THE EFFECTS OF COUNTING AS A FORM OF CONCURRENT FEEDBACK ON A SEVENTY-FIVE-YARD DASH

THESIS

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The use of concurrent Information Feedback (IF) through counting seconds verbally as the subject ran a 75 yard dash was tested. Forty-six ten and eleven year old boys and girls (boys = 20, girls = 26) were given two trials under four IF conditions: No IF; Terminal/Concurrent IF; Terminal IF; IF Removal. The counting occurred under Condition 2 and was combined with a final time given at the end of the dash.

Significant main effects were found for sex and for conditions, with interaction effects between sex and conditions, and between conditions and trials, $p < .05$. Results supported the combined IF condition with counting as maintaining subjects' level of performance, probably through motivation. Males performed well under Conditions 1, 2, and 3, while girls performed best under Conditions 1 and 2. Trial scores under Conditions 2 and 3 for all subjects were much more similar than under Conditions 1 and 4, indicating more consistent performance when IF was provided.

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CHAPTER I

Introduction

A young gymnast patiently waits for the judges to flash her score, while her coach verbally reviews with her parts of the performance that were well executed and parts which could have resulted in a deduction of points. Both the score and the verbal review represent forms of feedback--information feedback (IF)--pertaining to the execution of the task at hand. While intrinsic, proprioceptive feedback occurs during all actual performance, the literature tells us that it is probably through external sources that newly acquired skills are best-monitored. Providing that the information is useful, and that the person is able to apply it, the acquisition of a new ability and the mastery of a learned one are very dependent upon IF (Ammons, 1956; Gentile, 1972).

As early as 1927, Ross concluded that a positive relation existed between the degree of improvement of an unlearned skill, and the amount of information a subject received about his performance of that skill. Ross also noted a deterioration of improvement upon the removal of this information. These two basic properties have since provided the basis for expansion of explanations about the effects of IF. Performance of a subject can be altered, both positively and negatively, by the type of feedback

given, the amount of feedback applied, the length of time before and after feedback, and the amount of practice allowed with feedback.

Numerous theories now exist which attempt to explain the processes involved in utilizing feedback (Adams, 1971; Ammons, 1956; Gentile, 1972; Sheffield, Roby, & Campbell, 1954). With the formulation of these theories, come various new terms associated with types of IF. Knowledge of results, knowledge of performance, reinforcement, terminal feedback, concurrent feedback, augmented feedback, inherent and intrinsic feedback, and qualitative and quantitative feedback represent a few of these terms.

With terminology and theories, come properties and generalizations involving IF and motivation, frequency and degree of IF, persistence, expectancies, anxiety, complexity and type of skills, specificity and amount of IF, and rates of learning. The literature concerned with IF and skill development provides the guidelines for selective application of IF to specific situations, with the intent of eliciting superior performance.

Probable Values of the Study

It is hoped that the results of this study will contribute to existing research on information feedback, and will extend the use of IF as a motivational and informational technique to improve running speed in children. The utilization of concurrent IF shows a possible improvement

in speed when compared with a traditional form of terminal IF.

Statement of the Problem

Does information feedback, when applied to the task of running a seventy-five yard dash, result in improved performance? This study has been designed to answer this question. An attempt has also been made at finding whether concurrent IF provides an additional source of information when combined with terminal IF. The difference in the way males and females respond to the IF has been analyzed.

Purpose of the Study

The application of information feedback can affect performance in various ways. Concurrent IF should provide a more accurate form of feedback, and thus produce greater skill improvement than terminal IF. It was the intent of this study to determine whether IF caused an improvement in the performance of a subject running a seventy-five yard dash by comparing terminal and concurrent IF with terminal IF alone.

Hypotheses

1. An improvement in running speed will occur when IF is applied.

2. A greater improvement in running speed will occur in subjects receiving verbal IF counted in seconds in combination with final time at the end of the run, than

IF reported as a final time only.

3. Removal of IF will result in a decline in performance.

4. Males and females will respond differently to the situation of running.

Limitations of the Study

1. Persistence of the subject at his task is determined by the degree of importance and value ot the activity to the performer (Atkinson & Feather, 1966; Rotter, 1954; Weiner, 1965). Although participants in the study knew before they volunteered that the study would involve running, it cannot be stated with complete assurance that all subjects considered the task valuable.

2. Anxiety, caused from the presence of others, or competition, may have exhibited an influence upon the runner's performance (Cox, 1966; Oxendine, 1970; Vernon, 1969).

Delimitations of the Study

1. Since participation in the project was voluntary, and since subjects were told beforehand that the study would involve running, it is assumed that <u>most</u> subjects valued the task and thus put forth maximum effort.

2. The presence of the experimenters as an audience may have caused some anxiety and thus have affected performance. To avoid other audience effects, all subjects

performed individually, away from other participants. Subjects other than the immediate runner remained inside, and were requested not to discuss or compare performance scores until after the study was completed. Undue emphasis was not placed upon "success" at running the dash in a specific time.

3. Subjects were not told the distance they were running, to prevent any comparison with performance standards from previous experiences.

Definition of Terms

The following terms were pertinent to this study.

1. Feedback: refers to data available to the person by means of his own sensory system (Magill, 1980). "Feedback" is synonymous with "intrinsic feedback" (Del Rey, 1972).

2. Information feedback (IF): refers to stimuli added to a standard task under the experimenter's control (Bilodeau, 1966). The terms "augmented feedback" (Del Rey, 1972), "knowledge of results" (Singer, 1980), and "external feedback" (Drowatzky, 1981) are synonymous with IF.

3. Types of IF:

a. IF can be received visually (Adams, Gopher, & Lintern, 1977; Del Rey, 1971), verbally (Brown, 1961; Haywood, 1975); auditorily (Goldstein & Rittenhouse, 1954), kinesthetically (Adams, et al., 1977; Lincoln, 1956), or in

a combination of the above methods (Adams, Goetz, & Marshall, 1972).

b. IF can be a general qualitative response, or a specifically scaled quantitative response (Adams, 1971).

c. Concurrent feedback is a type of IF provided during the entire performance, while terminal feedback is given after the activity is completed (Drowatzky, 1981).

CHAPTER II

Review of Literature

Introduction

Literature defining feedback has been extensive, and terms can often be confusing and contradictory. "Knowledge of performance", or KP, as used by Ammons in 1956 and Ross in 1933, is applied in the same manner as the term "reinforcement" (Atkinson & Birch, 1970; Bandura, 1977; Baron, Kaufman, & Stauber, 1969; Deci, 1971) in referring to information received by a subject about his performance of a skill. Del Rey (1971) distinguishes KP from "knowledge of results", or KR, as being information about how the skill is performed (KP) rather than about the result of the skill (KR). KR is used by most researchers as a general form of feedback. Singer, however, specifically defines "KR" as information received from external sources, and "feedback" as an inherent, movement-produced effect (Singer, 1980).

Gagne and Fleishman (1959) interrelate several of the above terms in their discussion of IF:

> In practicing a motor skill, reinforcement usually takes the form of 'feedback' to the learner concerning degree of correctness (or error) of his responses. In most practice situations, the signal is quite obviously present . . . . But in some learning situations, little KR is available (p. 245).

For this paper, the term "information feedback", as used by Bilodeau in 1966, and by Malina in 1969, refers to stimuli added to a standard task under the experimenter's control.

General Properties of IF

Most research involving IF deals with determining the effects of giving or withholding various kinds of information about performance during, and for certain amounts of time after that performance (Ammons, 1956). The usual scientific procedure for testing IF compares a group given augmented feedback with a control group receiving no IF on their performance. Based upon this procedure, the following general properties concerning IF have been formulated.

1. The administration of augmented feedback usually results in skill improvement.

The conclusion that IF improves performance rests on a subject's ability to compare knowledge of his own response with the image of the desired response. When an individual executes a skill, he must have some standard with which to compare his performance in order for improvement to occur. A correct "image" must exist, either from a past personal performance, or by a performance from another source. The cues provided by IF help in making the actual response and the desired response closer in comparison. "Feedback reduces the disparity between the performer's present status and the anticipated outcome" (Drowatzky, 1981, p. 87).

Numerous studies exist to support this first property of IF. Elwell and Grindley (1938) reported a lack of improvement in their "no IF" group on a light-directing task. Subjects receiving information as to whether they were in the target zone in Stockbridge and Chamber's aiming task (1958) showed improvement over subjects denied the information. In both studies, groups receiving no augmented feedback had nothing to compare performance with, and thus showed no improvement.

Del Rey (1971), used a video-tape to provide IF on a fencing lunge to forty college women concerning performance. Results were consistent with previous studies in establishing a direct relationship between the amount of knowledge a subject received and skill improvement. Other studies supporting improvement in groups receiving IF include Adams et al. (1977), and Bilodeau, Bilodeau, and Schumsky (1959).

There seem to be two exceptions to skill improvement with IF. One exception involves skills which are said to be self-enhancing. Enough feedback already exists in these skills to give the subject enough knowledge about his performance, making any augmented feedback redundant. Enough information existed within Bell's badminton serve (1968), in Crafts' and Gilberts' maze (1935), and in Haywood's coincident-timing task (1975) to make IF unnecessary for skill improvement.

The other exception to this principle occurs when a very high level of proficiency is reached on a particular task. This phenomenon, termed "inherent feedback" by Adams (1971), makes the subject's improvement independent of any IF received concerning their performance. This theory is further developed in the next section.

2. There is a relative loss of skill upon removal of IF.

Not only does IF serve to improve performance, but a decline in skill level occurs when augmented feedback is removed. Subjects in Elwell and Grindley's light-directing task suffered a loss in improvement when IF was discontinued (1938). In addition, the degree of declination was directly related to the amount of practice the subject had received with IF. Baker and Young (1960) tested blindfolded subjects on a line-drawing task. Subjects who had four to seven days of practice with IF had much higher improvement than those practicing for only one day. The subjects having more practice also suffered less skill deterioration upon IF removal. The same result occurred in Newell's study (1974) using the sliding rod task. The more practice a subject receives with IF, the less the skill deteriorates. Conversely, practice under a minimum amount of IF results in a greater deterioration in skill.

The lack of skill deterioration among subjects receiving more practice with IF seems to be in agreement with the inherent feedback concept mentioned earlier. According to

Adams (1971), in early learning stages, IF provided by an external source is extremely important. With practice, however, the evaluative mechanism, labeled the "perceptual trace" by Adams, becomes more strongly ingrained. Repetition with IF gradually results in a change that replaces the normally conscious evaluation between actual and desired responses with a more automatic response. The performer no longer concentrates as much on basic details. Progress continues, the perceptual trace becomes a very strong, subconscious mechanism, and the performer is able to attend to other variables concerned with the skill. "As the movement becomes more 'habitual', the performer becomes progressively less dependent upon monitoring the external environment" (Gentile, 1972, p. 11).

The study by Adams et al. (1972) found the inherent feedback concept highly applicable. As subjects became more familiar and more proficient in the sliding rod task, they continued to improve, even after IF was removed. The same effect was witnessed by Newell (1974). Groups receiving more practice trials with IF developed a stronger perceptual trace, and suffered little, if any, skill deterioration when IF was withdrawn.

3. The degree of improvement with IF is related to the specificity of the information given.

Although augmented feedback is more precise than no IF, the degree of precision of the IF can also affect skill

improvement. "Even when the individual can assess the extent of his error visually, it has been found that more precise feedback can improve his performance" (Gagne & Fleishman, 1959, p. 245). Very general, qualitative IF, such as "Right", or "Good", does not relate as much information about performance as does the statement, "You are one-half of an inch too short". A more definitive form of IF will produce improvement in skill to a finer degree.

Gentile's breakdown of skills into open and closed categories allows us to be more specific in our delivery of IF. IF for open skills should refer to the result of the movement, while IF for closed skills should cue the performer about how the movement was executed. Support for the application of IF for the closed skill of free throw shooting was found by Wallace and Hagler (1979). Specific statements about how shooters were executing their throws proved to be more beneficial than general statements on their performance.

However, there seems to be an optimum level for the degree of precise IF a subject can absorb. "Too much or too little can be deleterious" (Rogers, 1974, p. 606). Smoll (1972) noted no differences between groups receiving quantitative feedback on ball velocity in tenth's or in hundreth's of a second. Both groups improved over subjects given general IF.

A study by Gill (1975) showed that extremely precise feedback for a newly acquired skill could hamper performance. There are already enough details to attend to in a new skill. Too much IF at first will frustrate and discourage the learner. A few main cues seem to provide enough information for a beginner.

The age of the learner is an important determinant in administering precise IF. Both Newell (1977), and Mitchell and Thomas (1977) found ten year olds able to apply precise IF, while seven year olds could process only the general IF. Both groups performed better than without IF at all. Gentile (1972) states that the more specific the IF, the more time will be needed for a subject to absorb and apply the imput. When the IF is so precise that it cannot be absorbed and applied, either because of a lack of comprehension or a lack of time allowance, no improvement will occur.

Several studies have reported inconsistent results concerning precise feedback. Hunt (1961) and Ross (1933) initially found no difference in groups receiving specific IF. However, Hunt's follow-up study completed in 1964 showed an improvement related to IF precision. Smode's (1958) population provided with precise IF improved much faster than controls, while Lavery's (1964) specific IF group showed greater retention than subjects receiving a general form of IF. Thus, effectiveness of the degree of precision apparently depends upon the type of skill, and the level of competency of the performer.

4. The scheduling, or "locus" of IF can influence a subject's response.

The "locus of IF" (Bilodeau, 1966), refers to the position IF takes in the trial cycle. The locus of IF can be broken down into several parts. "IF delay" is the lag between the response and IF. The time elapsing from IF to the next response is the "post-IF interval". The entire time between successive responses makes up the "interresponse interval".

Research differs in relation to which of these time intervals has the most influence on a subject's performance. A summary of five studies by Bilodeau and Bilodeau (1958) named the intertrial interval as being most significant. The following year, Bilodeau et al. (1959) found no significant differences between groups when tested for intertrial intervals.

The post IF interval is designated by Denny, Allard, and Rokeach (1960) as being most influential. Others simply acknowledge that a general influence exists (Greenspoon & Foreman, 1956; McGuigan, Hutchens, Eason, & Reynolds, 1964).

Perhaps the most applicable findings are by Rogers (1974) and Gentile (1972). They maintain that a long enough IF delay, and post-IF interval must exist in order for the subject to process and encode intrinsic feedback from the movement. A minimum delay of at least five seconds is suggested before augmented feedback is given.

5. IF exerts an overlapping influence as a motivator, as an informer, and as a reinforcer.

The role of IF as an informer has been discussed. The question often arises, however, as to how much skill improvement stems from additional knowledge, and how much from the simple desire to improve? The response, "Right", from the experimenter tells one that the movement is correct, but it also gives him the incentive to repeat it. If the response is again correct, IF serves as a reinforcer. Whether the values of IF as a reinforcer, an informer, and a motivator can be separated is questionable.

Fitts and Posner, in their book, Human Performance, speculate on the intertwined influences of IF. "Whether all knowledge provided by feedback, or only its rewarding aspects, provides the basis for its reinforcing properties is not fully known" (Fitts and Posner, 1979, p. 28).

As an informer, it is important that IF be of such a nature that it will help the performer in making some necessary adjustments before attempting the skill again. As a reinforcer, IF not only tells the learner that the response was correct, but it can increase the probability that the same response will be repeated. The role of IF as a motivator is witnessed by the maintenance of interest in an activity in relation to a specific goal which the performer has set for himself (Magill, 1980).

Oxendine (1968) finds the motivational aspects of IF as "necessary for effective performance in motor skills"

(p. 172). According to Brown (1961), technical "cues" provided through verbal responses initiate motivation in the learner.

Ross (1927) believes that motivation is induced by knowledge, but is not self-sustaining. Thus, IF can be viewed first as an informer, and then as a motivator. The inforamtion produces the motivation, but motivation does not always supply information. The same delineation is made by Locke, Cartledge, and Koeppel (1968). Emphasis is placed upon the individual's utilization of the IF as the deciding factor. It is not whether a subject receives the IF, but what he does with it. This leads to the final property of IF.

6. The successful application of IF depends upon the ability of the learner to relate external feedback to actual performance.

The mere availability of IF is not an answer to improved performance. IF must be processed purposefully, efficiently, and effectively. To be useful, visual IF must be attended to correctly. Auditory IF has the same requirement. It is necessary for the learner and the teacher to interact on the same level of communication (Singer, 1980). The primary purpose of augmented feedback is to call attention to intrinsic cues. It is the instructor's duty to make seemingly unimportant cues relative to the learner's performance (Drowatzky, 1981). Effective IF must relate to the already inherent aspects of the task, since the IF will eventually be withdrawn.

Although the running motion is non-uniform in terms of equal speed allocation (Dyson, 1977), the pattern is one of a repetitive cycle which, "Despite differences in speed, terrain, load, and anatomic variants, has a predictable sequence of events which may be decided on the basis of the relationship of the foot to the ground" (Slocum & James, 1979, p. 9).

Developing the running pattern into an effective sprint requires a good take-off, an acceleration phase to reach maximum speed, and the finish. At least two steps are required to recover from the take-off. These two steps are the shortest in the sprint sequence, since the center of gravity is low, and propulsion is coming from two feet simultaneously (Cretzmeyer, Alley, & Tipton, 1974). Once this transition is made, the acceleration phase is entered. Acceleration leads to maximum speed.

The distance required to achieve maximum speed has been debated by several researchers. Sills and Pennybaker (1956) found no further increase in speed after thirty yards. This is equivalent to four to nine strides. Bush (1978) named a sixty yard limit in his book, while Doherty (1976) determined that six seconds were needed before top speed was reached. A progressive lengthening in stride and a straightening of the trunk takes place during this acceleration phase. Once maximum speed is reached, there is no further change (Cretzmeyer et al., 1974). While special

The Skill of Running

Running is initially an extension of the walking pattern. As children mature, the running motion becomes smooth and consistent. Although the mature run is not completely attained until adolescence (McClenaghan & Gallahue, (1978), the initial purpose is still present at an early age . . . to move faster.

Slocum and James (1979), define running as "a series of smoothly coordinated jumps" (p. 9). The ability to execute a smooth run depends partially on genetic make-up, and partially on training. Hereditary factors of running include reaction time, leg length, foot size, and strength (Slocum & James, 1979). The running pattern, which is dependent upon a combination of these factors, can be altered to an extent through training and practice, resulting in more efficient performance. However, changing an athlete's technique, if done only to improve his "form", can be detrimental (Doherty, 1976).

The Running Pattern. Mechanically, the running cycle is broken into two stages. The drive stage is initiated with the foot contacting the ground. The recovery stage is made when the leg swings forward from the hip with its foot clear of the ground (Dyson, 1977). The full cycle consists of two strides, beginning when one foot strikes the ground, and ending when the same foot again strikes the ground. This entire cycle increases in length and forcefulness as the runner matures.

attention can be devoted to each of these ingredients of a sprint, good running calls for a coordinated action of the entire body.

Sex Differences in Running Performance. From age five to age eleven, improvement in running occurs in both boys and girls, with boys running about one-third ft./sec. faster than girls. Females traditionally show an earlier proficiency than males in finely coordinated, movement-oriented behavior. Males are better at vigorous, gross motor skills, such as running, throwing, and kicking (Singer, 1980). While girls are only slightly weaker than boys until adolescence, the difference is not enough to account for boys' superiority in gross motor skills at such an early age (Herkowitz, 1978).

Much of the difference between male and female performance depends upon socio-cultural expectations (Brawley & Landers, 1977). Developmental differences exist, but society places an early demand on boys for recognition in sports and games. Girls seem to be satisfied with other activities, but when they do participate in sports, it is for reasons such as social interaction, fun, and aesthetic expression. Males' reasons for participation included the pursuit of risk, competition in skill, and competition with the environment (Brawley & Landers, 1977). Some support has been shown for a higher desire of competition among men and among female athletes (Helmreich & Spence, 1977).

While sex differences in running performance are evident at an early age, differences are not as great as they once were. Performance in running, therefore, probably does not depend solely upon structural differences, but upon psychological motivation, and socio-cultural factors as well.

The Potential Influence of IF on Running Performance

A main topic in competitive running is obtaining top performance and maintaining consistent, maximum speed. A traditional technique for helping runners improve speed has been to time their performance. Bush (1978), believes that, "By timing the athletes and letting them know every day what their time is, a coach can motivate them to accomplish more. Athletes like to be told what they are doing . . . they like to be timed" (p. 407).

Timing a runner gives him precise, qualitative feedback, to apply and compare with both past and future performances. Elite performers like Otis Davis and Jim Green perform at such high levels of precision that augmented feedback is unnecessary. They know what their time is without IF (Wilt, 1973). Young performers, who have not completely mastered the skill at such a level, would probably benefit from IF in the form of a final time.

Timing a runner provides terminal IF upon conclusion of the run. Concurrent feedback, given during the sprint, could be even more helpful, since the IF could be used in

time to correct performance before completion. Split time intervals called out by long distance running coaches give the runner a reference upon which to calculate needed speed for completion of their final yardage. A situation where subjects receive information before the end of the sprint is an example of Adams' (1971) closed-loop concept of motor learning. This theory explains how information received during performance can be applied in time to alter results, and thus improve performance.

A sex difference might also be present due to the tendency of boys to display a more competitive attitude toward a task, as discussed previously. Boys might view the dash as more of a challenge than girls, and therefore may be more determined to improve their performance.

One must remember that a performer's improvement does not depend simply upon the existence of IF, but also upon how much is applied, when it is given, the type of skill, and the ability of the performer to apply the IF. The counting technique suggested in this study should provide a constant comparison for subjects about how quickly the sprint is being performed. If utilized correctly, the IF through counting, when combined with the traditional final time score, could become a viable form of augmented feedback for sprint running in ten and eleven year olds.

CHAPTER III

Methods and Procedures

Preliminary Procedures

A pilot study using five children was conducted to determine whether testing procedures could be smoothly coordinated, the number of subjects that could be tested in a certain period of time, and the length of rest time necessary to avoid fatigue. A field setting was located which was conducive to the conditions stipulated. The pilot study involved children other than those used for the actual study to avoid preconceived expectations of performance (Jones, 1977).

Subjects

The subjects in the actual study included forty-six children, ages ten and eleven, entering the sixth grade. There were twenty boys and twenty-six girls. Their participation was voluntary. Attendance at all sessions was required. Standard permission forms were completed prior to participation (see Appendices A, B, and C). All testing sessions took place in the gymnasium at Heather Glen Elementery School, Garland, Texas.

Treatment

Subjects were assigned the task of running a seventy-five yard dash. The order of subjects was randomized. All

subjects received the following treatment conditions, with Conditions 2 and 3 being counterbalanced:

(1) a "no IF" treatment in which the response, "Okay", was given to the runner upon completion of the sprint

(2) concurrent feedback through verbal counting during the sprint, with total running time to the nearest tenth of a second given upon completion of the run

(3) terminal feedback through a final time score only

(4) an "IF removal" treatment in which the response, "Okay", is again given.

Testing Procedures

On day one, all subjects received identical instructions concerning the general aspects of the study (see Appendix D). Subjects then ran two trials under Condition 1 described above.

Next, subjects received instructions concerning the IF treatment they received first (see Appendix D). The order of the treatment depended upon the subject's order of performance. Subjects assigned an even number in testing order ran three trials under Condition 2, then three trials under Condition 3. Odd-numbered subjects reversed this order. Subjects were randomly assigned to the odd or even-numbered sequence, thus counterbalancing the design. Three trials were given under each IF treatment, as opposed to two trials under Conditions 1 and 4, to allow the subject to practice under the IF situations, and to receive information from the

first trial with which to compare the next two trials. The first trial under each IF treatment is therefore slightly different than the second and third trials, and has been deleted from the analysis.

Instructions for the IF treatments explained how the subject was to use the IF. For Condition 2, the tenth of a second score, the counting, and the use of the halfway marker was described. The marker should have been especially helpful under this condition in providing an early point of reference for the subject to compare their performance. For Condition 3, subjects had the tenth of a second time score explained, and how future performances could be compared (see Appendix D).

On the second day, subjects received their second set of instructions concerning the remaining IF treatment. Upon completing their performance under this treatment, two trials under the IF removal condition were performed. All subjects therefore performed two trials under the first and fourth conditions, and three trials under the two IF treatments, for a total of ten trials.

Children remained inside the gymnasium doing passive activities until their turn to perform. Adult supervisors were present at all times to make sure no discussion about the study took place between children.

In preparation for the sprint, each child first performed warm-ups (Kaufman & Ware, 1977; Neuberger, 1969) according to a specified order indicated in Appendix F.

The child then went to the running area behind the gymnasium where the dash was performed. Each child ran the dash with only the experimenters present. After the child completed the run, he returned to the gymnasium, and the next child was sent to perform.

All subjects completed a questionnaire concerning the running trials when they returned to the gym. Questions determined whether the child tried their hardest, whether they were able to apply the IF, and whether they liked having the IF (see Appendix G). The questionnaires served as a manipulation check. The subject returned the questionnaire to the supervisor and proceeded with their quiet activity until their next turn. Since twenty-three children were tested during each session on a rotating basis, each child was guaranteed at least a twenty minute rest period between each run.

The seventy-five yard dash was performed behind the gymnasium (see Appendix H) on a part of the playground void of any equipment or poles which might cue the runner as to the distance of the sprint. A seventy-five yard dash was selected to maximize the effects of the counting condition over a longer duration period. Procedures for running the dash were revised for seventy-five yards, and based upon studies by Rarick and Oyster (1964) and Glassow and Kruse (1960) in which a thirty yard dash was used.

Subjects were allowed a five yard start behind the point at which the stopwatches began. Children were actually

running eighty yards. This was intended to remove any potential starting problems, such as a poor take-off, or slow reaction time (Doherty, 1976). The subject was also running at maximum speed for a larger percentage of time.

Runners began on a tape recorded starting signal of, "On your mark, get set, go!" played through a loud speaker. Two timers were present. The first timer was at a position five yards after the subject's starting line. The second timer was located at the finish line, seventy-five yards farther. The two stopwatches were activated simultaneously upon a signal by the first timer when the subject crossed the five yard mark. The watches were stopped in the same manner when the subject crossed the finish line upon signal from the finish-line timer. An average of the two times was taken as the runner's score. Stopwatches were synchronized. Appendix I gives the duties of all experimenters.

Under the concurrent feedback condition, the tape recorder counted off one-second intervals of, "One, two, three, ..." from the time the runner crossed the five yard line until the dash was completed. After the runner finished, a ten second interval elapsed before the timers gave their scores, and an average time announced to the runner. The ten second interval allowed the runner to absorb any intrinsic feedback from the sprint (Gentile, 1972). This procedure was repeated for each trial. Each subject was reminded of their previous score immediately before each

run, since a twenty-minute time period had elapsed during which their score may have been forgotten. A non-competitive atmosphere, with emphasis on using the IF was stressed.

Subjects under the terminal feedback condition performed according to above instructions, omitting the verbal counting during the sprint. Only the final score was given. All subjects received instructions to, "Run your fastest", before each trial. Special instructions for the use of IF were omitted under the first and fourth conditions. Only the response, "Okay", was given after each sprint under these no IF conditions. Children were not told when their final run would occur.

Analysis of Data

A 2 x 4 x 2 (sex by conditions by trials) ANOVA was used, with a repeated measures on the last two factors. The independent variables were the treatments administered to each subject, the number of trials each subject received, and whether they were male or female. The dependent variables were the running scores under all conditions. Significance was established at the .05 level. Questionnaires served only as a manipulation check.

CHAPTER IV

Results

This chapter includes a statistical analysis of the data as performed in order to test the hypotheses stated in Chapter 1. Two trials of a seventy-five yard dash were given under each of the following conditions:

Condition 1 = No IF

Condition 2 = Concurrent/Terminal IF

Condition 3 = Terminal IF

Condition 4 = IF Removal

Conditions 2 and 3 were counterbalanced to control for the effect of ordering.

A 2 (sex) by 4 (conditions) by 2 (trials) ANOVA with repeated measures on the last two variables was used to

analyze data. A significant main effect for sex was found $F(1,44) = 4.420$, $p < .05$. Table I shows the means and standard deviations for males and females.

TABLE I

MEANS AND STANDARD DEVIATIONS FOR MALES AND FEMALES

	1	2*	3*	4	Overall
Males					
$\bar{x}$	11.753	11.817	11.800	12.160	11.833
s	.747	.777	.752	.811	1.356
Females					
$\bar{x}$	12.338	12.375	12.683	12.863	12.565
s	1.280	1.322	1.428	1.358	.782

*Conditions 2 and 3 were counterbalanced.

Average times for males were significantly faster than for females. Besides having faster scores under all four conditions, males' performance under Conditions 2 and 3

did not differ as much as for females. Figure 1 shows the main effect for males and females.

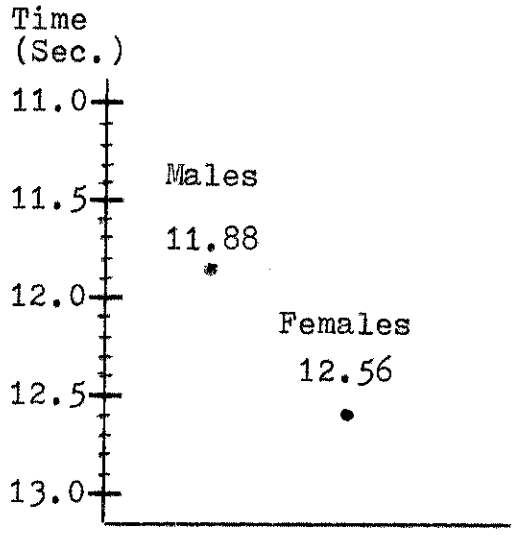

Fig. 1--Main Effect for Sex

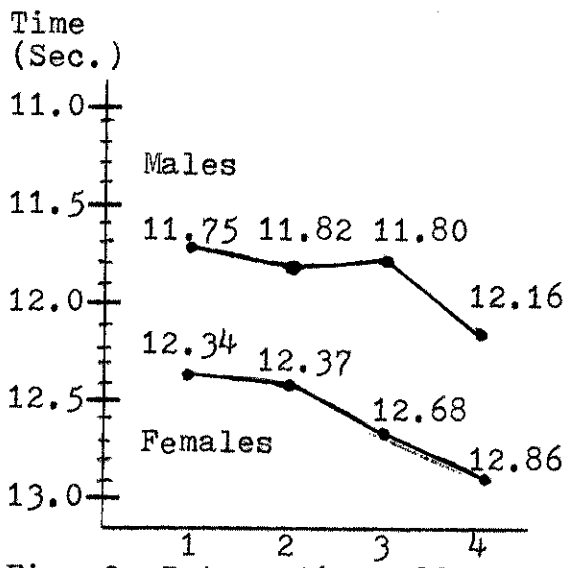

Fig. 2--Interaction Effect for Sex and Conditions

An interaction effect between sex and conditions was also found $F(3,132) = 2.816$, $p < .05$, as illustrated in Figure 2. Girls' performance declined in Condition 3, while boys' performance did not. The overall decrement between Conditions 1 and 4 for males was also less (.40) than for females (.52).

A post hoc analysis using the Newman Keuls' test showed a rank order of the following conditions: $1 = 2 < 3 < 4$. Scores for all subjects were best under the initial No IF condition, and poorest under the final IF

Removal condition. The main effect for conditions was indicated $F(3,132) = 22.5862$, $p < .05$, as illustrated in Figure 3. Table II shows the overall ANOVA for running scores under all conditions.

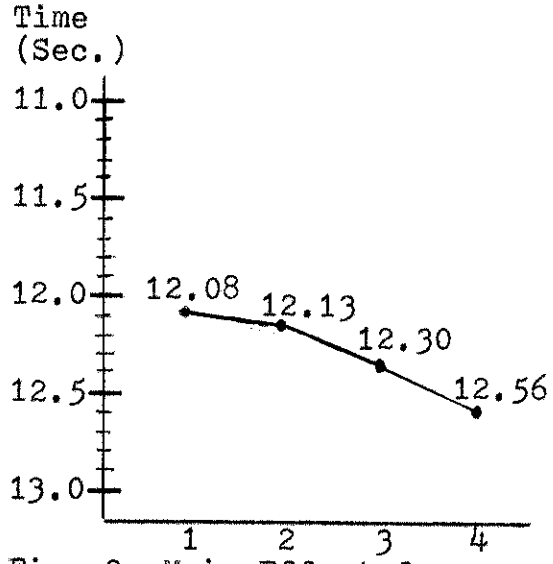

Fig. 3--Main Effect for Conditions

TABLE II

ANOVA SUMMARY FOR RUNNING SCORES

	df	MS	F	P
Between Subjects	45			
Sex	1	42.113	4.420	.041
Error Between	44	9.528		
Within Subjects	322			
Conditions	3	3.957	22.586	.000
Sex by Condition	3	.493	2.816	.042
Error Within	132	.175		
Trials	1	.224	2.600	.114
Sex by Trials	1	.020	.228	.636
Error Within	44	.086		
Conditions by Trials	3	.671	5.841	.001
Sex by Conditions by Trials	3	.031	.271	.846
Error Within	132	.115		

TABLE III

PERFORMANCE MEANS AND STANDARD DEVIATIONS

		1	2*	3*	4
Trial 1	$\bar{x}$	11.948	12.117	12.270	12.637
	s	.982	1.151	1.191	1.241
Trial 2	$\bar{x}$	12.220	12.148	12.328	12.480
	s	1.229	1.155	1.332	1.165
Overall	$\bar{x}$	12.084	12.133	12.299	12.558
	s	1.115	1.146	1.257	1.200

*Conditions 2 and 3 were counterbalanced

Performance scores under Conditions 1 and 2 did not differ significantly. Table III gives performance means and standard deviations under the four conditions. No effect from the counterbalanced ordering of Conditions 2 and 3 occurred. Subjects receiving Condition 2 before Condition 3 performed no differently than subjects receiving Condition 3 first.

An interaction effect between conditions and trials existed $F(3,132) = 5.841$, $p < .05$. Trial 1 performances were better under all conditions except Condition 4. Between trial differences for Conditions 2 and 3 seemed to be slightly

less (.03 and .06 respectively) when compared to trials under Conditions 1 and 4 (.27 and .15) Figure 4 depicts

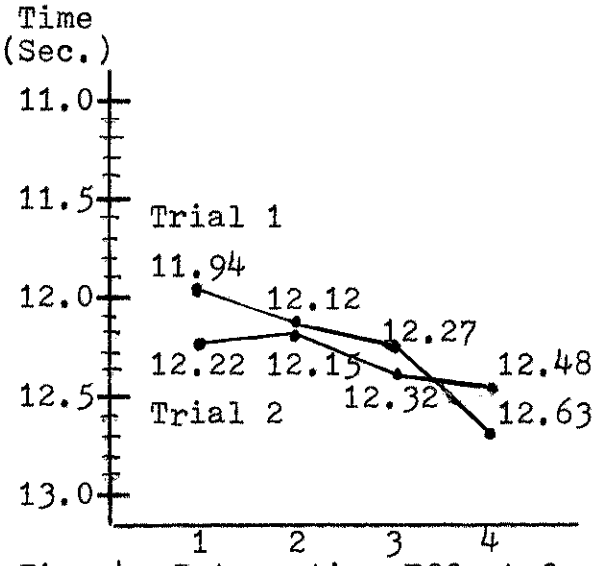

Fig. 4--Interaction Effect for Conditions and Trials

the effect between conditions and trials. The high correlation which existed between trials for every condition indicates that individual differences for each trial were actually quite similar. Since all conditions showed a correlation coefficient of .90 or higher, performances

are considered consistent and reliable, as shown in Table IV.

TABLE IV

CORRELATION COEFFICIENTS BETWEEN TRIALS 1 AND 2 FOR FOUR CONDITIONS

1	2	3	4
.9217	.9166	.9357	.9495

CHAPTER V

Discussion, Conclusions, and Recommendations

Discussion

The performance of forty-six ten and eleven year old boys and girls on a seventy-five yard dash under four different conditions with and without IF was measured. A relationship seems to exist between the type of IF received and performance on the dash. Subjects did not improve when IF was administered. However, performance with IF was maintained at a higher level when compared to performance under the final IF removal condition. Trial scores under Conditions 2 and 3 were also more consistent than trial scores under the conditions without IF.

Subjects averaged their best times on the first two trials without IF, and their poorest times on the final two trials when IF was removed. The first two trials served as a baseline to compare manipulation scores from Conditions 2, 3, and 4. Better performance under the first condition probably indicates that the subjects put forth greater effort for the first trials, since the task novel for them at that time. Ellis (1973) indicates that any situation which has not been executed recently may cause a higher arousal level than would normally occur. Although

all subjects had run dashes before, the testing circumstances probably heightened their anticipation and excitement.

Performances under Conditions 1 and 2 were equal, independent of the order of treatment of Conditions 2 and 3. For all subjects to score equally high under the second treatment, even though it appeared at a later interval for some, probably indicates a motivational characteristic in the counting which served to maintain subjects' speed. Magill (1980) notes that the role of IF as a motivator serves to maintain interest in an activity in relation to a specific goal which the performer has set for himself.

Based upon answers of "No" to the following questions found in Appendix G, "Did you try to do your best on this last run?" and "Can you try to run even faster next time?", children seemed to tire of the task after about the third trial each day. Ellis and Scholtz (1978) support this tendency for enthusiasm to decline after a task has been repeatedly executed. For equally high scores to have occurred under Condition 2 therefore seem especially significant.

Children were observed as having different attitudes toward the IF. Some subjects showed an intense interest, while others seemed unsure of the new situation. Just as an individual's response will vary in any situation, subjects' perception of the task as a positive or negative experience could have influenced their performance (Rotter, 1954).

Although it is possible that subjects did not like the counting, this was not indicated in their responses to questionnaires (see Appendix G). Several subjects rated Condition 2 as their second or third favorite, but eighty per cent ranked it first, and only one subject ranked it last. Perhaps more practice in using the concurrent IF would have produced a more automatic reaction to the counting, allowing subjects to concentrate more on improving their running cadence. This "ingraining" of the perceptual trace for concurrent IF would allow subjects to use the closed-loop theory suggested by Adams (1971) with more success.

Overall averages as noted in Table I showed that subjects were slower in Conditions 3 and 4. Boys, however, were actually equal in Condition 3, and showed little decrement until Condition 4. Girls declined over both Conditions 3 and 4. Girls did not seem to remain as interested as boys in the task of running, as noted by their questions of, "How many more times do we have to run?" This seems consistent with Brawley and Landers' (1977) explanation that males have a tendency to view a situation as more challenging, and may perform more competitively than girls.

The high correlation of .90 between Trials 1 and 2 for subjects indicate that performances were consistent. Between trial scores for Conditions 2 and 3 were much closer than for Conditions 1 and 4, indicating that IF might have served in maintaining interest and consistency. The lack of IF in Conditions 1 and 4 may have confused the runner.

Trial 1 scores were slightly better on Conditions 1, 2, and 3, and Trial 2 was higher for Condition 4. This improvement in Trial 2 under Condition 4 might represent a type of intrinsic feedback which developed from learning about the running cadence. Had the subject felt that the first trial was not as good as past performances, he might have tried to compensate for this poor feeling in the next run.

Conclusions

The following hypotheses were supported or rejected based upon the results of this study.

H_1: An improvement in running performance will occur when IF is applied.

This hypothesis was rejected.

H_2: A greater improvement in running speed will occur in subjects receiving verbal IF counted in seconds in combination with final time at the end of the run, than IF reported as a final time only.

This hypothesis was rejected. Had the word "improvement" been replaced with "performance", this hypothesis would have been supported.

H_3: Subjects' performance will decline under the IF Removal condition.

This hypothesis was partially supported. The decrement actually began under Condition 3 for girls. The decline under Condition 4 could also have been caused by other factors.

H_4: Males and females will respond differently to the situation of running.

This hypothesis was supported.

The following general conclusions are therefore drawn concerning IF and running performance in ten and eleven year olds.

1. Subjects' best performances occurred under the first no IF condition, while their poorest performances were under the final IF removal condition. Better scores under Condition 1 probably occurred because of the newness of the situation, while poor scores under Condition 4 probably reflected a lack of motivation in performing.

2. Performances under Conditions 1 and 2 were not significantly different, suggesting a level of interest and motivation in Condition 2 equal to that in Condition 1, regardless of when Condition 2 occurred for the subject.

3. Boys maintained performance under Conditions 1, 2, and 3, while girls' performances remained high for Conditions 1 and 2 only. This seems to indicate a preference for concurrent IF by girls. This could also have been the result of boys' competitive response to either type of IF.

Recommendations

Were this study to be replicated, the following procedural changes would assure more definite conclusions.

1. Random assignment of order would be made for trials and conditions, rather than for only the two conditions with IF.

2. A control group would be added and would receive only the No IF treatment. This would alleviate the question of whether scores could have been maintained at a high level without any IF.

3. A minimum of ten trials under each condition would be given, with not more than three trials on any one day. This would aid the subjects in practicing the task, and hopefully eliminate boredom.

4. An ABA format (Etzel, LeBlanc, & Baer, 1977), would be used to allow the re-testing of subjects under Conditions 2 and 3, after the IF Removal condition. This would help determine the strength of the IF conditions' effect.

5. Additional questions under the concurrent IF condition would be included. Subjects would be required to name the count at which the halfway point was reached. They would also be asked to tell which half of the run was the fastest.

6. An additional experimenter would be used to scan responses to questionnaires and to give further instructions or assistance to those needing it.

The results of this study are applicable to ten and eleven year old children running a seventy-five yard dash. Older children might be able to process the concurrent IF more quickly, and possibly support the first hypothesis. Athletes of a higher skill level might also be able to

utilize the counting more easily and with greater results. The possibility of lengthening the run to perhaps one half of a mile would also be interesting.

Another possibility for future study might be to provide the runner with instructional "cues" as to improvement of the running technique. According to Gentile (1972) and Del Rey (1972), specific informational corrections have the greatest effect on an individual's improvement of closed skills--of which running a sprint might be classified.

It must be remembered that it is not the application of IF which determines performance, but the performer's ability to utilize the IF and relate it to a particular task. As indicated earlier, those children who were motivated to apply the counting through desire, determination, or perception of the task as a challenge, seemed to show greater improvement over those who were not motivated to do so.

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APPENDICES

APPENDIX A

Dear _____,

I hope you have been having a good summer vacation! Based upon your response at the end of the school year, you have expressed an interest in participating in my study on running. It is very important that everyone attend, if the study is to be a good one.

Your two running sessions will be the mornings of Tuesday, August 18, and Thursday, August 20, from ____a.m. until ____a.m. I will be contacting you in order to verify your participation.

All sessions will be held at Heather Glen Elementary School, 5119 Heather Glen, at the gymnasium. Please come to the outside gym door, and avoid disturbing the children who are already there. All children will need to:

(1) bring a quiet activity to do between the runs, such as checkers, cards, a game, or a book

(2) wear clothes suitable for running

(3) bring the attached permission form already filled out.

I am looking forward to seeing you! Thank you very much.

Mrs. Parks

Jennifer Parks,
Physical Education Instructor

APPENDIX B

July 30, 1981

Dear Parent(s):

I am a candidate for the Master of Science degree in Physical Education at North Texas State University. I will be conducting a study involving running, in which your child has expressed a desire to participate in. The purpose of the study is to determine whether counting out loud as a child runs a seventy-five yard dash will make him/her run faster than the traditional method of giving a final time at the end of the run.

There will be two different days of testing. The first day will include the recording of each child's average dash time, and of one treatment condition. The second day, each child will perform under the remaining treatment condition, and then repeat a regular run. Treatment conditions will include, (1) the traditional feedback given in the form of a final time, and (2) second by second count as the dash is performed, and a final time at the end.

The children will not know ahead of time the purpose of the study, or for what reasons they are being given a specific treatment. After the runs have been completed, the purpose of the study will be explained. The children will remain indoors between their runs, and a twenty minute rest will occur between each trial. They will be running ten times over a two day period.

If you will allow your child to participate, please complete the enclosed permission slip and have him/her bring it with them to their first session. I will be contacting you as to their specific time of arrival. You may withdraw your child from the study at any time if necessary. If there are any questions, feel free to contact me at 358-5761. Thank you very much for your cooperation.

Jennifer Parks

Jennifer Parks,
Physical Education Instructor

APPENDIX C

INFORMED CONSENT

NAME OF SUBJECT:_____

1. I hereby give consent to _____ to perform or supervise the following investigational procedure or treatment:

   To determine which of the running conditions stated in the enclosed letter improves running performance the most.

2. I have seen a clear explanation and understand the nature and purpose of the procedure or treatment, possible appropriate alternative procedures that would be advantageous to him/her, and the attendant discomforts or risks involved and the possibility of complications which might arise. I have seen a clear explanation and understand the benefits to be expected. I understand that the procedure or treatment to be performed is investigational and that I may withdraw my consent for his/her status. With my understanding of this, having received this information and satisfactory answers to the questions I have asked, I voluntarily consent to the procedure or treatment designated in Paragraph 1 above.

_____
DATE

SIGNED: _____ SIGNED: _____
Subject
or
SIGNED:_____ Person Responsible

_____
Relationship

Instructions to persons authorized to sign:
If the subject is not competent, the person responsible shall be the legal appointed guardian or legally authorized representative.
If the subject is a minor under 18 years of age, the person responsible is the mother or father or legally appointed guardian.
If the subject is unable to write his name, the following is legally acceptable: John H. (His X Mark) Doe and two witnesses.

APPENDIX D

INSTRUCTIONS

Instructions for All Subjects

"You will be running some dashes for me. There will be plenty of time for you to rest between each trial. There are two things which will be very important for you to do.

(1) Make sure that you try your very hardest on every dash. You will be running outside behind the gymnasium, by yourself. The rest of the time you are to remain inside the gym doing your quiet activities.

(2) Be sure that you do not share any information about what you are doing with anyone else. Even though it does not seem important, it can make a difference. We will explain why everything is being done at the very end of the study, and will answer any questions you may have.

When it is your turn to run, you will be called. You will warm-up according to the list of exercises (demonstrate). You will then perform your run outside. When you return from your run, you will receive a questionnaire to answer. You may then return to your quiet activity until you are called again."

Note: All experimenters will answer any questions from children about why something is being done, by replying, "We cannot tell you now, but we will after the study is finished."

Instructions for Counting/Final Time Treatment

"Now you will again be running your fastest. This time, you will be getting some extra information about how fast you are running. After the starting signal, you will hear seconds counted off. These seconds will give you an idea of how fast you are running. There will be two cones halfway down, which you may use to help you determine your speed. For instance, if you got to the cones by count 3 on your first run, and on the second run, you were on count 4, what would that tell you about how fast you were running? After you have finished the dash, you will also be told the number of seconds in which it took you to run it. Your time will

be to the nearest tenth of a second. Which time is better, 9.0 or 9.2? Why? What does the .2 mean in 9.2? When you run the next dash, what should you try to do? Are there any questions? Okay, are you ready to try your hardest again?

Instructions for Final Time Only Treatment

"Now we are going to run our hardest again. The next runs are going to be a little different. After the starting signal, you will run your dash as fast as you can. There will be two cones halfway down, which you may use to help determine your speed. After you have finished the dash, you will be told the number of seconds in which it took you to run it. Your time will be to the nearest tenth of a second. Which time is better, 9.0 or 9.2? Why? What does the .2 mean in 9.2? When you run the next dash, what should you try to do? Are there any questions? Okay, are you ready to try your hardest again?

APPENDIX E

BATTERY-OPERATED EQUIPMENT

1. Two electronic stopwatches, a Premier 200 and a McGregor 200.

2. One Megaphone M-100 loud speaker, model #2SB449.

3. One General Electric Music Machine cassette tape recorder, model #3-5130 A.

APPENDIX F

WARM-UP EXERCISES

1. Ten Twisters--arms are out to the sides, shoulder high. The body twists from side to side, rotating from the waist. One Twister consists of twisting to the right and then to the left.

2. Ten Giant Arm Circles--arms are out to the side, shoulder high. Arms are circled toward the front from the shoulders in large circles.

3. Ten Hurdle Stretches on each side--sitting on the floor, one leg is straight out in the front, the other is bent in the back. Legs are stretched apart, and a twisting motion is made with the upper body, trying to lay the stomach onto the front thigh, and reaching for the toe with the opposite hand.

4. Ten Toe Raises--with hands on hips, heels together, raise up onto the toes, and back down onto the heels ten times.

5. Ten Jumping Jacks--as legs straddle on the jump, arms move to an overhead position and clap. As feet are returned together on the jump, arms are replaced at the sides of the body. One straddle and one return make one Jumping Jack.

6. Two practice sprints the length of the gymnasium.

APPENDIX G

QUESTIONS GIVEN DURING TREATMENTS

Questions for No IF Treatment (Condition 1)

Trial 1--

1. Did you try to do your best on the last run?
2. Do you think you can run faster?

Trial 2--

1. Did you try to do your best on this last run?
2. Can you try to run even faster next time?

Questions for Counting/Final Time Treatment (Condition 2)

Trial 1--

1. Did you try to do your best on the last run?
2. What did the counting tell you about how fast you ran?
3. What did the final time tell you?
4. How can you use the counting and the time to help you improve your speed next time?

Trial 2--

1. Did you try to do your best again?
2. What did the counting and final time tell you this time?
3. Do you think the counting and time can help you to do even better on this next run?

Trial 3--

1. Did you try to do your best on this last run with counting and time?

2. Did you like having the counting and time on these last three runs?

3. Which did you like better, the counting, the time, or both? Why?

Questions for Final Time Treatment (Condition 3)

Trial 1--

1. Did you try to do your best on this last run?

2. What did the final time tell you about how you ran?

3. How can you use that time to improve your speed?

Trial 2--

1. Did you try to do your best again?

2. What did the time tell you about your running this time?

3. Can you use the time to help you run faster?

Trial 3--

1. Did you try your best again on this last run with time?

2. Did you like having your running time given to you on these last three runs? Why?

Questions for IF Removal Treatment (Condition 4)

Trial 1--

1. Did you try your best on the last run?

2. Was that as fast you could possibly run?

Trial 1--

1. Did you run your very best on this last run?

2. Please rank the following according to which type of running you liked the best.

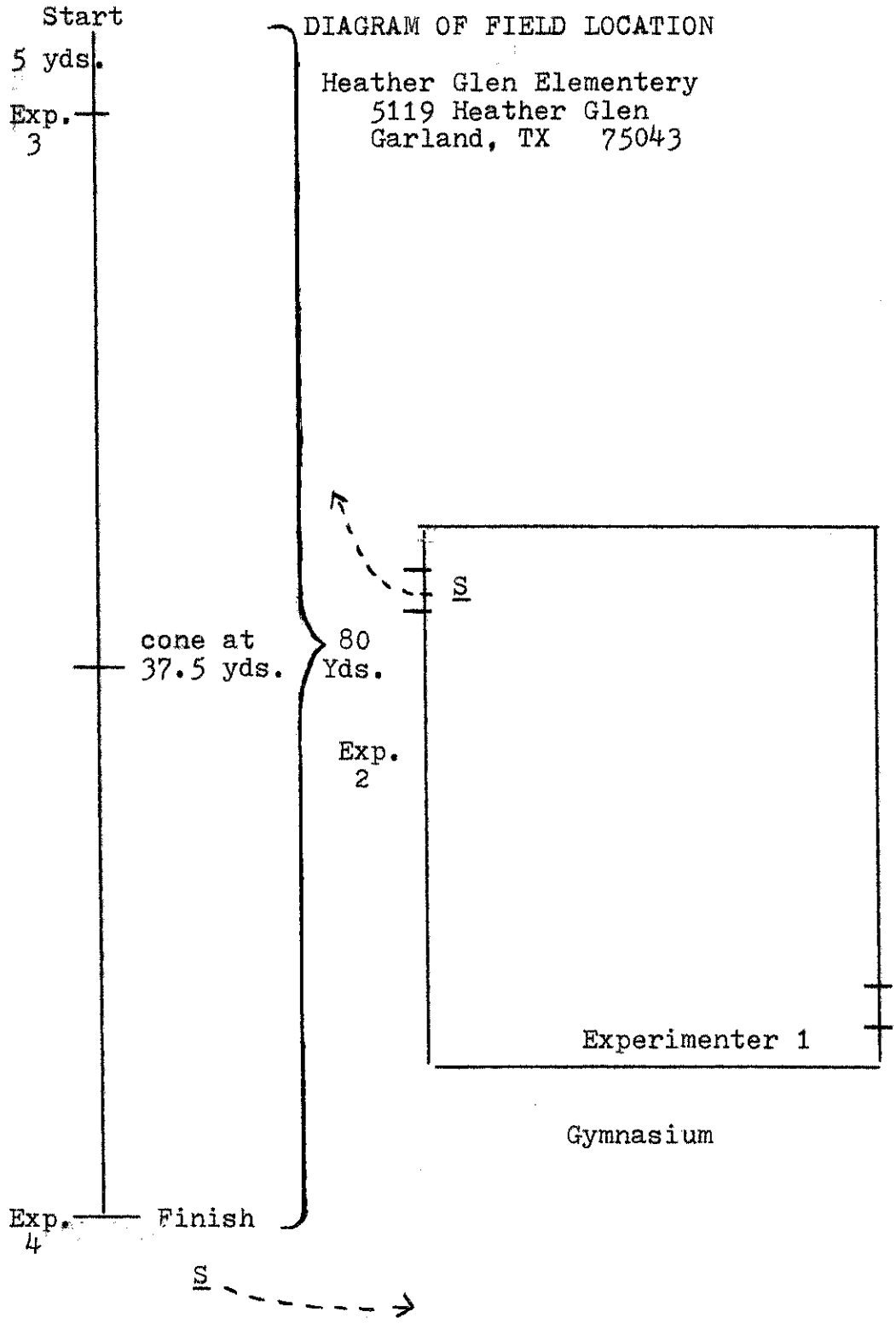
1 = favorite 2 = second favorite 3 = least favorite

_____ just plain running

_____ running with counting and time

_____ running with just time

APPENDIX H


Start
5 yds.
Exp. 3
DIAGRAM OF FIELD LOCATION
Heather Glen Elementery
5119 Heather Glen
Garland, TX 75043
S
cone at
37.5 yds.
80
Yds.
Exp. 2
Experimenter 1
Gymnasium
Exp. 4
Finish
S

APPENDIX I

JOB DESCRIPTION OF EXPERIMENTERS

Experimenter 1--

This person will be in charge of monitoring children during their quiet activities, handing out questionnaires, starting children on their warm-ups, and sending children to be tested when it is their turn. They will make sure that no discussion about the experiment takes place.

Experimenter 2--

This person will monitor the tape recorder and loud speaker, and will give instructions and record scores.

Experimenter 3--

These two people will be responsible for timing each child with a stopwatch. One timer will be positioned five yards after the starting line. The other timer will be seventy-five yards farther. Both timers will start their watches simultaneously on an arm signal previously practiced, and will stop their watches in the same manner as the subject crosses the finish line. An average of the two times will represent the runner's actual score. Timers will have practiced beforehand on other subjects.

APPENDIX J

SUMMARY OF RESEARCH PROJECT FOR
USE OF HUMAN SUBJECT REVIEW BOARD

NAME Jennifer Parks DATE OF REPORT July 30, 1981

PROJECT TITLE The Effects of Counting as a Form of Concurrent Feedback on the Seventy-Five Yard Dash

The purpose of this study is to determine whether counting out loud as a child performs a seventy-five yard dash will make him/her run faster than the traditional method of giving a final time at the conclusion of the run.

There will be two different days of testing. The first day will be spent recording average dash times for each child, and one treatment condition. The second day will include the other treatment condition, and regular running scores. The four conditions will include a No IF condition, a Concurrent/Terminal IF condition, a Terminal condition, and an IF Removal condition.

Children will not be told what particular condition they are running under, although they will receive specific instructions as to how to use the feedback. No conversation will be allowed during the study in reference to performance. Adult monitors will be present at all times to see that the children remain quiet. Questionnaires will be administered to determine whether the children liked the feedback. The children will remain indoors until it is their time to perform. There will be a twenty minute rest between each run.

MEMORANDUM

TO:

FROM: Office of Research and Academic Grants (for use of Human Subjects Review Board)

The North Texas State University Policy on Protection of Human Subjects states that an individual is considered to be "at risk" if he may be exposed to the possibility of injury -- physical, psychological, or social injury -- as a consequence of participation in any research development, demonstration, instruction, clinical service or related activity which departs from the application of those established and accepted methods necessary to meet his needs or which increases the ordinary risks of daily life, including the recognized risks inherent in a chosen occupation or field of service. The determination of when an individual is at risk is a matter of the application of common sense and sound professional judgment to the circumstances of the activity in question. Nevertheless, the Use of Human Subjects Review Board must make its own determination of "risk" in terms of the most accurate and complete information available. Further, only the Board is authorized to determine officially that subjects are not at risk.

A narrative description of the activity in which you propose the use of human subjects should be furnished to the Review Board. In addition, your responses required by the attached Form should be returned to my office, Room 206 Administrati Building, for forwarding to the Board. The Form must carry your signature and that of your department chairman.

A statement of the action of the Review Board will be sent to you as soon as possible after the next meeting of the Board.

If you have questions relative to providing the requested information, please call me (Ext. 2473) or Dr. Robert Gracy, Chairman of the Board (Ext. 2713).

FORM 1

USE OF HUMAN SUBJECTS

STATEMENT BY PRINCIPAL INVESTIGATOR OR ACTIVITY DIRECTOR

A. Activity Director: Jennifer Parks

B. Activity Title: "The Effects of Counting as a Form of Concurrent Feedback on the Seventy-Five Yard Dash"

C. Department: Physical Education D. Phone & Ext. 2651

E. Date Submitted July 28, 1981

F. Respond to each of the following on separate pages.

1. Identify the requirements for the subject population. Explain the rationale if the population includes a special group such as prisoners, children, mentally disabled, or those whose ability to give informed consent may be in question.

2. Specifically identify those procedures in which a human subject is used which depart from the application of those established and accepted methods necessary to meet his needs, or which increase the ordinary risks of daily life, including the recognized risks inherent in a chosen occupation or field of service.

3. Describe and assess any potential risks -- physical, psychological, social, legal, etc. and assess the likelihood and seriousness of such risks.

4. If electronic or stressful instrumentation is to be used, provide the name of the manufacturer, the model number and appropriate specifications of the device, as well as how it is to be used on the subjects.

5. Describe procedures, including confidentiality safeguards, for protecting against or minimizing potential risks and an assessment of the likely effectiveness of the procedures (i.e., physician's examination; required attending physician; attending registered technician, etc.).

6. Assess the potential benefits to be gained by the individual subject, as well as benefits which may accrue to society in general as a result of the planned work.

7. Analyze the risk/benefit ratio.

To assist the Committee further in its analysis of the direct or potential benefit of this activity against the potential risk to the individual, answer the following questions in the spaces provided.

1. What specific information will this activity provide, and what is the significance of that information? (Please answer in language that can be readily understood by persons in disciplines other than yours).

   This activity will determine whether counting, applied as concurrent feedback, will improve a child s performance on the seventy-five yard dash. It will also indicate whether this form of feedback is more beneficial than a final time (9.02 secs.)

2. Could this information be obtained from other animals or other laboratory models?

   _____YES X NO Explain your response.

   The information could not be applied by animals nor would there be any practical benefits as a result

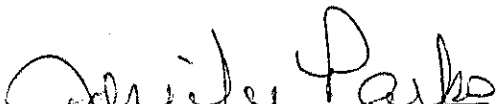
3. Are there alternative ways to acquire this information from human subjects that may avoid the risks identified in Item F, 2 & 3? _____YES X NO
   If "YES" response, explain why the alternatives are not being used.

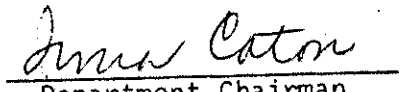
4. Is participation in the activity completely voluntary? X YES _____NO
   If "NO" response, explain.

5. May any subject withdraw from the activity at any time without penalty?
   X YES _____NO
   If "NO", explain.

. Is any kind of incentive offered to the subject? X YES _____NO
If "YES" response, explain the type and amount.

No concrete incentive is offered. The possibility of improving their running time provides a psychological incentive.

SIGNATURE of SUBMISSION  Principal Investigator or Activity Director

SIGNATURE of APPROVAL  Department Chairman

Attach a copy of the Informed Consent Form 2 filled in as completely as you expect to present it to the subject for signature. Include a copy of your statement to the subject covering the six basic elements* required by an informed consent as identified below.

*Informed consent must include the following six basic elements:

1. A fair explanation of the procedures to be followed, and their purposes, including an identification of those which are experimental;
2. A description of any attendant discomforts and risks reasonably to be expected;
3. A description of any benefits reasonably to be expected;
4. A disclosure of any appropriate alternative procedures that might be advantageous for the subject;
5. An offer to answer any inquiries concerning the procedures; and
6. An instruction that the person is free to withdraw his consent and to discontinue participation in the project or activity at any time without prejudice to the subject.

FORM 2

USE OF HUMAN SUBJECTS

INFORMED CONSENT

NAME OF SUBJECT: _____

1. I hereby give consent to _____ to peform or supervise the following investigational procedure or treatment:

_____

_____

_____

2. I have (seen, heard) a clear explanation and understand the nature and purpose of the procedure or treatment; possible appropriate alternative procedures that would be advantageous to me (him, her); and the attendant discomforts or risks involved and the possibility of complications which might arise. I have (seen, heard) a clear explanation and understand the benefits to be expected. I understand that the procedure or treatment to be performed is investigational and that I may withdraw my consent for my (his, her) status. With my understanding of this, having received this information and satisfactory answers to the questions I have asked, I voluntarily consent to the procedure or treatment designated in Paragraph 1 above.

_____
DATE

SIGNED: _____
Witness

SIGNED: _____
Subject

or

SIGNED: _____
Witness

SIGNED: _____
Person Responsible

_____
Relationship

Instructions to persons authorized to sign:
If the subject is not competent, the person responsible shall be the legal appointed guardian or legally authorized representative.
If the subject is a minor under 18 years of age, the person responsible is the mother or father or legally appointed guardian.
If the subject is unable to write his name, the following is legally acceptable: John H. (His X Mark) Doe and two (2) witnesses

1. Explain the requirements for the subject population. Explain the rationale if the population includes a special group such as prisoners, children, mentally disabled, or those whose ability to give informed consent may be in question.

Subjects will include ten and eleven year old boys and girls who are just entering the sixth grade. Children are voluntary participants from physical education classes at Heather Glen Elementary and Routh Roach Elementary schools in Garland, Texas.

2. Specifically identify those procedures in which a human subject is used which depart from the application of those established and accepted methods necessary to meet his needs, or which increase the ordinary risks of daily life, including the recognized risks inherent in a chosen occupation or field of service.

Subjects will be running ten seventy-five yard dashes under different conditions of information feedback. They will run five trials on each day. There will be a twenty minute rest period between runs. All children will remain indoors doing quiet, sitting activities until their turn to perform. The runs will take place behind the gymnasium, in the morning. Each child will perform by himself, with only the experimenters present.

The four treatment conditions will be: (1) No IF--only the response, "Okay" will be given to the runner after completion of the run, (2) Concurrent/Terminal IF--verbal counting through a tape recorder will be played as the subject performs the dash, and a final time will be given at the end of the run, (3) Terminal IF--only the final time will be given at the end of the run, (4) IF Removal--only the response, "Okay" will be given.

Questionnaires concerning how the children used the IF will be answered after each running trial. There are no risks involved in this study.

3. Describe and assess any potential risks--physical, psychological, social, legal, etc. and assess the likelihood and seriousness of such risks.

The ground where the runs will be completed is quite level, and there are no large rocks or pieces of glass on the grassy running area. Since the children will be running in the morning, and will be in the gymnasium involved in quiet activities until their turn, there is no risk of heat exhaustion. A first aid kit will be present to treat any cuts or scrapes which a child might receive.

4. If electronic or stressful instrumentation is to be used, provide the name of the manufacturer, the model number and appropriate specifications of the device, as well as how it is to be used on the subjects.

There is no electronic equipment connected to a current of any type in this study. Battery operated equipment will include stopwatches, a loud speaker, a tape recorder, and a finger sensor to monitor the children's heartrates.

5. Describe procedures, including confidentiality safeguards. for protecting against or minimizing potential risks and an assessment of the likely effectiveness of the procedures.

A first aid kit will be present. as will ice packs in case of emergency. Children will be seated between trials. Two adult monitors will be present to assist in emergency. Children involved in the study will be under adult supervision at all times. All scores will be kept confidential Only the child will know how they scored. This will prevent most social comparison and any negative feelings that might result from it.

Questionnaires will be completed and collected after each treatment trial. A different set of questions will be used for each treatment to determine whether the subject tried their hardest. whecher they liked their treatment condition, and what they learned from it.

6. Assess the potential benefits to be gained by the individual subject, as well as benefits which may accrue to society in general as a result of the planned work.

The subject has the potential of improving their time on the seventy-five yard dash. As a result, if the counting condition has a greater influence on improving their running time than the traditional practice of giving a final time at the end of the run, it could be used more often as a training technique.