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EFFECTS OF POSITIVE VERBAL REINFORCEMENT
ON THE FOUR UNDERLYING FACTORS IN
INTRINSIC MOTIVATION

THESIS

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By

Ray Prentice B.S.

Denton Texas

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The study examined the effects of positive verbal reinforcement on intrinsic motivation by determining differential effects over four multidimensions of Ryan's Intrinsic Motivation Inventory (IMI). Subjects (N=60) were 30 male and 30 female college students. The subjects were blocked by gender and randomly assigned to a positive verbal reinforcement group or a control group. The subjects received 10 trials on the stabilometer. The results of the study indicated that there were significant group differences for composite intrinsic motivation and for perceived competence; however, there were no significant gender differences found. Furthermore, no group differences were reported for the underlying factors of interest/enjoyment, effort, or pressure/tension.

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CHAPTER ONE

INTRODUCTION

Motivation has been studied from many different perspectives, however much of the attention given by social and sport psychology scientists has centered around intrinsic motivation. Many theorists believe that intrinsic motivation is more desirable than extrinsic motivation because the former has a greater, more prolonged maintenance of behavior change. For example, previous research indicated that extrinsic rewards had an impact on a person's overall level of motivation (Deci, 1971; Deci, 1972), and that the use of monetary or materialistic rewards might reduce intrinsic motivation. In general, the finding that external rewards lowered one's level of motivation toward a particular activity was frequently reported (Deci, 1971; Deci, 1972, Deci & Ryan, 1980). One noteworthy exception to this replicated finding was that the external reward of verbal reinforcement would increase levels of motivation (Deci, 1971).

In order to explain his findings on the differential effects of various types of reinforcement, Deci (1975) proposed a new cognitively-based theoretical framework. The major proposition embedded in cognitive evaluation theory is that intrinsic motivation consists of two main factors: the

need to feel competent and the need to be self determining when dealing with the surrounding environment. These feelings are formed based on the perceptions that an individual has to external feedback. Further, Deci (1975) and Deci and Ryan (1980) suggested that these perceptions are formulated and governed by whether the feedback is viewed as informational or controlling. If a person receives feedback and he or she perceives it to be informational in nature, he or she will interpret it as being reflective of a high level of competence and therefore will exhibit an increased level of intrinsic motivation. However, if individuals perceive feedback to be controlling, they will lose their feeling of self determination and therefore will experience a decrease in intrinsic motivation.

Research on the effects of verbal feedback on intrinsic motivation has generally shown that positive verbal reinforcement increases intrinsic motivation in both adult and child populations (Anderson, Manoogian & Reznick, 1976; Deci, 1971; Deci, 1972; Deci, Cascio & Krussell, 1973; Ryan, Vallerand & Deci, 1984; Vallerand, 1983; Weinberg & Jackson, 1979; Zinser, Young & King, 1982). The effects of positive verbal reinforcement on intrinsic motivation of females has been a less consistent finding than it has for males. Specifically, Deci & Ryan (1980) reported that females exhibited lower intrinsic motivation after receiving positive verbal feedback. They suggested that females

perceived the feedback as controlling, rather than informational, and therefore, did not feel self determining. However, it has been hypothesized (Shanab, Peterson, Dargahi & Deroian, 1981) that females no longer hold these perceptions of incompetence. Current socialization practices and success in a wide array of professional endeavors may account for these changes in feelings of self-worth and achievement, and ultimately lead to an interpretation of feedback as informational rather than controlling. Thus, it appears important to re-examine the effects of positive verbal reinforcement on intrinsic motivation with gender considerations taken into account.

Deci's cognitive evaluation theory has been tested in different settings in order to establish its applicability to varied areas of motivational research. However, a recurring problem with testing intrinsic motivation, and particularly the effects of verbal reinforcement on intrinsic motivation, is that intrinsic motivation levels have been examined by measuring external factors such as time on task (Deci, 1972) or by asking the subjects how much they enjoyed the activity following verbal reinforcement strategies (Kast & Connor, 1988). By using globally oriented tests that are generic in nature, researchers have extrapolated the effects of verbal reinforcement on intrinsic motivation based on performance or outcome measures. Further, the development of the Task Reaction

Questionnaire (Mayo, 1977), which was one of the first objectively scored paper-pencil tests, yielded a composite intrinsic motivation score. Limited attention has been directed toward the underlying factors that might constitute intrinsic motivation.

With the rare exception of Ryan's (1982) Intrinsic Motivation Inventory (IMI), no other assessment tool has tapped into the components of intrinsic motivation. This measurement instrument allows experimenters to assess the underlying factors of intrinsic motivation and is valuable in establishing what motivates people toward a specific activity more than the broadly defined and interpreted motivational tools. The present study has therefore examined the effects of positive verbal reinforcement on intrinsic motivation by determining differential effects over four multidimensions of the motivational instrument.

Purposes of the study

The purposes of the study were:

1. To determine the effects of positive verbal reinforcement on the four underlying factors of the IMI of a) interest/enjoyment; b) perceived competence; c) effort; and d) pressure/tension, as well as an accumulative composite score included in intrinsic motivation.
2. To determine if positive verbal reinforcement differentially influences the underlying factors of intrinsic motivation for male and female subjects.

Definition of terms

The following definitions were pertinent for a full comprehension of the study:

1. Controlling. Every reward is made up of two aspects, one of which is the controlling aspect. This aspect determines whether a person feels that he or she is self determining in his or her behavior (Deci & Ryan, 1980).
2. Informational. The second aspect which is involved with every reward. The information can be either positive, reflecting a good performance, or negative reflecting a poor performance (Deci & Ryan, 1980).
3. Effort. The level of energy or exertion that is put into the performance of an activity (operational).
4. Interest/Enjoyment. The amount of attention that a subject pays to a particular activity or the amount of fun that a subject has while performing the activity (operational).
5. Intrinsic Motivation. A person is intrinsically motivated if that person performs an activity for no apparent reward other than the activity itself (Deci & Ryan, 1980; White, 1959).
6. Perceived Competence. Feelings of skillfulness and satisfaction that are experienced while performing an activity (operational).
7. Positive Verbal Reinforcement. An interpersonal reward that is not perceived as a control on behavior and will

therefore increase intrinsic motivation due to a strengthening of the sense of competence and self determination (Deci, 1972).

8. Pressure/Tension. The level of anxiety that is felt while performing an activity (operational).

Delimitations of the study

The following delimitations were established for the study:

1. The study was limited to the use of university students who were enrolled at the University of North Texas.
2. There are a small number of objective tests which measure intrinsic motivation levels.
3. The use of an objectively scored test to measure the construct of intrinsic motivation.

Thus, the results of the study should be interpreted based on these delimitations.

CHAPTER TWO

REVIEW OF LITERATURE

Intrinsic motivation

There are many factors which contribute to a person's motivation to participate in physical activity. Extrinsic rewards such as affiliation with a particular group, or financial compensation for performance on a particular task certainly have an impact on the overall motivation of a person. These factors do not, however, explain motivation entirely. In order to fully understand the construct of motivation, one must look at the intrinsic motivation that is present within each person. Deci (1975) argued that the two main factors that made up a person's intrinsic motivation were the need to feel competent and the need to be self-determining when dealing with a surrounding environment. Intrinsic motivation explains why people engage in various activities, for long periods of time, with no apparent reward. The need for feelings of self determination and competence are the underlying factors that contribute to intrinsic motivation. Furthermore, cognitive evaluation theory suggests that any occurrence that affects a person's feelings of competence and self-determination also has an impact on his or her intrinsic motivation (Deci & Ryan, 1980). If feelings of self determination and competence are enhanced intrinsic motivation will increase; however if

feelings of self determination or competence are diminished intrinsic motivation will decrease. Deci and Ryan (1980) suggest that rewards can have different effects within a cognitive evaluation framework.

These different effects depend on the individual's perception of feedback. Thus, Deci (1975) and Deci and Ryan (1980) propose that cognitive evaluation theory is composed of two parts, the informational aspect and the controlling aspect. The salience of the informational and controlling aspects, as perceived by each person, determines what effect the feedback will have. If the controlling aspect is more salient, people will experience a decrease in feelings of self determination and feel they are being forced to perform according to someone else's standards. Once the participant senses that his or her ability to choose has been taken away, intrinsic motivation decreases. The informational aspect also plays an important role due to the fact that it can be perceived as either positive, suggesting competence, or it can be negative, suggesting incompetence. Positive information tends to increase intrinsic motivation, while the negative information tends to decrease intrinsic motivation (Deci & Ryan, 1980).

Feedback and intrinsic motivation

The effects of verbal feedback on intrinsic motivation have received a great deal of attention in the motor

behavior, sport psychology and psychology literature (Anderson et al., 1976; Deci, 1971; Deci, 1972; Deci & Ryan, 1980; Harackiewicz, 1979; Shanab et al., 1981; Vallerand, 1983; Vallerand & Reid, 1988; Weinberg & Jackson, 1979; Weinberg & Ragan, 1979; Zinser et al., 1982) Researches have examined the effects of verbal reinforcement on intrinsic motivation using populations from various age groups. Anderson et al. (1976) studied intrinsic motivation levels of preschool children. Children from a daycare center were given instructions on the proper use of marking pens and were then placed in an experimental or a control group. Children were pretested on intrinsic motivation levels by allowing them free time during which they could draw or participate in other activities within a classroom environment. The children in the experimental group either received a symbolic reward, money or positive verbal reinforcement for their picture drawing ability. Following the reinforcement the children were then observed in a free choice period where the researchers recorded how much time each child spent on picture drawing when other activities were available to the child. The researchers established a base level of intrinsic motivation by observing how much time each child spent on picture drawing. This was measured by recording whether or not the child was drawing at the beginning of 30 consecutive one-minute intervals. After establishing the base level the researchers returned one

week later to perform the experiment. Results indicated that children in the positive reinforcement group did show an increase in intrinsic motivation by being on task more often when the investigators recorded activity at the beginning of each one-minute interval. The researchers did not report gender differences within the positive reinforcement group.

Zinser et al. (1982) extended the research on intrinsic motivation in children by studying a group of second and third grade students. The students were asked to look at a picture and pick out hidden figures within the picture. The investigators then recorded how much free time each child spent attempting to find the hidden pictures. They were given low, moderate or high verbal reinforcement each time they found a hidden picture. Results indicated that high verbal reinforcement did increase intrinsic motivation. The results were, however, gender dependant. There were no gender differences for low-to-moderate levels of verbal reinforcement. However, there was a significant difference between boys and girls for the high level of positive verbal reinforcement. The boys showed an increase in intrinsic motivation with the high level of verbal reinforcement, but the girls did not show a significant increase in motivation levels.

Harackiewicz (1979) hypothesized that results for a young adult population would be similar to the results found by Anderson et al. He examined the effects of verbal

reinforcement on a group of students with a mean age of 16.4 years. The participants were asked to find hidden figures within a picture during a two minute test time. Following the two-minute period the subjects were given various reinforcements depending on which experimental condition they had been placed. The study was composed of six experimental conditions which included a no reward-no feedback (NRNF), task contingent reward-no feedback (TCRNF), no reward-positive feedback (NRPF), task contingent reward-positive feedback (TCRPF), performance contingent reward (norms supplied) positive feedback (PCRNSPF), and performance contingent reward (no norms) positive feedback (PCRNNPF). A reward was offered to subjects in the PCRNSPF condition, contingent on a performance above average. Before initiating the task subjects were informed of the performance standard so actual receipt of the reward merely confirmed that they had performed above average. In the PCRNNPF condition, the reward itself was the only source of information available to the subject concerning level of performance. Therefore, the informational aspect in the PCRNNPF condition was more salient than that received from the PCRNSPF condition. This was in spite of the fact that subjects in both conditions received the same feedback on performance. All subjects were eligible for positive feedback because performance standards were set at a relatively low level. Intrinsic motivation was measured by asking the subjects if they would be willing

to continue working on the puzzles during English class, study hall, after school or on a weekend. Subjects also were with them to work or to use during their spare time.

Subjects in the verbal reinforcement group had an increase in intrinsic motivation, although they were simultaneously under the experimental condition of reward contingency. It was noted that the findings had no over-justification effect and that the positive effects of the verbal reinforcement were independent of any other experimental condition.

The literature concerning the effects of verbal reinforcement on intrinsic motivation in adults is quite extensive (Deci, 1971; Deci, 1972; Deci, Cascio & Krussell, 1973; Ryan et al., 1984; Shanab et al., 1981; Vallerand, 1983; Weinberg & Jackson, 1979). The early empirical research of Deci (1971) on intrinsic motivation examined college adults. He examined the relationship between verbal reinforcement and intrinsic motivation by utilizing Soma puzzles (hidden figure puzzles) which had been shown to maintain the interest of a college-age population. The puzzles consisted of various pieces, which the subjects were asked to fit together. Subjects were given instructions on how to work the puzzles that had been provided for them, and they were asked to solve the puzzles over three separate sessions. After a few minutes had passed in the first session the experimenter left the room and observed the participants through a one way mirror. The investigator

recorded how much time each subject spent working on the puzzles and how much time he/she spent engaging in other interesting activities that were in the laboratory. During the second session the experimental group received positive verbal reinforcement at the beginning of the session and after each puzzle was solved during the session. The control group received no reinforcement. During the third session the experimenter again left the room and recorded how much time each subject spent working on the Soma puzzles. Results indicated that while the experimental group did not demonstrate a rise in intrinsic motivation following the second session, they did maintain a stable level of intrinsic motivation. The control group, however, experienced a significant drop in intrinsic motivation following the second session. In a subsequent study, which utilized the same methodology as the study just mentioned, Deci et al. (1973) found that there was a positive, moderate correlation between positive verbal reinforcement and intrinsic motivation. The findings were, however, gender dependent, with female subjects who received positive verbal reinforcement spending less free time on the task than their male counterparts who received the same positive verbal reinforcement. Females, however, had a decrease in intrinsic motivation when they received the positive reinforcement from either male or female experimenters. Males exhibited an increase in intrinsic motivation upon reception of positive

verbal reinforcement from male and female experimenters. These researchers pointed to the fact females perceived the feedback as controlling and the controlling aspect of the feedback was more salient for the females than for the males. Deci et al. (1973) also examined the effects of negative verbal feedback on intrinsic motivation. The research design was identical to the Deci (1971,1973) except that negative feedback was substituted for the experimental group. Subjects in the experimental group showed a significant decrease in intrinsic motivation levels due to the negative feedback. The mean scores for males and females were almost identical.

Weinberg and Jackson (1979) extended the research to a competitive environment. The study tested intrinsic motivation levels of college students performing a motor skill task on a stabilometer. Each subject was shown how the stabilometer worked and were asked to complete a 30 second time trial on the apparatus. Following the trials the subject's intrinsic motivation level was assessed by asking 3 questions, each measured with a 7-point likert scale. They were asked to rate the task from extremely uninteresting to extremely interesting, from extremely boring to extremely exciting, and from extremely unenjoyable to extremely enjoyable. The participants were also asked to rate questions concerning luck, task difficulty, effort and ability on a 5 point scale. The major finding was that there

was an increase in intrinsic motivation when the subjects were given success-feedback. Success-feedback was operationally defined as a provision of positive information about the subject's competence at the task.

Vallerand (1983) also investigated intrinsic motivation using male hockey players. The players were shown slides depicting various situations that might occur during a hockey game. The players were asked to decide what the proper course of action would be and were then given various amounts of positive verbal reinforcement, depending on the experimental condition in which they were placed. All three experimental conditions, the 25%, 50% and 75% verbal reinforcement groups, displayed higher levels of intrinsic motivation than the subjects in the control group that received no verbal reinforcement.

Thus the previous research overwhelmingly supports the idea of gains in intrinsic motivation through positive verbal reinforcement. However, Shanab et al. (1981) presented subtle conflicting results. For example the investigators reported that positive, verbal reinforcement increased intrinsic motivation, but likewise negative, verbal reinforcement also increased intrinsic motivation. Because these findings are in direct conflict with cognitive evaluation theory, the researchers suggested that the negative feedback was not harsh enough. Consequently, subjects in the negative feedback group perceived the

feedback as a challenge rather than as information concerning their competence.

Richardson and Weinberg (1990) also conducted a study that examined the effects of positive and negative verbal reinforcement. Specifically, the study focused on the verbal cueing that accompanies a model's demonstration. This verbal cueing could be either positive or negative. Beginning and intermediate tennis players (N=92) were placed in one of four situations: a silent model, a positive verbal model (what to do), a negative verbal model (what not to do), and a control (no model) condition. Following the modeling, the subjects were asked to perform 32 serves using the Avery, Richardson and Jackson (1979) serve test format. The subjects were also evaluated by trained raters for service form. Results revealed that there were no significant main effects or interactions for the model conditions. The positive feedback, therefore, did not seem to impact the subjects more than negative verbal feedback. Intermediate players performed better than beginning players and all players performed better at the end than at the beginning of the experiment. However, the effects of the different feedback conditions did not impact individual performances. A post experimental questionnaire revealed that the subjects in the positive verbal model group and the negative verbal model group did not perceive themselves as being any different in level of effort or attentiveness.

Gender and intrinsic motivation

Several of the studies that have examined the effects of positive verbal reinforcement and intrinsic motivation have obtained results that were gender dependent. For example, Deci (1972) revealed that only males had an increase in intrinsic motivation following positive verbal reinforcement. Similarly, Deci and Ryan (1980) postulated that intrinsic motivation is lowered if subjects perceive the feedback to be controlling. This occurs because the subject experiences a change in the locus of causality. Further, the investigators explained that females perceive strong verbal reinforcement as controlling while males perceive the same feedback as informational. Thus, the strength and perception of the reinforcement may determine its effect on intrinsic motivation. In explaining these findings, Deci and Ryan (1980) indicated that the differences between males and females may be due to the socialization process that occurs throughout an individual's life. Girls are often taught to be more attentive to interpersonal feelings, and therefore may be more attuned to feedback from others. Deci et al. (1973) reported that females had a decrease in intrinsic motivation when they received positive verbal reinforcement.

Shanab et al. (1981) investigated the intrinsic motivation levels of college students who were attempting to solve a Soma puzzle. The sex of the subject did not interact

significantly with positive verbal reinforcement. They postulated that their findings were not consistent with previous research (Deci, 1972; Deci et al., 1973) because a change in the socialization process had occurred over the last decade. The investigators suggested that women in 1981, particularly college women, would be more likely to interpret positive feedback as being informational in nature. Specifically, women would interpret the feedback as information about their competence, rather than as an attempt to control their behavior.

Studies concerned with the effects of positive reinforcement on female children have been equivocal. Anderson et al. (1976) reported that male and female pre-school children displayed no difference in intrinsic motivation following positive verbal reinforcement. Other studies (Dollinger & Thelen, 1978; Harackiewicz, 1979) that have focused on intrinsic motivation of elementary and high school students also have failed to find gender differences. In contrast, Zinser et al. (1982) reported a significant difference in the intrinsic motivation of second- and third-grade students with females exhibiting lower levels of intrinsic motivation following positive, verbal reinforcement than males. A recent study by Kast and Connor (1988) lends support to the cognitive evaluation theory. The intrinsic motivation levels of third-, fifth-, and eighth-grade students performing a word search puzzle was assessed.

Female students in the experimental group that received both controlling and informational feedback reacted more to the controlling feedback, while male students were much more attuned to the informational feedback. The investigators point out that females may respond to interpersonal factors, while males may react to independence-achievement oriented aspects of the feedback, thereby perceiving the feedback as informational.

Measurement of intrinsic motivation

It appears that research attention in motivation shifted, over a period of time, from a focus on intrinsic motivation to other motivational constructs, such as perceived competence (Roberts & Duda, 1984) and the Expectancy Value Model (Eccles & Harold, 1991). Intrinsic motivation can be measured with several tests and techniques. The early assessment of intrinsic motivation was accomplished by measuring time on task (Deci, 1972). Another technique was simply to ask the subjects how much they enjoyed the task (Kast & Connor, 1988), or how much they participated in the task during free time when there was no compensation involved (Dollinger & Thelen, 1978). There also have been attempts to cognitively assess levels of intrinsic motivation. An example of this type of test is the Mayo Task Reaction Questionnaire (1977) which was designed to measure intrinsic motivation levels on the stabilometer. However,

one of the weaknesses of this test was that it was designed specifically for use on the stabilometer and does not assess underlying factors that make up intrinsic motivation. The test measures intrinsic motivation as a generic construct and does not assess the specific concepts that make up the general construct of intrinsic motivation.

The Intrinsic Motivation Inventory (IMI) developed by Ryan (1982), measures certain underlying dimensions which make up the overall concept of intrinsic motivation. These subscales include: 1) interest/enjoyment; 2) perceived competence; 3) effort; 4) pressure/tension. The IMI seems to be unique in that the total 27 items appearing on the test have rarely been used. Modified or shorter versions of the test have been developed and have retained their reliability. Items on the IMI can be modified easily to fit a wide variety of activities. For example, Ryan and his colleagues have used the IMI (Ryan, 1982; Ryan, Mims & Koestner, 1983) in many different settings which included reading and writing and hidden figure puzzle tasks.

Similarly, McAuley and Tammen (1989) measured the effects of objective-competitive outcomes (win-loss) versus subjective-competitive outcomes (perceptions of personal success) on the general construct of intrinsic motivation using the IMI. Results indicated that winners and individuals who perceived themselves as more successful had higher levels of intrinsic motivation than individuals who

were classified as having low perceptions of success, or who were losers. Multivariate analysis indicated no differentiation between the winners and the losers. However, there was some distinction between successful and less successful groups in perceptions of effort, perceived competence, and interest/enjoyment. The findings of this study suggest that individuals perceiving themselves as successful will also have higher perceived competence and thus will expend a higher level of effort. When an individual perceives himself or herself to be successful, that individual will demonstrate an increase in interest and enjoyment of the activity. The findings of this study which linked success to perceptions of competence, effort and interest/enjoyment, were conducted in a competitive setting. However, the findings may also be applicable to non-competitive laboratory settings.

McAuley, Duncan and Tammen (1989) conducted a study specifically to measure the appropriateness of the IMI and the internal consistency of the subscales for sport settings. Alpha coefficients were adequate for each of the four subscales; interest/enjoyment ($\alpha=.78$), perceived competence ($\alpha=.80$), effort ($\alpha=.84$), and pressure/tension ($\alpha=.68$). The overall scale also was internally consistent with an alpha coefficient of .85. Further investigation indicated that the reliability for two of the subscales could be improved by removing a single item from each

subscale. Perceived competence had an increase in reliability from .80 to .87 upon removal of question number 9. The subscale of interest/ enjoyment had an increase in reliability from .78 to .80 with removal of question 13. The removal of these two questions did not affect the overall reliability of the scale. The investigators stated that the users of this measurement tool could modify the number of items on the inventory without causing an undue impact on the psychometric properties of the overall scale or subscales. The items in the scale are worded in such a way as to allow the researcher to apply the specific terms appropriate for the activity or task of interest. Thus, the IMI measures specific components of intrinsic motivation, while at the same time reflecting the overall levels of intrinsic motivation one experiences in engaging in the task.

With the lack of research in the past several years concerning the construct on intrinsic motivation, it seems that up-to-date research on the topic is needed for several reasons. First, few studies have utilized the IMI format which allows the measurement of subfactors which make up intrinsic motivation. The IMI format allows an examination of what is driving a person's motivation rather than simply whether a person is generally motivated. Second, previous research indicated that positive verbal reinforcement increased motivation levels, with some discrepancies

concerning gender differences. This study, therefore, measured the effects of positive reinforcement on the subfactors of intrinsic motivation. Male and female subjects, performing on a stabilometer apparatus, were used in order to allow an examination of gender differences in the 1990's. The results can then be compared to findings on gender differences from the 1970's and 1980's. Negative verbal feedback was not used primarily because the present study examined subjects' scores on the subfactors of the motivational inventory and not the effects of reinforcement on performance.

CHAPTER THREE

METHODS

Subjects and design

Subjects were 30 male and 30 female students, from the University of North Texas, ranging in age from 18 to 24 years. The subjects were blocked by gender and randomly assigned to one of two groups, a positive verbal reinforcement group or a control group in a 2 X 2 (gender X verbal reinforcement) design:

	<u>MALES</u>	<u>FEMALES</u>
positive verbal reinforcement	<u>15</u>	<u>15</u>
control group (no verbal reinforcement)	<u>15</u>	<u>15</u>

Task

The physical task the subjects were required to perform consisted of balancing on a stabilometer located in a motor behavior laboratory. The stabilometer involves a dynamic balancing task which requires the subject to keep a movable platform as close to perfect balance as possible. The stabilometer was chosen due to the fact that it had been shown to maintain the interest level of college-age students and male and female participants (Weinberg & Jackson, 1979). Each subject was asked if he or she had any experience on the stabilometer in order to insure that all participants

began with equal experience at the task. The subjects were shown how the stabilometer worked and were told that the object was to attempt to stay in balance for a 30-second time trial. The time on balance was measured by using a latch clock which was integrated with the stabilometer apparatus. The total time in balance was the amount of time that a subject was within 15 degrees of perfect balance. The subjects were given 2 practice trials before the testing actually began to insure that all participants had a good understanding of the requirements of the task.

Motivation Instrument

The instrument used to assess intrinsic motivation was the Intrinsic Motivation Inventory (IMI). The test was developed by Ryan (1982) and allows the researcher to measure certain underlying factors which make up the more general construct of intrinsic motivation. The IMI consists of five subscales including: 1) interest/enjoyment; 2) perceived competence; 3) effort; 4) pressure/tension; and 5) perceived choice, which all compose the construct of intrinsic motivation. For the purpose of this investigation the subscale entitled perceived choice was eliminated based on inadequate reliability and validity values. Thus, the IMI composite score obtained from 4 subscales has an alpha coefficient of .85. Further, the independent subscales have internal consistency of .78 for interest/enjoyment, .80 for

perceived competence, .84 for effort and .68 for pressure/tension as established by McAuley et al (1989). This reliable and valid modified version of the IMI (see appendix) included 7 interest/enjoyment items, 6 perceived competence items, 5 effort items and 5 items for pressure/tension. Each of the 23 items were scored using a Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). High scores reflected higher levels of intrinsic motivation, however, reverse scoring was used on 8 of the items.

Procedure

Approval for use of human subjects prior to experimentation was obtained from the Institutional Review Board. All subjects were tested on an individual basis. Each person was blocked by gender and then randomly assigned to either a positive verbal reinforcement group or a control group. Upon entering the laboratory, subjects were required to complete a consent form before testing was started (see appendix). The subjects were then given a brief outline concerning testing procedures. During the introduction, the subjects were told that each of their 10 time-trials on the stabilometer would last exactly 30 seconds and that subjects would be given a one-minute rest period between trials.

Prior to beginning the trials, all subjects were told that the stabilometer measures balance and perceptual-motor

abilities which are important to several popular sports and recreational activities (i.e. basketball, tennis, racquetball, skiing, volleyball). The importance of the measure to these popular activities was emphasized to optimize subjects' intrinsic motivation for the stabilometer activity.

During the introduction, individuals in the control group were told that they would receive reinforcement at the conclusion of all trials, but no feedback would be given between trials concerning their performance because the experimenter would need time to calculate average scores over all 10 time-trials. Subjects in the control group who asked how they were doing after the testing had started were again told that no results would be available until all trials had been completed.

Following the introduction, the subjects were asked to perform 10 trials on the stabilometer. They were informed that their scores would reflect the amount of time that they were within 15 degrees of perfect balance during the 30-second trial. Furthermore, they were told that the stabilometer clock would automatically stop each time they went beyond the specified limitation for being in balance. One-minute rest sessions were given between trials during which time the control group received no verbal reinforcement.

The experimental group received positive verbal

reinforcement following the second, fifth, eighth and final trials regardless of subjects' performances. Selection of specific trials after which reinforcement was given was not critical to the experiment. However, of utmost concern was the maintenance of optimal levels of intrinsic motivation. Further, research (King & Strongman, 1979) indicated that greater intertrial performance consistency is achieved with concurrent feedback rather than terminal feedback, thus 4 of the 10 trials were followed by evaluative reinforcement. Following the second trial, the experimenter said "Good!" with an appropriate amount of enthusiasm. Following the fifth trial, the experimenter said "All Right!", again using a high level of enthusiasm. Following the eighth trial, the experimenter said enthusiastically, "Great Job!". Finally, following the final trial, the experimenter said: "After looking over the scores from your trials, it looks like you will have one of the best scores, for a first time performer, that we have measured on this skill." This general evaluative reinforcement concerning performance was given to the subjects in the experimental condition in order to manipulate or heighten motivation and persistence in the activity and to reduce the effects of competition that might be created if the subjects were given feedback that compared their scores to a norm, i.e. your score is in the top 20 percent of all people who have taken the test.

Immediately following the final trial, all subjects

were given the IMI to assess levels of intrinsic motivation. Upon completion of the written test, the subjects were debriefed. They were informed that the test actually was measuring their intrinsic motivation and the influence of verbal reinforcement. Furthermore, subjects were informed that their performance scores were not being compared to other scores.

Statistical analysis

Levels of intrinsic motivation were analyzed using a 2 X 2 (gender X verbal reinforcement) analysis of variance with alpha established at the .05 level.

CHAPTER FOUR

RESULTS AND DISCUSSION

Results

Sixty subjects completed the IMI. Means and standard deviations for each of the four underlying motivational factors were: interest/enjoyment ($M = 38.05$; $SD = 6.86$), perceived competence ($M = 30.31$; $SD = 6.73$), effort ($M = 30.13$; $SD = 3.42$), and pressure/tension ($M = 17.28$; $SD = 6.36$). Further, the mean and standard deviation scores for composite intrinsic motivation were 115.73 and 12.63.

Mean scores by gender and reinforcement conditions on the IMI are presented in Table 1.

Table 1

Means and Standard Deviations For Males and Females in Control and Positive Verbal Reinforcement Conditions on Intrinsic Motivation and Four Subscales

Dependent Variable	Male Control		Male Reinf		Female Control		Female Reinf	
	M	SD	M	SD	M	SD	M	SD
INT MOT	105.3	10.3	121.6	10.7	113.2	12.6	122.8	12.3
PER COMP	28.1	4.9	33.0	3.6	25.2	7.6	34.8	5.7
INT/ENJ	33.8	8.0	38.8	4.7	38.0	3.1	41.4	6.8
EFFORT	28.1	3.6	31.2	3.0	30.0	3.1	31.1	3.0
PRESS/TEN	16.0	5.5	18.5	5.9	19.2	6.3	15.3	6.9

The composite mean and standard deviation for the experimental reinforcement group was 122.2 and 11.5, respectively. The mean for the control group was 109.2 with a standard deviation of 11.45.

A 2 X 2 (gender X verbal feedback) analysis of variance was conducted to determine the effects of positive verbal reinforcement on intrinsic motivation. Main group effects were significant for the verbal feedback group on overall intrinsic motivation, $F(2,56) = 12.257$, $p < .01$, and on perceived competence, $F(2,56) = 12.237$, $p < .01$. No significant group differences (verbal feedback and control) were obtained for the subscales of interest/enjoyment, effort, or pressure/tension. Further, there were no significant gender effects on any of the dependent measures.

Figure 1 illustrates mean scores of feedback conditions across composite intrinsic motivation (IM), perceived competence (Per Comp), interest/enjoyment (Int/Enj), effort (Eff), and pressure/tension (Press/Ten).

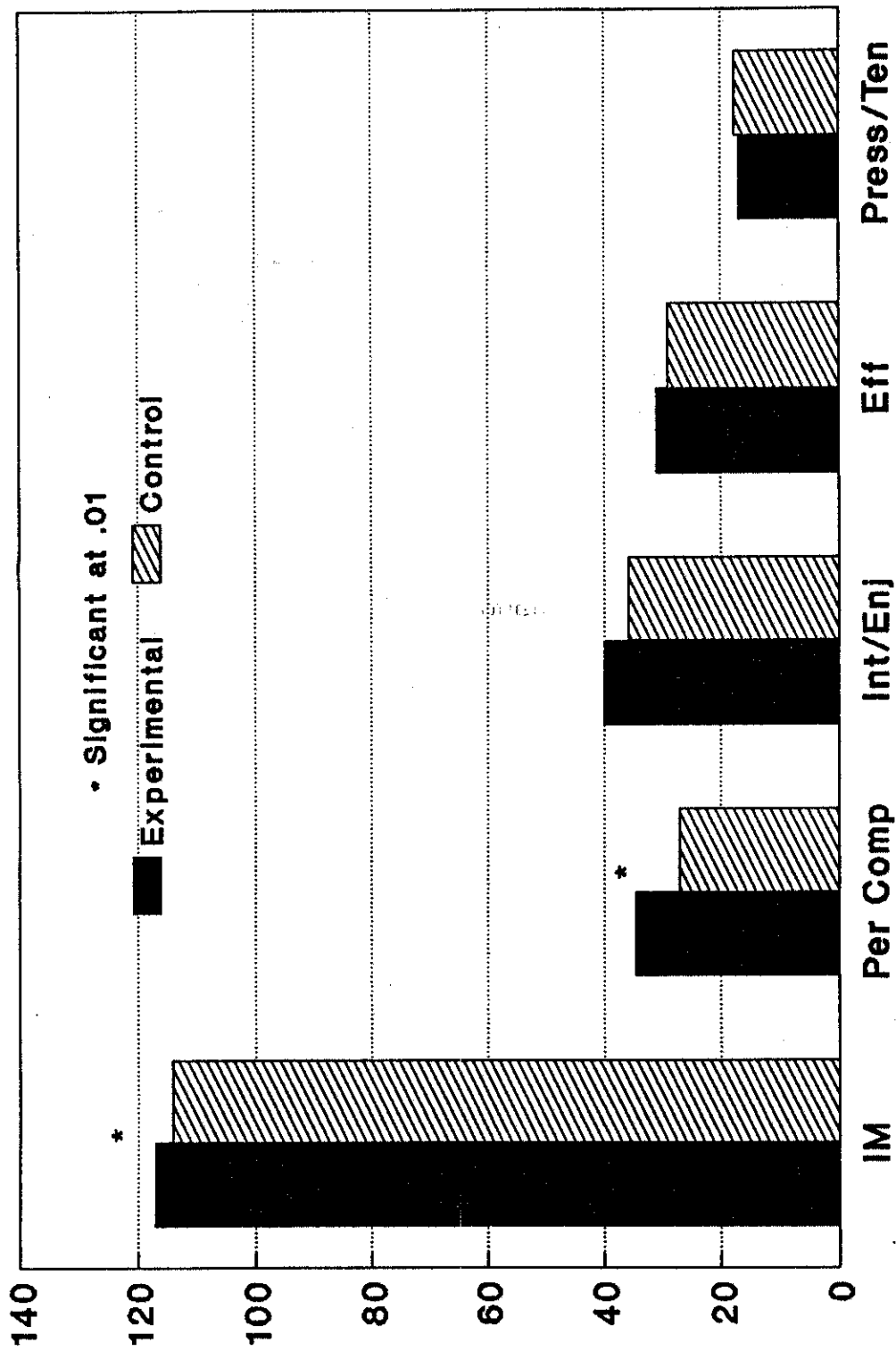


Figure 1. Mean scores on intrinsic motivation and four subscales for positive verbal feedback and control groups

Discussion

The present study was designed to examine the effects of positive verbal reinforcement on both the general construct of intrinsic motivation and on the underlying factors that make up intrinsic motivation. Within a cognitive evaluation framework, it was assumed that positive verbal reinforcement would increase composite intrinsic motivation levels. Of specific interest was the differential impact of positive verbal reinforcement on those components that underlie intrinsic motivation. Further, it was assumed that there would not be significant differences in motivation levels between men and women. This parity in motivation levels between males and females was shown by Shanab et al. (1981) and was in direct opposition to several studies by Deci (1971,1972,1975).

The composite scores for intrinsic motivation were different between the positive verbal reinforcement group and the control group. Subjects receiving verbal reinforcement indicated higher levels of motivation than subjects who received no verbal reinforcement. Furthermore, perceptions of perceived competence differentiated between the positive verbal reinforcement group and the control group. Deci and Ryan (1980) postulated that people who perceive themselves as having performed a task well (perceptions of competence) will be more intrinsically motivated toward that activity. Results from the present

study indicate that those individuals who saw themselves as competent did, in fact, display higher levels of intrinsic motivation. The IMI can be a very useful tool in assessing the effects of various types of reinforcement on perceived competence. This finding may indicate a need to focus on the causes of increased perceptions of success. For example the IMI permits a better understanding of whether the controlling or informational aspect of reinforcement, as assessed by the subfactor of perceived competence, is involved in determining intrinsic motivation. Thus, it seems essential that researchers need to identify the specific underlying factors, as well as the broadly defined construct of motivation, before attempting to determine the effects of motivation on physical performance.

Positive verbal reinforcement and intrinsic motivation have been the focus of several research studies, however, the findings were discussed in terms of reinforcement and motivation effects on physical performance. Previous research has also included gender response to motivation. For example, Deci (1971,1972,1975) and Deci and Ryan (1980) found that females who received positive verbal reinforcement interpreted that feedback as controlling, and therefore, either exhibited lower levels of intrinsic motivation or at least did not display increased levels of intrinsic motivation. This finding was especially true if the experimenter giving the feedback was male. In contrast,

Deci's (1971,1972,1975) studies consistently demonstrated high levels of intrinsic motivation for males who had received positive verbal reinforcement. In other words, the males involved in the studies were perceiving the feedback as information about their competence, while the females were perceiving the feedback as an attempt to control behavior. However, it was interesting to note that Shanab et al. (1981) reported evidence that females now considered feedback as informational because it provided an evaluation of their competence. The investigators concluded that the change in perception of motivation was linked to changes in socialization practices for women. In turn, these beliefs influenced their intrinsic motivation so that women and men scored similarly on motivational measures.

The results of the present study supported the contention that females and males consider feedback as informational rather than controlling in nature, evidenced by gender group means for composite intrinsic motivation. This finding may suggest that males and females are more similar, rather than different, in their reaction to the informational aspects of reinforcements. Thus, gender differences related to perceptions of controlling versus informational aspects embedded in the cognitive evaluation theory may no longer provide the best motivational explanation. Perhaps researchers should shift or redirect attention away from the informational and controlling

aspects of motivation and focus to a greater extent on what causes individuals to perceive themselves to be competent or incompetent. Specifically when assessing gender concerns in physical activity settings, it may not be useful to continue to view gender differences in performance from a cognitive evaluation framework, but rather from a theoretical position of perceived competency. This suggestion reflects alternatives proposed by several recent investigators (Allison, 1991; Roberts & Duda, 1984) who suggest that the role of women in our society today has changed and that different motivational constructs mediate their involvement and participation in physical activity and exercise.

CHAPTER FIVE

SUMMARY, FINDINGS AND CONCLUSION

Summary

Prior research in the area of motivation and feedback has suggested that perceptions held by individuals govern the effect of reinforcement on performance of a task. If individuals perceived the reinforcement as informational, they could interpret it as a reflection of a high level of competence. If, on the other hand, the reinforcement was perceived as controlling, individuals would lose their feeling of self determination and would therefore experience a decrease in intrinsic motivation (Deci & Ryan, 1980). Males generally perceived positive reinforcement as informational, however, females tended to interpret positive reinforcement as controlling thereby experiencing a decrease in intrinsic motivation.

The purposes of the present study were twofold. The first purpose was to determine the effects of positive verbal reinforcement on the four underlying factors of interest/ enjoyment, perceived competence, effort, pressure/tension, as well as the accumulative composite score of intrinsic motivation. The second purpose was to determine if positive verbal reinforcement differentially influences the underlying factors of intrinsic motivation for male and female subjects.

Subjects for the present study were 30 male and 30 female students from the University of North Texas, ranging in age from 18 to 24. The subjects were blocked by gender and randomly assigned to one of two groups, a positive verbal reinforcement group and a no reinforcement or control group in a 2 X 2 (gender X verbal reinforcement) design. Following an instruction period and 2 practice trials, subjects were asked to perform 10 trials, each lasting 30 seconds, on the stabilometer. The subjects were given one minute of rest between each trial. Individuals in the experimental group were given positive reinforcement following the second, fifth, eighth, and tenth trials. Subjects in the control group did not receive any feedback concerning their performance.

Results of the present study suggested that perceived competence was the underlying factor that separated the positive verbal reinforcement group from the no reinforcement group. While the remaining underlying factors may contribute to intrinsic motivation, it seems that perception of competence and how it relates to intrinsic motivation should receive attention in future research studies. The findings of the study also indicated that females did not consider positive reinforcement as controlling. It is possible that from the changing and dynamic practices of the 1990's women have accepted and internalized verbal reinforcement as informational.

Findings

The following results were obtained:

1. There was a significant difference between the positive verbal reinforcement and the control groups on the underlying factor of perceived competence.
2. There was a significant difference in composite intrinsic motivation between the positive verbal reinforcement group and the control group.
3. There was no significant group or gender effects for the underlying variables of interest/enjoyment, effort, or pressure/tension.
4. There was no significant difference between males and females on composite intrinsic motivation, or for any of the underlying motivational factors.

Conclusion

Based upon the findings, the following conclusions may be drawn:

1. Positive reinforcement has a direct influence on the underlying factor of perceived competence which directly influences the general construct of intrinsic motivation.
2. Males and females respond similarly in intrinsic motivation when they receive positive verbal reinforcement for task in action.

Future directions

The findings and conclusions of the present

investigation offer several directions for future research. Since there are limited objective measures that assess the underlying factors of intrinsic motivation, it seems important to refine the IMI by establishing reliability and validity for the fifth, but unused dimension of perceived choice. This factor may be significant in determining the variance of each underlying factor toward the total composite score for intrinsic motivation. Additionally, subsequent research will need to address the effects of different reinforcement techniques (i.e. negative verbal reinforcement) on the subfactors of intrinsic motivation.

APPENDIX

ITEMS FOR THE POST-EXPERIMENTAL INTRINSIC
MOTIVATION INVENTORY (IMI)

For each of the following statements, please circle the number that best indicates how strongly you agree or disagree with the sentence, using the following scale as a guide.

1	2	3	4	5	6	7
strongly disagree	disagree	somewhat disagree	neutral	somewhat agree	agree	strongly agree

1. I was very relaxed in doing the stabilometer task.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

2. I thought performing on the stabilometer was quite enjoyable.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

3. I think I am pretty good at the stabilometer activity.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

4. It was important to me to do well on the stabilometer.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

5. The stabilometer did not hold my attention at all.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

6. I am statisfied with my performance on the stabilometer.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

7. While I was performing on the stabilometer, I was thinking about how much I enjoyed it.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

8. I didn't try very hard to do well on the stabilometer.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

9. After working on the stabilometer for awhile, I felt pretty competent.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

10. I was very anxious while working on the stabilometer.

1 2 3 4 5 6 7

11. I would describe the stabilometer activity as very interesting.

1 2 3 4 5 6 7

12. I felt pressured while doing the stabilometer task.

1 2 3 4 5 6 7

13. I put a lot of effort into the stabilometer activity.

1 2 3 4 5 6 7

14. I was pretty skilled on the stabilometer.

1 2 3 4 5 6 7

15. I felt very tense while performing on the stabilometer.

1 2 3 4 5 6 7

16. The stabilometer was an activity that I couldn't do very well.

1 2 3 4 5 6 7

17. The stabilometer activity was fun to do.

1 2 3 4 5 6 7

18. I thought performing on the stabilometer was a boring activity.

1 2 3 4 5 6 7

19. I tried very hard on the stabilometer activity.

1 2 3 4 5 6 7

20. I did not feel nervous at all while performing on the stabilometer.

1 2 3 4 5 6 7

21. I enjoyed doing the stabilometer activity very much.

1 2 3 4 5 6 7

22. I didn't put much energy into the stabilometer task.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

23. I think I did pretty well on the stabilometer, compared to other students.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

CONSENT FORM

I, _____ agree to participate in a study concerning psychomotor factors, that are involved in balancing on a stabilometer apparatus, for Ray Prentice. I understand that I can withdraw from the study at any time. Further I understand that all information will be confidential and that only group data will be analyzed, thus anonymity is ensured.

SIGNATURE

DATE

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