and evaluative feedback which is oriented to attribution of performance to controllable factors. Low expectancy athletes, in contrast, may receive feedback which is not contingent on performance and evaluative feedback which attributes performance to factors beyond the athlete's control.

The differential behaviors exhibited by coaches toward individual players can affect players' cognitions in two ways. First, if a child

has had little previous or related experience in the particular athletic activity, certain facets of the coach's behavior will directly influence the athlete's beliefs concerning his or her ability or competence in this activity (Component G). With repeated or continual evaluation of his or her performance, the young athlete will also begin to internalize the performance standards reflected by the coach's behavior. As a result, the athlete develops a set of cognitive structures which defines his or her perceptions concerning performance control (i.e., the strength of the belief that effort and outcome co-vary) (Component H). Performance-contingent feedback or feedback in which the outcome of the performance is attributed to internal but controllable factors will induce the athlete to perceive that future performance outcome is under his or her control while non-contingent feedback or feedback which contains ascription of performance to uncontrollable factors induces low perceptions of control.

The child's perceptions of control in the athletic activity may causally influence his or her perceived competence in this or similar athletic situations (Component G). If an athlete perceives that athletic success or failure is under his or her control, the athlete will also sense a feeling of competence in this athletic activity.

High levels of perceived competence result in comparably high levels of self-esteem (Component I) and low levels of performance-related anxiety (Component D). Additionally, the child who perceives that he or she is competent in a particular athletic activity

will actively pursue athletic success, thus exhibiting high levels of intrinsic or competence motivation (Component J) in practice and game situations. The child who has developed a low level of perceived competence will tend to avoid athletic achievement situations, will exhibit high levels of anxiety in relation to performance and will not be intrinsically motivated to pursue athletic success.

As in Harter's (1981) model, the central concepts which are influential in the development and maintenence of achievement orientations in athletic situations are the child's perceptions of control and competence. However, this model extends Harter's formulation by providing more specific information concerning the link between adult evaluation and children's cognitions, thereby detailing the process through which coaches can facilitate the psychosocial growth of their young athletes.

While this model was developed for the specific purpose of delineating the causal relationships between coaches' expectations, coaching behaviors, and the development of players' perceptions of control and competence, it must also be noted that it is not intended to explain all the variation in the behaviors of coaches and athletes in competitive athletic situations. For example, coaching behavior is not solely determined by coaches' expectations concerning players' ability. Many other cognitions and attitudes characteristic of an individual coach will influence his or her coaching behavior. Similarly, advancement of this model does not suggest that coaching behaviors account for all the variation in players' perceptions of

control and competence. Certainly other social and cognitive factors, such as home and family environment, school, peers and teammates, past experiences, and chronological and mental age must also be recognized as contributory factors in determining the psychosocial growth of each player.

Although this model is not intended, then, to explain all behavioral variation there are theoretical and empirical justifications for assuming that coaches' expectations and behaviors account for a substantial portion of the variance in these measures of players' psychosocial growth, especially as measured through changes in such response over the course of a playing season. Therefore, this model is offered as a theoretical framework for guiding future research concerning the effectiveness of coaches in facilitating the psychosocial growth of their players.

Overview of the Present Study

The proposed model was used in the present study both to determine the experimental procedures and to formulate the investigative hypotheses. Although it would have been most desirable to test the validity of all aspects of this model, the required design and procedures for such an extensive investigation would have been beyond the scope of this study. Therefore, only two of the implied relationships were investigated. First, the predicted link between coaches' perceptions or expectations concerning athletes' ability and their subsequent behavior towards individual athletes was assessed. The model assumes that significant differences will be found in the quantity and quality of the coaching behaviors directed towards high as compared to low expectancy athletes. Specifically, it was predicted that coaches would interact with high expectancy players significantly more often than low expectancy athletes and that the quality of these interactions (i.e., the contingency of feedback, as well as its evaluative and attributional content) would also reflect expectancy effects.

Secondly, the psychosocial responses of young athletes (e.g., perceptions of competence and control) were examined as a function of both the athletes' actual performance success/failure (i.e., performance product) as well as the coaching behaviors exhibited in response to that success/failure. Specific statistical analyses were

employed to determine whether certain coaching behaviors could be identified as those which correlate most highly with measures of players' perceived control and competence. Based on research results from the developmental and social psychological literature, it was predicted that the most influential coaching behaviors would be those which can be defined along the dimensions of reinforcement contingency, and evaluative and attributional feedback.

CHAPTER II

METHOD

Methodological Overview

To assess the relationship between coaches' expectations, coaches' behaviors, players' performance success and players' subsequent psychosocial growth, a field-based process-product research design was utilized. Coaches and players from five interscholastic junior high softball teams participated as subjects in this study, and data collection was conducted throughout the entire competitive season.

The selection of female softball players as subjects for this study was based on two criteria. First, the pioneering study in coaching effectiveness which was conducted by Smith, Smoll and their colleagues (1978) used male Little League baseball players. Although the design of this study differed considerably from the Smith et al. (1978) investigation, the use of their behavioral observation instrument and the employment of several of their procedures made it logistically convenient to work with young athletes of a similar age group and from a comparable type of sport. Secondly, the deliberate selection of females for this study, as opposed to the young males used by Smith et al. (1978) was based on research from the developmental and social psychological literature. Such research indicates that females may be more susceptible to external feedback (from a significant adult figure) especially in the performance of a perceived sex-role inappropriate task and/or when they are uncertain about their own ability and the demands of the task (see Lenney, 1977). Because

many girls first begin competitive athletic participation during their junior high years, it was also determined that athletes participating on interscholastic middle school or junior high teams would be most appropriate subjects for this investigation.

A variety of instruments was used to assess the relationships predicted in the model. Process measures included the assessment of coaching behaviors through observation of practice and game situations. Product measures consisted of a battery of paper-and-pencil tests to measure players' perceptions of control and competence, as well as their expectancies concerning future athletic success. The test battery was given to all players prior to and at the end of the season for the purpose of calculating changes in players' psychosocial responses over the competitive season. Coaches' perceptions concerning players' ability were measured using an expectation rating scale.

Based on the proposed model, it was assumed that the degree of performance success or failure attained by athletes over the season would be highly correlated with their coach's behavior towards them and that this relative success/failure rate would also influence their perceptions of competence and control. Therefore, data collection procedures also involved the assessment of actual softball competence. Although performance scores (i.e., batting and fielding averages) were not available, an "averge ability" rating for each player was obtained through players' evaluation of all teammates, which represented the relative (standardized to the team) degree of attained performance success or failure as assessed across all skills. This ability rating

was used in an attempt to statistically control for the contribution which actual competence provides to the variation in perceived competence, so that the contribution of coaching behaviors to players' perceptions of competence and control could be more accurately estimated. The particular purposes of this study, then, were (1) to assess the strength of expectancy effects on coaches' behaviors and (2) to determine if certain coaching behaviors would be significantly associated with changes in players' psychosocial responses over the season.

Subjects

Female athletes and their coaches from five ninth grade interscholastic softball teams served as the available pool of subjects for this study (N=101 athletes). Participatory status was voluntary and based on athletes' softball skill as determined through a series of try-out sessions just prior to the season.

Permission for the participation of both coaches and athletes in this study was first requested from the coaches themselves and their immediate administrative supervisors (e.g., athletic directors and building principals). Contact with each of these athletic personnel was first initiated by phone and then followed up with a letter (see Appendix A) which explained the general purpose of the study (i.e., to investigate the achievement behaviors of females in competitive athletic situations), which guaranteed the anonymity of all participants and concluded with a request for their voluntary participation. Administrative personnel and coaches at all five of the schools who were initially contacted agreed to participate.

After team members for each of these teams had been selected, a letter (Appendix B), specifying the voluntary nature of the study was sent to the parent(s) or guardian of each of the players explaining that a study designed to investigate the achievement behaviors of female athletes was to be conducted. Each parent or guardian was then asked to grant permission for his/her daughter to participate. At one

of the first team practices of the season, the players, after being informed of the purpose of the study and of their rights as human subjects, were asked to sign a consent form. Of the 101 athletes and their parents who were asked to participate, only one parent declined permission for his daughter's participation, and she was then eliminated from the study.

Over the course of the competitive season, 14 of the original 100 available athletes discontinued participation from their respective school's team and were therefore dropped from the study. In addition, 8 of the total group of available athletes were not included because they had not been in attendance for either the pre- or post- season psychometric assessments. Finally, six athletes were not included in the data analyses because they had missed more than two of the seven observation sessions (four practices and three games). These reductions resulted in a total sample of 72 athletes. Table 3 presents a summary breakdown by school of the participating athletes.

This sample of 72 athletes ranged in age from 12 to 15 years with a mean of 13.9 (SD=.90). Thirteen of the players (18%) were seventh graders, twenty of them (28%) were eighth graders, and the remaining 39 (54%) were in ninth grade. The greatest majority of the team members (n=49, 68%) had not played on their school softball team prior to the present season, while 22 of them (30%) were in their second season, and only 1 of the 72 athletes had played for a total of 3 years. In general, these athletes had participated on other non-school softball teams (Years experience M=2.2, SD=2.2), although nearly 1/3 (n=22) of

TABLE 3. Breakdown by School of Project Participants

	SCHOOL					
	1	2	3[a]	4	5	TOTAL
Athletes who began the season	21	18	18	19	24	100
Athletes who discontinued participation in their school's softball program	2	0	3	0	9	14
Athletes with no pre-and/ or post-season psychometric assessments	1	1	0	4	2	8
Athletes who missed more than two observation sessions	0	0	1	3	2	6
Total number of athletes in the final study sample	18	17	14	12	11	72

[a]One athlete from this team was not included in the pool of available athletes in compliance with parental request

them indicated they had not played on another competitive softball team (school or non-school).

Four of the five coaches of these interscholastic teams were certified and school-employed teachers. The fifth coach is presently working on a teaching certification degree. All of them had coached their school softball team at least two years prior to the present season, and all of them had coached at least one other interscholastic sport team. Three of the softball coaches were female, and two were male.

Instrumentation

A variety of instruments was used to assess the process and product variables in this study. Process variables were assessed by means of a behavioral observation scale while product measures included three psychosocial assessment tests. In addition, information concerning relevant background characteristics of coaches and players was collected through the use of questionnaires and rating scales.

Process Assessments

Coaching Behavior Assessment System. The observational system used to record and classify coaches' behaviors was the Coaching Behavior Assessment System (CBAS). This instrument was developed over a period of years by Smith et. al (1977) who designed the system on the basis of principles adapted from the social learning literature and verified through extensive observation of coaching behaviors during practices and games. This process resulted in the identification of 12 categories or behavioral descriptions of various coaching behaviors. Subsequent use of the CBAS in a wide variety of sport situations demonstrated that these 12 categories were comprehensive enough to account for the vast majority of exhibited coaching behaviors.

The 12 categories included in the CBAS actually reflect two major classes of coaching behavior. Reactive behaviors are those which are emitted by the coach in reaction to or as a response to player actions

or performances, while spontaneous behaviors are coach-initiated and are not in response to immediately preceding player actions or performance. The 12 CBAS categories can be used to measure the frequency of the following types of coaching behaviors.

CLASS I. REACTIVE BEHAVIORS

A. Coach's response to desirable player performance

1. Positive Reinforcement or reward (R). Reinforcement may be verbal or nonverbal.
2. Nonreinforcement (NR). NR represents the coach's failure to reinforce a positive behavior.

B. Coach's response to player mistakes

3. Mistake-contingent encouragement (EM). Encouragement of a player by the coach.

4. Mistake-contingent technical instruction (TIM). Telling or instructing the player who has made the mistake how to improve performance.

5. Punishment (P). A negative response by the coach following an undesirable behavior which may be either verbal or nonverbal.

6. Punitive technical instruction (TIM-P). A response by the coach in which technical instruction is given in a punitive manner.

7. Ignoring mistakes (IM). A lack of any kind of response by the coach.

C. Coach's response to player misbehaviors

8. Keeping control (KC). Response that are designed to maintain order.

CLASS II. SPONTANEOUS BEHAVIORS

A. Coach's behaviors which are game-related.

9. General technical instruction (TIG). A coaching communication that provides the player with instruction relating to skill or strategy.

10. General encouragement (EG). Encouragement that does not immediately follow a mistake.

11. Organization (O). Behavior directed at adminstrative organization.

B. Coach's behaviors which are game-irrelevant

12. General communication (GC). Interactions with players that are unrelated to game situations or team activities.

Smith et al. (1977) report that several studies have been conducted both to assess the reliability of the CBAS, as well as to evaluate the effectiveness of the Observer Training Program which was developed for training raters to use the system. These reliability studies were performed using both videotaped and actual game situations and correlated trained observers' ratings with each other and with criterion standards. Reliability coefficients in the .80 to .90 range were consistently obtained, demonstrating that the CBAS can be quite easily learned and used with reliability and accuracy in coding the behaviors of baseball coaches.

Additional Asessment Components. In addition to the basic CBAS items, other components were added to the observational instrument for the purposes of this study. These components were selected on the basis of the review of related literature, and it was assumed that these components would provide further information relating to coaching effectiveness especially as it facilitates the psychosocial development of individual players. Thus, in addition to categorizing coaches'

behaviors toward individual athletes according to type (i.e., appropriate CBAS category), each behavior was also classified according to the initiator (coach or athlete) of the particular interaction. The rationale for using this categorical assessment was based on Cooper's (1979) review of the literature concerning expectancy effects. In this review, he concluded that consistent expectancy effects have been demonstrated in relation to frequency of teacher-student interactions, with high expectancy students initiating significantly more such interactions than their low expectancy classmates. However, as indicated in the previous review of the literature, there is considerable controversy concerning the direction of expectancy effects in relation to frequencies of teacher-initiated interactions. Therefore, this issue was examined in the present study.

An initiation by the player was coded when the trained observer judged that the individual player verbally initiated (through direct questioning or comment) a subsequent coach-athlete interaction. This most often occurred when the individual athlete specifically (verbally) requested the coaches' responding behavior (e.g., "Coach, what did I do wrong?"; "Should I play closer to the bag?") or in such non-performance related contexts as a general communication or an organizational concern.

In addition to adding an initiator component to the basic CBAS, a second component which assessed the specific attributional content of the coach's feedback following players' performance was also included. The rationale for including this component was based upon research from

the social psychology literature which indicates that the attributions which teachers use in ascribing causes for students' performance may influence the students' perceptions of performance control (e.g., Dweck, 1975; Dweck et al., 1978).

Although such attributional or evaluative statements made by coaches in athletic situations have not been empirically investigated, recent writers in the sport psychological literature (Singer & Gerson 1980; Martens, Note 1; Gould Note 2) have all emphasized the contribution that coaches' feedback and behavior can play in encouraging players to perceive personal control over their own sport performance. It seems logical, therefore, that coaches' attributional feedback should be included in a coding system designed to assess the effect of coaches' behavior on players' psychosocial development.

Because little research has been conducted to examine attributional feedback in an instructional setting, no existing coding schemes are available. Dweck and her associates (1978), who conducted one of the few reported studies to investigate this issue in the academic classroom, utilized a coding scale which was simply based on Weiner's (1974) four-factor attributional model (i.e., effort, ability, luck, and task difficulty). However, the use of this four-category system may not be appropriate in athletic situations as recent research (Bukowski & Moore, 1980; Roberts & Pascuzzi, 1979) has shown that individuals use different attributions to explain success and failure in athletic situations than they do in other achievement task situations.

The particular attributions which seem to be most valid in sport skill settings have been determined through the use of open-ended responses. Roberts and Pascuzzi (1979), for example, demonstrated that open-ended attributional responses by 346 college students could be categorized into 11 categories. These categories included the four groupings identified by Weiner which are comprised of ability, effort, luck and task difficulty (defined for athletic situations as the competence or performance of the opponent). In addition, however, Roberts and Pascuzzi (1979) found such categories as teamwork, psychological factors (motivation, arousal, anxiety), practice, unstable ability (played well or poorly today), coaching, and officials to be salient factors in the ascription of athletic performance. These researchers also indicated that the four traditional causal attributions advocated by Weiner only accounted for 45% of all attributions made. However, 100% of the responses obtained from subjects in this study could be classified along the two dimensions (stability and control) proposed by Weiner (1974) if the attributions were carefully diagnosed in relation to the athletic situation (see Figure 3). Therefore, for the present study, coaches' attributional statements to individual players following successful or unsucessful performance were classified according to the 11 categories indicated by Roberts and Pascuzzi. For purposes of data analyses, however, the attributions were categorized as indicated in Figure 3.

It should be noted that the categorization of attributional coaching behaviors was considerably more high-inference (i.e., required

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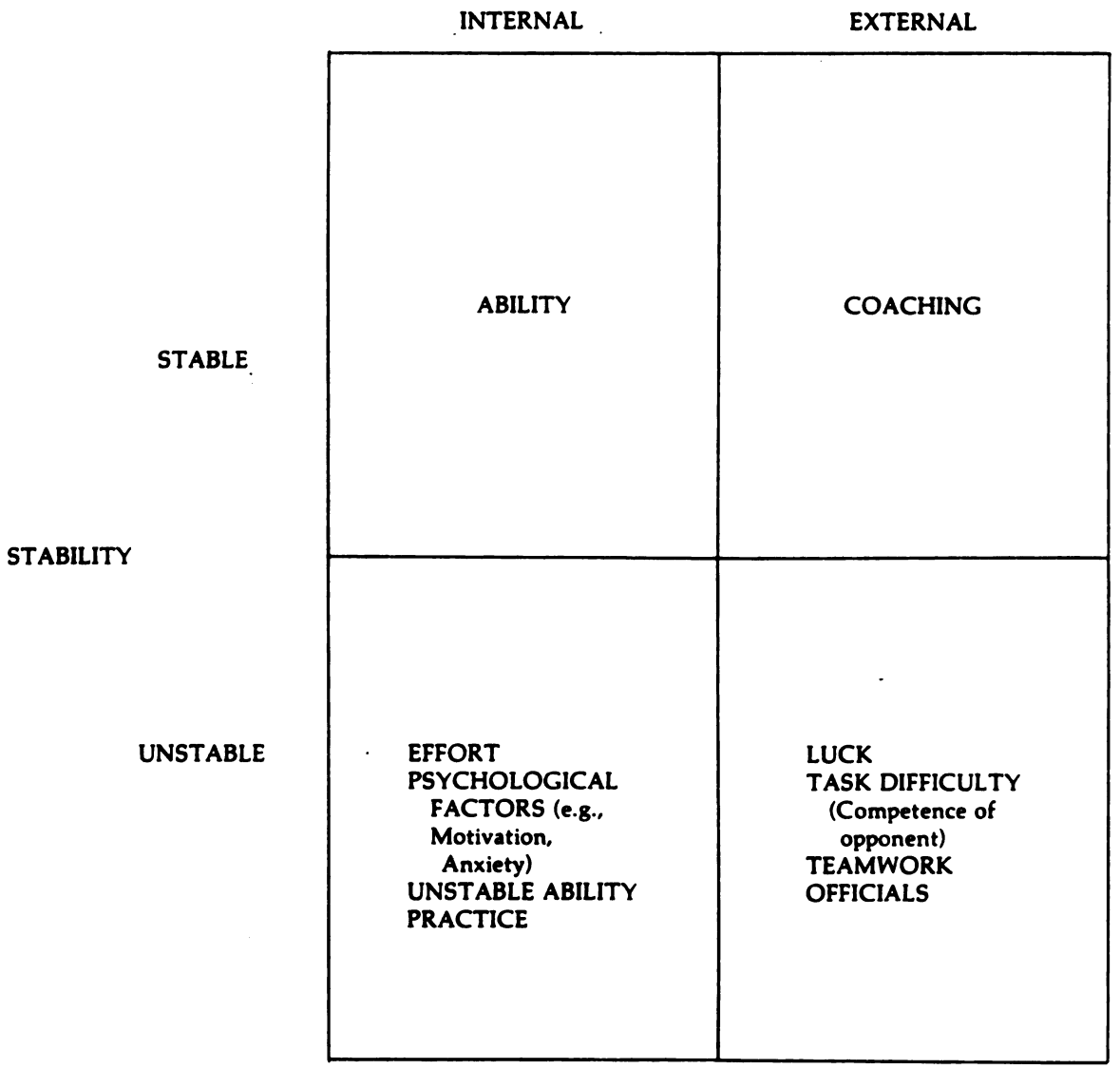

Figure 3. Dimensional categorization of sport-related attributions (Roberts & Pascuzzi, 1979).

more judgment to code reliably) in nature than the other CBAS components which were more objectively scored. Raters, however, were trained and instructed to code all coaching statements made toward individual players which were oriented toward ascription or explanation for player performance. During the training of raters, as well as during pilot testing sessions, example athletic statements for each category were identified. Each coder was then trained to recognize and categorize such statements.

Finally, two behavioral categories were added to the basic CBAS instrument. A new reinforcement category was used to record coaching behaviors (in response to a player's desirable performance) which contained a positive reinforcement component along with a technically instructive statement (e.g., "Good swing, Sally, you kept your elbow up that time"). This response category was included in the present study because observation of the coaches used in the pilot testing suggested that there was a real distinction between reinforcement which was only an evaluative response to player performance and reinforcement which was positively evaluative but also included some technical instruction concerning the player's performance. The second category added to the CBAS was one labeled as "Uncodable" and included those coaching behaviors which were not codable due to situational factors (e.g., coach-pitcher conversations on the mound, coach-batter conferences).

Product Assessments

Three written questionnaires were utilized to assess the psychosocial response which were of interest in this study. These three instruments constituted a battery of psychometric tests which were administered prior to and at the end of the season (see Appendix C for entire test battery).

Perceived Competence Scale for Children. This psychosocial assessment instrument was developed by Harter (Note 15) and consists of four sub-scales, three of which measure the degree to which the child feels competent (i.e., believes that he/she is capable of performing successfully) in a particular achievement domain. The three domains include: (a) cognitive competence which is oriented to academic achievement; (b) social competence which assesses social skill; and (c) physical competence which measures perceived ability in sport and games. The fourth sub-scale assesses the child's general feelings of worth or self-esteem, independent of any particular domain. Thus, a child may not feel competent in a certain domain but may still have positive feelings about him or herself.

The format of each of these sub-scales was designed for the purpose of minimizing social desirability effects. Therefore, a "structured alternative format" was used in which the alternatives are both perceived as socially legitimate. The child is instructed to select the statement which is most like him or her. Then, the child indicates whether that chosen statement is really true for him or her or only sort of true.

Each of the four sub-scales contains seven items, and each item is scored from 1 (low competence) to 4 (high competence). The perceived competence score for each child in each domain is computed by adding up the seven individual items and dividing by seven, thus obtaining an average competence score across all seven items comprising that subscale. All sub-scales are computed separately, so that each athlete will have four perceived competence scores - one for each of the four domains, cognitive, social, physical, and general.

The Perceived Competence Scale for Children was validated by Harter using several large samples of children from four states in grades three to nine. Item scores from all samples were subjected to factor analytic techniques, and the internal consistency of each sub-scale was assessed using the Kuder-Richardson formula. These reliability estimates ranged from .73 to .83.

Multidimensional Measure of Children's Perceptions of Control. This self-report instrument was designed to assess the degree of responsibility children feel for both successes and failures in each of Harter's (Note 15) four competence domains (Connell, Note 16). This psychometic measure actually consists of four subscales, one for each of the achievement domains, and each subscale assesses the degree to which the child believes that each particular source (Self, Powerful Others, Unknown) is responsible for his or her performance outcome. These three sources of control were identified, through extensive validation procedures, as those which explain the greatest amount of variation in children's perceptions of who or what is responsible for

their achievement task success and failure. Obtained scores on each of these subscales represent the strength of the child's belief in each of these three sources of control: Self or internal (I am responsible), Powerful Others (Someone else is responsible), and Unknown (I don't know what is responsible). Additionally, children's perceptions of the degree to which each source is responsible for their performance are measured independently (i.e., the sources of perceived control are not measured on a single, uni-dimensional scale). The format of this assessment device is very similar to that used in the Perceived Competence Scale in that social desirability effects are minimized. The total instrument consists of 96 items which includes measures of control in all four domain-specific achievement areas.

The complete set of scales was administered to 521 children in grades three through nine for the purpose of assessing the instruments' psychometric properties. Median subscale reliability estimates for each of these grade levels were obtained, and acceptable estimates for all possible subscales were demonstrated (Connell, Note 16).

For this particular study, only the subscales which measure children's perceptions of control in the physical domain were used. To supplement this subset of 12 items, an additional 12 items were written which reflected the same scale factors represented by the original scale but pertained specifically to success/failure in the performance of softball skills. These additional items were appended to the original scale and constitute the last 12 items in the Perceptions of Control instrument (see Appendix C for the complete instrument).

Connell (Note 16) indicates that such additional items can increase the ecological validity of the measure but that the newly-created items must accurately represent the same dimension as the original items and that reliability estimates for these new subscales should be obtained. These reliability assessments were conducted and the results are presented in Chapter 3 of this paper.

Generalized Expectancy of Sport Sucess Scale. The coaching effectiveness model, as well as Harter's model for the development of achievement motivation, suggest that high levels of perceived competence are also reflected in the child's expectancy of future success in a particular achievement activity. Therefore, an instrument specifically designed to measure the strength of an individual's generalized expectation for athletic success was also used in this study (Coulson & Cobb, Note 17). This instrument utilizes the semantic differential scaling technique and consists of 20 bipolar adjective items, each of which is rated on a five-point scale (see Appendix C for a sample test scale).

The reliability and validity of this scale were assessed using three independent samples of college students (N=593) (Coulson & Cobb, Note 17). Reliability procedures indicated high levels of reliability across time (test-retest, r=.90) as well as good internal consistency (r=.95). Construct validity procedures indicated that those individuals who had been involved in an organized competitive athletic program (high school varsity, junior varsity, or club team) obtained significantly higher scores in terms of general success expectancy than

did those individuals who had little or no past competitive experience. In addition, collegiate physical education majors exhibited significantly higher scores on this scale than did non-physical education majors.

Although this scale has been validated for a population considerably older than the athletes to be used in this study, it is the only reported instrument designed specifically to assess athletes' perceptions concerning their competence in competitive athletic situations. Moreover, the wording of the items seemed appropriate for a wide age range, and pilot testing revealed that young athletes of junior high age could easily understand and respond to all items. This scale, therefore, was used in this investigation as a sports-specific expectancy assessment device.

Presage Variables

Presage variables are defined as those background characteristics which teachers and students bring into the learning situation and which may influence the process-product relationship. By identifying and measuring those relevant presage variables, it may be possible to remove some of the superfluous variation attributable to unknown factors and thus to obtain a better statistical estimate of the relationship between coaching behaviors and student growth. In the present study, two presage variables, coaches' expectations concerning players' ability and players' actual ability, were identified and assessed.

Coaches expectation scale. Research and theory have already been reviewed to show that much of the variation in instructional behaviors can be attributed to the expectations which teachers and coaches form concerning the ability of their students/athletes. Therefore, coaches' perceptions of their players' athletic potential was assessed by administering a questionnaire to each coach at the beginning of the season. Immediately after team tryouts, each coach was given this questionnaire which required her or him to rank all players on the team from highest to lowest according to their potential softball ability. The following instructions were given to each of the coaches:

> "Please rank-order all players on your team according to your expectations concerning their potential softball ability."

Because information concerning the stability and accuracy of coaches' perceptions of players' ability was desired, this expectation ranking scale was also given to coaches at the end of their competitive season, and estimates of the reliability of such rankings were then statistically obtained.

Ability assessments. Although Harter's scale was utilized to measure each player's perceived level of competence, additional information was also collected to provide an estimate of player's actual competence and was employed in data analyses to control for the assumed correlation between players' ability and observed coaching behaviors, as well as to measure the influence which actual competence contributes to the player's level of perceived competence. Because valid and reliable performance statistics (e.g., batting and fielding

averages) were not available for all players who were included in the sample, individual athletes' playing ability was assessed through evaluation by their teammates. At the end of the season, each player was asked to rank all of her teammates (herself excluded) from the highest to lowest according to softball skill. On the basis of all of these rankings, an average "ability ranking" was calculated for each player on each of the four teams and was then used as a rough estimate of the players' relative skill level.

Demographic information. Each of the coaches and players involved in this study was also asked to complete a questionnaire designed to provide information concerning relevant background characteristics. Coaches were asked for information concerning the extent of their coaching experience as well as their competitive playing experience. In addition, such demographic information as age, educational and occupational status was collected. Similarly, players were asked to detail their previous softball experience as well as the extent of the related competitive experience they had (i.e., other interscholastic sport participation, community leagues, instructional leagues).

Research Procedures

Training of Coders

Although all of the observational data was collected by only two coders, a total of five individuals were trained so that more extensive reliability checks could be made and to serve as an available "pool" of substitute observers. Each of these individuals was trained through the use of the CBAS Audio Visual Training Module developed by Smith, Smoll, and Hunt (1976). This training module employs programmed videotaped instruction, written tests, and a videotaped proficiency test to develop and assess each coder's competence in identifying and recording coaching behaviors. Training sessions were conducted over a one-month period, and each coder attained at least a 95% accuracy score on both the written and proficiency tests. In addition to this training, coders were also required to demonstrate scoring competence in actual field situations (i.e., pilot testing sessions). Assessment of inter-rater reliablity was conducted during these field training sessions and each rater was required to attain an average reliability coefficient (as based on the percentage of behaviors for each CBAS category) of .80 or higher which indicated high agreement with an expert coder. All of the trained raters reached this criterion. In addition, periodic assessments of inter-rater reliability were conducted during the course of the study. These assessments required two raters to code a game/practice session simultaneously but

independently. Category percentages were then compared through correlational analyses to determine the degree of agreement between trained raters. Obtained correlation coefficients ranged from .78 to .92 over all assessment sessions and all CBAS categories.

Data Collection Procedures

Extensive procedures were followed to collect the necessary data for this study. These procedures included the collection of data prior to, during, and after the completion of the competitive season.

Pre-season. Following the coaches' final selection of team members, an explanation of the experimental procedures was given to all players, and consent forms were obtained from each of the coaches and athletes. In addition, several assessment measures were also administered. Specifically, each coach was asked to rank order all his or her players from highest to lowest in terms of expected softball ability, and a battery of pencil-and-paper tests were administered to all players for the purpose of assessing their baseline or entry level scores on a variety of psychosocial measures, including perceptions of control and competence and expectancies for athletic success. Finally, both coaches and players were given a questionnaire to complete which provided demographic and other background information relevant to this study.

During the season. Process variables (i.e., coaching behaviors) were recorded at periodic intervals during the course of the entire season. Each team was observed a total of seven times - four practice

and three game situations. Such observations occurred for each coach and team at the rate of approximately one day per week (although the particular day for each team was randomized over the season). Because the purpose of this study was to identify coaching behaviors towards individual players, only those coaching behaviors which were actually directed to individual players were recorded.

In order to equalize the contextual situation across all recording sessions, an observational limitation, adapted from Cooper and Good (in press), was imposed. This observational principle limited behavioral coding to only those situations in which all athletes had an equal chance for interactions with the coach. That is, the only coach-athlete interactions recorded were those which occurred when the entire team was working together or in small group workouts where the coach could move freely between groups. Therefore, coach-athlete interactions which occurred during practice situations in which the coach worked exclusively with a small group of athletes (i.e., working with just the pitchers) were not utilized in data collection. However, it should be noted that this situation seldom occurred during the course of data collection. Each of the five coaches ran a very "coach-directed" practice and most often worked with all athletes simultaneously.

The observer began data collection when the coach "officially" began practice or, similarly, when the game was officially begun. Although the observer recorded coach-athlete interactions throughout the entire practice or game session (except when the coach worked

exclusively with a small group of athletes), a minimum of 60 minutes was set for each observational session. Therefore, if a practice session lasted less than one hour, it was not counted as an observation session.

Individual coach-athlete interactions were recorded on data sheets by using players' numbers for game observations. Practice interactions were recorded on data sheets which contained pictures of individual athletes. Therefore, each of the coders had no difficulty identifying or differentiating between individual players.

While recording coaches' behaviors, the observer stationed him or herself in a position which allowed the most accurate and complete observation of coach-athlete interactions while also trying to maintain an unobstrusive role. This limitation was deemed necessary in order to ensure that "reactivity" effects did not bias the collected data. Coaches and players were informed at the beginning of the season that the purpose of the study was to collect some descriptive data concerning females' achievement motivation in competitive athletics. Therefore, coaches and players were not aware of the specific nature of the behavioral observation. However, all coaches were interviewed at the end of the season, and at that point were still unaware of the exact type of information collected. After being informed of the specific purpose of the study, they indicated that they did not think that the observers' presence, in any way, affected the players' behavior.

Post-season. After the playing season had been completed, the measures used to assess coaches' expectations and players psychosocial status were again adminstered. That is, coaches were asked at the end of the season for their perceptions of the athletic and softball ability of each of their players, and all players were administered the same battery of tests which assessed the psychosocial variables of research interest (e.g., perceptions of competence, control and expectancies of athletic success). A complete summary of the data collection procedures is listed in Table 4.

TABLE 4. Summary of Assessment Procedures

Pre-Season Procedures

1. Consent Form (parents, coaches, athletes)
2. Coaches' Expectation Scale
3. Psychometric Test Battery
    a. Perceived Competence Scale
    b. Multidimensional Measure of Children's Perceptions of Control
    c. Generalized Expectancy of Sport Success Scale
4. Demographic Information Questionnaire

During Season Procedures

Observation and Categorization of Exhibited Coaching Behaviors using CBAS and attributional coding scale

Post-Season Procedures

1. Coaches' Expectation Scale
2. Psychometric Test Battery
    a. Perceived Competence Scale
    b. Multidimensional Measure of Children's Perceptions of Control
    c. Generalized Expectancy of Sport Success Scale
3. Players' Ability Rankings

CHAPTER III

RESULTS

This study was designed to statistically address two issues in relation to coaching effectiveness. First, patterns of coach-athlete interactions were examined as a function of coaches' expectations concerning athletes' skill level. That is, are the behaviors exhibited by coaches to individual players influenced by coaches' perceptions of players' softball ability? Secondly, the influence of coaching behaviors on players' perceptions of competence and control was also examined. Are there certain coaching behaviors which are most conducive to players' development of competence and performance control perceptions? The results obtained from of each of these statistical analyses will be discussed separately.

Statistical Analyses: Expectancy Effects

Over the course of the 1982 competitive season, coach-athlete interactions were recorded and categorized according to the Coaching Behavior Assessment System (CBAS). These observation procedures resulted in the collection of a total of 6478 individual coach-athlete interactions, as summed across all coaches and observation sessions. Of this total, 3662 behaviors were recorded during team practice sessions (four practices for each team) while 2816 of them were coded

during games (three games per team). Tables 5 and 6 present a summary of the data obtained for each CBAS category and for each of the five coaches in practice and game situations.

The total amount of observed practice time for each team ranged from 325 total minutes (summed across four sessions) to 350 minutes, with a mean of 338 minutes. All games were at least five innings long, and although the amount of observed time varied considerably from game to game, the total number of minutes of game time under observation for each team ranged from 294 minutes (as summed across three games) to 387 minutes with an average of 358.20 minutes.

Because the individual player was to be used as the unit of analysis, the observed coaching behaviors in both game and practice situations were recorded and coded as the frequency of each type of behavior which was received by a player. Summary statistics, used to describe the distribution of coaching behaviors towards individual players, revealed that the averge number of coaching communications received by an individual player across all four observed practice sessions was 50.86 (SD=20.25). However, the range of this value indicates that there was considerable variation among individuals in relation to the number of interactions with their coach. That is, some players received as few as 12 coaching communications over four practices while others received as many as 114 communications. In game situations, the average number of coaching behaviors directed towards individual players was 39.11 (SD=36.01). Again the range (6 to 199)

TABLE 5. Summary by School of Coaches' Practice Behaviors

	COACH									
	1		2		3		4		5	
	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Reinforcement with Technical Instruction	5	.6	7	1.1	18	1.8	3	.4	2	.4
Reinforcement	89	11.3	266	42.7	223	22.7	295	38.5	125	24.9
Nonreinforcement	133	16.9	13	2.1	73	7.4	29	3.8	47	9.4
Mistake-contingent Technical Instruction	213	27.1	129	20.7	221	22.5	107	14.0	32	6.4
Mistake-contingent Encouragement	14	1.8	22	3.5	45	4.6	48	6.3	21	4.2
Ignoring Mistake	83	10.6	21	3.4	77	7.8	44	5.7	49	9.8
Punishment	30	3.8	5	.8	10	1.0	15	2.0	43	8.6
Mistake-contingent Technical Instruction with Punishment	44	5.6	2	.3	13	1.3	20	2.6	2	.4
Keeping Control	11	1.4	0	0	6	.6	16	2.1	4	.8
Organization	44	5.6	18	2.9	55	5.6	24	3.1	52	10.4
General Communication	9	1.1	14	2.2	27	2.7	58	7.6	35	7.0
General Technical Instruction	94	11.9	93	14.9	130	13.2	49	6.4	48	9.6
General Encouragement	14	1.8	28	4.5	74	7.5	57	7.4	38	7.6
Uncodable	4	.5	1	.2	15	1.5	0	0	4	.8
Total Practice Behaviors	787		623		984		766		502	

Note: Percentage scores were calculated by dividing the number of behaviors in each category by the total number of exhibited behaviors.

TABLE 6. Summary by School of Coaches' Game Behaviors

	COACH									
	1		2		3		4		5	
	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Reinforcement with Technical Instruction	2	.4	3	.4	0	0	0	0	1	.3
Reinforcement	83	15.0	213	30.3	114	28.5	274	32.7	41	12.7
Nonreinforcement	32	5.8	21	3.0	11	2.8	14	1.7	35	10.9
Mistake-contingent Technical Instruction	29	5.2	37	5.3	16	4.0	37	4.4	26	8.1
Mistake-contingent Encouragement	22	4.0	22	3.1	18	4.5	67	8.0	5	1.6
Ignoring Mistakes	27	4.9	30	4.3	17	4.2	40	4.8	22	6.8
Punishment	1	.2	6	.8	2	.5	8	1.0	15	4.7
Mistake-contingent Technical Instruction with Punishment	15	2.7	6	.8	1	.2	4	.5	14	4.3
Keeping Control	8	1.4	1	.1	1	.2	9	1.1	0	0
Organization	9	1.6	6	.8	4	1.0	11	1.3	6	1.9
General Communication	8	1.4	4	.6	8	2.0	14	1.7	3	.9
General Technical Instruction	211	38.2	211	30.0	112	28.0	97	11.6	84	26.1
General Encouragement	94	17.0	137	19.5	88	22.0	253	30.2	65	20.2
Uncodable	11	2.0	6	.8	8	2.0	10	1.2	5	1.6
Total Game Behaviors	552		704		400		838		322	

Note: Percentage scores were calculated by dividing the number of behaviors in each category by the total number of exhibited behaviors.

indicates considerable variation among players in the absolute amount of coaching communications received.

Data Preparation

Computational Indices

Although data collected with the CBAS instrument has been and can be utilized in a number of ways, Smoll et al. (1978) suggest that the most useful and reliable behavioral index has been shown to be the percentage of behaviors across all observations which fall within each of the coding categories. However, percentage scores may not be valid measures to use for the type of analyses to be employed in the present study because such percentage scores for individual athletes will be highly influenced by the absolute amount of desirable/undesirable performances which that athlete exhibits. That is, because high, as compared to low, ability players exhibit relatively higher proportions of successful as compared to unsuccessful performances, their percentage scores will reflect a disproportionate amount of reinforcement opportunities. Because the purpose of this study was to examine whether individual athletes receive different coaching behaviors as a function of coaches' expectations, percentages were judged to be unreliable as a measure of coaches' biases because they may actually be reflecting only differences in absolute amounts of success/failure attained by players. Therefore, in addition to the calculation of 13 percentage scores (one for each of the CBAS categories), nine index scores were also computed for each athlete. These indices provided a measure of the relative frequency of the

coach's response to individual players following their successful/unsuccessful performance. The divisor for each index score was not the total number of behaviors but the total number of desirable performances or the total number of undesirable performances. These indices made it possible, then, to assess differential treatment by coaches of high and low expectancy athletes when these athletes were in similar situations (i.e., after success/failure). Of the nine calculated indices, three measured relative frequencies of the coaches' responses to a desirable performance and five indices measured frequencies of the coach's response to players' mistakes. The ninth index represented the relative frequency with which some type of technical instruction (e.g., reinforcement with technical instruction, mistake-contingent technical instruction, mistake-contingent technical instruction with punishment, or general technical instruction) was provided the individual athletes. The divisor for this index score was the total number of instances in which technical instruction could have been provided. This index score was specifically chosen for inclusion in the analyses because the developmental psychology literature suggests that perceptions of performance control may be influenced by the presence of clear, consistent and performance-contingent feedback. A computational summary of each of these indices is presented in Table 7.

Although percentage scores as well as indices were calculated for each player , the majority of the data analyses was conducted using the indices because they provide a more accurate and reliable measure of

TABLE 7. Computational Summary of Coaching Behavioral Indices

Descriptive Label	Behavioral Index	Computation
RTI	Reinforcement with Technical Instruction	RTI = RTI/RTI + R + NR
R	Reinforcement	R = R/RTI + R + NR
NR	Non-Reinforcement	NR = NR/RTI + R + NR
TIM	Mistake-Contingent Technical Instruction	TIM = TIM/TIM + EM + IM + P + TIMP
EM	Mistake-Contingent Encouragement	EM = EM/TIM + EM + IM + P + TIMP
IM	Ignoring Mistakes	IM = IM/TIM + EM + IM + P + TIMP
P	Punishment	P = P/TIM + EM + IM + P + TIMP
TIMP	Mistake-Contingent Technical Instruction with Punishment	TIMP = TIMP/TIM + EM + IM + P + TIMP
TIN	Technical Instruction Index	TIN = (RTI + TIM + TIMP + TIG)/(R + NR + EM + IM + P + RTI + TIM + TIMP + TIG + EG)

individual coach-athlete interactions for the purpose of this study. Tables 8 and 9 contain a descriptive summary of the behavioral indices of each coach in both practice and game situations.

Contextual Variables

Thirteen percentage and nine index scores for each athlete were calculated separately for practice and game situations. To test whether the observational data for games and practices could legitimately be combined, Hotellings T^2 analysis, using pairwise comparisons, was conducted to assess the similarity of the patterns of individual coach-athlete interactions across both types of situations. Results indicate that there was a significant difference between the coaching behaviors received by players in practice sessions and those recieved by players in game situations, $T^2 = 57.80$, $F(7,65) = 7.56$, $p < .0001$. Additionally, canonical correlation analyses, a multivariate statistical technique designed to assess relationships between complex behavioral data sets, revealed that no significant canonical variates could be computed for these two sets of data. Thus, while practice and game behaviors significantly differed, these differences did not follow any clear pattern. On the basis of these two statistical tests, it was concluded that coaches' behaviors towards individual athletes differs significantly from game to practice situations. Therefore, all of the analyses were conducted separately for games and practices.

Unit of Analysis

In their study of coaching effectiveness Smith et al. (1979) have examined the relationship between coaches' behavors and player

TABLE 8. Indices of Coaching Behaviors During Practice Sessions

COACHING BEHAVIORS	COACH 1	2	3	4	5
			REINFORCEMENT INDICES		
Reinforcement with Technical Instruction	2.20	2.45	5.73	.92	1.15
Reinforcement	39.21	93.01	71.02	90.21	71.84
Non-Reinforcement	58.59	4.54	23.25	8.87	27.01
			MISTAKE-CONTINGENT INDICES		
Technical Instruction	55.47	72.07	60.38	45.73	21.77
Encouragement	3.64	12.29	12.30	20.51	14.28
Ignoring Mistake	21.61	11.73	21.04	18.80	33.33
Punishment	7.81	2.79	2.73	6.41	29.25
Technical Instruction with Punishment	11.46	1.12	3.55	8.55	1.36
			TECHNICAL INSTRUCTION INDEX		
Technical Instruction Index	49.51	39.42	43.21	26.84	20.64

TABLE 9. Indices of Coaching Behaviors During Game Sessions

COACHING BEHAVIORS	COACH 1	2	3	4	5
			REINFORCEMENT INDICES		
Reinforcement with Technical Instruction	1.71	1.26	0	0	1.30
Reinforcement	70.94	89.87	91.20	95.14	53.25
Non-Reinforcement	27.35	8.86	8.80	4.86	45.45
			MISTAKE-CONTINGENT INDICES		
Technical Instruction	30.85	36.63	29.63	23.72	31.71
Encouragement	23.40	21.78	33.33	42.95	6.10
Ignoring Mistake	28.72	29.70	31.48	25.64	26.83
Punishment	1.06	5.94	3.70	5.13	18.29
Technical Instruction with Punishment	15.96	5.94	1.85	2.56	17.07
			TECHNICAL INSTRUCTION INDEX		
Technical Instruction Index	49.81	37.46	34.04	17.38	40.58

attitudes by treating the team as the unit of analyses. These researchers then coded all coaches' behaviors without reference to specific coach-athlete interactions. Coaching effectiveness was determined by calculating the relationship between observed coaching behaviors and the team's average score on psychosocial measures. However, this method of analyses ignores the importance of differences between individuals on the same team. To use the individual player as the analytic unit also entails statistical problems in that it wrongly assumes that players' responses are independent of the general setting in which they occur (Cronbach, 1976). Several researchers (Cooper & Good, in press; Martin & Veldman, Note 18) have suggested that a viable solution to this problem is to analyze this relationship in two ways - first by looking at between-group differences (class or team) and secondly by analyzing within-group (individual) differences. Although this approach appears to be an excellent statistical solution, it is not feasible in this study due to the lack of a sufficient number of groups (n=5).

Therefore, for the present study, the individual player was used as the unit of analysis, but, a statistical procedure was employed to control for the variance attibutable to differences between teams. That is, all of the behavioral data (i.e., percentage and index scores) were converted to standard scores which reflect the number of standard deviations that each player is from the team mean on each behavioral category. These standardized scores, then, allowed comparison of

individual players but also controlled for the influence of the team setting.

Results: Expectancy Effects

To assess the stability of coaches expectations over the course of the competitive season, Kendall's coefficient of concordance was used to compare coaches' ranking of their team members at pre-season with similar rankings given at post-season. The results of this correlational analysis indicated that coaches' expectancies did remain relatively consistent over the season, $W(71)=.85$, $p < .0001$.

In addition to assessing the stability of coaches' perceptions of players' ability over the season, the accuracy of these perceptions was also examined by correlating them with a measure of players' actual ability. Because no performance data (i.e., batting or fielding averages) were available, the skill level of all players was assessed through a teammate ranking system which was administered at the end of the season.[1] Correlation of players' rankings with coaches' rankings indicated moderately high agreement, although the association between coaches' post-season rankings and the players' assessments ($r=.87$, $p < .001$) was stronger than the correlation between coaches' pre-season rankings and the players' assessments ($r=.71$, $p < .001$). This finding

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[1]Although it would have been most appropriate to assess the consistency or stability of the rankings supplied by the players themselves, Kendall's coefficient of concordance could not be computed with this data because of the small number of cases relative to the number of judges (rankers) used.

suggests that coaches' perceptions of players' ability may have increased in accuracy as more information was made available to them. That is, coaches' pre-season rankings were probably not based on knowledge of players' past softball performance as most of the athletes (n=49) had not played the previous season. Therefore, coaches' initial perceptions were modified as actual information concerning players' performance was acquired.

Selection of Low and High Expectancy Players

To examine the influence of coaches' expectations on their behaviors towards individual athletes, the study design required that coaches' behavioral indices be compared for low and high expectancy athletes. Therefore, the results of the pre-season coaches' rankings were used to classify 40 of the 72 athletes as either high expectancy (n=20) or low expectancy (n=20) players. Because the total number of athletes on each team who participated in this study varied from team to team, the actual number of athletes designated as high and low on each team also varied. Approximately 1/4 of the athletes on each team were designated as high expectancy and 1/4 of them were classified as low expectancy players. Schools 1 and 2 had five high and five low expectancy athletes each. School 4 had four athletes in each expectancy group, and the remaining 2 schools had only three designated high and three designated low expectancy players.

This partitioning of players was repeated using the coaches' rankings which were obtained at the end of the season. Comparison of the pre-season groupings with the post-season groupings revealed that 13 of the 20 pre-season high expectancy athletes were similarly

designated as high at post-season. Of the 20 pre-season low expectancy athletes, ten of them were assigned the same low expectancy grouping at post-season. One pre-season high expectancy individual ended up as a low-expectancy athlete at post-season, and similarly one pre-season low expectancy individual finished up the season as a high expectancy designate.

Descriptive comparisons between these high and low expectancy athletes (both pre-and post-season groupings) revealed no differences between them in relation to the number of years of past experience either in competitive softball (Pre-season, $\underline{t}(38) = 1.04$, $\underline{p} < .31$; Post-season, $\underline{t}(38) = 1.37$, $\underline{p} < .18$), or in sport participation in general (Pre-season, $\underline{t}(38) = .66$, $\underline{p} < .51$; Post-season, $\underline{t}(38)=.74$, $\underline{p}<.46$). Similarly, no differences were found between the groups in practice attendance, but high expectancy athletes (both the pre-season and post-season groups) did play significantly more innings in the games which were under observation than did their low expectancy teammates (Pre-season, $\underline{t}(38)=4.82$, $\underline{p}<.0001$; Post-season, $\underline{t}(38)=7.60$, $\underline{p}<.001$). Finally, descriptive statistics indicated that high expectancy athletes were more often placed in infield positions while low expectancy players were predominantly outfielders. Table 10 shows the breakdown of the 40 expectancy group athletes (both pre-and post-season) by position played.

Although the results of these analyses do show that coaches' expectations remained relatively stable over the season, there was still some discrepancy between those players designated as high or low

TABLE 10: Positions Played by High and Low Expectancy Athletes

	PRE-SEASON GROUPINGS		POST-SEASON GROUPINGS	
	High Expectancy	Low Expectancy	High Expectancy	Low Expectancy
Pitcher/Catcher	6	2	8	2
Infield	10	3	11	4
Outfield	4	15	1	14

expectancy at pre-season and those so designated at post-season. Therefore, the statistical analyses used to examine expectancy effects were conducted twice - once using the pre-season groups and once using the post-season ranked groups.[2]

Specific comparisons between these high and low expectancy players included examination of expectancy effects on three types of criterion variables: (1) the number of individual coach-athlete interactions; (2) the type of coach-athlete interactions, and (3) the number and type of attributions made by coaches concerning players' performance.

Expectancy Effects on Number of Interactions

To analyze the differences between high and low expectancy athletes in relation to the number of interactions with their coach, four criterion scores were calculated for each athlete.

(1) the average number of practice interactions which were initiated by the coach (total number of coach-initiated behaviors in four practice session divided by the number of practices attended by the athlete)

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[2]The researcher recognizes that the use of data collected after the season for the purpose of predicting behavior which occurred during the season is somewhat unorthodox. However, the correlational analyses conducted to assess the stability and accuracy of coaches' expectations indicated that such perceptions or expectations were modified during the season as information concerning players' ability was acquired. Because no information was available to determine exactly when coaches' expectations were changed, the best alternative was to use post-season expectancy rankings as a measure of coaches' modified perceptions. However, it is recommended that additional research be conducted to determine when coaches' perceptions do change (i.e., after first few practices, after the first game, or at mid-season).

(2) the average number of practice interactions which were initiated by the player (total number of player-initiated behaviors divided by the number of attended practices)

(3) the average number of game interactions which were initiated by the coach (total number of coach-initiated interactions divided by the number of innings played).

(4) the average number of game interactions which were initiated by the player (total number of player-initiated behaviors divided by the number of innings played).

Because these criterion measures were inter-related, multivariate t tests were conducted to assess differences between high (n=20) and low (n=20) expectancy athletes in relation to these four measures. Although no expectancy effects were found using pre-season expectancy groupings, T^2=6.31, $F(4,35)$=1.45, p<.24, a significant multivariate effect was found for post-season groups, T^2=13.47, $F(4,35)$ = 3.10, p < .03, thus indicating that the vector of means did differ for high as compared to low expectancy athletes. As a follow-up to the multivariate t test, a stepwise discriminant function analysis was employed to specifically identify which criterion variables were most responsible for this group difference (Huberty, 1975). This analytic technique selects in stepwise fashion those criterion variables which maximize the statistical difference between the two groups. In addition, one or more discriminant equations can be calculated, each of which is actually a weighted linear combination of the variables selected in the step-wise procedure. The contribution which each of

the criterion variables contributes to the equation is a measure of the importance of that variable in discriminating between the groups. The results of the discriminant function analysis using the four separate measures of frequency of coach-athlete interactions, indicated that three of the four criterion variables combined to form a single, significant discriminant function equation (Wilks Lambda = .7441, $p<.02$). Comparison of the standardized discriminant coefficients (see Table 11) indicates that the number of behaviors initiated by the athletes in both practices and games are the two most powerful discriminators of expectancy group differences, although the number of behaviors initiated by the coach in game situations is also a significant contributor. Examination of the group means (also shown in Table 11) shows that low expectancy athletes initiated fewer interactions in practice situations but significantly more interactions in game situations than did their high expectancy teammates. Conversely, coaches tended to interact more often with their high-expectancy athletes in game situations than with their low ability players. This behavioral expectancy effect was not evident in practice situations, as it appeared that coaches did not interact with high expectancy players more frequently than with their lower skilled athletes.

Interestingly, when the source or initiator of the interaction is ignored (i.e., all interactions were included in the frequency count regardless of initiator), significant expectancy effects for post-season groupings were found $t(38)=2.28$, $p < .03$) which indicate

TABLE 11: Post-Season Expectancy Effects: Discriminant Function Results for Frequency of Coaching Behaviors

Behavioral Indices	High Expectancy Mean	Low Expectancy Mean	F[a]	Standardized Discriminant Coefficient
Average Player-Initiated Practice Behaviors	.554	-.338	7.39**	-.75
Average Player-Initiated Game Behaviors	.008	.087	4.95*	.77
Average Coach-Initiated Game Behaviors	.554	-.229	4.13*	-.63

[a]Reported F's correspond to the step at which each variable was entered into the discriminant function equation

*p<.02

**p<.01

that coaches interacted with their high expectancy athletes significantly more often (M=.42) than with their low expectancy players (M=-.35), in practice situations. However, as indicated above, this significant expectancy effect in practice situations disappeared when player-initiated interactions were partialed out.

Expectancy Effects and the Quality of Coach-Athlete Interactions

For this section of the data analyses, multivariate t tests were conducted to assess whether coaches' expectations influenced their reactions and responses to players' desirable and undesirable performances. For this analyses, then, the nine indices were used and expectancy effects (using both pre-season groupings and post-season groupings) were examined for game and practice situations separately.

Expectancy effects and practice behaviors. Multivariate analyses revealed that coaches' expectations concerning their players' ability, as measured both prior to and after the season, did not significantly influence their behaviors towards individuals in practice situations. Hotellings T^2, comparing players designated as low or high expectancy athletes based on pre-season rankings, indicated no difference in the type of behaviors these athletes received from their coaches, T^2 = 5.82, $F(9,30)$=.51, p<.86. Similarly, post-season expectancy rankings also revealed no effects on coaching behaviors, T^2=8.86, $F(9,30)$=.78, p<.64.

Expectancy effects and game behaviors. In contrast, both pre-season and post-season expectancy rankings were associated with differential coaching behaviors in game situations. Multivariate

analyses revealed significant differences, $T^2=34.78, F(8,31) = 3.55, p<.0006$, between high and low expectancy (pre-season groupings) players in the type of behaviors received from their coaches. Discriminant function analyses indicated that six categories of coaching behaviors contributed significantly to the difference between expectancy groups (Wilks-Lambda = .57, $p<.004$). Examination of the standardized discriminant function coefficients (see Table 12) clearly indicates that reinforcement and non reinforcement are the most powerful discriminators. Comparison of group means shows that high expectancy athletes received considerably less reinforcement for positive performance than did low expectancy athletes. Correspondingly, these high ability athletes also were ignored more often (i.e., received no reinforcement) after a successful performance than were their low ability teammates. Coaches' responses to players' game mistakes were also significantly influenced by their perceptions of players' ability. That is, low expectancy athletes were ignored more often following an undesirable performance while high expectancy athletes received more punishment (criticism) and more technical instruction delivered in a critical manner. Finally, however, these discriminant analysis results also indicated that low expectancy athletes were given more technical instruction in game situations than were high expectancy players.

The previously presented expectancy effects were based on analyses using pre-season expectancy rankings. However, very similar effects were found using expectancy groupings based on rankings provided by coaches at the end of the season. Again, this analyses indicated

TABLE 12: Pre-Season Expectancy Effects: Discriminant Function Results for Coaches' Game Behaviors

Behavioral Indices	High Expectancy Mean	Low Expectancy Mean	F[a]	Standardized Discriminant Coefficient
Reinforcement	-.284	.372	7.69*	1.46
Non-Reinforcement	.298	-.194	4.16*	.70
Ignoring Mistakes	.073	.261	6.08**	.44
Punishment	.058	-.289	5.02**	-.53
Mistake-Contingent Technical Instruction with Punishment	.401	-.216	4.45**	-.42
Technical Instruction Index	-.304	.129	5.55**	.57

[a]Reported F's correspond to the step at which each variable was entered into the discriminant function equation

*$p<.01$

**$p<.005$

significant differences in coaches' behaviors during games as a function of their expectations, $T^2=26.31, F(8,31)=2.68, p<.03$. Follow-up discriminant analysis revealed that a weighted linear combination of four behavioral indices provided effective group discrimination (Wilks Lambda = .6091, $p<.002$). The most significant contributor to this equation was the relative frequency with which the coaches provided technical instruction (see Table 13), with low expectancy athletes again receiving more such performance-related information. Similarly, when performance mistakes were committed, the low expectancy athletes received more technical instruction, and, correspondingly, less technical instruction accompanied by punishment than did the high ability athletes. In regard to desirable performance, the only significant differences between the feedback received by these two expectancy groups was the frequency with which such performance was ignored or not acknowledged by the coach (non-reinforcement), with the high expectancy players experiencing more of this type of response than did low expectancy players.

Expectancy Effects: Predictive Strength

The statistical tests utilized to assess expectancy effects which have thus far been described have only used 40 (20 high and 20 low) players out of the 72 who were observed. Therefore, in order to include all of the subjects in the analyses for expectancy effects and also to obtain a numerical estimate of the influence of coaches' expectations on their behaviors, a multivariate multiple regression analysis was also conducted. Predictor variables were the pre-season

TABLE 13: Post-Season Expectancy Effects: Discriminant Function Results for Coaches' Game Behaviors

Behavioral Indices	High Expectancy Mean	Low Expectancy Mean	F[a]	Standardized Discriminant Coefficient
Non-reinforcement	.431	-.416	9.16*	-.71
Mistake-Contingent Technical Instruction with Punishment	.436	-.350	6.92*	-.70
Technical Instruction Index	-.445	.080	6.80**	.80
Mistake-Contingent Technical Instruction	-.142	.114	5.62**	-.42

[a]Reported F's correspond to the step at which each variable was entered into the discriminant function equation

*$p<.005$

**$p<.002$

and post-season rankings (standardized by team) which coaches had assigned to each player. Criterion (dependent) variables were the behavioral indices which were again divided into practice and game, and behavioral sets.

The results of these two separate analyses indicated no association between coaches' expectations and their practice behaviors, $F(18,122)=.74$, $p < .76$. However, a significant relationship between coaches' expectations and their behaviors in game situations, $F(16, 124) = 2.87$, $p<.0006$, was revealed. Standardized regression coefficients, presented in Table 14 provide a measure of the relative importance which pre- and post-season expectancy rankings contribute to the prediction of coaches' behaviors in game situations. Comparison of these beta weights suggests that post-season expectations have the most predictive influence on the frequency with which non-reinforcment is given as well as on the frequency of mistake-contingent technical instruction accompanied by punishment or criticism. In contrast, pre-season expectancy rankings were most highly associated with the frequency of reinforcement given.

To more specifically examine the influence of expectancies on coaching behaviors, canonical correlation analysis was also conducted. This type of analysis, which was designed for the multivariate analysis of relationships between complex sets of behaviors (Hotelling, 1935), statistically defines pairs of linear combinations of weighed variables. One set of each pair represents the predictor variables and the other set within the pair represents the dependent variables. Each

TABLE 14: Standardized Regression Coefficients for Prediction of Coaches' Game Behaviors

Behavioral Indices	Pre-Season Expectancy Rank	Post-Season Expectancy Rank
Technical Instruction	.143	.157
Reinforcement	.377	-.117
Non-Reinforcement	-.178	-.260
Mistake-Contingent Technical Instruction	.049	.050
Mistake-Contigent Encouragement	.036	-.082
Ignoring Mistakes	-.044	.039
Punishment	-.132	.083
Mistake-Contingent Technical Instruction with Punishment	-.048	-.270

pair of canonical variates is selected so that correlation between the two behavioral sets is maximized. Although two or more pairs of variates may be calculated, each succeeding pair, beyond the first, must be orthogonal to the previously defined pairs. The eigenvalue asssociated with a particular pair of variates represents the amount of variance which is shared between these two canonical variates.

In the present analysis, only the first two canonical correlations were significant ($\underline{Rc}_1$=.5749,$\underline{p}$<.0006; $\underline{Rc}_2$=.4522, $\underline{p}$<.04). Additionally, eignevalues of .3306 for the first variate and .2045 for the second variate indicate that the amount of shared variance is 33% for the first pair and 20% for the second pair. These figures indicate that there is a significant relationship between coaches' expectations and their game behaviors. However, recent commentaries by Karpman (1981) and Reynolds and Jackosfsky (1981) suggested that the eigenvalues calculated for a particular pair of canonical variates only provide a measure of the variance shared by the artificially-created canonical variables and may not really represent the amount of variance shared by the two sets of original variables. These statisticians recommended that a redundancy index (Stewart & Love, 1968) additionally be calculated which more accurately measures the variance shared between the two original behavioral sets. The redundancy index for the first pair of variates was computed to be .0396 and for the second pair was .0116. Addition of these two indices indicates that only 5% of the variance in coaches' behaviors during games is accounted for by their expectations.

In addition to calculating the amount of shared variance between the two behavioral sets, canonical correlation analysis can also show the relative contribution which each individual variable provides to the over-all relationship. This contribution has typically been assessed by using either the raw or standardized canonical coefficients. However, several statisticians have argued that even moderate correlation between the variables in a particular set can distort the interpretation of the standardized weights (Mintzes, 1979; Weiss, 1972). Therefore, a more reliable estimator of the contribution of a particular variable to the over-all relationship may be provided by examining the correlation between the original variables within a set and the artificially-constructed variate (Meredith, 1964; Weiss, 1972; Karpman, Note 19). Because the univariate correlations within both the predictor set of variables (coaches' expectations) and within the criterion set (coaching behaviors) was quite high, the strength of the individual variables contribution to the canonical correlation was assessed using these recommended correlations, also know as canonical loadings, and which are shown in Table 15.

Inspection of the correlations between the first canonical variate and the original variables in both the behavioral and expectation sets indicates that the frequency of nonreinforcement exhibited by coaches is the most important contributor to the canonical correlation. Other influential behavioral indices include those which are oriented to technical instruction. That is, the amount of mistake-contingent technical feedback which is delivered in a critical

TABLE 15. Canonical Loadings for First and Second Canonical Correlations: Coaches' Expectations and Coaching Behaviors

Variable	Canonical Correlation 1: Loadings	Canonical Correlation 2: Loadings[a]
Criterion Variable		
Technical Instruction	.455	-.150
Reinforcement	.292	-.597
Non-Reinforcement	-.599	.072
Mistake-Contingent Technical Instruction	.149	-.053
Mistake-Contingent Encouragement	-.092	-.085
Ignoring Mistakes	.010	.079
Punishment	-.031	.226
Mistake-Contingent Technical Instruction with Punishment	-.526	-.034
Predictor Variables		
Post-Season Expectancies	.985	.173
Pre-Season Expectancies	.750	-.662
	$\underline{Rc}_1 = .575$	$\underline{Rc}_2 = .452$
	$\underline{Rc}^2 = .331$	$\underline{Rc}^2 = .204$

[a]Only loadings of $\pm$ .30 are reported

or punishing manner and the relative frequency of technically instructive information given in game situations also contributed significantly to the canonical correlation between the two sets of data. The loadings for the predictor criterion set indicates that post-season expectancy rankings contributed relatively more to the over-all relationship between the two sets of data than did pre-season expectancy rankings.

The sign (positive or negative) of each of these loadings indicates that low expectancy players received more technical instruction, less nonreinforcement, and less punishment-oriented technical instruction. Canonical loadings for the second canonical variate, also shown in Table 15, suggest that coaches' pre-season expectations were most highly associated with two "evaluative" behavioral indices -- the amount of reinforcement given versus the frequency with which punishment was exhibited as a response to players' mistakes. Again, the sign of the correlation suggests that low expectancy players received more reinforcement and less punishment than did high expectancy players.

The results of this regression analyses, then, are consistent with the findings from the discriminant function analyses which indicate that expectancy effects are limited to game situations only. The specific coaching behaviors which provided the most evidence of coaches' bias are the indices for reinforcement, non-reinforcement, punishment, ignoring mistakes, and technical instruction. Additionally, the regression analyses suggested that coaches'

post-season expectancies exerted more influence on their behaviors than did their pre-season expectancies.

Expectancy Effects and Attribution of Players' Performance

A total of 179 direct and verbal attributions by coaches of individual players' performance was recorded over the course of 35 observation sessions. Of this total, 72 were exhibited in game situations and 107 in practice situations. Table 16 contains a breakdown, expressed in percentage scores, of the type of attributions made in game and practice sessions.

It is obvious that the frequency with which coaches were recorded to verbally make attributions for their players' performance was certainly not as extensive as was expected on the basis of initial research in the social psychological literature (e.g., Dweck et al., 1978). However, examination of the data presented in Table 16 does provide some descriptive information concerning coaches' ascriptive reactions to players' success and failure. First, coaches were observed to make considerably more attributions for players' skill errors than for their successful performance. This was true for both game and practice situations. Secondly, the majority of these verbal attributions were made relative to the amount of effort expended by the athlete under both success (e.g., "You really worked hard for that one.") and failure (e.g., "You gave up before the ball was caught.") conditions. The one exception to this pronounced use of effort was evident in game failure situations where relatively more performance ascriptions were made to psychological factors (especially in batting

TABLE 16: Categorical Percentages of Coaches' Attribution for Players' Performance

	Practice		Game	
	Success	Failure	Success	Failure
Ability	12.82	0	0	0
Coach	0	14.70	0	3.50
Effort	41.02	47.05	60.00	21.05
Psychological Factors	0	16.17	0	31.57
Practice	12.82	8.82	6.66	1.75
Luck	17.74	2.94	2.00	3.50
Task	15.38	10.29	6.66	7.01
Teamwork	0	0	6.66	0
Officials	0	0	0	31.57
TOTAL	39	68	15	57

and pitching situations) or to the officials (again, especially in batting and pitching situations). Examples of ascription to psychological factors included such coaching statements as, "You let her intimidate you; she's just lobbing them in!" (given to a batter who just struck out), or "You weren't concentrating on the batter; you were thinking about the last play!" (after a pitcher walked a batter).

To examine the influence which coaches' expectations exerted on the frequency and quality of their attributions for individual players, two types of analyses were conducted. First, multivariate *t* tests were conducted to determine if the percentage of attributions within each attributional category differed for high and low expectancy athletes. However, no significant differences were found for either the pre-season, $T^2=21.05$, $F(5,10)=3.01$, $p<.07$, or post-season groups $T^2=14.14$, $F(5,10)=2.02$, $p<.16$.

For the second analysis, four frequency scores were calculated for each athlete which represented the average number of success and failure attributions received per practice attended or game inning played. Again, however, no expectancy effects were found for either pre-season, $T^2=1.13$, $F(4, 35) =.26$, $p<.90$, or post-season groupings, $T^2=2.85$, $F(4, 35)=.66$, $p<.63$.

Expectancy Effects: Summary of Results

The variety of analyses conducted to assess the viability of expectancy effects in this junior high girls' softball league provided some consistent information concerning such expectancy influences.

First, it is evident that coaches exhibited differential patterns of behavior to individual athletes based on their perceptions of players' ability. However, such differential patterns were evident in game/competitive situations only and did not carry over into practice sessions. The specific coaching behaviors identified as part of this differential pattern included both evaluative feedback (reinforcement, nonreinforcement and punishment) and informative feedback (mistake-contingent technical instruction with and without punishment and an index of technical instruction). Low expectancy players received more reinforcement, mistake-contingent instruction, and technical instruction in general and less nonreinforcement, punishment, and technical instruction given in a punitive or critical manner than high expectancy athletes. In regard to the initiator of coach-athlete interactions, additional analyses showed that high expectancy athletes initiated more interactions with their coaches in practice sessions, while low expectancy athletes more frequently intiated such interactions in game situations.

Secondly, the results of the regression analyses indicated that coaches' post-season expectancy rankings exerted a greater influence on these differential behavioral patterns than their pre-season rankings. Additionally, this analysis also revealed that only about 4% of the variation in coaches' behavior towards all athletes during game situations can be accounted for by their pre- and post-season expectancy rankings, indicating that these differential patterns of

behavior are most evident when extreme groups of athletes are compared.

Finally, no expectancy effects were evident in relation to the type of or frequency with which coaches made verbal attributions for their players' success or failure. Although the absolute number of recorded attributions for all players was relatively low, some descriptive information was revealed concerning coaches' attributional patterns.

Statistical Analyses: Coaching Effectiveness

This section of the data analyses was designed to determine whether players' psychosocial growth over the competitive season could be predicted by a measure of their attained skill (as measured through post-season teammate evaluations) and by the observed frequency of their coaches' behaviors. The psychosocial growth of these young athletes was assessed through the administration of three psychometric tests both prior to and at the end of the season. One of these tests, the Multidimensional Measure of Children's Perceptions of Control, has been utilized and validated by Connell (Note 16). However, for this particular study, an additional set of items was appended to the validated scale for the purpose of providing a more sport-specific measure of athletes' perceptions of control. Although this procedure is recommended by Connell (Note 16) to increase ecological validity, he also suggested that reliability estimates for these new items should be obtained. Therefore, the following section details the results of this psychometric analyses.

Psychometric Analyses

Cronbach's alpha was used to assess the reliability of each of the softball-specific perceptions of control subscales which were specifically designed for this study. This set of items consisted of 12 statements each of which "mirrored" an item in the original validated scale. Four of the items assessed the degree of perceived

Internal Control (two items for success and two for failure). A second group of four statements measured the athletes' perceptions of Powerful Others as a source of performance control, and the last set of four referred to Unknown perceptions of performance control. Reliability estimates for each of the possible subscales are presented in Table 17. Cronbach's alpha estimates indicate that all of the subscales measuring perceptions of Unknown and Powerful Others as sources of performance control show moderately high reliability (.37 to .71). However, the subscale items designed to assess athletes' perceptions of internal control show very low reliability across subscale items, especially for the subscales measuring the internal success (.17) and failure (-.19) components. There are two possible explanations for this low reliability. First, the statements used to measure softball-related perceptions of control referred to players' performance in specific softball situations, utilizing a number of different skills within the sport (e.g., batting, throwing, fielding). It may be that such specificity within the scale items also influenced the players to "partition" their skill abilities (i.e., "I am good at batting but not fielding.") and therefore reduced the reliability of that particular subscale. Secondly, since a considerable number of these players (n=22) indicated that they had no previous competitive softball experience, it may have been difficult for them to adquately assess their ability to control their performance in softball situations.

To determine whether this inexperience may have contributed to such low reliability, the assessment of subscale reliability was also

TABLE 17. Reliability Estimates for the Softball-Specific Perceptions of Control Subscales (Numbers in parentheses represent the number of items forming subscale)

Internal (4) = .26
Powerful Others (4) = .53
Unknown (4) = .63

	Success	Failure
Internal	(2) = .17	(2) = -.19
Powerful Others	(2) = .47	(2) = .37
Unknown	(2) = .57	(2) = .39

conducted on the responses given at the end of the season to the same questionaire. The obtained post-season reliability estimates were considerably higher (Unknown subscales, .42 to .59; Others subscales; .54 to .71; Internal subscales, .19 to .52), indicating that the lack of previous softball experience may have contributed to their inability to answer consistently from item to item.

Although the subscale reliabilities (especially for the Internal scales) for this new set of measures did not reach adequate levels, they were still included in the data analyses because they provide some sport-specific information which is lacking in the other more generalized measures of psychosocial responses. However, these subscales were utilized in the statistical analyses as an independent group of criterion measures. Therefore, the results of the analyses using these subscales were totally separate from the other analyses and can be used to provide some additional information even though the reliability limitation must be recognized. Additionally, then, the validated subscales developed and published by Connell (Note 16) were also utilized to measure these young athletes' perceptions of control in the physical domain. Reliability estimates, as obtained for these subscales in the present study, ranged from .38 to .75.

Data Preparation

The administration of the three psychometric tests to all players at both pre-season and post-season timepoints resulted in the identification of 15 criterion or dependent measures. As indicated in

Table 18, these 15 measures were actually composed of five measures of perceived competence (one for each of the achievement domains and an additional one to assess the athletes' expectancy of future sport success), and 10 measures of perceived control (five subscales for perceived control in a general physical domain and five subscales to assess perceptions of control in softball situations). Table 18 also summarizes the mean scores on each of these subscales for all athletes as obtained at both the pre-season and post-season assessment sessions.

To provide a measure of the change in these scores over the season, residualized gain scores were computed for each individual on each of the 15 subscale scores. These residualized gain scores were then standardized and used as criterion/dependent variables in several correlational and regression analyses designed to determine if changes in players' perceptions of competence and control could be predicted by a set of predictor variables which included measures of players' ability and coaching behavioral indices. The significance of this relationship was tested in two independent sets of analyses -- the first using only practice behaviors and the second using only game behaviors. For each of the regression analyses conducted, the residualized gain scores, which provide a measure of the changes in players' perceptions of competence and control over the season, were designated as criterion or dependent variables. The observed coaching behaviors (either in games or practices) were used as the predictor variables. In addition, because the coaching effectiveness model on which the design of this

TABLE 18: Subscale Measures of Perceptions of Control and Competence

	Pre-Season Mean	Post-Season Mean
Perceptions of Competence		
Sport Success Expectancy	3.974	3.971
Physical Competence	2.929	2.954
Social Competence	3.147	3.067
General Competence	2.885	2.849
Cognitive Competence	2.970	3.000
Perceptions of Performance Control		
Physical Domain		
Internal Source	3.313	3.285
Powerful Others Source	2.413	2.292
Unknown Source	2.101	1.993
Extent of Knowledge: Known Sources - Unknown Source	3.625	3.583
Internal Index: Internal - Powerful Others	.899	.993
Softball Domain[a]		
Internal Source	3.469	3.413
Powerful Others Source	2.049	2.205
Unknown Source	2.191	2.264
Extent of Knowledge Known Sources - Unknown Source	3.326	3.354
Internal Index Internal - Powerful Others	1.420	1.208

[a]Obtained reliability estimates for this set of subscales did not reach acceptable levels.

study is based hypothesizes that players' actual success/failure rates in combination with coaches' evaluation of that performance will influence their perceptions of competence, a measure of players' ability was entered into each regression equation as well. This measure of players' actual ability was obtained by averaging the ranks assigned to each player by all of her teammates relative to her overall softball ability. This assessment of players' skill level, although subject to measurement error, represented the only information concerning players' attained skill over the season, as performance scores (e.g., batting and fielding averages) were not available for all 72 players.

Practice Behaviors and Players' Psychosocial Development

Three separate regression analyses were conducted to assess the relationship between coaching behaviors (as exhibited in practices), players' attained skill level and thier psychosocial growth over the season. The first set of analyses used players' perceptions of competence as the dependent set of variables, and the last two analyses used gains in players' perceptions of control, in both the general physical domain and in the more softball specific domain.

Changes in Perceived Competence

A significant multivariate relationship was found to exist between the behaviors exhibited by coaches across four practice sessions and changes in the players' perceptions of competence, $F(50, 263) = 1.73$, $p<.004$. Examination of the univariate F tests for each dependent

measure indicated that the predictor variables significantly influence three of the measures of perceived competence (Success Expectancy, $F(10, 61) = 2.38$, $p<.02$; Physical Competence, $F(10,61)=2.40$, $p<.02$; and Cognitive Competence, $F(10,61)=3.13$, $p<.003$) while no significance was found for perceived social competence, $F(10,61)=1.23$, $p<.29$, or perceived general competence, $F(10, 61)=1.88$, $p<.07$. Examination of the standardized regression coefficients (Table 19) consistently shows, for each measure of perceived competence, that the coaching behaviors exhibited in response to a desirable performance (i.e. reinforcement and nonreinforcement) were the most influential determinants of players' psychosocial development. The negative sign associated with each of these coefficients suggests that both reinforcement and non-reinforcement were inversely associated with positive increases in players' perceptions of competence.

Because no a priori ordering of either criterion or predictor variables was advanced, the use of both the step-down and the step-wise regression analyses to test the significance of each of the variables in contributing to the predictive equation was not deemed appropriate (Finn, 1974). However, based on the coaching effectiveness model, it had been hypothesized that coaching behaviors would contribute to the prediction of players' perceptions of competence and control above that accounted for by players' actual ability. Therefore, for this and all succeeding regression analyses, a covariate grouping key was used to test, in step-wise fashion, the additional contribution which all coaching behaviors in combination would provide to the regression

TABLE 19. Standardized Regression Coefficients: Coaches' Practice Behaviors and Players' Perceived Competence Gains

	CRITERION VARIABLES				
PREDICTOR VARIABLES	Success Expectancy	Perceived Physical Competence	Perceived Social Competence	Perceived General Competence	Perceived Cognitive Competence
Ability	-.338	-.241	-.103	-.229	-.342
Reinforcement with Technical Instruction	-.228	-.396	-.045	-.140	-.153
Reinforcement	-.984	-1.244	-.610	-.655	-.934
Non-reinforcement	-.904	-1.611	-.767	-.944	-1.200
Mistake-contingent Technical Instruction	-.355	.451	-.150	.251	.595
Mistake-contingent Encouragement	-.138	.051	.042	.322	.468
Ignoring Mistake	-.221	.166	-.273	.347	.124
Punishment	.045	.291	-.086	.251	.430
Mistake-contingent Technical Instruction with Punishment	-.087	.214	.099	.343	.259
Technical Instruction Index	.211	-.391	-.083	-.068	-.321

equation above that explained by the ability measure. For this particular analyses, the likelihood ratio test indicated that the group of coaching behaviors contributed significantly to criterion variation over and above that which was already accounted for by the ability measure $F(45, 258)=1.60, p<.01$.

In addition to the regression procedures, the relationship between the 2 behavioral sets was also tested through canonical correlation analyses. A single canonical relationship was found to be significant ($Rc_1=.655, p<.003$), with the amount of variance shared between the two canonical variates estimated to be approximately 43% ($Rc_1^2=.4293$). However the redundancy index, calculated to determine the strength of the relationship between the actual behavioral sets, was equal to .1550 indicating that 15.5% of the variation in relation to players' gains in perceptions of competence could be accounted for by the coaches' behaviors towards these players in practice situations in combination with a measure of players' ability.

Examination of the canonical loadings as presented in Table 20 shows that perceptions of physical and cognitive competence are the most influential contributors to the criterion variate although all of the criterion variables do show significant loadings. Inspection of the set of loadings in regard to the predictor variables indicates that the players' assigned ability ranking was the most influential contributor to the canonical variate. As could be expected, the sign of the loading suggests an inverse relationship. That is, as the ability rank goes up (i.e., a rank of 1 would reflect highest relative ability),

TABLE 20. Canonical Loadings: Coaches' Practice Behaviors and Players' Perceived Competence Gains

Criterion Variables	Canonical[a] Loadings
Success Expectancy	-.387
Perceived Physical Competence	-.735
Perceived Social Competence	-.365
Perceived General Competence	-.514
Perceived Cognitive Competence	-.848
Predictor Variables	
Ranked Ability	.416
Non-Reinforcement	.300
Punishment	-.341
	R_{c_1} = .655
	$R_{c_1}^2$ = .429

[a]Only loadings of ±.30 are reported.

perceptions of competence decreased over the course of the season. In addition, however, two particular coaching behaviors also contribute to the correlation between the two sets of data. The frequency of nonreinforcement suggests an inverse relationship with competence perceptions while the extent of punishment or criticism received as a response to a player's mistake was positively associated with the set of competence measures.

Changes in Perceived Control

In addition to assessing the strength of the relationship between coaching behaviors and players' gains in perceived competence, their perceptions of performance control were also analyzed as a function of practice behaviors and ranked ability. These results indicated no association between coaching behaviors, measured ability, and perceptions of control as assessed in the physical domain, F (50, 263)=1.31, $p<.09$, or between coaching behaviors and perceptions of control as measured through a softball-specific control scale, F(50, 263)=.85, $p<.85$, suggesting, then, that the set of predictor variables (players' ability measure and observed coaching behaviors) cannot accurately predict changes in players' perceptions concerning who or what is responsible for their performance success or failure.

Game Behaviors and Players' Psychosocial Development

None of the tested relationships between the behaviors exhibited by coaches in game situations and measures of players' psychosocial development was found to be significant. Specifically, game behaviors

could not be accurately used to predict changes in players' perceptions of competence, $F(45,263)=1.02, p<.44$, or in players' perceptions of control either in the physical domain, $F(45, 263)=1.14$, $p<.27$, or in the more softball-specific domain, $F(45, 263)=1.25, p<.15$. Generally, then, it seems that coaching responses to players' performance during competitive play were either not as salient to these young athletes as were the coaches' behaviors in practice sessions or that the contextual situation (e.g., the relatively lesser amount of playing time and coaching communications received by some players in game situations) may have reduced the chances of finding a significant relationship between the two sets of data.

Analyses of Coaching Effectiveness: Summary

In summary, the results of the multivariate correlational analyses revealed that the set of predictor variables, which included measures of coaching behaviors as well as a single assessment of players' ability, accounted for a significant portion of the variance in players' competence perceptions. The redundancy index indicated that about 15% of the changes in players' perceived competence which occurred over the season can be accounted for by measures of their coaches' behavior and their own attained softball ability. In contrast, changes in the players' perceptions of performance control however, were not found to be a function of this set of predictors.

Secondly, this associative relationship between the two behavioral sets of data was significant only when the coaches' behaviors

collected during practice sessions were used. The comparable analyses which examined changes in players' psychosocial growth as a function of coaches' game behaviors was not found to be significant.

Finally, the most salient coaching behaviors (those which contributed most highly to the relationship) appeared to be those which are evaluative in nature (i.e., reinforcement, nonreinforcement, and punishment). More specifically, both of the reinforcing indices were inversely associated with the competence measures while the frequency of mistake-contingent punishment or criticism was postively associated with such psychosocial measures.

CHAPTER IV

DISCUSSION

Expectancy Effects

One of the primary purposes of this study was to assess both the strength and direction of expectancy effects as they may occur in junior high interscholastic athletics. The results indicated that coaches exhibited differential patterns of behavior towards their high as compared to their low expectancy athletes. Specific differences were evident both in coaches' responses to players' successful performance as well as in their response to athletes' skill errors. Low expectancy athletes received a higher frequency of reinforcement following a desirable skill performance while high expectancy players experienced a higher proportion of nonreinforcement. In response to players' skill errors, coaches were more apt to provide low expectancy athletes with mistake-contingent technical instruction or to ignore the error. High expectancy athletes, in contrast, received more punitive or critical coaching responses to mistakes, this criticism occurring either alone or in combination with technical instruction. Finally, low expectancy athletes generally received more technical instruction as measured across all coaching communications than did high expectancy athletes.

Although these results indicate that coaches in this investigation exhibited differential patterns of feedback to individual athletes,

these expectancy influences were primarily demonstrated in game situations. Comparable expectancy influences were not found in relation to coaching behaviors exhibited solely in practice sessions. This contextual limitation in regard to demonstrated expectancy effects was not only true for the quality/type of interactions provided athletes but also for the relative frequency with which such coach-athlete interactions took place. Coaches were found to direct significantly more communications to high expectancy players during games, even when the frequency of such interactions was controlled for the number of innings athletes actually played. In contrast, no differences were found in practice sessions. That is, coaches interacted with low expectancy players in practices as frequently as they did their high expectancy group.

The demonstrated expectancy effects in relation to frequency of coach-athlete interactions in game situations may be attributed to the field positions to which high and low expectancy athletes were assigned. Infield positions were predominantly given to high expectancy athletes while most of the low expectancy athletes (Pre-season, $\underline{n}$ = 15; Post-season, $\underline{n}$ = 14) were outfielders. Since much of the action during game situations takes place in the infield, it is likely that the greater number of coaching communications to high expectancy athletes may be partially explained by their position as infielders. Similarly, it is also possible that coaches direct more performance-related communications to high expectancy athletes during competitive situations because such athletes were perceived by coaches

to be more crucial to game success, and thus their performance was more salient to the coaches.

In general, then, the results of these analyses indicated that coaches' behavioral patterns towards their low and high expectancy athletes differed depending on the contextual situation. Interestingly, pair-wise comparisons, using all 72 subjects, indicated that coach-athlete interactions markedly differed from game to practice sessions for all athletes. In fact, multivariate correlational analyses revealed that no associative relationship could be found between the behavioral patterns exhibited to individual players in each of these two types of situations. These results suggest, then, that the contextual situation will certainly influence the type of information collected through observation of coaching behaviors, and further implies that a complete assessment of coaching effectiveness cannot be obtained unless observational data from both settings (i.e., practices and games) are examined.

Although the results of this investigation indicated that coaches' behaviors towards individual athletes may, at least in some part, be predicted by their expectations concerning the athletes' ability, caution must be exercised in regard to the interpretation of such demonstrated expectancy findings. The traditional conception of expectancy effects as they occur in instructional contexts assumes that the behaviors exhibited by the instructor (coach) towards individual students (athletes) will be biased by the instructor's expectations concerning the children's ability. Such bias is reflected in

instructional behaviors which provide greater learning opportunities for high expectancy children and which ultimately enhance or increase the disparity between the achievement of high and low expectancy groups. Although coaches in this study were observed to employ different patterns of behavior, the direction of these differences was not consistent with the traditional conception of expectancy effects. That is, low expectancy players actually received more technical instruction and feedback, both in general as well as in mistake-contingent situations. This finding seems to indicate that coaches were trying to provide the most information to those players who, in their opinion, had the lowest amount of skill. Similarly, such low expectancy athletes also received more reinforcement after a successful performance than did high expectancy athletes whose successes were more often ignored (nonreinforcement). Coaches, then, displayed a tendency to "make the most" of the low ability players' successful performances, presumably as compensation for their lower success rate and to motivate them to continue practice efforts. Therefore, in this study, it appears that the differential coaching behaviors actually represented instructional techniques consciously employed by the coach to meet the needs of the individual player. Coaches' expectations, then, may be more accurately interpreted as perceptions of players' ability which induced these coaches to provide differential treatment to athletes based on their assessment of the athletes' needs. This interpretation seems especially credible considering the results of the analyses concerning the frequency of

coach-athlete interactions. Although it was demonstrated that high expectancy athletes initiated more interactions with their coach in practice sessions, there were actually no differences in the total number of coach-athlete interactions, indicating that coaches may have compensated for the greater tendency of the high ability players to interact with them by deliberately initiating more such interactional situations with the low expectancy athletes. Therefore, it does seem likely that the expectancy effects encountered in this investigation may actually reflect differential instructional techniques employed by coaches to facilitate the performance and motivation of their low ability athletes, rather than discriminatory or biased behavior towards the high ability player.

To hypothesize that the expectancy effects demonstrated in this study are actually forms of individualized instruction does not automatically imply, however, that these differential patterns of behavior are in actuality facilitative of players' performance and motivation. Because very little sport science research has been reported relative to effective coaching behaviors, either in terms of players' skill performance or in relation to their psychosocial growth, we do not know what instructional behaviors are most beneficial for young athletes. Therefore, the relatively greater amounts of reinforcement and technical instruction given by coaches in this study to their low expectancy athletes may or may not be conducive to gains in their performance, attitude or cognitions. Until further

information is available concerning effective coaching behaviors, the implications of the demonstrated differential patterns of behavior to selected groups of athletes cannot be adequately assessed. However, the results of the second part of this study may provide some additional information concerning this issue.

Coaching Effectiveness

The second major purpose of this study was to determine if changes in players' psychosocial development over the course of a competitive season could be predicted by a measure of their skill ability in combination with measures of the coaches' evaluation of their skill performance. This predictive relationship was found to be significant, but in a somewhat limited context. That is, this relationship was statistically significant at (or less than) an adequate level of confidence (i.e., $p<.05$). However, calculation of the redundancy index indicates that only 15% of the variation in the criterion variables (changes in players' perceptions of competence) is accounted for by a combination of actual player ability and observed coaching behaviors, leaving about 85% of the variance unexplained. It is equally true, however, that 15% of the variation in players' psychosocial growth over the course of the season represents a meaningful and substantial portion of that growth, especially when considering the myriad of other influences which certainly may be contributing to the child's self-perceptions. Therefore, the theoretical and practical importance of this relationship for further study can be justified. Secondly, although the statistical step-wise hypotheses testing indicated that coaching behaviors contributed to the prediction equation above and beyond that provided by the ability measure, the 15% of the variance accounted for cannot <u>all</u> be attributed to the observed measures of

coaching behavior. With these limitations in mind, then, a few general discussion points concerning the demonstrated results appear to be valid.

First, the results suggest that players' ability and coaching behaviors influenced changes in the perceived competence of young athletes, but correspondingly seemed to have little effect on changes in their perceptions of performance control. In contrast to these findings, Harter's (1981) model theorizes that adult evaluation should indirectly influence children's perception of competence through direct effects on their perceptions of performance control. However, it may be that the athletes in this study were more dependent on coaches' evaluation of their performance in order to make judgments concerning their competence due to their lack of previous experience in softball and in sport in general. Certainly, these hypothesized path relationships should be explored with an additional group of athletes varying in age and past sport experience.

Secondly, although the relationship between the two behavioral sets was tested in two independent analyses using practice and game behaviors as predictor variables, the results suggest that coaching behaviors exhibited in practice situations provided the strongest and most significant prediction for changes in players' perceptions of competence. This may be due to the relatively greater number of practice sessions as compared to game situations (approximately a 2.5 to 1 ratio), or may indicate that players perceive coaches' behaviors

in practice as more salient indicators of their ability than coaches' game behaviors.

In addition to providing some support for the general relationship between player ability, coaching behaviors, and players' psychosocial growth, the results of the canonical correlation analyses provided some information concerning the individual predictor variables which most contribute to the regression equation. These results indicated that players' ability (as measured by teammate evaluation) was a consistent predictor of changes in players' perceptions of competence. This associative relationship between individuals' actual ability with their perceptions of ability has also been advocated by Bandura (1977) in his theory of self-efficacy. He suggested that past related performance accomplishments (personal mastery experiences) play a central role in determining the strength of the individual's belief in his/her ability to successfully execute an achievement task. Research designed specifically to examine this theory in sport-related activity has supported the predictive influence of performance attainment on measures of participants' self-efficacy (Feltz, 1982; Weinberg, Gould & Jackson, 1980). Therefore, the results of this investigation, which indicated that players' attained skill level was a significant predictor of changes in their perceptions of personal competence is consistent with the previous sport psychological research.

The demonstrated importance of actual ability as a determinant of competence perceptions emphasizes the necessity for including in future research attempts, the assessment of coaching behaviors both in terms

of their facilitation of players' skill acquisition as well as in terms of their influence on players' psychosocial growth. The results of this study suggest that coaching behaviors may exert their greatest influence on players' perceptions of competence through their facilitation of players' actual skill acquisition.

Although performance accomplishment (post-season ability ranking) was identified as the primary predictor of players' psychosocial growth over the season, step-wise hypothesis testing in this study additionally indicated that coaching behaviors contributed to the prediction of changes in players' perceptions of competence over and above that provided by the ability measure. Those coaching behaviors which were specifically identified as influential contributors were those which contained an evaluative component (i.e., frequencies of reinforcement, nonreinforcement, and criticism or punishment). Interestingly, coaches' responses to players' successful performance (e.g., reinforcement and nonreinforcement) quite consistently contributed a negative influence to the equation, suggesting that high frequencies of either behavior were not facilitative of players' development of perceived competence, while the punishment or criticism component seemed to be positively associated with gains in perceived competence.

Although exact and definitive interpretations of these findings are certainly difficult without additional information and further replication, these results can best be explained with respect to the contingency dimension of performance feedback. Both Harter's model, as

well as the proposed coaching effectiveness model, hypothesize that clear, consistent and performance-contingent feedback from significant adult evaluators will lead to significant increases in children's perceptions of competence and control. However, results from the teaching effectiveness literature indicate with some consistency that teacher praise as an instructional behavior is either not an influential contributor to students' performance or is even negatively correlated with such performance gains (see reviews by Brophy, 1979; Good, 1979). Brophy (1979) has commented that this negative relationship may exist because reinforcement is not used by teachers as a performance-contingent and appropriate evaluation of the child's performance but is often utilized for motivational and disciplinary purposes. In this particular study, the results of the expectancy analyses indicated that low expectancy (ability) athletes received a higher proportion of reinforcement for positive performance than did high ability players. Given the lower skill level of the low expectancy players, many of these reinforcements may have been inappropriate and thus non-contingent to performance. As a result, reinforcement as an instructional/coaching behavior may not be facilitative of players' perceptions of competence because it does not represent a contingent and appropriate mode of performance feedback. In contrast, punishment, given by coaches as a response to errors in skill performance, may actually have been given in a more contingent manner. High expectancy athletes, in this study, did receive more punishment-oriented response to their skill errors, and it may be that

these young players, then, perceived punishment as an appropriate and informative evaluation of their performance and an indication that their coaches expected them to perform at a higher level, thus facilitating higher perceptions of competence. Therefore, it is suggested that the contingency/appropriateness of the coaching behavior may be a more salient source of information for the player than the actual behavior itself.

Although the accuracy of this contingency interpretation cannot be directly assessed in this investigation, this explanation is consistent with two particular research findings from the teaching behavior literature. First, several researchers have demonstrated that inappropriate reinforcement of low ability students is one of the means through which expectancy effects are exhibited in the academic classroom (Kleinfeld, 1975; Rowe, 1974; Weinstein, 1976). This inappropriate reinforcement often takes the form of providing praise or reward for incorrect performance or accepting lower quality of performance from low ability students. Secondly, Meyer and his colleagues (Meyer, Bachmann, Biermann, Hempelmann, Ploger, & Spiller, 1979) conducted a series of six laboratory studies to examine whether differential patterns of evaluative feedback (praise and criticism) given to students actually provided observers and participants with information concerning the students' ability. These researchers consistently found that students who received praise after success and neutral reaction after failure at very easy tasks were perceived to be low in task ability. In contrast, students who were given neutral

reactions after successful performance and criticism after failure were perceived as high ability students. These patterns of behavior identified by Meyer et al. conform very closely to the differential patterns of behavior exhibited by the coaches in the present study. That is, low ability athletes were given relatively more reinforcement or praise for success and were ignored more often after a mistake. In contrast, high ability athletes experienced higher frequencies of nonreinforcement after success but more criticism following failure. Based on the results of Meyer et al., it seems likely, then, that the contingency or appropriateness of coaches' responses to players' performance may have influenced players' perceptions of competence.

Future Research Directions in Coaching Effectiveness

Because the present study represented an exploratory attempt to identify some correlates of effective coaching behaviors, these results should primarily be used to delineate some profitable avenues for future research. Based on the initial results from this study, one of the major research needs would be to further investigate the contingency and appropriateness of coaches' instructional feedback. Specifically, do coaches employ performance-contingent patterns of feedback and consistent standards of performance for all players, or do they selectively reward/respond to players on the basis of their expectations concerning players' ability or their desire to motivate lower-skilled players?

Correspondingly, of course, even if the feedback provided by coaches to young athletes (especially low ability players) is not appropriately and contingently given, it would also be necessary to determine if such evaluative feedback does differentially influence the performance and psychosocial reponses of these athletes. Therefore, players' perceptions of the information provided by coaches in relation to their skill performance must also be assessed.

Secondly, the relationship between coaching behaviors and players' perceptions of competence and control might be more accurately assessed if future investigators included more skill-specific measures of relevant variables. The players at this age and skill level tended to partition their self-assessments of over-all ability into more skill-specific components (e.g., "I am a good batter but not a good fielder."). Actually, evaluation of player abilities based on observers' analyses suggests that for many players at this level, this division of ability according to sub-skills may be based on actual performance differences (e.g., designated hitters usually only batted, and pitchers only pitched). In contrast, the psychometric measures of perceived competence and control were assessed in more general ways. Even the softball-specific subscales which were specifically designed for this study assumed that perceptions of control would be similar across all skills. The markedly lower reliability estimates of this set of scales may reflect the inability of players to assess their ability as a softball player in consistent ways when, in actuality, they tend to partition such assessments.

Similarly, even the collection of coaches' behavioral data may be more reliably and accurately assessed if skill specificity is also built into the observational instrument. In this study, both of the trained coders observed differences in the type of instructional feedback which coaches gave to players as a function of the particular skill involved. For example, virtually all of the feedback given to pitchers in response to their performance was supportive or evaluative (reinforcement, mistake-contingent encouragement) rather than technically instructive. In addition, individual coaches also differed considerably in instructional patterns from one subskill to another. A few of the coaches provided very specific feedback in response to players' fielding performance but utilized more evaluative or general instructional behavioral patterns when conducting batting practice. These differences in instructional patterns from one subskill to another may be a reflection of the coaches' own skill-specific expertise. Yerg (1980) found that significant differences in instructional behaviors between individual teachers were a function of their own knowledge or personal skill level.

Obviously, if coaches' instructional behaviors are dependent on the particular skill involved, then players may also develop differential perceptions of their ability in each of the subskills. Therefore, the need for more specific assessment is indicated. To assess coaching effectiveness by dividing data collection according to subskills will certainly complicate the whole observational process but

might provide a more accurate assessment of the relationship between instructional behaviors and players' self perceptions.

Finally, although this study provides limited support for the hypothesized relationship between coaching behaviors and individual players' psychosocial growth, more specific information might be obtained if individual variation between players was also taken into account. Research from the literature on teaching effectiveness suggests that the correlates of effective instruction are dependent upon situational factors but also on the characteristics of the learners (Brophy, Note 6). In relation to coaching effectiveness, Smith et al. (1979) found that gains in self-esteem and attitude toward participation as a function of coaching behaviors were significantly greater for those Little League athletes who had begun the season with relatively lower levels of self-esteem. In this study, too, it might be hypothesized that the statistical attempt to identify effective coaching behaviors was complicated by such differences between players. Therefore, although the original design of this study did not include comparisons between groups of athletes in relation to coaching effectiveness, additional analyses were conducted to determine if such variation existed. This re-examination of the data was conducted primarily to outline some exploratory direction for future research and was not intended to be a definitive assessment of coaching effectiveness.

A Re-Examination of Coach-Athlete Interactions

Based on the results of the Smith et al. (1979) study, it was hypothesized that the players' initial level of perceived competence might influence their susceptibility to certain coaching behaviors. That is, perhaps the coaching behaviors which would be most facilitative of the psychosocial growth of these young athletes would be different for low perceived competence players as opposed to their higher perceived competence teammates. Therefore, it was determined to statistically assess differences between those players who initially scored high on the perceived competence subscale and those who obtained low perceived competency scores. For this purpose two groups of athletes were selected from the total number of 72 available subjects. Approximately 1/3 of the players on each team were designated as low perceived competency players (n=21) and an additional 1/3 were designated as high competency athletes (n=25).

The series of regression analyses used earlier to determine the predictive relationship between coaching behaviors and players' ability (predictor set) and changes in players' perceptions of competence and control (criterion sets) was again conducted using only these two groups of athletes (N=46). However, a group comparisons test was also added to the analyses for the purpose of determining if the regression planes for the two groups differed. This test for the parallelism of regression planes (Finn, 1974) is designed to assess the homogeneity or equality of the regression equations for two or more groups. Obtaining a significant difference on this test indicates that the set of regression weights for one group is statistically different

from the set of weights for the other group. In this study, if group differences were found, then separate multivariate multiple regression analyses (exactly as conducted in the previous analyses with all 72 players) were performed for each of the two groups to obtain estimates of these statistically unique regression weights.

The results of these parallelism regression tests indicated that three of the nine tested regression planes were not equal across the two comparison groups, suggesting that the strength and the nature (i.e., the size and sign of the regression weights) of the predictive relationship between players' ability, coaching behaviors and players' psychosocial growth differed as a function of their level of perceived competence. These parallelism results, presented in more detailed form in Appendix E (Table 21) indicated that the majority of the differences between high and low perceived competence athletes in their response to coaches' feedback occurred when the criterion variables were changes in athletes' perceptions of performance control. That is, the three regression planes which were found to be statistically different for the two groups of athletes were those which measured the influence of coaching behaviors on changes in players' perceptions of performance control.

The follow-up independent multivariate regression analyses, (detailed in Appendix E, Table 22) conducted for each of the two groups suggested that low perceived competence players were most strongly influenced by the set of predictor variables (which include coaches' practice behaviors and the ability measure) than were high perceived

competence athletes. Standardized regression coefficients (Table 23, Appendix E) and canonical loadings (Table 24, Appendix E) indicated that low competency athletes' beliefs in an unknown source of control were positively correlated with nonreinforcement (as frequency of nonreinforcement increases, so does the belief in an unknown source of performance control) but negatively correlated with reinforcement which was accompanied by technical instruction (i.e., not simply an evaluative response to a positive performance). Understandably, of course, the strength of the low perceived competency athletes' belief in unknown sources increased when ability was rated low in comparison to teammates. The associative relationship between low competency athletes' ability, their coach's behavior and changes in their perceptions of performance control was correspondingly not shown to be significant for high competency athletes, indicating that variation in their perceptions of performance control could not be accounted for by measures of coaching behaviors or ability level.

Although the results of this series of regression analyses must be accepted with caution because of their a posteriori nature and because only a small number of subjects was assigned to each group, these exploratory findings demonstrated that variations among individual athletes influenced the identification of effective coaching behaviors. These results suggest that young athletes who have low perceptions of competence in relation to physical activity may be more easily influenced by their coaches' behaviors towards them than their teammates with high levels of perceived competence Smith et al. (1979)

also found that the attitudes and self perceptions of young athletes with initially low levels of self-esteem were more susceptible to coaches' behavior than their high self-esteem peers. The results of these analyses also suggest that coaches' behavior may be most influential in relation to the athletes' perceptions of performance control (i.e., their beliefs concerning who or what is responsible for athletic success or failure). Certainly these analyses emphasize the importance of considering individual variation among athletes as a determinant of the correlates of coaching effectiveness.

Conclusions and Implications

Although the statistical results of this study provided some important information relative to coaches' perceptions and behaviors and their players' subsequent psychosocial growth over the season, the applicability of such findings to other athletic situations must certainly be made with caution. The athletes in this study were all females with relatively little previous athletic experience. Their interscholastic coaches were certified and experienced teachers (or teachers in training) who had been coaching for a minimum of two years. Certainly, then, the statistical results as well as the points raised in the ensuing discussion are limited to athletes and coaches from a similar population. As several writers have indicated, the key to determining the correlates of teaching (coaching) effectiveness is the implementation of field-based, process-product research (with successive replication) across a variety of contextual situations (Gage, 1979; Locke, 1977; Yinger, Note 10). This study, then, represents only initial work with young athletes, and replication and extension of such results are needed before generalizable conclusions can be made.

Methodological Issues

Although the specific findings from this study may not be generalizable, some methodological information was acquired which

certainly may be applicable to future research in coaching behavior. First, and perhaps most obviously, statistical analyses indicated that the context within which coach-athlete interactions took place influenced the obtained results. Comparison of coaching behaviors in game and practice situations revealed very little relationship between the patterns of coaches' responses to players' performance in each of these two situations. Additionally, when coach-athlete interactions were examined as a function of coaches' perceptions of player ability, significant effects were found for game behaviors only. It is obvious, then, that research results may be highly dependent on the context used. Previous researchers who have examined coaching behavior have utilized either game behaviors only (Smith et al., 1979), practice behaviors only (Tharp & Gallimore, 1976), or a combination (i.e., summing together) of practice and game behaviors (Rejeski et al., 1979). The issue of contextual influences, then, has not previously been examined in the sport psychological literature.

A second methodological issue addressed in this study concerns the necessity for imposing some control on inherent differences between groups of athletes when examining coaching behavior. Brophy (Note 20) has pointed out that high expectancy (ability) students present more opportunities to the teacher for positive instructional interactions (i.e., higher success rates encourage higher rates of instructional reinforcement) than do low ability students. Therefore, even if the teacher reacts consistently towards all students, statistical analysis of rate or percentage scores will indicate higher rates of

reinforcement to high ability students. Brophy strongly recommended that observational measures of instructional behaviors must be adjusted for differences in the opportunities presented to the instructor by the child. The index scores used in this study as a measure of coaching behaviors were specifically chosen to control for differences in such success and failure rates.

The importance of controlling for player behaviors which may influence coaching behaviors was specifically demonstrated in another way in this study. Significant expectancy effects were found in relation to the frequency of coach-athlete interactions. Specifically, the results indicated that high ability athletes experienced more such interactions with their coach in practice situations than did low ability players. However, when the number of coach-athlete interactions initiated by the athlete was subtracted from the total, no expectancy effects were found. These results suggest that high ability athletes initiated more communications with their coach, but the coach, in turn, initiated more such interactions with low ability players. These findings demonstrate the necessity of controlling for the opportunities presented to the coach by groups of athletes.

Similiarly, coach-athlete interactions may be influenced by the defensive positions which athletes play. Descriptive statistics from this study revealed that high ability athletes at this level predominantly played infield positions while low expectancy athletes were most often assigned to the outfield. The small number of high and low expectancy athletes in this study precluded the possibility of

statistically testing an Ability Group by Position interaction. However, such analyses in future research studies may provide a more accurate assessment of differential patterns of coaching behavior.

In summary, the results of this study did uncover some methodological issues that were demonstrated to influence the assessment of coaching behavior. Certainly these issues neeed to be considered in future research designed to examine the effectiveness of coaches in facilitating the learning and performance of young athletes.

Theoretical Implications

The purposes and design of this study were specifically based on a proposed coaching effectiveness model which was developed in Chapter 1 of this paper following a review of the related literature. Although only certain aspects of this model were tested in the present investigation, it seems most appropriate to conclude this discussion by examining the obtained results in relation to this model (outlined in Chapter 1).

First, the hypothesized relationship between coaches' expectations concerning players' ability and their subsequent behavior towards these individuals was demonstrated. Although, coaches exhibited differential behaviors to their high and low expectancy athletes, however, no evidence was provided to support the contention that high expectancy athletes would receive higher frequencies of instructional behavior or

more positive evaluation of performance. In actuality, it was the low expectancy players who received more such instruction and reinforcement, and correspondingly, less punitive evaluation of skill errors. However, the implications of these differential patterns of coaches behavior cannot be assessed until more specific information is obtained relative to coaching effectiveness.

The second hypothesized path to be tested was that leading from the players' performance and coaches' evaluation of that performance to players' perceptions of competence and control. Results of these analyses indicated that some of the variation in players' psychosocial growth over the season could be predicted by a measure of their actual softball competence and their coaches' behavior towards them in practice sessions. Although the degree of success these players had attained over the season was consistently associated with the development of perceived competence, certain coaching behaviors (e.g., reinforcement, nonreinforcement, punishment) also were identified as important contributors. The demonstrated association of these coaching behaviors with players' perceptions of competence was interpreted in light of the contingency of these instructional behaviors to performance outcome. It was suggested that both reinforcement and nonreinforcement may be negative contributors to the development of players' perceived competence because both of these behaviors did not provide appropriate and contingent information concerning performance outcome. Punishment or criticism of players' performance, in contrast, may be contingently and appropriately given, thus providing players

with specific information concerning their performance and contributing to the development of perceived competence.

Finally, the results of the analyses using all players indicated that coaching behaviors and players' attained skill ranking were significantly associated with changes in players' perceptions of competence but not with changes in their perceptions of performance control. However, similar analyses conducted with two smaller groups of athletes (high and low perceived competence players), indicated that players who began the season with low levels of perceived physical competence were more influenced by the events which occurred during the season (i.e., their attained skill and their coaches' behavior towards them) than their teammates with higher levels of perceived competence. For these low competency athletes, the hypothesized relationship between coaches' evaluation of their performance and their perceptions of control was found to be significant. These results suggest that individual variation between athletes will influence their susceptibility to coaches' behavior.

Additionally, these findings indicate that the demonstrated relationship between players' performance accomplishments, coaches response towards those accomplishments, and players' development of competence should be examined as a function of a number of other factors including the athletes' age, gender, past experience, and competitive skill level. In summary, although the results of this exploratory investigation did not establish conclusive support for the proposed model, they indicated that it may be a viable means of

developing and testing theoretically-based hypotheses regarding the influence which participation in competitive athletics exerts on the psychosocial growth of young athletes.

APPENDIX A

LETTER TO SCHOOL PERSONNEL

February 19, 1982

Athletic Personnel
Lansing Public Schools

The Michigan Youth Sports Institute was established in 1978 for the purpose of assisting parents, coaches, and other sport leaders provide positive and beneficial sport experiences for children. One of the ways in which the Institute has attempted to accomplish this objective is through a continuing research program designed to provide us with information about young athletes and the effects of sports participation on their physical and psychological development.

Through my work as a doctoral student with the Youth Sports Institute's research program, I have developed a particular interest in studying the experiences which female athletes receive through participation in competitive sport programs. Since the advent of Title IX, the opportunities for girls to participate in competitive sport programs have greatly increased. However, much of the information concerning the influence of sport participation on young athletes has been obtained through research with males. Therefore, my dissertation study, which is being conducted under the supervision of Dr. Dan Gould of the Youth Sports Institute, represents an exploratory investigation designed to identify and assess the achievement behaviors which females commonly exhibit in athletic situations, especially in regard to individual coach-athlete interactions.

Data will be collected for this study through observation of coaches and athletes in game and practice situations as well as through administration of questionaires and surveys to measure the attitudes and motivation of female athletes toward competitive sport participation. Because most females begin participation in competitive athletics during the seventh through ninth grades, I am planning to conduct this study using the junior high softball teams in the Capital Area Conference. Each team will be observed approximately one day a week (three games and four practices) during the course of the entire season. Additionally, all players will be asked to complete a survey form assessing their motivation for and attitudes towards sport participation. This testing

session (approximately 20-30 minutes in length) must be completed once at the beginning of the season and once at the end of the playing season.

The purposes and procedures of this study have already been briefly explained to you by phone, however this letter provides more specific information concerning the project. A copy of this letter is also enclosed which, contingent on your approval, should be given to the junior high team softball coach as his or her permission is also needed before we can proceed with the study. Finally, each athlete and her parent(s) or guardian will also be informed by letter of the purposes and procedures, as well as the voluntary nature, of this study and will be asked to give their permission for their daughter to participate.

You can be assured that all of the information collected during the course of this study (e.g., recorded behaviors as well as survey responses) will be kept strictly confidential, and the identity of all players, coaches, and school systems will remain anonymous. Furthermore, the researcher will be making no personal contact with individual players (other than during the administration of the survey), and the observer(s) will not interfere with practice activities. The general findings obtained through analyses of the data from all six schools combined will be sent to all interested parties, including athletes, parents, coaches, and athletic administrators.

Your school's participation in this project will be greatly appreciated as it will allow us as researchers the opportunity to collect realistic and field-based data which we can use to assess the attitudes and motivation of children in sport activity. It is only through the combined efforts of researchers and sport leaders that quality athletic experiences may be made available for all children.

We look forward to working with each of you on this project and will send each coach a letter, which should arrive about March 15, detailing the specific data collection procedures. If you have any questions concerning this study, please contact me at 353-4652.

Sincerely

Thelma Sternberg Horn
Youth Sports Institute
#205 IM-Sports Circle
Michigan State University
East Lansing, Michigan 48824
Phone: 353-4652

APPENDIX B

PARENT LETTER AND CONSENT FORM

Thelma Sternberg Horn
Youth Sports Institute
Michigan State University
East Lansing, Michigan 48824

Dear Parent(s) or Guardian:

The Michigan Youth Sports Institute was established in 1978 for the purpose of assisting parents, coaches, and other adult leaders provide positive and beneficial sport experiences for children. One of the ways in which the Institute has attempted to accomplish this objective is through a continuing research program designed to provide us with information about young athletes and the effects of sport participation on their physical and psychological development.

Through my work as a doctoral student with the Youth Sports Institute's research program, I have developed a particular interest in studying the experiences which female athletes receive through participation in competive sports programs. Since the advent of Title IX, the opportunities for girls to participate in competitive sport programs have greatly increased. However, much of the information concerning the influence of sport participation on young athletes has been obtained through research with males. Therefore, my dissertation study, which is being conducted under the supervision of Dr. Dan Gould of the Youth Sports Institute, represents an exploratory study designed to identify and assess the achievement behaviors which females commonly exhibit in athletic situations, especially in regard to individual coach-athlete interactions.

The data collection procedures for this study include the observation of coaches and athletes in game and practice situations and the administration of a survey to assess the attitudes and motivation of female athletes towards competitive sport participation. Because most females begin participation in competitive athletics during seventh through ninth grades, I am planning to conduct this study using junior high softball teams in the Capital Area Conference. Each team will be observed approximately one day a week (three games and three practices) during the course of the entire season. Additionally, all players will be asked to complete a survey form assessing their motivation for achievement in sport. This testing session (approximately 20-30 minutes in length) must be completed once at the beginning and once at the end of the playing season.

All of the information collected during the course of this study (e.g., recorded behaviors as well as survey responses) will be kept strictly confidential, and the identity of all players, coaches, and school systems will remain anonymous. Individual athletes, coaches, or parents will be free to discontinue participation in this project at any time during the course of the study. Furthermore, the researcher will be making no personal contact with the individual players (other than during the administration of the survey), and the observer will not interfere with practice activities. After the study has been completed, information concerning its findings will be sent to all interested parties including athletes, coaches, athletic administrators and parents.

The purposes and procedures of this study have already been explained to your daughter's coach and the school's athletic director, and each of them has agreed to participate in this project. However, the approval of all athletes and their parents/guardians is also needed; therefore, each of the athletes will also be informed of the purposes of the study and will be asked to volunteer their participation. If an athlete indicates that she does not want to participate, her decision will be respected, and she will not be surveyed or observed.

This letter constitutes a request for your permission to allow your daughter to participate in this study. Once again, be assured that all information collected will be totally confidential, and your daughter's name will be replaced with a subject number as soon as the information is collected. If you do approve of the purposes of this study and will allow your child to participate, then please complete the attached form and return it to the address listed at the bottom of this letter or have your daughter return the form to her coach. If you have any questions concerning this project, you can call or write me at the address listed below.

Your permission will be greatly appreciated as it will allow us as researchers to collect information concerning the attitudes of female athletes. It is only through studies such as these that more knowledge concerning the values of sport participation for all children can be gained.

Thelma Sternberg Horn
1760 Nemoke Trail
Haslett, Michigan 48840
Phone: 349-6638

PARENTAL CONSENT FORM

Youth Sports Institute
Michigan State University

1. I have read the information contained in the accompanying letter concerning the proposed project which is being conducted with female athletes in the Lansing (Holt or East Lansing) school districts and I will give permission to let my daughter, _____ participate as a volunteer in the scientific study being conducted by: Thelma Sternberg Horn under the supervision of Dr. Daniel Gould, Assistant Professor of Health and Physical Education at Michigan State University.

2. The study has been explained to me and I understand what my daughter's participation will involve.

3. I understand that I (or my daughter) am free to withdraw my consent and discontinue my child's participation at any time.

4. I understand that the results of the study will be treated in strict confidence and that my daughter's identity will remain anonymous. Within these restrictions, results of the study will be made available to me.

5. I understand that my daughter's participation in the study does not guarantee any beneficial results to her or to me.

6. I understand that I can receive additional explanation of the study, at my request, after my daughter's participation is completed.

SIGNED _____

DATE _____

APPENDIX C

PSYCHOMETRIC TEST BATTERY

PERCEIVED COMPETENCE SCALE FOR CHILDREN

What I Am Like

NAME _____ BOY OR GIRL (circle which) AGE _____ BIRTHDAY _____ CLASS OR GROUP _____

SAMPLE SENTENCES

	REALLY TRUE for me	SORT OF TRUE for me				SORT OF TRUE for me	REALLY TRUE for me
a.	☐	☐	Some kids would rather play outdoors in their spare time	BUT	Other kids would rather watch T.V.	☐	☐
b.	☐	☐	Some kids never worry about anything	BUT	Other kids sometimes worry about certain things.	☐	☐
1.	☐	☐	Some kids feel that they are very good at their school work	BUT	Other kids worry about whether they can do the school work assigned to them.	☐	☐
2.	☐	☐	Some kids find it hard to make friends	BUT	For other kids it's pretty easy.	☐	☐
3.	☐	☐	Some kids do very well at all kinds of sports	BUT	Others don't feel that they are very good when it comes to sports.	☐	☐
4.	☐	☐	Some kids feel that there are alot of things about themselves that they would change if they could	BUT	Other kids would like to stay pretty much the same.	☐	☐
5.	☐	☐	Some kids feel like they are just as smart as other kids their age	BUT	Other kids aren't so sure and wonder if they are as smart.	☐	☐
6.	☐	☐	Some kids have alot of friends	BUT	Other kids don't have very many friends.	☐	☐

	REALLY TRUE for me	SORT OF TRUE for me				SORT OF TRUE for me	REALLY TRUE for me
7.	☐	☐	Some kids wish they could be alot better at sports	BUT	Other kids feel they are good enough.	☐	☐
8.	☐	☐	Some kids are pretty sure of themselves	BUT	Other kids are not very sure of themselves.	☐	☐
9.	☐	☐	Some kids are pretty slow in finishing their school work	BUT	Other kids can do their school work quickly.	☐	☐
10.	☐	☐	Some kids don't think they are a very important member of their class	BUT	Other kids think they are pretty important to their classmates.	☐	☐
11.	☐	☐	Some kids think they could do well at just about any new outdoor activity they haven't tried before	BUT	Other kids are afraid they might not do well at outdoor things they haven't ever tried.	☐	☐
12.	☐	☐	Some kids feel good about the way they act	BUT	Other kids wish they acted differently.	☐	☐
13.	☐	☐	Some kids often forget what they learn	BUT	Other kids can remember things easily.	☐	☐
14.	☐	☐	Some kids are always doing things with alot of kids	BUT	Other kids usually do things by themselves.	☐	☐
15.	☐	☐	Some kids feel that they are better than others their age at sports	BUT	Other kids don't feel they can play as well.	☐	☐
16.	☐	☐	Some kids think that maybe they are not a very good person	BUT	Other kids are pretty sure that they are a good person.	☐	☐

	REALLY TRUE for me	SORT OF TRUE for me				SORT OF TRUE for me	REALLY TRUE for me
17.	☐	☐	Some kids like school because they do well in class	**BUT**	Other kids don't like school because they aren't doing very well.	☐	☐
18.	☐	☐	Some kids wish that more kids liked them	**BUT**	Others feel that most kids do like them.	☐	☐
19.	☐	☐	In games and sports some kids usually watch instead of play	**BUT**	Other kids usually play rather than just watch.	☐	☐
20.	☐	☐	Some kids are very happy being the way they are	**BUT**	Other kids wish they were different.	☐	☐
21.	☐	☐	Some kids wish it was easier to understand what they read	**BUT**	Other kids don't have any trouble understanding what they read.	☐	☐
22.	☐	☐	Some kids are popular with others their age	**BUT**	Other kids are not very popular.	☐	☐
23.	☐	☐	Some kids don't do well at new outdoor games	**BUT**	Other kids are good at new games right away.	☐	☐
24.	☐	☐	Some kids aren't very happy with the way they do alot of things	**BUT**	Other kids think the way they do things is fine.	☐	☐
25.	☐	☐	Some kids have trouble figuring out the answers in school	**BUT**	Other kids almost always can figure out the answers.	☐	☐
26.	☐	☐	Some kids are really easy to like	**BUT**	Other kids are kind of hard to like.	☐	☐

	REALLY TRUE for me	SORT OF TRUE for me				SORT OF TRUE for me	REALLY TRUE for me
27.	☐	☐	Some kids are among the last to be chosen for games	**BUT**	Other kids are usually picked first.	☐	☐
28.	☐	☐	Some kids are usually sure that what they are doing is the right thing	**BUT**	Other kids aren't so sure whether or not they are doing the right thing.	☐	☐

MULTIDIMENSIONAL MEASURE OF CHILDREN'S PERCEPTIONS OF CONTROL

WHY THINGS HAPPEN

Directions: Reach each sentence and decide which answer best decribes your feelings concerning why things happen in sport situations. The first 12 sentences describe activity in general while the last 12 sentences apply specifically to softball.

SAMPLE QUESTIONS

(A) I like chocolate ice cream better than vanilla ice cream.

Very True Sort of True Not Very True Not at all True

(B) Most kids really like spinach.

Very True Sort of True Not Very True Not at all True

---

1. When I win at a sport, a lot of times I can't figure out why I won.

Very True Sort of True Not Very True Not at all True

2. I can be good at any sport if I try hard enough.

Very True Sort of True Not Very True Not at all True

3. When I play an outdoor game against another kid, and I win, it's probably because the other kid didn't play well.

Very True Sort of True Not Very True Not at all True

4. If I try to catch a ball and I miss it, it's usually because I didn't try hard enough.

Very True Sort of True Not Very True Not at all True

5. When I lose an outdoor game, it is usually because the kid I played against was much better at that game to begin with.

Very True Sort of True Not Very True Not at all True

6. When I don't win at an outdoor game, the person I was playing against was probably a lot better than I was.

Very True Sort of True Not Very True Not at all True

7. When I don't win at an outdoor game, most of the time I can't figure out why.

Very True Sort of True Not Very True Not at all True

8. If I try a new sport and don't do very well, I wouldn't know why I couldn't do the skill well.

Very True Sort of True Not Very True Not at all True

9. If I am not too good at any athletic skill, it's usually because I haven't practiced enough.

Very True Sort of True Not Very True Not at all True

10. When I win at a sport, it's usually because the person I was playing against played badly.

Very True Sort of True Not Very True Not at all True

11. I can be good at any sport if I work hard enough.

Very True Sort of True Not Very T. Not at all True

12. When I win at an outdoor game, a lot of times I don't know why I won.

Very True Sort of True Not Very True Not at all True

THE FOLLOWING QUESTIONS APPLY SPECIFICALLY TO SOFTBALL

13. When I face a good pitcher and get a hit, it's usually because she wasn't pitching very well.

Very True Sort of True Not Very True Not at all True

14. When I play very poorly during softball practice, I really never knon why I played so badly.

Very True Sort of True Not Very True Not at all True

15. If I would get five hits in one game, it would probably happen because we were playing against a really weak team.

Very True Sort of True Not Very True Not at all True

16. If I want to be a good softball player, it's really up to me to do it.

Very True Sort of True Not Very True Not at all True

17. If I hit two home runs in one game, I really wouldn't know why I had hit so well.

Very True Sort of True Not Very True Not at all True

18. If I am not too good at a particular softball skill, it's probably because I haven't practiced that skill enough.

Very True Sort of True Not Very True Not at all True

19. When I play very well in a softball game, a lot of times I really don't know why I playes so well.

Very True Sort of True Not Very True Not at all True

20. I could be a very good softball player if I would try hard enough.

Very True Sort of True Not Very True Not at all True

21. If I am trying to steal second base and I get thrown out by the catcher, it's probably because the catcher has a really good arm.

Very True Sort of True Not Very True Not at all True

22. If I wouldn't get a single hit during a game, I wouldn't be able to figure out why I didn't.

Very True Sort of True Not Very True Not at all True

23. When I fail to catch a fly ball, it's probably because the batter is a really good hitter.

Very True Sort of True Not Very True Not at all True

24. If I am trying to throw a runner out at a base and I don't, it's usually my own fault.

Very True Sort of True Not Very True Not at all True

GENERALIZED EXPECTANCY OF SPORT SUCCESS SCALE

DIRECTIONS: Each of the lines below contains two adjectives -- one on the right and one on the left. You must decide whether you are closer to the adjective on the left or to the one on the right. Put a checkmark in the space which best describes you.

IN SPORTS I HAVE BEEN

Example: Happy	___	___	___	___	___	Unhappy
1. Active	___	___	___	___	___	Inactive
2. Bad	___	___	___	___	___	Good
3. Successful	___	___	___	___	___	Unsuccessful
4. Unnoticed	___	___	___	___	___	Outstanding
5. A Winner	___	___	___	___	___	A Loser

I LEARN ATHLETIC SKILLS

6. Easily	___	___	___	___	___	With Difficulty
7. Fast	___	___	___	___	___	Slowly
8. Poorly	___	___	___	___	___	Well
9. Always	___	___	___	___	___	Never

WHEN LEARNING ATHLETIC SKILLS I

10. Persist	___	___	___	___	___	Give Up
11. Am Uncoordinated	___	___	___	___	___	Am Coordinated
12. Am Successful	___	___	___	___	___	Am Unsuccessful

MY ATHLETIC ABILITY IS

13. Above Average	___	___	___	___	___	Below Average
14. Bad	___	___	___	___	___	Good
15. Superior	___	___	___	___	___	Inferior
16. Limited	___	___	___	___	___	Broad
17. Praised By Others	___	___	___	___	___	Ridiculed By Others
18. Encouraging	___	___	___	___	___	Frustrating
19. Strong	___	___	___	___	___	Weak
20. Worse Than Most People's	___	___	___	___	___	Better Than Most People's

APPENDIX D

COACHES' DEMOGRAPHIC QUESTIONAIRE

COACHES' DEMOGRAPHIC QUESTIONAIRE

COACH: This questionnaire just asks you to list some demographic information about your coaching and athletic background. All answers will be confidential and my report will include a summary/average of information obtained across all participating coaches.

I. COACHING BACKGROUND

A. Are you presently a teacher in the school system where you coach?

_____ YES _____ NO

B. What is the highest educational degree you have attained?

_____ (Please include year of graduation)

C. How many years (include this one) have you coached this interscholastic girls' softball team?

_____

D. Are you presently, or have you ever been, coach of another interscholastic athletic team? _____YES _____ NO

E. If YES, list the team and the number of years you coached that team.

TEAM	YEARS OF COACHING EXPERIENCE
_____	_____
_____	_____
_____	_____

II. COMPETITIVE ATHLETIC BACKGROUND

A. Were you a member of a varsity team in high school?

_____ YES _____ NO

B. If YES, indicate what team(s).

C. Were you a member of a competitive athletic team in college (varsity or junior varsity level)?

_____ YES _____ NO

D. If YES, indicate which team(s).

E. Do you presently play on (or plan to play on) a competitive athletic team?

_____ YES _____ NO

F. If YES, indicate the sport and the league in which you play.

(for athletes and coaches)

CONSENT FORM

Youth Sports Institute
Michigan State University

1. I have freely consented to take part in a scientific study being conducted by: Thelma Sternberg Horn under the supervision of Dr. Daniel Gould, Assistant Professor of Health and Physical Education and a staff member with the Youth Sports Institute at Michigan State University.

2. The study has been explained to me and I understand the explanation that has been given and what my participation will involve.

3. I understand that I am free to discontinue my participation in the study at any time without penalty.

4. I understand that the results of the study will be treated in strict confidence and that I will remain anonymous. Within these restrictions, results of the study will be made available to me at my request.

5. I understand that my participation in the study does not guarantee any beneficial results to me.

6. I understand that I can receive additional explanation of the study after my participation is completed.

Signed_____

Date_____

APPENDIX E

STATISTICAL ANALYSES:

PARALLELISM REGRESSION RESULTS

TABLE 21: Summary Results Of The Test For Homogeneity Of Regression Planes: Low And High Competency Athletes

REGRESSION EQUATION	PREDICTOR VARIABLES	CRITERION VARIABLES	F-VALUE	SIGNIFICANCE
1	Player ability Total Coaching Behaviors	Perceptions of Control: Softball Domain	1.52	.03
2	Player ability Total Coaching Behaviors	Perceptions of Control: Physical Domain	1.53	.04
3	Player ability Practice Coaching Behaviors	Perceptions of Control: Physical Domain	1.47	.05

TABLE 22: Follow-up Regression Analyses: Low And High Perceived Competence Athletes

REGRESSION EQUATION	PREDICTOR VARIABLES	CRITERION VARIABLES	LOW COMPETENCE F-VALUE	HIGH COMPETENCE F-VALUE
1	Player ability Total Coaching Behaviors	Perceptions of Control: Softball Domain	.82	.88
2	Player ability Total Coaching Behaviors	Perceptions of Control: Physical Domain	1.64**	.97
3	Player ability Practice Coaching Behaviors	Perceptions of Control: Physical Domain	2.12*[a]	1.39

*$p<.01$
**$p<.07$

[a]Standardized regression coefficients and canonical loadings for this significant relationship presented in Tables 23 and 24.

TABLE 23: Standardized Regression Coefficients: Coaches' Practice Behaviors And Perceived Control For Low Perceived Competency Players

	CRITERION VARIABLES					
	Internal Success	Internal Failure	Powerful Others Success	Powerful Others Failure	Unknown Success	Unknown Failure
Ability						
Reinforcement with Technical Instruction	-.4347	.5892	-.1509	-.2312	-.0552	-.2682
	.2825	1.066	-.3488	.0920	-.4915	.1485
Reinforcement	.7648	1.515	-1.5086	.4135	-1.2526	.7344
Nonreinforcement	.7997	1.638	-1.8402	-.0182	-1.5848	.5511
Mistake-contingent Technical Instruction	-.3649	- .9002	- .6183	-.5973	.2779	-.0054
Mistake-contingent Encouragement	.2671	- .8723	- .4299	-.0022	- .0315	-.4244
Ignoring Mistakes	.2740	-1.3614	- .9727	-.7450	- .0233	-.6397
Punishment	.5729	- .8971	- .7988	-.5767	.0455	-.3222
Mistake-contingent Technical Technical Instruction with Punishment	-.3192	.0390	.4026	-.2470	.4638	.2914
Technical Instruction Index	.9425	- .5214	- .7866	.1970	- .4116	-.7229

TABLE 24. Canonical Loadings: Coaches' Practice Behaviors and Perceived Control For Low Perceived Competency Players

	CANONICAL LOADINGS
CRITERION VARIABLES	
Unknown - Failure	.4830
PREDICTOR VARIABLES	
Ability	-.6442
Reinforcement with Technical Instruction	-.4134
Non-reinforcement	.5179

APPENDIX F

DATA

DATA CODING

CARD 1

Column Number	Variable	Value Label
1 - 3	Subject Number	
4	School	
5	Card	
7 - 8	Pre-Season Expectancy Rank	
9	Pre-Season Expectancy Rank	1=High Expectancy 2=Low Expectancy
10 - 11	Grade	
12 - 13	Age	
14	Playing Position	1=Pitcher 6=Shortstop 2=Catcher 7=Left 3=First 8=Center 4=Second 9=Right 5=Third 10=Designated Hitter
15	Starting Status	1=Starter 2=Non-starter
17 - 18	Post-season Expectancy Rank	
19	Post-season Expectancy Group	1=High Expectancy 2=Low Expectancy
20	Years Experience School Softball	
21	Years Experience Non-school softball	
22	School Sport 1: participation	1=Swimming 4=Track 2=Basketball 5=Cheerleading 3=Volleyball 6=Other
23	Years Experience: School Sport 1	
24	School Sport 2 participation	1=Swimming 2=Basketball 5=Cheerleading 3=Volleyball 6=Other 4=Track
25	Years experience: Non-school sport	

Column Number	Variable	Value Label
26	Years experience non-school sport	1=swimming 4=track 2=basketball 5=cheerleading 3=volleyball 6=other
28 - 55	Perceived Competence Scale Items: Pre-season Cognitive Domain: Cols. 28,32,36,40, 44,48,52 Social Domain: Cols. 29,33,37,41, 45, 49, 53 Physical Domain: Cols. 30,34,38,42, 46,50,54 General Domain: Cols. 31,35,39,43, 47,51,55	
60 - 69 (Card 1) 7 - 20 (Card 2)	Perception of Control Scale Items: Pre-season Internal Success: Cols. 61,7,12,16 Internal Failure: Cols. 63,68,14,20 Others Success: Cols. 62,69,9,11 Others Failure: Cols. 64,65,17,19 Unknown Success: Cols. 60,8,13,15 Unknown Failure: Cols. 66,67,10,18	
Card 2		
23 - 42	Success Expectancy: Scale Items - Pre-Season	
45 - 72	Perceived Competence: Scale Items - Post-Season Cognitive Domain: Cols. 45,49,53,57,61 65,69 Social Domain: Cols. 46,50,54,58,62, 66,70	

	Column Number	Variable	Value Label
		Physical Domain: Cols. 47,51,55,59,63, 67,71	
		General Domain: Cols. 48,52,56,60,64, 68,72	
Card 3			
	7 - 30	Perceptions of Control: Scale Items:-Post-Season	
		Internal Success Cols. 8,5,22,26 Internal Failure Cols. 10,15,24,30 Others Success Cols. 9,16,19,21 Others Failure Cols. 11,12,27,29 Unknown Success Cols. 7,18,23,25 Unknown Failure Cols. 13,14,20,28	
	33 - 52	Success Expectancy: Scale Items-Post-Season	
	55 - 70	Post-Season Ability Ranking: Teammates 1-8	
Card 4			
	7 - 26	Post-Season Ability Ranking: Teammates 9-18	
	29 - 32	Ability Rank Average	
	33 - 34	Ability Rank Mode	
Card 5			
	21	Attendance Status: Practice 1	1=Present 2=Absent
	22 - 24 (RTI)	Practice 1: CBAS Frequencies Reinforcement with technical instruction	

Column Number	Variable	Value Label
25 - 27 (R)	Reinforcement	
28 - 30 (NR)	Nonreinforcement	
31 - 33 (TIM)	Mistake-contingent technical instruction	
34 - 36	Mistake-contingent Encouragement	
37 - 39 (IM)	Ignoring Mistakes	
40 - 42 (P)	Punishment	
43 - 45 (TIMP)	Mistake-contingent technical instruction with punishment	
46 - 48 (KC)	Keeping Control	
49 - 51 (O)	Organization	
52 - 54 (GC)	General Communication	
55 - 57 (TIG)	General Technical Instruction	
58 - 60 (EG)	General Encouragement	
61 - 63 (UC)	Uncodable	
64 - 66 (TOT)	Total Practice 1 Behaviors	
Card 6		
13	Attendance Status: Practice 2	1=present 2=absent
	Practices 1 and 2: CBAS frequencies for practices 1 and 2	
15 - 17	RTI	(see code for practice 1)
18 - 20	R	
21 - 23	NR	
24 - 26	TIM	
27 - 29	EM	

Column Number	Variable	Value Label
30 - 32	IM	
33 - 35	P	
36 - 38	TIMP	
39 - 41	KC	
42 - 44	O	
45 - 47	GC	
48 - 50	TIG	
51 - 53	EG	
54 - 56	UC	
57 - 59	Practice 2: Total Behaviors	
	Player-initiated interactions Practices 1 and 2	
61 - 62	R	
63 - 64	TIM	
65 - 66	EM	
67 - 68	P	
69 - 70	TIMP	
71 - 72	O	
73 - 74	GC	
75 - 76	TIG	
77 - 78	Practices 1 and 2: Player-initiated total	
Card 7		
13	Attendance Status Practice 3	1=present 2=absent
	Practice 3: CBAS Frequencies	

Column Number	Variable	Value Label
15 - 59	(same format as Card 6)	
Card 8		
13	Attendance Status: Practice 4	1=present 2=absent
	Practice 3 and 4: CBAS frequencies	
15 - 59	(same format as card 6)	
	Player-initiated interactions: practices 3 and 4	
61 - 78	(same format as card 6)	
79	total number of practices attended	
Card 9		
7	Game 1: outcome	1=won game 2=lost game
8	Game 1: attendance	1=present 2=absent
9	Game 1: playing status	1=played 2=not play
10	Game 1: starting status	1=started 2=not started
	Game 1: CBAS frequencies	
15 - 56	(same format as card 6)	
57 - 59	Game 1: total behaviors	
Card 10		
7	Game 2: outcome	1=won game 2=lost game
8	Game 2: attendance	1=present 2=absent
9	Game 2: playing status	1-played 2=not played
10	Game 2: starting status	1=started 2=not started

Column Number	Variable	Value Label
	Game 2: CBAS Frequencies	
15 - 56	(same format as Card 6)	
57 - 59	Game 2: Total Behaviors	
Card 11		
7	Game 3: outcome	1=won game 2=lost game
8	Game 3: attendance	1=present 2=absent
9	Game 3: playing status	1=played 2=not played
10	Game 3: starting status	1=started 2=not started
	Games 1, 2, and 3: Player-Initiated Interactions	
61 - 62	R	
63 - 64	TIM	
65 - 66	EM	
67 - 68	P	
69 - 70	TIMP	
71 - 72	O	
73 - 74	GC	
75 - 76	TIG	
77 - 78	Player-initiated total - all games	
79 - 80	Total number of innings played	
Card 12		
	Practice Attributions	
7 - 8	Success - ability	
9 - 10	Success - coach	

Column Number	Variable	Value Label
11 - 12	Success - effort	
13 - 14	Success - psychological factors	
15 - 16	Success - practice	
17 - 18	Success - luck	
19 - 20	Success - task	
21 - 22	Success - teamwork	
23 - 24	Total practice success	
26 - 27	Failure - coach	
28 - 29	Failure - effort	
30 - 31	Failure - psychological factors	
32 - 33	Failure - practice	
34 - 35	Failure - luck	
36 - 37	Failure - task	
38 - 39	total practice failure	
	Game Attributions	
41 - 42	Succuss - ability	
43 - 44	Success - coach	
45 - 46	Success - effort	
47 - 48	Success - psychological factors	
49 - 50	Success - practice	
51 - 52	Success - luck	
53 - 54	Success - task	
55 - 56	Success - teamwork	
57 - 58	Success - officials	
59 - 60	Game total success	
62 - 63	Failure ability	

Column Number	Variable	Value Label
64 - 65	Failure - coach	
66 - 67	Failure - effort	
68 - 69	Failure - psychological factors	
70 - 71	Failure - practice	
72 - 73	Failure - luck	
74 - 75	Failure - task	
76 - 77	Failure - official	
78 - 79	Game total failure	

```
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02214          1  0  4  3 11  1  0  1  9  0  0  0  4  0  0 33  0 0 0 0 0 0 0 0 04
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02216 11114    0  2  2  1  1  0  0  4  0  0  1 10  3  0 24
02217 21114    0  7  1  0  1  2  0  0  0  0  0 12  2  0 25  0 0 0 0 0 2 1 0 310
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02312 33131423141213  45533435455535424335  31313122221133314141413 23131
02313 23232222243231242323121 3  4443343334443433433  0310140306090712
02314 09060906080611          74406 0310150407100713090610070907 12        1710
02311 15209 17       1  0  1  7  5  0  1  0  0  1  1  0  2  0  0 18
02312          1  0  1  7  9  0  1  1  0  1  5  2  3  1  0 31  0 0 0 0 0 0 2 0 2
02313          1  0  0  1  1  0  0  0  0  0  1  0  0  0  0  3
02314          2  0  0  1  1  0  0  0  0  0  1  0  0  0  0  3  0 0 0 0 0 1 0 0 13
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02316 1122        0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
02317 21117       0  3  0  0  0  1  0  0  0  0  0  7  5  0 16  0 0 0 0 0 0 0 0 0 7
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02412 43132433343333  433234443423343 23433  3441442333334424331412123433
02413 242122232241122422242214  44443555544434 43 3443  0206091208071006
02414 13080206141608 12         94412 020709130908110614080207151709 13      1813
02411 16212 16          2
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02413          1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
02414          1  2  4  2. 8  0  2  0  5  0  0  0  7  0  0 30  0 0 0 0 0 0 0 2 23
02415 11116       0  0  1  2  0  2  0  1  0  0  0  5  1  0 12
02416 1122        0  0  0  0  0  0  0  0  0  0  1  0  0  0  1
02417 21116       0  4  1  1  0  0  0  0  0  0  0  5  2  0 13  0 0 0 0 1 0 1 1 307
02418  0 0 0 0 0 0 1 0 1  0 0 0 0 0 0 0  0 0 0 0 0 0 0 0 0 0  0 0 0 0 0 0 0 0 0
02511 172081311 1622232     4443443443344334443444444      4424221132
02512 41111424242222  55545555455545445554  4434442444344334434444 33 34444
02513 14232212324121241414 2224  5554555545544545 3544  1315041311080805
02514 17171417071003         101317 1415041412090805181815180811 03        1917
02511 1721621 1      1  0  0  1  2  0  4  5  1  0  1  0  2  0  0 16
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02514          1  0  1  1  0  1  1  0  0  0  1  0  0  0  0  5  1 0 0 0 0 1 0 0 24
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02516 1122        0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
02517 21111       0  3  2  0  1  4  0  1  0  0  0  5  4  1 21  1 0 0 0 0 0 0 2 308
02518  0 0 0 0 0 0 0 0 0  1 0 0 0 0 0 1  0 0 0 0 0 0 1 0 0 1  0 0 0 3 0 0 0 0 3
02611 08 081432 06 2121311  342334433333333334 3333 2 33333      2321222232
02612 32122424132212  44333344344344343344  44333444343333333434334344434
02613 24112221314112241324211 3  44444554444544454444  0909030916071009
02614 06110807030506          73709 1010031017081110061209080406 07        0906
02611 08 06 23       1  0  2  6  4  0  3  0  0  0  0  0  0  0  0 15
02612          1  0  3  7  7  0  4  0  0  0  3  0  6  1  0 31  1 1 0 0 0 1 0 3 6
02613          1  0  2  1  0  0  2  0  0  0  1  0  0  0  0  6
02614          1  0  9  6 11  0  6  0  0  0  3  0  2  0  0 37  0 0 0 0 0 0 0 0 04
02615 11123       0  2  0  0  0  0  0  0  0  0  0  1  1  0  4
02616 11113       0  1  0  2  0  1  0  0  0  0  0  9  5  0 18
02617 2122        0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 0 0 0 0 0 0 0 009
02618  0 0 0 0 1 0 0 0 1  1 0 0 0 0 0 1  0 0 0 0 0 0 0 0 0 0  0 0 0 0 0 0 0 0 0
02711 12 071362 1421 11     222214144311143244333212342 2      1434421243
02712 41123412141213  4533345434343443223 3  421211124111212144433111 1112
02713 2434333233421114333443 14  43332344433422231223  0712040315121515
02714 11151510101717         111615 7130403161316161116161111 1818       1415
02711 12 14226       1  0  1  1  5  1  2  0  0  0  0  0  0  0  0 10
02712          1  0  3  2 11  2  3  1  0  1  1  0  3  1  0 28  0 0 0 0 0 0 0 0 0
02713          1  0  0  0  3  0  2  0  0  0  0  0  1  2  0  8
02714          1  0 10  7 12  1  2  1  0  3  1  0  4  3  0 44  0 0 0 0 0 0 0 1 14
02715 11126       0  1  0  1  2  0  0  0  0  0  0  4  3  0 11
02716 11116       0  5  0  1  0  1  0  0  0  0  0 13  2  0 22
02717 2122        0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 0 0 0 0 0 0 0 009
02718  0 0 0 0 0 0 0 0 0  0 1 0 0 0 1 2  0 0 0 0 0 0 0 0 0 0  0 0 0 1 1 1 0 0 3
02811 11 091452 10 122132  43424323443343344333 43334333      2324222233
02812 32222323232223  5443455555445445 4454  434243134432444342434 3334333
02813 34344433434323333343223  544445554444454 54555  14130507061 11408
02814 05051211091307          87205 151405070712150905051312101408        1311
02811 11 10 25       1  0  0  2  2  1  1  1  1  0  1  0  0  0  0  9
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02813          1  0  2  0  3  0  1  0  0  0  0  0  0  0  0  6
02814          1  0  8  4  8  2  3  0  0  0  0  0  2  0  0 27  0 0 0 0 0 0 0 0 04
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```

```
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02817 2122 .      0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 0 0 0 0 0 0 0 008
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02913 2424332343422324242422223  545355544545444545 44  11011211050104 01
02914 020401010403 02            39401 1201131206010401020401010504 02      0402
02911 04102113        1  0  4  0  1  0  1  2  0  0  0  0  3  0  0 11
02912          1  0  4  2  6  0  6  2  0  2  1  0  5  1  2 31  0 0 0 0 0 0 0 2 2
02913          1  0  0  1  0  0  0  0  0  0  0  0  0  0  0  1
02914          1  0  3  5  6  2  2  1  0  0  1  0  1  0  0 21  0 0 0 0 0 0 0 0 04
02915 11113       0  1  0  0  0  0  0  0  0  0  0  5  2  2 10
02916 11117       0  5  0  0  0  0  0  0  0  0  0  3  4  0 12
02917 21113       0  0  1  1  1  0  0  0  0  0  0  5  6  2 16  0 0 0 0 0 0 0 0 017
02918  0 0 0 0 2 0 0 0 2  0 1 0 0 0 1 2  0 0 0 0 0 0 0 0 0 0  0 0 0 0 0 0 0 0 0
03011 011091581 03111       1 43423333333333333233333333333      2322232332
03012 32323423243322  5443444435444454 34444  434233333333333333323333333242
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03014 0703100515161 0            83116  1806171408030204070311061617 11      0103
03011 01103118        1  1  1  5  4  2  1  1  2  0  0  0  0  0  0 17
03012          1  1  1  8  7  2  3  2  3  0  1  1  4  0  0 33  0 0 0 0 0 0 0 2 2
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03014          1  0  1  2  5  0  1  1  0  0  0  0  0  0  0 10  0 1 0 0 0 0 0 0 14
03015 11118       0  0  1  1  0  0  0  2  2  1  0  6  0  0 13
03016 11118       0  3  0  0  1  1  0  0  0  0  1  5  6  1 18
03017 21118       0  3  1  0  1  1  0  1  0  0  0  4  4  0 15  0 0 0 0 0 0 0 1 115
03018  0 0 0 0 0 0 0 0 0  0 0 0 0 0 0 0  0 0 0 0 0 0 0 0 0 0  0 0 0 0 0 0 0 0 0
03111 051091591 07 2          2332333323323323333333322323      343333 2232
03112 42222444343314  33333433334333333333 3  33334333333332334333433333333
03113 34333222424232343332423 22  44433444343333334333  1203070802090502
03114 100409030202020 4           52502 1303070902100602110410030203030 5      0507
03111 05107 19        2
03112          1  0  0  0  1  0  0  0  0  0  2  0  0  0  0  3  0 0 0 0 0 1 0 0 1
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03115 11119       0  0  1  1  0  0  0  1  0  0  1  6  1  0 11
03116 11111       0 19  2  1  2  0  0  0  0  0  0 12  6  1 43
03117 21119       0  1  0  0  0  0  0  0  0  0  0  2  4  0  7  0 0 0 0 0 0 0 0 014
03118  0 0 0 0 0 0 0 0 0  0 0 0 0 0 0 0  0 0 0 0 0 0 0 0 0 0  0 0 0 0 0 0 0 1 1
03211 142071282 1721        2 3433241233242124443331334442       1433211231
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03213 44123221414113131 4143112  4523345544443443 4453  101717171 41 71617
03214 1612161 6171515         145017 1117181815181718171317 171816 16      1618
03211 14217228        1  0  0  0  6  0  1  1  1  0  0  0  1  0  0 10
03212          1  0  1  0  6  0  2  2  1  0  2  0  1  0  0 15  0 0 0 0 0 0 0 0 0
03213          1  0  0  0  5  0  0  0  0  0  0  0  2  0  0  7
03214          1  0  0  0  7  0  0  0  0  0  1  0  3  0  0 11  0 0 0 0 0 0 0 0 04
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03218  0 0 0 0 0 0 0 0 0  0 1 0 0 0 0 1  0 0 0 0 0 0 0 0 0 0  0 0 0 0 0 0 0 0 0
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03312 4324244 3344313  55443555554 335524553  44314433 13443444444 134333442
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03314 0201050401010 1            15601 010201010102010 1020105050101 01      0201
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03312          1  0  3 21  6  0  3  2  2  0  1  1  3  1  0 43  0 0 0 0 0 1 1 1 3
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03314          1  0  1  4  5  0  0  0  0  0  1  0  2  0  0 13  0 0 0 0 0 0 0 2 24
03315 11115       0  1  2  2  1  1  0  0  0  0  0  8  1  0 16
03316 1122        0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
03317 21115       0  1  4  1  0  2  0  0  0  0  0 10  2  0 20  0 0 0 0 0 0 0 1 112
03318  0 0 0 0 0 0 0 0 0  0 1 0 1 0 0 2  0 0 0 0 0 0 0 0 0 0  0 0 0 0 0 0 0 1 1
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03415 1122        0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
03416 11112       0  5  0  3  0  0  0  0  1  0  1 13  4  0 27
03417 21112       0  4  4  0  0  1  1  0  0  0  0  8  2  0 20  0 0 0 0 0 0 0 1 112
03418  0 0 0 0 0 0 0 0 0  1 1 1 0 0 0 3  0 0 1 0 0 0 0 0 0 1  0 0 0 0 0 0 0 0 0
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03514 06121003050909             84411 0512140612111512061211040 61010      1209
03511 10 08 24        1  0  1  3  7  0  1  0  0  0  0  0  2  0  0 14
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```

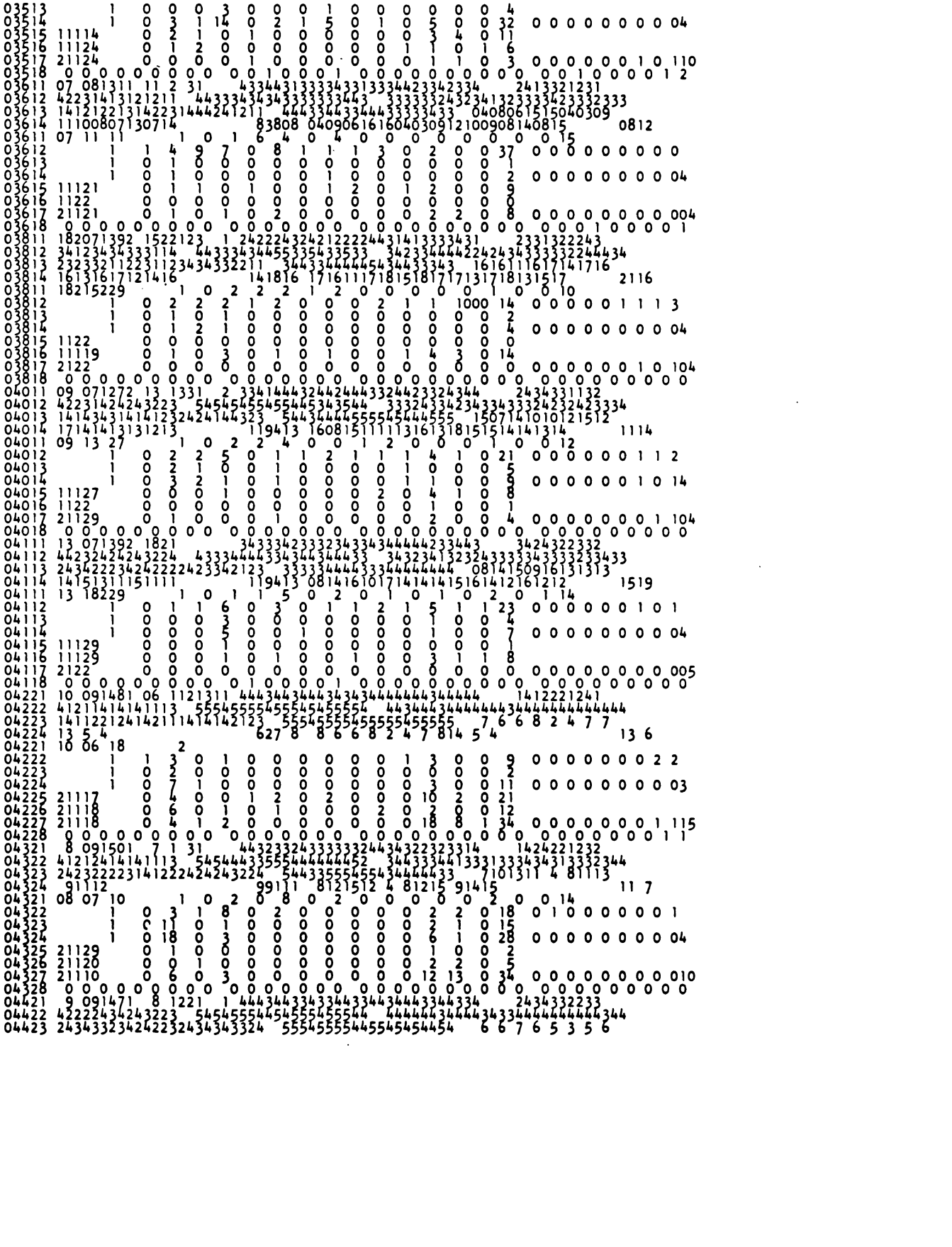

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04425 2122        0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
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04428  0 0 0 0 0 0 0 0 0  1 0 0 0 0 0 1  0 0 1 0 0 0 0 0 1  0 0 1 0 0 0 0 0 1
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04524         1   2 13  0  9  0  1  0  0  0  1  1  6  1  0 34  0 0 0 0 0 0 0 0 04
04525 21114       0  4  0  1  0  2  0  0  0  0  0  5  2  0 14
04526 11116       0  9  0  3  0  2  0  0  0  0  0  5  2  0 21
04527 21116       0 16  2  4  1  1  0  0  0  0  0  9  7  0 40  0 0 0 0 0 0 0 0 021
04528  0 0 0 0 0 0 0 0 0  0 0 0 0 0 0 0  0 0 0 0 0 0 0 0 0  0 0 0 0 0 0 1 0 1
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04821 04103112       1  0  4  0  2  0  1  0  0  0  0  0  6  0  0 13
04822         1   0 11  0 15  0  1  0  0  0  5  3 25  2  0 62  0 2 0 0 0 1 21318
04823         1   0 19  0  6  1  0  0  0  0  0  2  3  4  0 35
04824         1   0 25  0  6  1  0  1  0  0  0  4 10  5  0 52  0 0 0 0 0 0 1 0 14
04825 21112       1 28  0  4  4  1  3  1  0  0  1 21  7  0 72
04826 21112       0 21  1  5  0  3  0  1  0  0  0 18  4  0 53
04827 21112       0 26  0  1  1  0  0  2  0  0  1 24 17  2 74  0 0 0 0 1 0 0 1 221
04828  0 0 0 0 0 0 0 0 0  1 0 0 0 0 0 1  0 0 1 0 0 0 0 0 1  0 0 0 0 0 0 0 0 0
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04922 32232433222313  54434444454444444344  33323323233332332233323 23333
04923 23233223323223343333333 23  44433434444444434444   4 8 91110 6 8 5
04924 10 911                   827 8  4 9111311 6 9 5111014                     1811
04921 14210 29       1  0  7  0  4  2  2  0  0  0  0  0  1  2  1 19
04922         1   0 14  0  6  2  5  0  1  0  1  0  1  2  1 33  0 0 0 0 0 0 0 0 0
04923         1   0  7  0  7  1  1  0  0  0  0  0  3  2  0 21
04924         1   0  7  2  7  1  1  0  0  0  0  0  3  2  0 23  0 0 0 0 0 0 0 0 04
04925 21118       0  1  0  3  0  1  1  0  0  0  0  3  3  0 12
04926 21120       0  1  0  0  0  1  0  0  0  0  0  0  0  0  2
04927 21129       0  3  0  1  1  0  0  0  0  0  0  5  5  0 15  0 0 0 0 0 0 0 0 010
04928  0 0 0 0 0 0 0 0 0  0 0 1 1 0 0 2  0 0 0 0 0 0 0 0 0  0 0 0 0 0 0 0 0 0
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05022 33233433332323  43334443443333343344  33333323333313333333313232333
05023 33222222323322243333 2222  444334443433423333 44   2 2 2 2 2 6 6 1
05024  2 3 6                   309 2  2 2 2 2 2 6 6 1 2 3 7                     8 2
05021 05 02111       1  0  6  0  2  4  1  0  0  0  0  0  2  0  0 15
05022         1   0 10  1  4  4  1  0  0  0  1  0  2  2  0 25  0 1 0 0 0 0 0 0 1
05023         1   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
05024         1   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 0 0 0 0 0 0 0 04
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05026 21111       0 13  6  1  1  0  0  0  0  0  0  4  5  0 30
05027 21111       0 10  2  0  4  1  0  0  0  0  0  2  7  1 27  0 0 0 0 0 0 0 0 021
05028  0 0 1 0 0 0 0 0 1  0 0 0 0 0 0 0  0 0 0 0 0 0 0 0 0  0 0 1 0 0 0 0 1 2
05121  21091431  4 1321313 4444442433334444344433333444     1422221242
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05123 142311124241122414 243123  5555555555 4555455555   1 4 1 4 3 9 1 3
05124  5 4 1                   327 1  1 4 1 4 310 1 3 5 4 1                     5 4
05121 02104 13       1  1  4  1  6  0  0  1  0  0  0  0  3  0  0 16
05122         2   0  4  1  6  0  0  1  0  0  0  0  3  0  0 16  0 0 0 0 0 0 0 2 2
05123         1   0  7  1  8  1  0  1  0  0  1  1  1  1  0 22
05124         1   0 13  1  8  1  0  2  1  0  1  1  1  1  0 30  0 0 0 0 0 0 0 0 04
05125 21113       0  4  1  1  0  0  0  0  0  0  0 10  2  0 18
05126 21113       0  5  2  0  0  0  0  0  0  0  0  3  4  0 14
05127 21113       1 14  0  0  1  2  1  0  1  0  2 16 12  0 50  0 0 0 0 0 0 0 0 021
05128  0 0 0 0 0 0 0 0 0  0 1 0 0 0 0 1  0 0 0 0 0 0 0 0 0  0 1 0 0 0 0 0 0 1
05321 07 091542 1221224312 4333431332243334333433333434     1412221231
05322 41131413241114  54444445555544415554  42221323333433333333343333333
05323 23232222324223232323 3223  43333433443333344443   1311 7 9 51212 9
05324  71010                   95410 1714 7 9 5141610 71311                     1013
05321 07 12224       1  0  7  0  0  0  1  0  0  0  0  0  1  0  0  9
05322         1   1 16  2  3  1  4  0  0  0  1  0  1  4  0 33  0 0 0 0 0 0 0 0 0
05323         1   0 14  0  3  1  0  0  0  0  0  0  2  1  0 21
05324         1   0 22  0  5  1  0  0  0  0  0  0  3  1  0 32  0 0 0 0 0 0 0 0 04
05325 21124       0  1  1  1  1  1  0  0  0  0  0  4  3  0 12
05326 21120       0  1  1  0  0  0  0  0  0  0  0  5  0  0  7
05327 2122        0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 0 0 0 0 0 0 0 005
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```

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05423 233333223332223443243214  43334443554344333233  1213131212131313
05424  91313                    123613 16161714131517171111716             1518
05421 12214229      1  0  5  0  3  2  1  0  0  0  0  0  1  0  0 12
05422         1  0  9  0  3  2  1  0  0  0  2  2  1  0  0 20  0 1 0 0 0 1 0 0 2
05423         1  0 17  0  5  2  0  0  0  0  1  0  5  2  0 32
05424         1  0 17  0  2  2  0  0  0  0  1  0  5  2  0 32  0 0 0 0 0 0 0 1 14
05425 2122       0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
05426 21119      0  0  0  0  0  1  0  0  0  1  0  1  4  0  7
05427 21119      0  3  0  0  1  1  0  0  0  0  0  2  4  1 12  0 0 0 0 0 0 0 0 006
05428  0 0 1 0 0 0 0 0 1  0 0 0 0 0 0 0  0 0 0 0 0 0 0 0 0 0  0 0 0 0 0 0 0 0 0
05428  0 0 1 0 0 0 0 0 1  0 0 0 0 0 0 0  0 0 0 0 0 0 0 0 0 0  0 0 0 0 0 0 0 0 0
05521 11 091442 11 1124314 32324333323233334343333323332       2323232242
05522 222324332323 22  5343333335433334343 4  3232433333323333424333323332
05523 23233222323222333323322 3  44433333444433343334   910 8 5 4101112
05524 1212 9                    92712 1113 8 5 412151514131 0              1412
05521 11 11 24      1  0  5  1  3  0  1  0  0  0  0  0  2  0  0 12
05522         1  0 12  1  6  1  1  0  0  0  0  0  6  0  0 27  0 0 0 0 0 0 0 3 3
05523         2
05524         1  0  7  0  2  1  0  1  0  0  0  0  1  0  0 12  0 0 0 0 0 0 0 0 03
05525 21128      0  1  0  1  0  0  1  0  0  0  0  4  1  0  8
05526 21114      0  2  0  0  0  2  0  0  0  0  0  2  1  0  7
05527 2122       0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 0 0 0 0 0 0 0 007
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05621 132091572 1321321  2 24423424434433442444133442 44      3433223242
05622 43222434244322  555555555555555555 5  144233132233313424443 2332332
05623 242433224341122424141114  555445555555444443445  10 912101311 1010
05624 10 812                    104510 121015101413131112 815              1615
05621 13213227      1  0  5  0  2  0  1  0  0  0  0  0  0  0  0  8
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05623         1  0  4  1  8  0  0  0  0  0  1  2  1  0  0 17
05624         1  0  6  1  8  0  0  0  0  0  1  2  1  0  0 19  0 0 0 0 0 0 1 0 14
05625 21117      0  1  0  0  0  0  0  0  0  0  0  0  0  0  1
05626 21117      0  7  0  1  0  2  0  0  0  3  0  4  2  0 19
05627 2122       0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 0 0 0 0 0 0 0 011
05628  0 0 0 0 0 0 0 0 0  0 0 0 0 0 0 0  0 0 0 0 0 1 0 0 0 1  0 0 0 0 0 0 0 0 0
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06254         1  1 19  0  7  1  1  1  0  2  1  1  2  6  0 42  0 0 0 0 0 0 0 2 24
06255 21117      0  6  0  1  0  1  0  0  0  1  2  1  4  0 16
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06354 09080512                  80008 0608100708070810090805 13            0612
06351 05 12212      1  0  3  0  0  0  0  0  1  0  0  0  0  0  0  4
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06354         1  0  4  0  2  1  1  0  0  1  0  2  0  1  0 12  0 0 0 0 0 0 0 0 04
06355 21112      0 10  0  3  4  1  0  0  0  0  0  5  3  0 26
06356 11112      0 12  0  4  1  0  1  1  0  1  1 13  2  0 37
06357 21112      0 10  0  1  1  3  0  0  1  1  0  8  8  3 36  0 1 0 0 0 0 0 3 417
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06456 11114      0  6  1  1  0  0  0  0  0  0  0  1  9  0 18
06457 21116      0  7  0  0  1  0  0  0  0  0  0  1  4  0 13  0 0 0 0 0 0 0 0 021
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06552 43222422343223  525355532423323223 43  3333234434332444333322322333
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06554 11120911                  102512 08080912121112091112 0911           1814
06551 14214229      1  0  2  0  0  0  0  0  0  0  0  0  0  0  0  2
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06553         2
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06554         1   0  4  0  5  1  0  0  0  0  0  1  0  5  0 16  0 0 0 0 0 0 0 1 0 13
06555 2122        0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
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06557 21129       0  0  0  0  0  0  0  0  0  0  0  0  1  0  1  0 0 0 0 0 0 0 0 0 007
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06651 03106 18          1  0  4  0  2  2  3  3  2  3  1  3  1  0  0 24
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06656 11118       0  3  0  1  3  0  0  0  0  0  0  2  5  0 14
06657 21118       0  8  1  0  0  1  1  1  1  0  0  2 11  1 27  0 0 0 0 0 0 0 1 1 221
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06754 05050706                    48305 04050505030403080505070 6           0801
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06752         1   1 21  1  7  0  6  1  0  1  1  9  7  1  0 56  0 0 0 0 0 1 8 514
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06755 21113       0  8  0  0  2  0  0  0  0  0  0  0 12  0 22
06756 11111       0 33  0  1  7  5  0  0  0  0  1  1 20  0 68
06757 21111       0 20  0  2 12  0  0  0  0  0  0  2 24  0 60  0 0 0 0 0 0 0 1 1 221
06758  0 0 0 0 0 0 0 0 0 0  0 1 0 0 0 0 0 1  0 0 0 0 0 0 0 0 0 0  0 0 0 0 0 0 1 0 4 5
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06853 232433224232244323333324   5444445454545445544   131011021313131l
06854 13101210                    109213 13101102131313131101210          1411
06851 11211229          2
06852         1   0  0  0  1  0  1  0  1  0  0  4  0  0  0  7  0 0 0 0 0 0 3 0 3
06853         1   0  3  1  3  0  2  1  0  1  2  0  0  0  0 13
06854         1   0  5  1  4  4  2  2  0  1  2  3  0  1  0 25  0 0 0 0 0 0 3 0 33
06855 2122        0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
06856 11129       0  4  0  1  0  0  0  0  0  0  0  2  2  0  9
06857 21119       0  3  0  2  0  0  0  0  1  0  0  5  3  1 15  0 0 0 0 0 0 0 1 106
06858  0 0 0 0 0 0 0 0 0 0  0 2 1 0 0 0 3  0 0 0 0 0 0 0 0 0 0  0 0 0 0 0 0 0 0 0 0
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06953 142333223231112413242312   555555555555555555555   0909071106030905
06954 07090608                    74209 0909071206030906070906O8          1009
06951 09 09 27          1  0  8  0  1  0  0  1  2  0  3  2  3  1  0 21
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06954         1   0 10  2  3  1  0  0  1  1  1  4  1  2  0 26  0 1 0 0 0 0 3 1 54
06955 2122        0  0  0  0  0  0  0  0  0  1  0  1  0  0  2
06956 11120       0  4  1  1  1  0  2  0  2  0  1  7  3  0 22
06957 21127       0  1  1  0  0  0  0  0  1  2  1  0  1  1  8  0 0 0 0 0 0 0 1 2 307
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07154 10110807                    100810 10131011091013101011080 7          1508
07151 12208 17          1  0  2  1  1  1  2  0  0  0  0  0  4  0  0 11
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07154         1   0  7  0  2  1  2  1  0  0  0  1  0  0  0 14  0 0 0 0 0 0 0 0 0 04
07155 21119       0  8  1  0  2  2  0  0  0  0  0  5  5  0 23
07156 11117       0  2  0  0  0  1  0  0  0  0  0  5  5  0 13
07157 21127       0  1  0  0  0  0  0  0  0  0  0  0  0  1  2  0 0 0 0 0 0 0 0 0 019
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07254         1   1 16  3  3  2  0  1  0  1  0  8  4  5  0 44  1 0 0 0 0 0 5 1 74
07255 21114       0 14  2  0  1  2  0  0  0  0  0  2 15  0 35
07256 1122        0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
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07454 13081113                    113311 12111313111110111508111 4          0913
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07454         1   0 19  0  4  0  1  0  0  0  0  0  1  5  0 30  0 0 0 0 0 0 0 0 04
07455 21129       0  3  0  0  2  1  0  0  0  0  0  3  2  0 11
07456 1122        0  0  0  0  0  0  0  0  0  0  0  0  0  0
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07753 24213223134223243223423 2  32354243455345345 43  05070406050606506
07754 0604010305              52505 05070407050605060704010305          1205
07751 10 05 15       1  0  4  1  3  0  0  0  1  0  2  5  0  0 16
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07755 21111       0 23  0  1 13  6  0  0  0  3  1  3 25  0 75
07756 11115       0  5  0  3  3  1  0  1  0  0  0  3  8  0 24
07757 21115       0  9  1  4  1  1  1  0  0  0  2  0  6  0 25  0 0 2 0 0 1 1 0 421
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07854 12121310                112512 1112121410091209141213 10          1710
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08262 333224232432 23  5345534445554532 3534   3332244333333323334333333333
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08264 0507                    54004 13070412070606070 8 10              2206
08261 10204 18       1  0  6  0  2  2  1  1  1  0  0  0  6  1  0 20
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08263         1   0  5  3  1  2  6  3  0  0  0  1  1  4  0 26
08264         1   0  8  4  1  2  8  3  0  0  1  1  1  4  0 33  0 1 0 0 0 0 0 1 0 24
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08267 21118       0  1  1  1  0  0  1  2  0  0  0  4  2  0 12  0 0 0 0 0 1 0 1 219
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08565 21115       0  1  2  1  0  1  1  5  0  1  0  7  1  1 21
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```

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08766 11117        0  5  0  2  1  0  1  0  0  0  0  3  3  0 15
08767 21117        0  3  2  1  0  0  1  1  0  0  0  7  5  0 20  0 0 0 0 0 0 0 0 011
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09067 21111        0  4  7  0  0  9  2  0  0  0  0  8  9  0 39  0 0 0 0 0 0 0 1 119
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09261 05 06 14        2
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09264           1  0 10  5  1  1  6  6  0  0  0  0  0  1  0 30  0 0 0 0 0 0 0 0 03
09265 21114        0  1  2  0  0  3  2  0  0  0  0  0  0  0  8
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09268  0 0 0 0 0 0 0 0 0  0 1 1 1 0 0 3  0 0 1 0 0 1 0 0 0 2  0 0 0 0 0 0 0 0 0
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09363 241222233232332332233214  3343444454544444444 4  030505050505060 8
09364 0704                        53005 0508080807080911100 6                1811
09361 09207 23        1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
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09365 2122         0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
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09464           1  0  6  5  2  0  3  2  0  0  0  0  0  1  0 19  0 0 0 0 0 0 0 0 04
09465 2122         0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
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09467 21113        0  0  0  2  0  0  0  1  0  0  0  1  1  0  5  0 0 0 0 0 0 0 0 011
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09662 43221413242213   34443554455444354555  2431332333333232324323233333
09663 23343322334223242324121 3  43333443333333333 33  0910080910101010
09664 1009                        95010 1214111313141314141 3                14
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09663           1  0  6  1  0  0  1  3  0  0  0  0  0  2  0 13
09664           1  1  9  2  2  0  2  4  0  0  0  0  2  3 1026  1 0 0 0 0 0 0 2 34
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09863           1  0  4  2  0  1  0  6  0  0  2  1  1  3  0 20
09864           1  0  7  3  0  1  0  7  0  0  3  1  2  3  0 27  1 0 0 0 0 1 1 0 34
09865 21124        0  0  1  1  0  0  0  0  0  2  2  0  0  0  6
09866 1122         0  0  0  0  0  0  0  0  0  0  0  1  0  0  1
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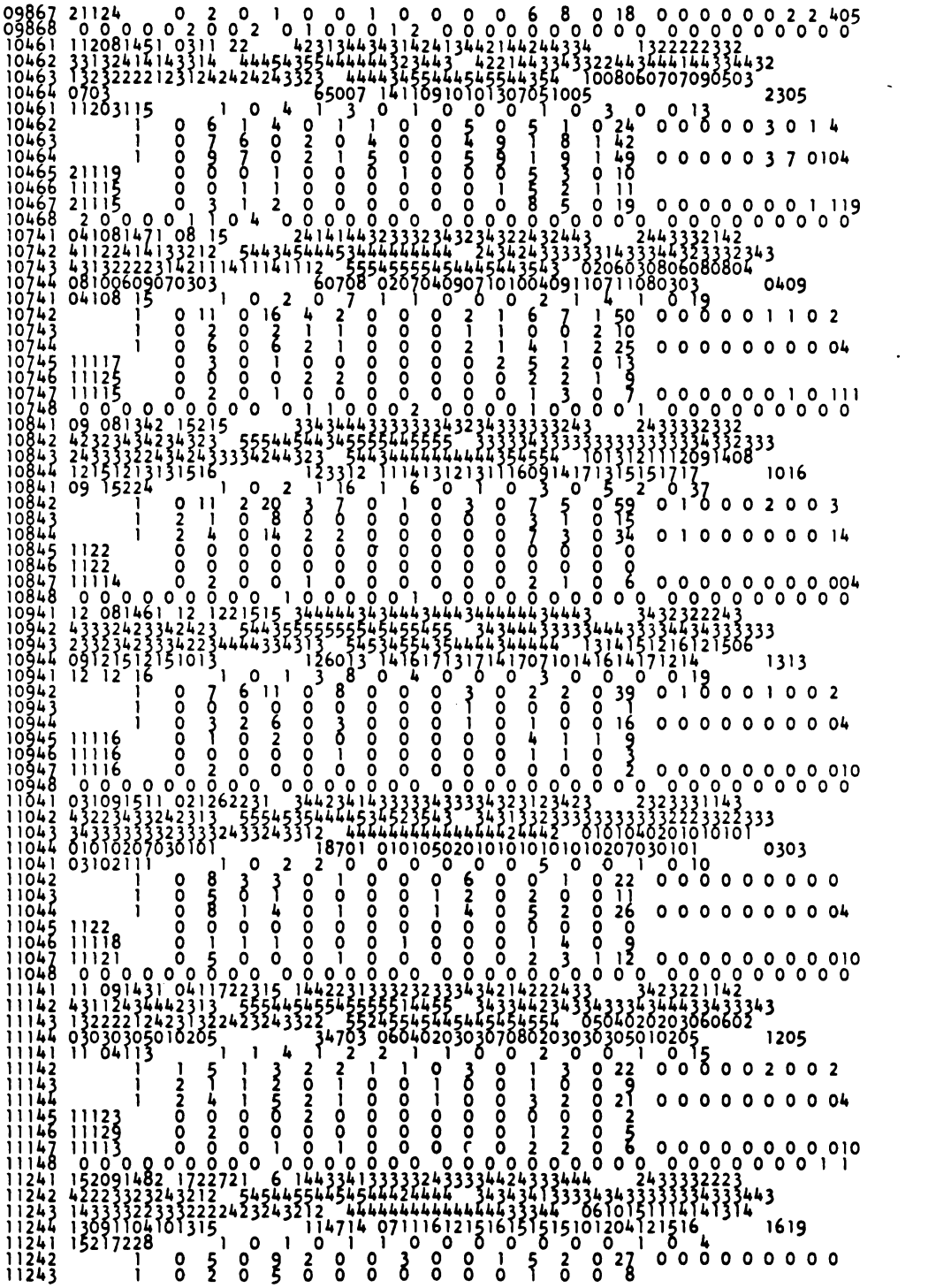

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11447 11123       0  2  0  0  0  0  0  0  0  1  0  2  0  5  0 0 0 0 0 0 1 1 210
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11541 13213218        1  0  1  0  2  0  2  0  0  0  2  0  2  1  0 10
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11544         1   0 12  1  7  0  0  0  0  0  1  0  4  1  0 26  0 0 0 0 0 0 0 0 04
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11644         1   0  6  0  5  0  6  2  0  0  0  0  4  0  0 23  0 0 0 0 0 0 0 0 04
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