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THE EFFECTS OF AN EVALUATIVE AUDIENCE UPON COLLEGE MALES' SELF-EFFICACY, PERCEIVED ABILITY, ANXIETY, AND LEARNING OF A NOVEL MOTOR TASK

By

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ABSTRACT

THE EFFECTS OF AN EVALUATIVE AUDIENCE UPON COLLEGE MALES' SELF-EFFICACY, PERCEIVED ABILITY, ANXIETY, AND LEARNING OF A NOVEL MOTOR TASK

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The purpose of this study was to investigate the impact of an audience upon perceived ability, self-efficacy, anxiety, and the learning of a novel motor task of task- and ego-oriented individuals. It was hypothesized that ego-oriented subjects in the audience condition would exhibit lower self-efficacy, perceived ability, performance, and higher anxiety than task-oriented subjects in the audience condition. Eighty undergraduate male volunteers, separated by their Task and Ego Orientation Sports Questionnaire (TEOSQ) scores, performed thirty trials on the Bachman Ladder in either alone or audience conditions.

Results showed that subjects significantly increased in performance across most trial blocks, increased in anxiety, decreased in self-efficacy, and decreased in perceived ability. The nonsignificant interaction effects and main effects were attributed to the failure of the Task and Ego Orientation Sports Questionnaire to adequately dichotomize task- from ego-oriented subjects. An exploratory analysis supported this defense.

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To my mother Barbara

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TABLE OF CONTENTS

CHAPTER Page

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

Nature of the Problem

In 1897, an archival study was undertaken by Norman Triplett to assess the effects of various competitive conditions on wheel racers' time. Triplett found that the fastest times were recorded when racers competed against other opponents, followed by racers competing against a mechanical tandem, and finally, by racers competing against the clock alone. It was deduced that the presence of other opponents, referred to as coactors, somehow aroused in individuals the competitive instinct resulting in better performance. Although Triplett could only speculate about the nature of this coactive interaction, his empirical pursuits began an area of research which remains very important and relevant to contemporary social psychologists. However, although it has been almost a century since Triplett's study, the scientific domain of social facilitation still remains shrouded in a cloud of inconclusive results.

Many researchers have blamed these equivocal results on poor methodologies and ill-defined concepts that are too simplistic and too mechanistic to adequately explain social facilitation effects. For example, social facilitation research has neglected the impact that certain individual variables, such as self-confidence, anxiety, and achievement motivation, may have upon individuals' social performance despite the advocations of Allport (1924). In addition, task variables, (e.g., motor versus verbal tasks) and their levels of complexity (e.g.,

example, Allport (1924) hypothesized that verbal tasks were affected simple versus complex), have also been neglected in past research. For qualitatively (i.e., cognitively) while motor tasks were affected quantitatively by an audience. According to this hypothesis, the assumption that motor tasks are affected only quantitatively (i.e., speed and accuracy of a movement are affected) would lead one to believe that there are no qualitative components, like competitive strategy or mental decisions, associated with any motor task. While this may be valid to some extent for some simple motor tasks, it is clearly not the case for complex motor tasks such as downhill skiing or shooting jump shots during a basketball game where strategies and split second decisions have to be altered frequently in order to succeed.

Because human social behavior and performance are so complex, they necessitate an in-depth analysis of all possible confounding variables which may influence the audience-performer interaction. Three such variables which have been linked to performance differences in social facilitation settings and which will be discussed later in this chapter are self-efficacy, anxiety, and perceived ability. Therefore, researchers should employ a multivariate approach using these aforementioned variables to analyze social facilitation effects in athletics.

There is a need to look at both individual and situational variables if one is to describe, explain, predict, and control the effects of an audience upon individual performance (Borden, 1980). Despite the advocation of such an interactionist approach to social facilitation (Wankel, 1975b), very few researchers have actually incorporated the variables into researchable hypotheses. Some social scientists have pinpointed,

however, an influential variable that has been linked to varied performance in social settings. This variable is achievement motivation.

The need to study the relationship between achievement motivation and social facilitation has been expressed by many psychology researchers (e.g., Wankel, 1975a, 1975b; Borden, 1980; Geen, 1980), but only one study to date has attempted to experiment with these variables. Bell and Yee's (1989) study on karate-kicking attempted to tie motivational aspects of subjects to their performance in audience and no audience conditions. However, due to their self-acknowledged "exploratory" venture into achievement motivation and to some methodological problems, their results proved inconclusive.

In accord with contemporary social psychological thought, achievement motivation researchers have proposed that the most informative view of the audience-performer relationship is a cognitive one. The thought process that precedes all action is believed to be the key to understanding variation among individual performance. The attributional approach to achievement motivation has been regarded by many to be the best cognitive view of social facilitation (Wankel, 1975a, 1975b).

Weiner's (1972) attributional model of achievement motivation is perhaps the most widely used taxonomy to explain human perceptions of success and failure experiences. Weiner structured four attributional factors (ability, effort, task difficulty, and luck) within two causal dimensions (locus of control and stability) in a two-dimensional taxonomy. Other researchers have attempted to extend this attributional model to help account for variation in human social performance. For example,

while supporting the significance of the four attributional factors found within Weiner's model, Nicholls (1984a) propounded that the construct of ability was the primary determinant of human motives and behavior.

Basing his research in part on White's (1959) theory of effectance motivation, Nicholls (1984a) proposed that human behavior is a function of peoples' need to feel self-competent within their environment. According to the theory, individuals feel a sense of self-competence when they maximize the demonstration of high ability and minimize the demonstration of low ability. However, the way in which one seeks self-competence is governed by one's ability orientation. That is, individuals can be either task- or ego-involved in their ability orientation which dictates the way in which self-competence is sought. Task-oriented indivduals are concerned with revealing high ability primarily by improving upon one's past performance or by performing a task better than expected. Ego-oriented individuals are concerned with revealing high ability primarily via a social comparison process, whereby a sense of competency is attained when one favorably compares oneself to significant others.

An ability-oriented view of social behavior has received empirical backing from some researchers in achievement motivation (e.g., Duda, 1987, 1989; Roberts, 1984a) and in social facilitation (Allport, 1924; Wankel, 1975b). Allport (1924), using a similar dichotomy of achievement motivation to that of Nicholls, held that the type of achievement motive one possessed helped determine one's achievement behavior in social facilitation settings. More specifically, auto-competitive individuals (task-oriented) were hypothesized to perform differently in social

situations than hetero-competitive individuals (ego-oriented).

While motor performances are affected cognitively and motorically by an audience and task- and ego-oriented individuals may differ in performance in social situations, the magnitude and directionality of these performance differences need to be addressed in order to shed some light on the equivocal results found in past social facilitation research. In order to derive an accurate understanding of potential performance differences between task- and ego-oriented individuals, it is necessary to investigate the psychological variables which impact the actual performance. In adherence to an interactionist approach to achievement motivation (Borden, 1980) as well as a multivariate approach to social facilitation (Allport, 1924; Wankel, 1975a), the constructs of self-efficacy, anxiety, and perceived ability need to be examined in relation to one's achievement goals in order to hypothesize about ability-related performance differences.

According to Bandura (1977), self-efficacy is a key mediator of human performance. This has been shown to be the case in many different motor performance activities (Wurtele, 1986) and in audience conditions (Lirgg & Feltz, 1991). For example, motor performance has been shown to be significantly influenced by subjects' vicarious experiences, an important source of efficacy information, in social facilitation settings (Landers & Landers, 1973; Lirgg & Feltz, 1991). In addition, research has shown that motor performance is influenced by other sources of self-efficacy information, namely past performance, verbal persuasion, and physiological arousal. In sum, after thoroughly reviewing the literature on self-efficacy and motor performance, Feltz (1988a) stated

that self-efficacy was "an important and necessary cognitive mechanism in explaining motor performance" (p. 432).

The relationship between anxiety and motor performance has been a topic of concern in many different empirical domains. Researchers interested in the areas of sport psychology (e.g., Burton, 1988; Martens, 1977), self-presentation (e.g., Schlenker & Leary, 1982), and social facilitation (e.g., Cottrell 1968, 1972) have all reported significant interactions between anxiety and human performance. In addition, anxiety has been shown to be a salient mediator of performance in social facilitation settings (e.g., Martens, 1969b). However, contemporary debates still exist on whether anxiety has a positive effect (Neeley & Ewing, 1989) or negative effect (Burton, 1988) on performance. In addition, research has supported the need to look at a model using both anxiety and self-efficacy to understand motor performance variance (Feltz, 1988a).

Attribution theory has stressed that an individual's perception of ability can greatly influence his/her task motivation (Weiner, 1972), task choice (Nicholls, 1984a), persistence (Geen, 1979,1981), and performance (Nicholls, 1984a, 1984b). According to Nicholls' (1984a) theory of ability orientations, whether one uses a task- or ego-oriented frame of reference to determine one's task competency in relation to one's perception of possessing high or low perceived ability can result in varied performance. For example, ego-oriented individuals with high perceived ability are hypothesized to perform better than task-oriented individuals with high perceived ability. In addition, Nicholls (1984b) contends that situational influences, such as an audience, can cause a shift in one's ability

orientation, thereby affecting performance. While these hypotheses have been supported in theory, no research to date has examined Nicholls' hypotheses in controlled situations. In addition, no research has been conducted investigating the influence of one's perceived ability on other mediating variables of performance such as self-efficacy and anxiety.

Research has shown that in competitive situations, anxiety can have an inverse relationship with self-confidence (Burton, 1988). Furthermore, it has been found that an evaluative audience often induced heightened levels of anxiety in individuals (Schlenker & Leary, 1982). Thus, in audience conditions, individuals would tend to have higher anxiety and lower self-confidence than in alone conditions. In addition, individuals with high anxiety and low self-confidence have been shown to perform poorly on motor tasks (Burton, 1988). Because ego-oriented individuals are more dependent upon outside influences in determining competency than task-oriented individuals, they would tend to be more influenced by an evaluative audience than their task-oriented counterparts. Because of this, ego-oriented individuals would tend to exhibit higher anxiety, lower self-efficacy, lower perceived ability, and lower performance than task-oriented individuals in the learning of a novel motor task in an audience condition. In an alone condition, where task- and ego-oriented individuals perform by themselves, no differences would be expected.

Statement of the Problem

The purpose of this study was to extend social facilitation research by examining specific situational and individual variables that may influence individual learning of a novel motor task. More specifically, the goal of this experiment was to investigate the impact that an evaluative

audience may have upon anxiety, self-efficacy, perceived ability, and performance levels of individuals possessing different ability orientations. The main question that was pursued in this study was the following: How will an evaluative audience affect self-efficacy, perceived ability, anxiety, and the learning of a complex motor task of task- and ego-oriented college undergraduate males?

Hypotheses

The following hypotheses were examined in this study.

1. Task-oriented individuals will exhibit lower anxiety, higher self-efficacy, higher perceived ability, and higher performance than ego-oriented individuals in the audience condition.

2. There will be no differences between task- and ego-oriented individuals in the alone condition.

Delimitations

This study was conducted with the use of Michigan State University undergraduate males, all of whom were volunteers. These subjects were drawn from physical activity classes and were chosen to participate in this study based upon their scores on the Task and Ego Orientation Sports Questionnaire, TEOSQ, (Duda, 1992) and their completion of a consent form.

Definitions

The following definitions were used in this study.

Bachman Ladder. This is a free-standing ladder designed by Bachman (1961) which has 14 total rungs that are alternately spaced every 3 inches. Its base is fixed to the floor and therefore can only move in a vertical line of motion. Subjects were asked to climb as high as they could up the ladder by stepping on consecutive rungs until either they

reached the top of the ladder or they lost their balance, signaled by either their feet touching the floor or the ladder touching the forward 45 degree safety stop.

Task-Oriented Individual. Individuals who had a 1.2 differential between task- and ego-orientation, with task being higher, as measured by the TEOSQ, were labelled as task-oriented individuals. The 1.2 differential denotes a distinct difference between the orientations and is similar to the results found by Duda (1989).

Ego-Oriented Individual. These individuals had higher ego- than task-orientation scores on the TEOSQ.

Self-Efficacy. This construct was measured by the Bachman Ladder Self-Efficacy Scale developed by Lirgg and Feltz (1991). The sum of subjects' percent confidence per rung level divided by the total number of rungs on the Bachman Ladder yields one's strength of self-efficacy.

Perceived Ability. This construct was measured by the statement "I feel that I have the ability to do well at this task," based on a 5-point Likert Scale. Those who scored 4 or 5 were considered to have high perceived ability while those who scored 2 or 1 were considered to have low perceived ability.

Anxiety. This construct was measured using Spielberger et al's (1970) State Anxiety Questionnaire. This questionnaire was comprised of 20 state anxiety statements which were assessed on 4-point Likert Scales. Subjects who scored between 20 and 40 were considered to have low anxiety, those scoring between 41and 59 were considered to have medium anxiety, while those scoring between 60 and 80 were considered to have high anxiety.

Baseline Measurement Period. This term indicated the assessment period where questionnaires were administered to subjects immediately after entering the laboratory. At this point in time, subjects had seen pictures of the Bachman Ladder, but had not seen the actual ladder nor did they know anything about this study's procedures.

Pre-task Measurement Period. This term denoted the assessment period where questionnaires were administered to subjects after the Bachman Ladder objectives and strategies and audience condition manipulations were disseminated, but before performance trials commenced. As this information was dispensed by the experimenter, the experimenter manually manipulated the Bachman Ladder to show the subject the ladder's path of movement as well as other pertinent mechanical information such as the safety stop.

Post-task Measurement Period. This term indicated the assessment period where subjects were administered questionnaires between Trials 20 and 21. At this time, for subjects in the audience condition, the experimenter walked behind a partition to "discuss" the subject's performance with the members of the audience. This discussion was made loud enough at some points in time, consistent for all subjects, so the subject could hear this evaluative discussion about their performance. This "discussion" was enacted in order to convince subjects that the audience members were attentive to and evaluative of their performance as deemed a necessary component of social anxiety (Schlenker & Leary, 1982).

Assumptions

All subjects answered all questionnaires truthfully and were equally motivated to do their best on the Bachman Ladder.

CHAPTER 2
REVIEW OF THE LITERATURE

Social facilitation is one of the longest lines of research in social psychology. Yet, despite almost 100 years as an empirical topic, the understanding of why individuals perform differently in audience settings remains unclear. Contemporary research into this field of study has showed some promise in unravelling the intricacies associated with the audience-performer relationship. The use of cognitive models in examining individual and situational differences has provided an excellent framework from which to view the interactions within social facilitation settings. The fact that more insight may be gained into the effect of an audience on performance from new cognitive conceptualizations could result in more effective intervention strategies for individuals having problems performing in front of others. Athletes, among others, would benefit from such advances in social psychology. However, in order to comprehend the conceptual underpinnings associated with contemporary social facilitation research, a thorough review of the studies examining an audience's effect on individual performance must first be understood.

Social Facilitation Influences

Dynamogenic factors. The first study in social facilitation was conducted by Triplett (1897). This archival study reviewed the results of three types of wheel races: an unpaced race, where a rider raced alone against a clock; a paced race, where a rider raced against a mechanical

tandem; and a live competitive race, where riders competed against each other. The fastest times were recorded in the live race, followed by the paced race, and, lastly, the unpaced race. Triplett concluded from these results that the presence of competitor(s) provided each rider "with a stimulus that arouses within each the competitive instinct, which aides in the release of latent nervous energy, not ordinarily available" (p.522) as well as providing inspiration to others. These influential elements were referred to as dynamogenic factors. Although he could not definitively account for these different audience effects (facilitation vs. inhibition), Triplett sparked a tremendous empirical interest in the field of social facilitation.

Allport (1924) extended Triplett's line of research by concentrating on the competitive coactive effects that individuals had on each other's performance. He found that coaction effects were factor-, individual-, and task-specific. First, Allport maintained that there were two types of social factors that could have varied effects upon performance--social facilitation and rivalry. Social facilitation is an increased response due to another's coactive movement, while rivalry is an emotional reaction accompanied by one's desire to win. These two social factors can have different effects upon performance. Whether one or both of these factors is present is dependent upon the individual. Second, some individuals are more auto-competitive (i.e., those who are interested in self-improvement) while others are hetero-competitive (i.e., those who try to "outdo" others in competition). Further, individual differences that may affect the way an audience impacts performance include "habit, customary work environment, nervousness and distractability, as well as

reclusiveness, negative suggestibility, attitudes of superiority, effect of sociality, and other traits" (p. 278). Lastly, Allport posited that coaction impact was task-specific-- motor tasks were facilitated quantitatively (speed, strength, or accuracy) while intellectual/implicit tasks were debilitated qualitatively (cognitively).

Allport's (1924) work on coaction provided an important extension to Triplett's (1897) findings. Specifically, the impact that an audience had on one's performance was mediated by one's cognition and interpretation of a situation. While one individual may interpret an audience to be important (such as one's boss), resulting in increased nervousness and decreased self-confidence, another individual may interpret the same audience as less important, resulting in little added anxiety and cognitive turmoil. How these two individuals actually perform as a result of their different cognitive states and situational interpretations of outside demands is a point that needs to be addressed.

Dashiell (1935) examined the equivocal results found by Triplett (1897) and Allport (1924) and propounded that the varied results were as attributable to poor methodology as they were to individual differences. He explained that the inconclusive findings of the 1920's and 1930's were attributable to a lack of a theoretical and psychometric base: Different dependent measures were studied in each experiment; individual differences such as age, sex, schooling, and personality traits were not accounted for; the relationship between the audience and the performing individuals was neglected; and finally, many of the studies' data were analyzed via inappropriate statistical techniques. Moreover, Dashiell argued that performance differences found in past studies were a result of

audiences' overt behavior. More specifically, he stressed that individuals may react differently to a "passive" audience ("mere presence") than to a coactive one.

A number of research studies on social facilitation between the years of 1935 and 1965 investigated audience versus coaction performance effects. Yet few researchers attempted to integrate past contradictory findings into a cohesive theory, despite the advocations of Allport and Dashiell (Borden, 1980; Wankel, 1984). Due to the many methodological flaws and ill-defined concepts, most of the results of these studies proved inconclusive, forcing many researchers to change to other investigatory domains (Gill, 1981; Wankel, 1984).

Drive theory. In 1965, Zajonc breathed new life into social faciliatation research by synthesizing past studies into a cohesive unit based upon a Hull-Spence, drive-like theory (Landers, 1975; Wankel, 1975a, 1975b). Basing his work on Dashiell's (1935) advocation for research on audience passivity, Zajonc propounded that the mere presence of an audience was probably sufficient enough to evoke arousal (drive) in individuals, which, in turn, increased one's tendency to emit a dominant response (habit). If the task was well- learned, this dominant response would be a correct one. However, if the task was not well-learned, the dominant response would be incorrect.

Zajonc's classic study sparked a resurgence of interest into social facilitation research (Wankel, 1984). Others attempted to investigate the concept of mere presence (Chapman, 1974; Cohen, 1980; Haas & Roberts, 1975), the augmentation of dominant responses (Forgas, Brennan, Howe, Kane & Sweet, 1980; Landers, Snyder-Bauer & Feltz, 1979; Martens, 1974)

and arousal's relationship to one's drive state (Henchy & Glass, 1968; Landers et al., 1979; Martens, 1969b,1974). Most of this research supported Zajonc's premises to some extent (Guerin, 1986). Yet, the majority revealed that Zajonc's theory did not account for much of the effects that an audience had upon individuals (Bond & Titus, 1983; Cottrell, 1968, 1972; Cottrell, Rittle, & Wack, 1967; Haas & Roberts, 1975; Landers et al., 1979). Furthermore, despite the advocations that this drive-like theory still had valuable applications to social facilitation research (Landers, 1975; Zajonc, 1980), many attacked it as being too simplistic (Sanders & Baron, 1975; Weiner, 1972) and too mechanistic (Borden, 1980; Wankel,1975a, 1975b, 1980) to account for the wide range of human behaviors found in social situations. In an attempt to extend this proclaimed reductionistic theory, Cottrell (1968, 1972) moved away from a behavioristic approach of social facilitation to a more cognitive one (Martens & Landers, 1972).

Cognitive Interpretations of Social Facilitation.

Learned drive. Cottrell (1968), while acknowledging the important extentions made by Zajonc (1965), refuted the proclaimed "mere presence" effects on individuals based on his own research (Cottrell et al., 1967; Cottrell, Wack, Sekerak & Rittle, 1968) and on the research of others (e.g., Henchy & Glass, 1968; Zajonc & Sales, 1966). He maintained that the mere presence of others was not sufficient enough to effect performance. Rather, he contended that the presence of an audience was a learned source of drive, and affected performance according to one's interpretation of the audience. In other words, a subjectively evaluative audience would elicit dominant responses more significantly than an audience interpreted as

being non-evaluative. This cognitive reinterpretation of Zajonc's drive approach received empirical support from some researchers (e.g., Klinger, 1969; Martens & Landers, 1972), but not from others (Guerin, 1986). While Cottrell's evaluation apprehension theory is an important empirical extention to Zajonc's (1965) drive theory, it was his cognitive approach that was held responsible for opening the floodgates to recent research in social facilitation.

Attention-distraction. A number of cognitive-based hypotheses have attempted to account for audience effects on individuals' performances. Most of these hypotheses were very similar in scope, concentrating on individuals' attention and audience distraction. The attention-distraction premise poses that individuals are distracted from the task at hand by the presence of surrounding others (Sanders & Baron, 1975). The objective self-awareness hypothesis holds that an audience's presence forces an individual to become either objectively self-aware, causing one to direct attention inwards, or subjectively self-aware, causing one to direct attention outwards, depending upon one's concern for the audience (Duval & Wickland, 1972). There are a host of other premises attempting to explain the varied effects that an audience may have upon individuals besides the aforementioned (e.g., Latane & Nida, 1980). However, most of these theories have all been attacked as being still too simplistic and mechanistic in accounting for the wide variety of human behaviors found in a social setting (Wankel, 1984).

The simplicity of many of the past studies on social facilitation becomes quite apparent when considering Allport's (1924) research. Most of the research attempted to view the audience-performer relationship,

manipulating audience characteristics and noting group reactions. However, while the audience's activity level is an important component of the audience-performer relationship, as noted by Dashiell (1935), it is only one contributing factor to performance differences. Yet, most of the past research has considered this variable to be the only differential factor. Allport (1924) argued the need to look at individual factors such as cognition, self-confidence, and sociality as well as task factors in order to understand social facilitation effects. Thus, a multivariate approach to this empirical domain should be utilized in order to address the phenomenon of social facilitation.

The proposition that task factors are a signficant component of social facilitation has undergone little empirical study since mentioned by Allport (1924). Most of the past research utilized simple and/or verbal tasks (Cratty, 1967; Martens, 1969a), probably to aid in data collection. Although Martens (1969a, 1969b; Martens & Landers, 1969) used complex motor tasks, he utilized Zajonc's (1965) rather limited drive theory. Because most of the past studies have used similar simple tasks, Allport's proposition that motor tasks are facilitated quantitatively while intellectual/implicit tasks are debilitated qualitatively has been left unchalleged.

Allport's (1924) theory contended that one's speed and accuracy were affected by an audience on movement tasks such as ball rolling or high jumping while one was cognitively affected by an audience on intellectual/implicit pursuits such as concentration tasks. While Allport's (1924) theory does attempt to introduce a relationship between task-specificity and audience effects, it is very reductionistic. Certainly,

to say that complex motor tasks such as driving in for a lay-up, where split second decisions are needed to achieve success, are only affected quantitatively by an audience would indicate an inadequate understanding of the task. There are many situations in basketball, as well as other sports, where the excitement of an audience leads a player to go against one's better judgement or game strategy in order to "electrify" the crowd. Because motor tasks can be cognitively and motorically impacted by an audience, certain empirical questions, which need to be addressed by future social facilitation research, have surfaced: For example, exactly what type of cognitive variables are affected by an audience and how do these cognitive changes impact motor performance?

Because motor tasks are more closely related to athletics than simple or verbal tasks, they shall be focused upon in this chapter. While motor task performances are affected by an audience, Allport (1924) does not conjecture about individual differences. He states that auto-competitive individuals, those who are interested in self-improvement, and hetero-competitive individuals, those who are interested in outdoing opponents, may react differently to an audience, but he does not provide any hypotheses. Thus the empirical question remains: How are auto-competitive and hetero-competitive individuals cognitively and motorically affected by an audience on a motor task?

Proactive theory. The answer to this question might be found in Borden's (1980) proactive theory. Borden reconceptualized the drive theories developed by Zajonc (1965) and later by Cottrell (1968, 1972), focusing on individuals' subjective appraisals of audiences as antecedents to behavior. According to his theory, individuals are not passive, reactive

automatons to social situations, rather people are active, interpretative beings--they are proactive. Moreover, Borden argued that both individual and situational variables need to be addressed in order to understand the relationship between human behavior and social situations. According to his model, Borden (1980) feels that audience effects are mediated by such sociocognitive variables as one's perceived ability relative to a task and one's perceived meaning of an audience. He states:

> *"...an adequate understanding of audience influence must therefore include the motivational processes involved in audience seeking behavior as well. Here the anticipatory and manipulative attributes of the performer would appear to be especially important. Consequently, future research must concentrate on identifying how such factors as pride, exhibitionism, uniqueness, knowledge, feelings of efficacy on the part of the performer develop in one's life and how these factors interact with what we know about the factors of arousal and fear in the performance situations"* (p. 127).

Other researchers have agreed with the need for such an interactionist approach to explain social facilitation, emphasizing investigation into individuals' cognitive perceptions of social situations (Geen, 1980; Wankel, 1975b, 1980; Weiner, 1972). A key body of research that investigates human cognition and its relationship to social behavior is the area of achievement motivation.

Achievement Motivation Theory

As noted earlier, Allport (1924) was one of the first researchers to stress the importance that cognition plays in social behavior. More recent research in achievement motivation has begun to examine the

intricacies of this relationship and have found interesting results. Thus, the area of achievement motivation will be reviewed to allow a better understanding of the sociocognitive interaction involved in a social facilitation setting.

Current conceptualizations of achievement motivation have been built upon the strong empirical foundations erected by McClelland (1951). McClelland, rooted in Murray's (1938) biological model of psychology, contended that goal-directed behavior was a function of one's predispositions toward environmental stimuli. The formation of personality traits result from affective states aroused by meaningful cues, thus determining behavior. For example, environmental stimuli (e.g., angry dogs) that evoke a negative affective state (e.g., fear) in an individual may result in avoidance behavior of similar stimuli in the future. Conversely, environmental stimuli (e.g., playful dogs) that evoke a positive affective state (e.g., happiness) in an individual may result in approach behavior of similar stimuli in the future. Or, as Weiner (1972) described McClelland's tenet: "Anticipatory goal reactions or emotions, learned from prior cue-affect associations, engage and direct behavior" (p. 23).

While accepting McClelland's research as contributing significantly to the understanding of achievment motivation, many scientists felt that this approach was very limited and weighted too heavily upon stable personality traits (Brawley & Roberts, 1984; Maehr & Nicholls, 1980). One of McClelland's pupils, Atkinson (1957), recognized this shortcoming and extended achievement motivation theory incorporating situational components into the model. This

personality by situation approach marked the beginning of the interactionist approach, recognizing that social behavior is a function of the interaction between individual and situational variables. In an attempt to account for all human behavior in achievement settings, Atkinson (1964) developed a mathematical model, centering on the multiplicative function of motives, probabilities, and incentives of success or failure for given situations. Although this extension helped further knowledge about the complexity of human achievement behavior, other researchers argued that this theory, like McClelland's (1951) before it, was also too heavily weighted on personality traits (Mischel, 1973). It was argued that a personality-based approach could not account for cultural and individual differences because they were too unidimensional, reductionsitic, and mechanistic (Brawley & Roberts, 1984; Maehr & Nicholls, 1980; Weiner, 1972).

Attributional model. Similar to the theoretical developments in the field of social facilitation, achievement motivation research began to move towards a cognitive approach in an attempt to account for the wide variety of human behaviors found in social situations. Imperative to this movement was Weiner's (1972) attributional model. Weiner (1972) cast aside previous tenets basing human behavior on personality predispositions and stimulus-response premises and maintained that humans are active, information processing beings. That is to say, cognition precedes human action. According to Weiner (1972), varied complex human behaviors can be attributed to each person's unique subjective interpretations (success/failure) of objective performance outcomes (win/loss).

Weiner (1972, 1974) based this attibutional approach of achievement motivation on the research efforts of Rotter (1966) and Heider (1958). Weiner developed a two-dimensional taxonomy focusing upon both the antecedents and consequences of one's attributions towards success and failure experiences (Roberts, 1984b). Weiner restructured four attributional factors (ability, effort, task difficulty, and luck) within two causal dimensions (locus of control and stability). His model is presented in Figure 1:

		Locus of Control	
		internal	external
Stability	stable	ability	task difficulty
	unstable	effort	luck

Figure 1. Weiner's attributional model.

According to this model, the antecedents of subjective attributions to one's performance were based upon one's past experiences, expectancy of success, and perceived ability. For example, one who has encountered many failure experiences on a given task, will feel negative affect and will perceive low ability (internal/stable) and a slim chance of success on future tasks of the same nature. If one were to succeed on a task where failure was normally commonplace, one would feel positive affect and probably attribute luck (external/unstable) to performance. The opposite is true for individuals who have had many successful past

experiences on a given task, feeling positive affect and perceiving high ability (internal/stable) as well as a great chance for success on all future tasks of a similar nature. These individuals may attribute a failure experience on a previously successful task to a lack of effort (internal/unstable). Because one's perception of performance is mediated in part by past experiences, perceived ability, and expectancies of success, achievement behavior and cognition will vary widely among individuals.

Weiner (1972) further contended that individuals strive to feel positive affect on tasks. These feelings of success can best be accomplished by performing with high effort. Unlike ability, where individuals vary considerably with respect to performance (some individuals being more able than others), effort can be voluntarily and equally displayed by all. And, according to Weiner's (1972) research, individuals perceived the greatest accomplishment and felt the most successful when knowing that they tried very hard at a task.

Weiner's (1972) attributional model has been criticized by some researchers, however. The four causal ascriptions (ability, effort, task difficulty, and luck) of Weiner's model have been claimed to be laboratory-specific (DeKalb, 1981), culturally-specific (Maehr & Nicholls, 1980), ill-conceived (Dekalb, 1981; Kukla, 1972, 1978) and reductionstic (Roberts & Pascuzzi, 1979). These criticisms inspired many researchers to extend this attributional model beyond the realm of the laboratory to include a wider variety of situational and individual variables.

More recently, researchers (e.g., Maehr & Nicholls, 1980) have begun to view the area of achievement motivation in more global terms with respect to the attributional approach. While agreeing in part with Weiner's (1972) attributional model that individuals feel the need to achieve in order to feel competent/successful, some researchers argue that not all individuals feel most competent when attributing high effort towards success (e.g., Nicholls, 1984a). Rather, feelings of success and setting of goals are individually-specific, as demonstrated by Nicholls' (1976) study.

Nicholls (1976) questioned college students about the attributions they ascribe when they feel most successful. He found that many of the students felt more pride in success due to high ability, low effort than the reverse. That is, subjects felt ability, not effort, implied the most good qualities about themselves (Maehr & Nicholls, 1980). Maehr and Nicholls (1980) also argued that not only are causal ascriptions of success and goal setting individually-specific but they also varied among cultures, citing differences between Japanese, Iranians, and Westerners. Therefore, a goal's means and ends are different for different people and cultures.

While research supports the contention that there exists multiple achievement orientations which are individually-specific (Maehr & Nicholls, 1980; Ewing, 1981) as well as culturally-specific (Maehr & Nicholls, 1980), Nicholls (1976, 1984a, 1984b) argued that achievement behavior revolved more around the construct of ability than with the other orientations. This ability-oriented schema has received some empirical support from researchers (Duda, 1988, 1989; Roberts, 1984a).

Ability Orientations

Nicholls (1984a) based his theory on White's (1959) tenet that all individuals have a need to display competency within the environment. Feelings of competency can best be accomplished by maximizing the probability of attributing high ability to oneself while minimizing the probability of attributing low ability to oneself (Nicholls, 1984a; Nicholls & Miller, 1984). Individuals select tasks based upon their belief that they can display high competency in them. Furthermore, it is maintained that one's perceived sense of competency (referred to as perceived ability) also determines the type(s) of subjective ascriptions (effort, ability, luck, and task difficulty) one gives to one's performance outcomes, affects, and achievement behaviors (Nicholls, 1984a).

Nicholls (1975; Maehr & Nicholls, 1980; Nicholls & Miller, 1984) holds that of the four causal attributes in Weiner's (1972) theory, ability is the most important determinant of achievement behavior, similar to the premises of other researchers (e.g., Covington & Omelick, 1979; Roberts & Pascuzzi, 1979; Spink & Roberts, 1980). Yet, where some researchers have concentrated on how much ability (competency) one perceives oneself to possess (e.g., Harter, 1981), Nicholls (1984a) focuses on how ability is construed in achievement situations. He contends that one's perception of ability is individually-specific (Nicholls, 1984a, 1984b) and situationally-specific (Nicholls & Miller, 1984). That is to say, individuals may choose their task objectives and behaviors according to how able they believe they can be in a particular situation. A change in one's perceived ability or the situation may result in an adjustment in achievement behavior and cognition. For instance, an

individual who has achieved a great deal of success on a given task will perceive oneself to possess high ability on it and approach similar tasks in the future. On a different novel task, the same individual might lower his/her perceived ability and depending upon performance, may or may not approach similar future tasks.

Task- and ego-orientation. Individuals use different subjective criteria to determine whether they have demonstrated high ability (success) or low ability (failure) for a given performance. The type of critieria used is dependent upon one's achievement goal. The two major ability orientations that involve distinct conceptions of competency are referred to as task- and ego-orientation (Nicholls, 1984a; Nicholls & Miller, 1984). Task-involved individuals are concerned with revealing high ability (competency) primarily by improving upon their past performances or by performing a task better than expected. Ego-oriented individuals determine their sense of competency via a social comparison process, i.e., how their performance compares to that of others. Yet, one's ability orientation can be affected situationally: "If situational factors such as the presence of an audience, competition, or other evaluative cues induce individuals to focus on their personal competence, a more differentiated conception of ability [will be used]" (Nicholls & Miller, 1984, p. 212). "In contrast, situational factors that emphasize mastery or improved performance on moderately challenging tasks would elicit attempts to demonstrate the less differentiated conception of ability" (Duda, 1987, p. 135). For example, when evaluation cues, such as normative references, are perceived as salient, individuals may use an ego-oriented frame of reference. However, when situational factors

induce individuals to focus on task mastery, such as a lack of normative references, they may use a task-oriented frame of reference. In sum, one's ability orientation and hence, subjective criteria for determining competency, can be situationally influenced--by an audience, for example.

The conceptualizations of perceived ability in achievement situations by Nicholls (1984a, 1984b) bear an uncanny resemblance to the social faciltation constructs of auto-competition and hetero-competition conceived by Allport (1924). In review, Allport (1924) believed that one's competitive goal influenced one's performance in audience conditions. Hetero-competitive individuals, those who try to "outdo" others, perform differently than auto-competitive individuals, those who are interested in self-improvement when placed in front of an audience. Nicholls (1984a) utilized similar constructs to state the same hypothesis. Namely that ego-oriented individuals (hetero-competitive) tended to perform differently in front of an audience than task-oriented individuals (auto-competitive) according to one's perceived ability and task difficulty.

Changes in one's perceived ability and/or task difficulty have been linked to changes in the learning of motor tasks (Feltz, 1988a). According to Feltz (1988a), the terms "perceived ability", "self-efficacy", and "self-confidence" have been used synonymously by researchers. These terms reflect one's belief that one can successfully execute "the behavior (e.g., sports performance) required to produce a certain outcome (e.g., a trophy or self-satisfaction) and thus, can be considered situationally-specific" (Feltz, 1988a, p. 423). Furthermore,

she argued that "self-efficacy has been found consistently to be an important and necessary cognitive mechanism in explaining motor performance, especially in an initial performance attempt" (p. 432). Allport (1924) also noted that self-confidence has an effect on motor performance in an audience condition. Therefore, the question that remains is the following: How will differences in self-efficacy and perceived ability affect the performance in the learning of a motor task of task- and ego-involved individuals in an audience condition? Nicholls (1984a) has shown some insight into this question.

Nicholls (1984a) holds that the performance of task- and ego-involved individuals is mediated by their perceived ability and task difficulty. He states:

> *"Ego involvement is predicted to impair performance for those with low perceived ability so that they perform more poorly than when task involved and more poorly than high perceived ability individuals in task or ego involvement"* (1984a, p. 340).

Furthermore:

> *"Compared to task involvement, ego involvement produces lower performance in low-perceived-ability individuals and equal or higher performance in high-perceived-ability individuals"* (p. 341).

These hypotheses are thought to hold true on moderately difficult tasks. From this, one can deduce the level of performance from best to worst on a moderately difficult task as the following:

1. High perceived ability ego-involved individuals
2. High perceived ability task-involved individuals (or tie with 1)
3. Low perceived ability ego-involved individuals
4. Low perceived ability task-involved individuals

Thus, ego-involved individuals would tend to perform better, on the average, than task-involved individuals on a task that is perceived as moderately difficult. Also, because perceived ability and self-efficacy are related (Feltz, 1988a), it can be argued that high-perceived-ability individuals would tend to have higher levels of self-efficacy than low-perceived-ability individuals. In addition, Burton (1988) maintained that there is an inverse relationship between self-confidence and anxiety affecting performance. He found that individuals possessing high self-confidence, experienced lower anxiety, and performed better than individuals who possessed the opposite levels of these variables. While these hypotheses remain as a point of interest in answering the posed question, there is the need to explore the relationship between achievement motivation and social facilitation if one is to understand the effects that an audience may have upon one's ability orientation.

Audience effects are not really discussed in most achievement motivation literature. Nonetheless, hypotheses can be deduced from Nicholl's (1984a, 1984b) work. Ego-oriented individuals strive for a favorable comparison between one's own performance abilities versus those of others. Nicholls referred to this goal of dominance solely in subjective terms -- that is, the individual derives a sense of competency from the self-knowledge that one is more able than

another. More specifically, it is apparent that the determination of competency is dependent not only on one's self-belief that one is more able than another, but also on one's self-belief that others also know that one is more able than another. For example, competency may be determined by an ego-oriented individual not only becasue s/he has beaten an opponent at a 100m dash, but also because s/he ascertains that the opponent and the audience knows it too. Would a feeling of competency truly be achieved by ego-oriented individuals if they felt themselves to have higher ability than others, but surrounding others did not? Probably not. Therefore, ego-oriented individuals rely upon others (e.g., audience, opponents, and the media) as determining sources of competency.

Task-oriented individuals derive their sense of competency from self-improvement of past or expected performance (Nicholls & Miller, 1984; Duda, 1987). Such task-mastery goals, are also partially based upon the judgment of others as competency evaluators. Would feelings of competency truly be gained if task-oriented individuals believed they had improved, but others did not? Again probably not. However, because task-oriented individuals are more concerned with self-improvement and not improvement over other individuals, they would be less susceptible to outside influences. Hence, ego-oriented individuals, relying more heavily on outside influences in determining competency, would tend to experience more anxiety than task-oriented individuals when performing a task in front of an audience.

In sum, social facilitation research, filled with a century's worth of inconclusive results, has been sharply criticized for its failure to

use a cognitive approach to ascertain an audience's impact upon human performance. Individual variables such as perceived ability, self-efficacy, and anxiety, which have been empirically shown to have a mediating effect upon performance, may account for much of the variability in individuals' motor performance in front of an audience. Therefore, it is important to use an interactionist approach to study the arena of social facilitation in order to explain, predict, and control the audience-performer relationship.

CHAPTER 3

METHOD

Subjects and Design

Eighty male undergraduates enrolled in physical education activity classes at Michigan State University volunteered to participate in this experiment which was approved by the Human Subjects' Committee (see Appendix A). Selection of subjects was based upon their completion of a consent form and their scores on Duda and Nicholls' Task and Ego Orientation Sport Questionnaire, TEOSQ, (Duda, 1992). Subjects who had higher ego-orientation scores than task-orientation scores were labelled as ego-oriented and those who displayed a 1.2 unit difference between task-orientation and ego-orientation, with task-orientation being higher, were labelled as task-oriented. Due to a lack of research using the TEOSQ as a independent variable measure, these criteria were established in an attempt to isolate ability orientation groups on the basis of their TEOSQ scores while maintaining statistical power. A significant problem emerged in dichotomizing ability orientation groups using subjects' TEOSQ scores. In fact, when this study was orginally conceptualized, it was planned that those subjects who scored a +1 standard deviation above the mean on ego-orientation while scoring the mean or lower on task-orientation would be selected as ego-oriented subjects. Similarly, those subjects who scored a +1 standard deviation above the mean on

task-orientation while scoring the mean or lower on ego-orientation would be selected as task-oriented subjects. However, after sampling almost 250 subjects, only 2 ego-oriented subjects would have been selected using these criteria.

After it was determined that the criteria for subject selection was too rigid for the TEOSQ, new guidelines were established. Because there were many subjects who had relatively high task-orientation scores while possessing low ego-orientation scores, it was determined that those subjects who had the largest difference between these two achievement scores, with task-orientation being higher, would be selected as task-orientated subjects in order to help assure a true dichotomization. These task-oriented subjects had a 1.2 or greater unit difference between their task- and ego-orientation scores.

The true problem arose with the ego-oriented subjects. Because there were minimal cases where subjects had high ego-orientation scores while possessing low task-orientation scores, it was determined that those subjects displaying higher ego-orientation than task-orientation scores would be selected as ego-oriented subjects. From these task- and ego-oriented groups, subjects were then randomly subdivided into audience-present and audience-absent conditions. Thus, this study employed a 2 (ability orientation) x 2 (audience condition) factoral design (see Figure 2).

In the initial screening, 107 task-oriented and 49 ego-oriented subjects were identified under the revised selection criteria levels out of 250 possible subjects. From the subjects who were selected for this

study, six task-oriented and nine ego-oriented subjects refused to return the experimenter's calls and thus were dropped from the study.

		Audience	
		Present	Absent
Ability Orientation	Task	20	20
	Ego	20	20

Figure 2. Research design employed in this study.

In the case where there were more subjects in a cell than needed for the experiment, a random selection process was used to fill the cell. This procedure occurred with the task-oriented subjects only. In the case where more subjects were needed to fill particular cell levels, more volunteers were asked to complete the TEOSQ and consent form in order to procure the necessary number of subjects for the study. This procedure occurred two times in order to fill the ego-oriented cells.

Task

Subjects were asked to perform on the Bachman (1961) Ladder. This apparatus is a 6 foot tall free standing ladder used to measure motor performance (balance). Its base is stabilized, allowing it to move in only a vertical line of motion. It can fall forward no further than 45 degrees, after which, it is stopped by a safety block. The ladder has three uprights (two on the sides and one up the middle) and the 14 rungs are alternately

spaced every half-step apart (3 inches) up to the 5 foot level. The object of the task is to climb as high up the ladder as possible, touching every rung along the way, until balance is lost and the ladder either falls forward and stops at 45 degrees or falls backwards where one's feet touch the ground. Subjects were given 30 trials and the recorded score per trial was the last consecutive rung touched before balance was lost. For example, if the subject climbed to Rung 2 then jumped to Rung 4 before falling off, the score was marked as 2. This procedure was similar to the one utilized by Landers and Landers (1973).

Self-Report Measures

Task and Ego Orientation Sport Questionnaire (TEOSQ). The TEOSQ (see Appendix B) was designed to measure an individual's sport-related ability orientation. The TEOSQ is comprised of two subscales. Six statements form the ego-orientation subscale and seven statements make up the task-orientation subscale. Feelings of competency in athletics are measured via subjects' responses to these 13 statements. Each statement is assessed using 5-point Likert scales, ranging from 1 (strongly disagree) to 5 (strongly agree). Mean scores for each subscale were used in order to dichotomize subjects. The reliability and validity of this scale are not fully documented as the scale is relatively new.

After completing the TEOSQ, subjects were asked to mark "yes" or "no" to a forced choice question asking if they had ever climbed a free standing ladder before. If subjects had experience climbing a free-standing ladder, they were required to explain the extent of their experience. This question screened potential subjects for experience on

the Bachman Ladder in order to ensure that all participants considered this apparatus a novel task. Those individuals who had indicated some experience on such a ladder would have been dropped from the study, but none of the subjects indicated familiarity with the Bachman Ladder. The TEOSQ was administered to subjects during their exercise science classes.

Demographic Questionnaire. A demographic questionnaire (see Appendix C) was designed to assess each subject's age and past athletic participation. The questionnaire was administered to subjects after they had entered the laboratory and before they climbed the Bachman Ladder.

State Anxiety Questionnaire. The State Anxiety Questionnaire (see Appendix D) was constructed by Spielberger, Gorsuch, and Lushene (1970) and contains 20 questions pertaining to an individual's state anxiety level. Each question is based on a 4-point Likert scale ranging from 1 (Not at all) to 4 (Very much so). Total scores range from 20 to 80. Scores ranging from 20 to 40 were considered low scores, 41 to 60 moderate scores, and 61 to 80 high scores on state anxiety. This scale was administered as baseline, pre-task, and post-task measures for all subjects. As a baseline measure, this scale was administered directly after the demographic questionnaire and was used to reflect anxiety levels that subjects carried into the study. The pre-task measure was given directly after the Bachman Ladder descriptions, explanations, and strategies and/or treatment manipulations were disseminated. The post-task measure was given immediately after the conclusion of Trial 20 for all subjects. The reliability and validity of this scale are well documented (Spielberger, Gorsuch, & Lushene, 1970).

Bachman Ladder Self-Efficacy Scale. The Bachman Ladder Self-Efficacy Scale (see Appendix E), developed by Lirgg and Feltz (1991), measures one's self-efficacy specifically in reference to the Bachman Ladder. Subjects were asked to describe their level of confidence (expressed in percent success) per attempted rung level (total of 14 rung levels) by answering the question "How confident are you that you can do this task?" Scale completion was signaled by subjects' perception of 0% self-efficacy at any one rung level. For example, a subject may be 100% confident that he will be able to reach the first rung, but only 80% confident in reaching the second rung, 40% confident in reaching the third rung, and finally 0% confident in reaching the fourth rung. Strength and level were scored together on this questionnaire as recommended by Lirgg and Feltz (1991). For example, an individual who was 100% confident in reaching the first rung, 50% confident in reaching the second rung, and 0% confident in reaching the third rung would receive a self-efficacy score of 10.71 (100% + 50% confidence /14 rungs). This scale was used as a baseline, pre-task, and mid-task measure. In all three measurement periods, this scale was administered after the State Anxiety Scale for all subjects.

Perceived Ability Scale. Perceived ability was measured using the statement: "I feel that I have the ability to do well at this task" (see Appendix E). This statement was quantified using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Subjects scoring 1 to 2 were assessed as having low perceived ability and those scoring 4 to 5 were assessed as having high perceived ability. This questionnaire

was used as baseline, pre-task, and post-task measures for all subjects. Located at the bottom of the Bachman Ladder Self-Efficacy Scale, the Perceived Ability Scale was administered after the State Anxiety and Self-Efficacy Questionnaires in all three assessment periods.

Manipulation Check (See Appendix F).

After completion of all task trials, subjects in the audience-present condition were asked whether or not they had perceived the audience as being evaluative of and attentive to their performance. According to Schlenker and Leary (1982), individuals who are deemed by others as being powerful, esteemed, attractive, expert, or high in status are perceived as having strong evaluation potential. An underlying assumption of this tenet is that individuals must be perceived as being attentive to one's performance in order to be perceived as evaluative. Therefore, this manipulation check dealt with how subjects perceived audience characteristics and attentiveness to their performance. This scale comprised four statements, two pertaining to audience characteristics and two pertaining to audience attentiveness, each based on a 4-point Likert Scale ranging from 1 (not at all) to 4 (very much so). One of the questions pertaining to audience characteristics was as follows: "The surrounding exercise science graduate students are very knowledgeable in analyzing motor performances." One of the questions pertaining to audience attentiveness was as follows: "The surrounding exercise science graduate students were attentive to my performance." If a subject scored greater than one on any of the four questions, it was determined that the audience had an effect on that individual. All of the subjects scored higher than one

on every question.

Procedure

Orientation to the apparatus and task objectives. Subjects were scheduled to arrive at 20 minute intervals so that only one subject entered the laboratory at a time (See Appendix G). This was done to minimize subject interaction. After entering the laboratory, subjects were told that they were participating in a study to see how well college students could perform on a novel motor task such as the Bachman Ladder. They then completed the demographic questionnaire and the baseline measures (state anxiety, self-efficacy, and perceived ability scales, respectively).

After completion of the baseline measures, subjects in the treatment condition were given a one minute introduction to the audience and their objectives. In lieu of the treatment condition, subjects in the alone conditions waited for one minute after the completion of the baseline measures before the experiment continued. Next, Bachman Ladder descriptions and objectives were explained to all of the subjects as follows:

> "This is a Bachman Ladder. You are to climb up as high as you can while touching each consecutive rung along the way. You will begin by placing your left foot on the lowest left-hand rung and proceed to climb up the ladder. Your score will be recorded as being the last rung touched in a consecutive order before your feet touch the floor or before the ladder rolls forward and touches the 45 degree safety stop. You will be given a two minute rest between Trials 20 and 21.

Once your feet have touched the floor or the ladder touches the safety stop, that will signal the end of the trial. Remember to go as high as possible."

Also, in order to ensure that all participants used a similar and effective strategy to climb the ladder, subjects were advised to begin with the arms outstretched, gripping the ladder by the outside uprights, and to climb relatively fast (Feltz, 1982). The experimenter showed the hand/arm commencement position on the ladder to all of the subjects, but did not climb the ladder.

Audience Conditions and Self-Report Measures. After the treatment manipulation and task instructions, objectives, and strategy were disseminated, subjects were asked to complete the pre-task measures (state anxiety, self-efficacy, and perceived ability scales, respectively) according to how they felt at this particular time. Subjects were reminded that their complete honesty was needed to make this study a success. Furthermore, subjects were told that once all the data were collected, the master sheet containing their names and their identification numbers would be destroyed, ensuring their complete anonymity. Finally, subjects were told that only the primary investigator would be handling and recording all of the data collected by himself and the audience and that all information would remain in strict confidence.

Treatment Conditions. After the four baseline measures were completed, subjects in the audience condition were told that their performance would be evaluated by two other exercise science graduate students (one male and one female) who were very knowledgeable in the

field of gross motor task analysis. While in front of each subject, these graduate students were handed a "motor performance analysis" sheet to assess subject performance and then informed of each subject's identification number. These steps were taken so that subjects' would perceive the audience members as being knowledgable in the field of motor task analysis and, thus, evaluative of their performance. After the treatment condition was explained, these subjects were then administered the three pre-task measures (state anxiety, self-efficacy, and perceived ability scales, respectively).

Bachman Ladder Performance. Subjects were asked to perform 30 trials. They were scored using a performance record sheet (see Appendix H). Also, all subjects were given a two minute rest break between Trials 20 and 21 so that they could complete the three post-task measures (State Anxiety, Bachman Ladder Self-Efficacy, and Perceived Ability Scales, respectively). During this break, while the subjects were completing these post-task measures, the experimenter went over to "discuss" with the audience members (who were obscured by a divider from the subjects) some aspect of the subjects' previously completed trials. This discussion and subsequent pencil scribbles were made loud enough so that subjects would believe a serious conference regarding their performance was being conducted. In actuality, certain words and phrases such as "On Trial 6....." and "No, it was a four" and also "The temporal aspect..." were spoken and then hushed, followed by some murmuring. After the post-task measures were finished, subjects completed the final 10 trials on the Bachman Ladder. Upon completion of the trials, the audience condition subjects

were administered the manipulation check and then thanked for their participation and the alone condition subjects were thanked for their participation in the study. All subjects were debriefed at the end of the study.

Summary of Procedures. Subjects were selected after they completed a consent form and from their scores on the TEOSQ (Duda, 1992). After having entered the laboratory, all subjects completed the four baseline measures (Demographic, Spielberger's State Anxiety, Bachman Ladder Self-Efficacy, and Perceived Ability Scales, respectively). Subjects in the treatment group were then given a one minute introduction to the audience and to their objectives. In order to maintain an equal appropriation of time to complete this experiment between subjects, individuals in the alone condition were asked to wait one minute before proceeding on to this study's next phase. Next, Bachman Ladder descriptions, objectives, and strategy were explained to all subjects before they were given the three pre-task measures (state anxiety, self-efficacy, and perceived ability scales, respectively). Upon completion of these measures and the answering of subjects' questions, the task trials commenced. Between Trials 20 and 21, a two minute rest was given to all subjects so that they could complete the three post-task measures (state anxiety, self-efficacy, and perceived ability scales, respectively). After Trials 21 to 30 were completed, subjects in the audience condition were administered the manipulation check and, upon its completion, were thanked for their participation in the study and allowed to leave the laboratory. Subjects in the alone condition were thanked for their

participation in the study and allowed to leave the laboratory immediately after completion of the task trials.

Treatment of the Data.

To test the hypotheses, a 2 (task-, ego-orientation) x 2 (alone, audience condition) x 6 (trial blocks) MANOVA with repeated measures was performed with performance on 30 trials as the dependent variable. In order to increase statistical power, three separate 2 x 2 x 3 (baseline, pre, post) MANOVAs with anxiety, self-efficacy, and perceived ability as the dependent variables were conducted. Tukey Pairwise Comparison Tests comprised the post-hoc analyses.

CHAPTER IV
RESULTS

The purpose of this experimental study was to examine the effects of an audience upon the performance of individuals who maintain different types of achievement orientations. Thus, the following questions were investigated: Would an audience affect task-oriented males differently than ego-oriented males on a motor task? If so, how would these differences affect such performance influencing variables as self-efficacy, perceived ability, and anxiety with regards to climbing a Bachman Ladder? Could differences in these variables, resulting from audience versus no audience conditions, be used to predict task- and ego-oriented individuals' performance?

Experimental Analyses

Performance Measures. The hypothesis proposed that task-oriented subjects in the audience condition would perform better than their ego-oriented counterparts. Performance on the Bachman Ladder was broken down into six blocks of five trials. Blocking on trials allowed changes in performance to be assessed over time without the confusion associated with trial by trial analyses.

To test for performance differences in climbing the Bachman Ladder, a 2 (alone, audience conditions) x 2 (task-, ego-oriented groups) x 6 (trial blocks) repeated measures MANOVA was employed with trial blocks being the repeated factor. Because subjects performed repeated trials on the

Bachman Ladder, performance is reported as a within subjects variable. Between group differences are reported for the audience/alone condition and achievement groups and their associated interactions.

The summary table of the between and within subjects main and interaction effects are shown in Table 1. The main effect for the

Table 1

Between and Within Subjects MANOVA Table for Performance on the Bachman Ladder

	SS	DF	MS	F	P
Between Subjects					
Total	450.47	76	5.93	---	---
Condition	4.84	1	4.84	.82	.37
Achievement	8.27	1	8.27	1.40	.24
Cond x Ach	7.65	1	7.65	1.29	.26
Cond x Ach x Time	3.10	5	.62	1.19	.31
Ach x Time	4.36	5	.87	1.68	.14
Cond x Time	2.09	5	.42	.80	.55
Time	294.08	5	58.82	113.05	.00*
Within Subjects					
Total	197.70	380	.52	---	---

Note. Condition (Cond.) = alone/audience conditions; Achievement (Ach.) = task-/ego-oriented groups.

* $p < .01$

audience/no audience condition was not signficant, indicating no

performance differences on the Bachman Ladder between those who climbed the ladder with an audience and those who climbed alone. Also, the main effect for the task-/ego-orientation subjects was not significant, indicating no performance differences between task- and ego-oriented achievement groups. Finally, the interaction effect for the audience/alone condition and the task-/ego-orientated subjects performance interaction effect was nonsignficant. These results did not support the hypothesis. All performance means and standard deviations are presented in Appendix I.

As shown in Table 1, all of the interaction effects for performance were nonsignificant. However, the main effect for the trial blocks was significant. Due to this significant main effect for performance on the Bachman Ladder, post hoc analyses were undertaken.

Tukey Pairwise Comparison Tests were performed to ascertain which trial block means were different. Results from these tests are revealed in Table 2. All of the means significantly differed from one another with two exceptions. Trial Block 3 did not differ significantly from Trial Block 4 and Trial Block 5 did not differ significantly from Trial Block 6.

Perceived Ability Measures. The hypothesis predicted that task-oriented males in the alone condition would reveal the highest overall perceived ability score. To check for significant differences on perceived ability, a 2 (audience, alone condition) x 2 (task-, ego-oriented subjects) x 3 (baseline, pre-task, post-task time periods) repeated measures MANOVA was conducted. The between and within subjects summary is presented in Table 3. Only the main effect for time periods was significant. Because of this significant effect for time periods, post

Table 2

Tukey Pairwise Comparison Test Matrix for Trial Main Effect for Performance on the Bachman Ladder

	Trial Block 1	Trial Block 2	Trial Block 3	Trial Block 4	Trial Block 5	Trial Block 6
Trial Block 1	----	----	----	----	----	----
Trial Block 2	9.75*	----	----	----	----	----
Trial Block 3	15.43*	5.68*	----	----	----	----
Trial Block 4	18.02*	8.27*	2.59	----	----	----
Trial Block 5	25.80*	16.05*	10.37*	7.78*	----	----
Trial Block 6	28.89*	19.14*	13.46*	10.86*	3.08	----

* $p<.05$

hoc analyses were conducted to establish exactly which periods of perceived ability means were different. All of the perceived ability means and standard deviations can be found in Appendix J.

Multiple Tukey Pairwise Comparisons Tests comprised the poc hoc analyses. As presented in Table 4, the baseline measure did not differ significantly from the pre-task measure but did differ significantly from the post-task measure. Also, the pre-task measure did differ significantly from the post-task measure, indicating a significant drop in perceived ability between these two time periods. Thus, subjects had very high perceived ability prior to onset of the task and readjusted it after performing 20 trials on the Bachman Ladder by decreasing their

Table 3

Between and Within Subjects MANOVA Table for Perceived Ability on the Bachman Ladder

	SS	DF	MS	F	P
Within Cells					
Total	76.23	76	1.02	---	---
Condition	1.23	1	1.25	1.23	.27
Achievement	.18	1	.18	.18	.68
Cond x Ach	2.10	1	2.10	2.06	.15
Cond x Ach x Time	.07	2	.03	.12	.90
Ach x Time	.55	2	.27	.94	.39
Cond x Time	.06	2	.03	.11	.90
Time	13.14	2	6.57	22.70	.00*
Within Subjects					
Total	43.43	150	.29	---	---

Note. Condition (Cond) = audience/alone groups. Achievement (Ach) = task-/ego-oriented groups.

* $p < .01$

perceived ability at the post-task time period.

Self-Efficacy Measures. The hypothesis postulated that task-oriented subjects in the alone condition would exhibit the highest overall self-efficacy score. In order to test for significance among self-efficacy means, a 2 (audience/alone condition) x 2 (task-/ego-orientation groups) x 3 (baseline, pre-task, post-task time periods) repeated measures MANOVA was employed. As shown in the summary table (see Table 5) of the

Table 4

Tukey Pairwise Comparison Test Matrix for Perceived Ability Time Main Effect on the Bachman Ladder

	Baseline	Pre-task
Baseline	----	----
Pre-task	.67	----
Post-task	8.67*	8.00*

* $p<.05$

between and within subjects MANOVA table, none of the main or interaction effects was statistically significant except for a Time main effect. All of the means and standard deviations for self-efficacy are presented in Appendix K.

The time periods main effect for self-efficacy was significant. Because of this significant main effect for self-efficacy, post hoc analyses were conducted in order to ascertain which of the time periods were different.

Tukey Pairwise Comparison Tests comprised the post hoc analyses for the Trial main effect for self-efficacy. The results are reported in Table 6. The baseline measure was not statistically different from the pre-task measure but was statistically different from the post-task measure.

Table 5

Between and Within Subjects MANOVA Table for Self-Efficacy on the Bachman Ladder

	SS	DF	MS	F	P
Between Subjects					
Total	45876.42	76	603.64	---	---
Condition	1425.94	1	1425.94	2.36	.13
Achievement	308.27	1	308.27	.51	.48
Cond x Ach	452.65	1	452.65	.75	.39
Cond x Ach x Time	152.27	2	76.13	.76	.47
Ach x Time	69.32	2	34.66	.35	.71
Cond x Time	11.02	2	5.51	.05	.95
Time	7130.24	2	3565.12	35.55	.00*
Within Subjects					
Total	15241.69	152	100.27	---	---

Note. Condition (Cond) = audience/alone groups; Achievement (Ach) = task-/ego-oriented groups.

* $p < .01$

Lastly, the pre-task measure was statistically different from the post-task measure.

These results for self-efficacy paralleled those found for perceived ability. Subjects appeared to have overestimated both their self-efficacy and perceived ability baseline and pre-task measures and then drastically reduced these self-perceptions after they had completed the first 20

Table 6

Tukey Pairwise Comparison Test Matrix for Self-Efficacy Time Main Effect on the Bachman Ladder

	Baseline	Pre-task
Baseline	----	----
Pre-task	.01	----
Post-task	9.79*	10.78*

*p<.05

trials of the task. The correlations for these two variables were significant as reported in Table 7. The correlation between pre-task perceived ability and self-efficacy measures was significant, r=.60, p<.01 as was the correlation between their post-task measures, r=.30, p<.01.

Anxiety Measures. The hypothesis projected that ego-oriented subjects in the audience condition would exhibit the highest overall anxiety score. In order to test for differences among the anxiety means, a 2 (audience/alone condition) x 2 (task-/ego-orientation groups) x 3 (baseline, pre-task, post-task time periods) repeated measures MANOVA was conducted. Table 8 presents the results of the between and within subjects MANOVA analyses for anxiety relative to performance on the Bachman Ladder. Neither the interaction effects nor the main effects were significant, except for a time main effect. These results are similar

Table 7

Correlation Matrix for Performance on the Bachman Ladder for Pre-task Anxiety, Pre-task Self-Efficacy, Pre-task Perceived Ability, Post-task Anxiety, Post-task Self-Efficacy, and Post-task Perceived Ability Variables

	Perf1	Pre-task anxiety	Pre-task SE	Pre-task perceived ability	Post-task anxiety	Post-task SE	Post-task perceived ability	Perf2
Perf1	1.00	----	----	----	----	----	----	----
Pre-task anxiety	-.02	1.00	----	----	----	----	----	----
Pre-task SE	.05	-.20	1.00	----	----	----	----	----
Pre-task perceived ability	.06	-.25*	.60**	1.00	----	----	----	----
Post-task anxiety	.01	.78*	-.23*	-.29**	1.00	----	----	----
Post-task SE	.40**	-.17	.62**	.39**	-.20	1.00	----	----
Post-task perceived ability	.31**	-.23*	.01	.45**	-.28*	.30**	1.00	----
Perf2	.89**	-.02	.11	.13	.05	.40**	.30**	1.00

Note. Perf1 = performance on the first 20 Trials of the Bachman Ladder; Perf2 = performance on the final 10 Trials of the Bachman Ladder; SE = self-efficacy.

* $p<.05$ ** $p<.01$

Table 8

Between and Within Subjects MANOVA Table for Anxiety on the Bachman Ladder

	SS	DF	MS	F	P
Within Cells	12560.37	76	165.27	---	---
Condition	16.02	1	16.02	.10	.76
Achievement	135.00	1	135.00	.82	.37
Cond x Ach	40.02	1	40.02	.24	.62
Cond x Ach x Time	44.81	2	22.40	1.21	.30
Ach x Time	15.18	2	7.59	.41	.66
Cond x Time	9.61	2	4.80	.26	.77
Time	1881.31	2	940.65	50.91	.00*
Within Subjects Total	2808.43	152	18.48	---	---

Note. Condition (Cond) = audience/alone groups; Achievement (Ach) = task-/ego-oriented groups.

* $p < .01$

to the ones found for performance, self-efficacy, and perceived ability.

As indicated by the means for anxiety and the lack of an interaction effect for the alone/audience condition by task- and ego-oriented subjects, the hypothesis that ego-oriented subjects in the audience condition would reveal the highest overall anxiety measures, was not supported. All of the means and standard deviations for the anxiety analysis can be found in Appendix L.

Table 9

Tukey Pairwise Comparison Test Matrix for Anxiety Time Main Effect on the Bachman Ladder

	Baseline	Pre-task
Baseline	----	----
Pre-task	6.52*	----
Post-task	14.38*	7.75*

* $p<.05$

Because of the significant Time main effect, post hoc analyses were employed in order to ascertain where among the means the true differences lay. Tukey Pairwise Comparison Tests were used to extract this information. As shown in Table 9, all of the means for anxiety were significantly different from one another. The baseline measure was significantly different from the pre-task measure as well as the post-task measure. Also, the pre-task measure was significantly different than the post-task measure.

In sum, subjects became increasingly more anxious from the time they entered the laboratory, to the time they were introduced to the task and their performance condition, to the completion of the first 20 trials on the Bachman Ladder. Whether this linear increase in anxiety actually influenced subjects' performance is unclear.

Exploratory Analyses

Recomputation With Extreme Scores. Due to the lack of significant interaction effects further exploratory analyses were performed in order to ascertain why the hypothesis were not supported. Problems with this study had begun with the attempt to dichotomize the achievement orientation groups using the Task and Ego Orientation Sports Questionnaire, TEOSQ, as discussed in Chapter 3.

It is possible that the lack of significant interaction effects could be attributed to the discrepant experimental selective processes used for the task- and ego-oriented subjects. The ego-oriented subjects possessed higher standard deviations than the task-oriented subjects in most cases throughout the whole study. The high standard deviations indicated that the ego-oriented subjects were not as homogenous as the task-oriented subjects.

Because the TEOSQ was a relatively new scale with little statistical backing and because of the differences in selection of the task- and ego-orientation groups employed in this study, new analyses were computed to check for differences in performance, perceived ability, self-efficacy, and anxiety. Subjects with the most extreme differences between achievement orientations were selected for the recomputation of the statistics for this study. Extreme differences in ability orientation scores were used in this recomputation in order to pull task- and ego-oriented groups farther apart. Different criteria for selection were used for task- and ego-oriented subjects. A minimum of 10 task- and ego-oriented subjects were required for the recomputation to provide sufficient statistical power. Thus, only those task-oriented subjects

were selected for the recomputation if they had a 1.6 unit difference or greater between task- and ego-orientation, with task scores being higher. Twenty-two total task-oriented subjects were selected under this criterion: 12 in the audience condition and 10 in the alone condition.

In order to select a minimum of 10 ego-oriented subjects per cell, the criterion for selection for the recomputation was more relaxed than found for the task-oriented subjects. Only those ego-oriented subjects who had a .30 unit difference or greater between the two achievement orientation scores, with ego-orientation being higher, were selected. Twenty-four total ego-oriented subjects were selected under this criterion: 14 in the audience condition and 10 in the alone condition.

Despite the recomputation of this study there were still no significant interaction effects. The Time main effect for each dependent variable remained significant as was found in the original computations. Recomputation with the extreme achievement scores did, however, reveal some probability levels that came closer to significance than the original analyses' scores. The summary of the between subjects MANOVA analysis for performance is presented in Table 10.

As expected, the manipulation of the achievement orientation scores resulted in the task-/ego-orientation main effect for performance approaching significance, $F(1,42)=3.64$, $p=.06$ while the original computations revealed no significant differences, $F(1,76)=1.40$, $p=.24$. Also approaching significance was the alone/audience condition, $F(1,42)=1.8$, $p=.18$. However, none of the within subjects interaction effects for performance approached signficance.

Interaction effects for the reconstituted groups differed dramatically

Table 10

Comparison of the Between Subjects MANOVA Tables for Performance on the Bachman Ladder For the Original Computation Scores and the Recomputations for Subjects With Extreme Achievement Orientation Scores

	SS	DF	MS	F	P
			Original Computations		
Within Cells	450.47	76	5.93		
Condition	4.84	1	4.84	.82	.37
Achievement	8.27	1	8.27	1.40	.24
Cond x Ach	7.65	1	7.65	1.29	.26
			Recomputations		
Within Cells	267.10	42	6.36		
Condition	11.92	1	11.92	1.88	.18
Achievement	23.12	1	23.12	3.64	.06
Cond x Ach	.65	1	.65	.10	.75

Note. Condition (Cond) = audience/alone groups; Achievement (Ach) = task-/ego-oriented groups.

from the original computations, e.g., the alone/audience condition by baseline, pre-task, and post-task measures interaction for self-efficacy,

F(1,42)=1.86, p=.16 versus the original computation, F(1,76)=.35, p=.71.

Another example was the 3-way interaction for perceived ability where the multivariate Hotellings t was smaller, F(2,41) = 1.72, p=.19 than the original computation, F(2,74) = 2.08, p=.82.

While these were only a few instances where the recomputation of the statistics dramatically approached significance versus the original computation of scores, the fact that most of the scores did not achieve significance was probably due to the reduction of subjects, and thus a reduction of statistical power, rather than to a lack of interaction effects. Seen in this light, the fact that these few instances approached significance despite the reduction in statistical power leads one to believe that the lack of support for the proposed hypothesis in this study was obscured by the problems associated with the achievement dichotomization of subjects.

In sum, the recomputation of the MANOVA using subjects possessing extreme achievement orientation scores did not differ from the original computations. That is, all main effects and interaction effects were nonsignificant, except for the Time main effects. For each variable, the main effect for the time periods was significant, indicating changes in subjects' cognitions as they performed on the Bachman Ladder. Interestingly, in the recomputation, some interactions did approach significance, suggesting that there may be methodological and/or conceptual dilemmas associated with the Task and Ego Orientation Sports Questionnaire.

Multiple Regressions. Further exploratory analyses were conducted in order to ascertain whether this study's cognitive model could be used to

predict subjects' performance on the Bachman Ladder. In the first analyses, all of the cognitive pre-task measures were placed in a multiple regression equation to see if they could predict subjects' performance on the first 20 Trials of the Bachman Ladder. The results were nonsignificant, as none of the variables could even account for 1% of the performance variance. Similar inconclusive results occurred when the post-task cognitive variables were placed in a Multiple Regression equation to see if they could predict subjects' performance on the last 10 Trials of the Bachman Ladder.

The last multiple regression conducted used many pre-task dependent measures as predictors of post-task self-efficacy. Specifically, task- and ego-orientation, performance on the first 10 trials of the Bachman Ladder, pre-task self-efficacy, anxiety, and perceived ability, as well as audience versus alone conditions were the predictors and post-task self-efficacy was the outcome variable in this equation. The results showed that the initial performance trial blocks accounted for 38.85 percent of post-task self-efficacy's variance and pre-task self-efficacy accounted for 46.10 of post-task self-efficacy's variance.

In sum, none of the cognitive measures were adequate predictors of subjects' performance on the Bachman Ladder. However, subjects' initial performance on the Bachman Ladder and pre-task self-efficacy measures were rather substantial predictors of post-task self-efficacy measures.

CHAPTER 5

DISCUSSION

The impact of an audience on performance has been viewed from several different perspectives. Most researchers in social facilitation have investigated this audience-performer relationship by basing their analyses upon very mechanistic theories that fail to account for the wide range of human behaviors prevalent in social interactions (Wankel, 1984). For example, theories paralleling the human learning process to that of a drive state (Zajonc, 1965) and those focusing on the effects of an audience's "mere presence" upon the performance of others (e.g., Chapman, 1974; Cohen, 1980) have resulted in equivocal findings and have lead to the subsequent abandonment of social facilitation as an empirical research topic (Wankel, 1980). The fact that these past theories have hypothesized that all humans should react similarly to such external manipulations of the task or audience relegates humans to mere automatons, devoid of interpretation or cognition.

More recently, such cognitive theories as Nicholls' (1984a) ability orientations approach to achievement motivation have shown some promise in laying a basis of explanation for the complex audience-performer relationship. Nicholls contends that task- and ego-oriented individuals define competence differently. Task-oriented individuals, being primarily self-competitive in determining competency, focus upon task mastery, while ego-oriented individuals, being

other-oriented in determining competency, concentate on comparing themselves favorably to other individuals. These competing orientations may result in possible social performance differences. The potential differences between individuals possessing disparate achievement orientations on such performance-influencing cognitive variables as anxiety, self-efficacy, and perceived ability were the foci of this research.

The discussion of this study will be divided into three parts. The first part will deal with this study's problems associated with the discrepancy between Nicholls' conception of ability orientation and the Task and Ego Orientation Sports Questionnaire. The second part will deal with this study's results, in light of the TEOSQ problems. Finally, the third part will focus on future research utilizing the concepts of task- and ego-orientation.

TEOSQ Problems

Situation-specificity. The biggest problems associated with this study had to do with potential methodological and conceptual shortcomings associated with the Task and Ego Orientation Sports Questionnaire (Duda, 1992). According to Nicholls (Nicholls & Miller, 1984), whether one uses a task- or ego-oriented frame of reference is a function of the situation at hand. For example, situations such as the presence of an audience, competition, or other evaluative cues demands an orientation of the less differentiated sense (i.e., ego-orientation). It is thus implied that despite one's initial orientation, one must maintain an ego-orientation in front of an audience. In addition, situations that

"emphasize mastery or improved performance on moderately challenging tasks" would require individuals to focus on more task-orientated conceptions of competency (Duda, 1987). Yet, instead of reflecting the ability orientations' situation-specificity, the TEOSQ remains a very trait-oriented measure. It refers to sports as a whole with no attention paid to different sport situations.

If achievement orientations are situationally-specific and the TEOSQ captures more trait-like characteristics associated with task- and ego-involvement, then it is possible that subjects could have changed their achievement orientation from the time they were administered the TEOSQ to the time they were introduced to the task and/or the audience. For example, the audience could have forced subjects who were initially measured by the TEOSQ to possess task-orientation to use "a more differentiated conception of ability" (i.e., ego-orientation) (Nicholls & Miller, 1984, p.212) when performing in front of the audience, placing them in a similar cognitive disposition as the ego-oriented subjects, and thereby nullifying potential dependent measure differences between the groups. Or, the fact that there were no normative references on which to compare their performance could have caused subjects who were initially measured by the TEOSQ to possess an ego-orientation to use a less differentiated conception of ability (i.e., task-orientation). In essence, the reason for this study's equivocal results could have been that, although the TEOSQ measured two groups at the very beginning of the study, when placed in a different situational context, subjects switched to a similar ability orientation.

While Nicholls (Nicholls & Miller, 1984) contends that individuals do actually change ability orientations depending upon the situation, there has been no research supporting such a switch. However, other theories such as Duval and Wicklund's (1972) theory of objective self-awareness are in agreement with Nicholls' (1984a) theory that individuals' cognitive focus differ depending upon the situation.

Duval and Wicklund (1972) proposed that social facilitation results were a function of individual's attentional states. Subjects who were characterized by an outward focus of attention, like an ego-oriented individual, were classified as being "subjectively self-aware". Others who focused their attention inward, similar to a task-oriented individual, were labelled as being "objectively self-aware". The theory, similar in nature to the claimed situation-specificity of ability orientations, holds that one's self-awareness is regulated by particular stimuli. Duval and Wicklund's (1972) theory, possessing self-presentational overtones, holds that certain stimuli, such as an audience, draws individuals' attention inward resulting in a "realization of an ideal self-actual self-discrepancy that may motivate that individual to attain higher performance standards" (p. 110). Subjectively self-aware subjects are induced by other stimuli to draw their attention outward. Although Nicholls (1984a) propounds that these changes in cognition occur in a different manner (i.e., the change is in ability orientation) and for different reasons (i.e., endogenous versus exogenous), this ability oriented theory and Duval and Wicklund's (1972) theory are very similar in scope, as both emphasize that individuals switch cognitions between internal and external states.

There has been insufficient evidence to support the self-awareness theory (Borden, 1980) suggesting that Nicholls' theory may also be in jeopardy. Certainly, more research is needed in order to ascertain whether there is a switch in one's ability orientation under varying circumstances. If this theory is valid, one must ascertain if all subjects are able to adequately make this change in cognition and the extent of the change. Wine's (1980) theory holds that cognitive anxiety misdirects one's attention from task-relevant cues to the self or social evaluation cues. Can ability-oriented individuals be provoked by a task or an audience to become so task- or ego-involved that their performance suffers due to a lack of attention to task-relevant cues? Could the process of shifting in orientation, misdirect attention away from the task itself, as a proponent of Nideffer's (1978) individual attention style theory might argue? Future research needs to look at the impact that a shift in ability orientation may have upon attention to task-relevant cues and task performance.

Construct validity. Another problem associated with the TEOSQ deals with its construct validity. As already mentioned, the selection of subjects may have posed a problem in this study. The TEOSQ revealed that most subjects in this study were very high in task-orientation while being relatively low in ego-orientation. Similar findings were also reported in Duda's (1989), G. C. Roberts' (personal communication, 1991), and G. Stein's (personal communication,1991) research studies. This problem may have two bases: Firstly, even though there may be adequate questions in the TEOSQ pertaining to ego-orientation as revealed by Duda (1989), they may be worded in such a way that subjects do not want to publically reveal

these characteristics; and secondly, perhaps there are other conceptual problems with Nicholls' construct of achievement orientation.

The factor analyses for the TEOSQ did reveal a sufficient dichotomy of questions for task- and ego-orientation (Duda, 1989, 1992). However, subjects in this study and in Duda's (1989) scored significantly lower (around 1.2 units) for ego-orientation than for task-orientation. One possible reason for this differentiation is that questions pertaining to ego-orientation may not take into account contradictions associated with the way individuals are socialized.

Social stigmatization. There are strong contradictions within society which often times become very apparent in sports. Sometimes two highly regarded beliefs become at odds with each other in particular situations. In sports, individual achievement and team sacrifice, both of which are highly stressed, can become at odds with each other in certain settings. For example, some players are praised for performing well for the team while others are scorned for playing well solely for personal reasons such as capturing a batting title or increasing one's arbitration value. Certainly, the latter reason for performing well is still in tact at all levels in American sports, athletes just keep their true motives quiet. While one may personally feel justified in playing for money over the team, publically it is dismissed because such a sentiment would result in social stigmatization. In the history of athletics, certain sports figures have been branded by the media and fans as being negatively narcissistic for their excessive focus on their personal statistics over team statistics.

Keeping this socialization of values in mind, it is possible that the

reason for consistently low ego-orientation scores is that subjects do not want to publically admit that they feel successful when they score the most goals or when all others (including teammates) "mess up" even though they may personally gloat when these situations occur. The questions pertaining to task-orientation, on the other hand, are not stigmatized by society. In fact, the task-orientation questions describe characteristics ascribed to the Puritan work ethic, which is highly approved by society. This may be reflected in the almost perfect task-orientation scores, which by itself poses a methodological problem - a type of ceiling effect. Therefore, although there may be an accurate empirical dichotomy in achievement motivation on the TEOSQ, more sensitive questions need to be developed in order to get at the discrepancies between task- and ego-orientation.

Conceptualization of ego-orientation. Another possible reason for the problems regarding the TEOSQ lies in Nicholls' (1984a) concept of achievement motivation. The fact that it was extemely difficult to find high ego-oriented and low task-oriented subjects may mean there is more to achievement orientation than previously thought. An area which may prove fruitful in reconceptualizing ability orientation deals with intrinsically and extrinsically motivating factors.

According to Nicholls' (1984a) theory, achievement orientation is a function of the search for competency in society. Individuals seek situations where they can demonstrate high ability while minimizing low ability. However, this theory does not take into account the supposition that individuals may want to achieve the demonstration of high ability for

reasons other than the need to display competency. For example, athletes often compete for extrinsic reinforcements like money, trophies, etc. Even "task-oriented" athletes compete for such prizes, contradicting Nicholls (1984a) contention that "...an increase in mastery is, therefore, an end in itself" (p.331).

Performance has been shown to be a function of the interplay between personality and situational factors such as one's social goal (Baumeister, 1982; Goffman, 1959), audience characteristics (Baumeister, 1982; Schlenker & Leary, 1982), subjective interpretation of the audience's evaluation potential (Baumeister, 1982; Bond, 1982; Schlenker & Leary, 1982), subjects' evaluations of audience expectations (Baumeister, Cooper, & Skib, 1979; Sanna & Shotland, 1989; Schlenker, 1975), whether performance results are made public verus private (Schlenker, 1975), among other reasons. Also, research has shown that subjects often participate and perform in activities for reasons other than to demonstrate high ability, such as to attain money (e.g., Festinger & Carsmith, 1959; Schlenker, Forsyth, Leary, & Miller, 1980) and pleasing the experimenter (e.g., Zanna & Cooper, 1974). In sum, self-presentationists would counter Nicholls' all-inclusive ability-oriented premise with "Task performance can become a mere tool in the service of self-presentational goals" (Baumeister, 1982, p.19). Therefore, it seems that an empirical paradigm utilizing a combination of achievement motivation and self-presentation would be best suited for future research on social facilitation.

Perhaps the most salient point eminating from the review of Nicholls'

(1984a) and self-presentation research is that competency can be either self-determined or other-determined depending on the situation. For example, a hockey player may start the game with the intent of scoring the most goals in order to demonstrate high ability, but as the game progresses, the fans may egg the player on to concentrate on being overly aggressive for entertainment purposes. As Baumeister (1982) states in defining characteristics of audience-pleasing self-presentation: "(the characteristics)...are that it is an attempt to present oneself 'favorably' according to audience's values, it is specific to a particular audience, and it is motivated by some desire for rewards that the audience controls or dispenses" (p. 3). This being the case, how different would a "task-oriented" athlete who wants to better his/her personal record for the sake of winning a cash prize be from an "ego-oriented" athlete who wants to beat his/her competitors for the same reason? Or, how different would either a task- or ego-oriented athlete perform in front of audiences that demanded different styles of play, such as aggressiveness versus finesse?

In addition, Nicholls' (1984a) theory does not refer to instances where both ability orientations may dominate in a given situation. For example, a long distance runner's goal in a marathon may be to best a personal record and win the race. Nicholls (1984a) would contend that because of the competitive setting, the ego-orientation would be the most salient frame of reference. However, there have been many situations in athletics where a runner won a race with a "slow" time. Would such an individual feel like high ability had been demonstrated? What about the

situation where a last place finisher in a race clipped some time off of a personal record? As shown, performance and competency have a complex relationship which needs to be addressed by future researchers.

Other Methodological Problems

Response sets. Potential methodological problems that could have affected this study revolve around the administration of the cognitive measures. As noted in educational research (Borg & Gall, 1989), there are a host of potential problems associated with the use of reactive measures. Of those mentioned, it is possible that subjects were influenced by the guinea pig effect and response sets. That is, because the same self-efficacy, perceived ability, and anxiety scales were given as a baseline measure and then again after particular events such as the introduction of the Bachman Ladder and/or the audience, subjects might have become aware of how they were expected to change on the dependent measures. As a result of this guinea pig effect, instead of the subjects providing accurate information about how they truly felt at a particular point in time, they simply repeated the answers that they gave on the last set of questionnaires. Admittedly, there were some comments made by subjects when they were handed the same set of questionnaires after being introduced to the audience or after performing the first 20 trials on the Bachman Ladder as at the baseline time period such as "Oh, like I'm supposed to feel different now, right?"

Another type of response set that could have influenced the findings resulted from the selection of subjects. All of the subjects were males who all had a wide variety of athletic backgrounds and knew that they

would be asked to perform motorically. Past research has noted that males are usually more optimistic than females about performing on motor tasks, even when their overoptimism does not translate into better performance (Corbin, Landers, Feltz, & Senior, 1983; Feltz, 1988b; Gill, Gross, Huddleston, & Shifflett, 1984).

Another probable contributor to this response set was the nature of the task. Although the task was accurately described to the subjects, all of them overestimated its difficulty perhaps because it could be construed as a masculine task and many of them probably had some experience with climbing ladders. Thus, due to the response sets attributed to the administration of the questionnaires, male cockiness, and the nature of the task, results could have become confounded.

Results Based on TEOSQ Shortcomings

Because the results revealed no statistical differences between task- and ego-oriented subjects and between audience and alone groups, this section will discuss the findings in terms of main effects. However, some interesting trends which appeared in one group or another will also be discussed.

Perceived ability. Prior to the task, subjects revealed heightened levels of perceived ability. This could be attributed to subjects' perceived oversimplification of the task as expressed to the experimenter after all 30 trials were completed. Almost every individual conveyed that the task "looked a lot easier than it really was."

The perceived ease of the task prior to its commencement was reflected after the subjects had performed 20 trials on the Bachman

Ladder, as their post-task perceived ability measure dropped significantly. Despite this drop, however, the subjects continued to improve in performance. The fluctuations in this variable may have affected performance, but were obscured by the nature of the task. This factor will be discussed later in the section on self-efficacy.

The fact that both achievement oriented groups exhibited similar decreases in perceived ability despite statistically significant increases in performance runs contrary to Nicholls' (1984a) tenets. Nicholls held that "...under ego involvement, it is predicted that high-perceived-ability individuals perform their worst on tasks perceived as normatively easy, whereas low-perceived-ability individuals perform their worst at moderate-difficulty levels" (p. 338). In this study, both groups perceived the task as normatively easy, yet performance significantly increased. Moreover, both groups continued to show similar increases in performance despite decreases in perceived ability. Nicholls (1984a) might argue that the realization of the task's true difficulty lead subjects to maintain high effort in order to avoid the evaluation by others that they were demonstrating low ability. Nicholls states, "Feedback indicating below-average performance would violate high-perceived-ability individuals' expectancies and produce high effort and performance" (p.339). Thus, performance increased across trial blocks despite subjects' initial inflation and subsequent decrease in perceived ability levels.

Perceived ability was not an adequate predictor of performance in this study, highlighting the complexities associated with relating cognitive variables to motor performance. In academic settings,

fluctuations in perceived ability affect individuals qualitatively. That is, in academic environments, one's perceived ability level influences one's cognitive output, as revealed by tests and quizzes. However, in situations demanding motor output, perceived ability can affect individuals both cognitively and motorically. For example, in a complex motor sport such as diving, a diver may underestimate a dive's difficulty, leading to high ability and low effort perceptions. This underestimation of task difficulty may lead to a relaxed state, increased self-confidence and a fine dive. Or, underestimation of the dive's difficulty may lead to a mental lapse, perhaps a disregard for a particular twist, resulting in a poor performance. Thus, as shown from this example and from this study, one's perceived ability level may not necessarily translate into an accurate prediction of one's motor performance. More research needs to be conducted investigating the cognitive and motorical influence that the overestimation of perceived ability has on the learning of a motor task.

Self-efficacy. Trends in self-efficacy parallel those found for perceived ability. That is, both task- and ego-oriented groups overestimated their self-efficacy in both the baseline and pre-task measures as compared to the statistically significant decrease in their post-task measure. As also found with the perceived ability measures, the decrease in self-efficacy occurred despite significant increases in performance. This inverse relationship between self-efficacy and performance can be attributed to the subjects' lack of familiarity with the task. Feltz (1988a) noted: "Discrepancies (between performance and self-efficacy levels) will also occur when tasks or circumstances are

ambiguous or when one has little information on which to base efficacy expectations" (p. 427). In addition, Schunk (1989) stated: "High self-efficacy won't produce competent performance when requisite skills are lacking" (p.15). Bandura (1986) would also argue that a lack of necessary motives to perform well would produce poor performance. However, in this study, subjects appeared motivated to do well as all subjects increased in performance across the 30 trials.

None of the pre-task dependent measures, including self-efficacy, significantly predicted performance, suggesting that there were other confounding variables which influenced subjects' motor performance. This point becomes especially poignant when considering that self-efficacy and sport performance have been significantly linked in a multitude of studies (Wurtele, 1986). One of the key variables which likely confounded the results of this study was the task itself.

Performance on the Bachman Ladder has been shown to steadily increase beyond 80 trials (Schmidt, Zuckerman, Martin & Wolfe, 1971) and despite fluctuations in self-efficacy (e.g., Lirgg & Feltz, 1991). The fact that subjects in this study only performed 30 trials where performance significantly increased between most trial blocks would suggest that they were still in a learning mode. The effects of overinflated self-efficacy scores on the learning phase of a motor task, especially an unfamiliar one, has not yielded unequivocal results in sport psychological literature. There has been research acknowledging that incompetent performance may result from discrepancies in self-efficacy perceptions and actual ability levels (Feltz, 1988a; Schunk, 1989) and that in some situations males

boast more than females prior to initial performance attempts (Corbin, Landers, Feltz, & Senior, 1983; Feltz, 1988b). However, despite Bandura's (1986) belief that "judgements that slightly exceed what one can do are most functional" (p.394), no studies have unequivocally determined the impact of overconfidence upon motor performance.

Subjects' overestimation of their pre-task self-efficacy levels could have repressed larger increases in performance during this learning phase. Perhaps, the shock of the Bachman Ladder's difficulty to the subjects resulted in a type of cognitive dissonance, as revealed by the decreases in post-task self-efficacy and perceived ability scores and an increase in anxiety scores. For example, after performance optimism had been expressed and the true nature of the task's difficulty had been realized, the recognition that the task is more difficult than previously thought could cause one to worry about the discrepancies between their predicted performance and actual performance. Also, further anxiety could result from such self-presentation concerns as how to avoid embarrassment on such an easy looking task, instead of on task demands such as testing alternate performance strategies for the Bachman Ladder. Clearly, future research needs to address the impact that self-efficacy has on individual's learning of a novel task, especially where there is a discrepancy between the task and one's efficacy measure.

While self-efficacy did not predict performance in this study, initial performance did account for almost 40 percent of the variance for post-task self-efficacy as shown by the results of the multiple regression. This upholds Bandura's (1977) theory that performance

accomplishments provided individuals with necessary information that helps determine future efficacy expectations. In this study, performance on the initial trial blocks on the Bachman Ladder may have been deemed sub-par by the subjects and provided them with information that they had overestimated their self-efficacy. In response, subjects reduced their self-efficacy, exhibited by their post-task measure.

Sport psychology researchers have debated whether anxiety-based models or self-efficacy models were the better predictors of athletic performance (Feltz, 1988a). While neither of the groups of models have been shown to fully explain motor performance, "self-efficacy has been found consistently to be an important and necessary cognitive mechanism in explaining motor performance, especially in an initial performance attempt" (Feltz, 1988a, p. 432). Although this tenet was not supported in this study, self-efficacy provided a higher significant relationship with performance than did anxiety.

Anxiety. Subjects exhibited a significant linear increase in anxiety between pre-task and post-task measures. One would expect that as a result of this increase subject's performance on the task would falter especially under audience conditions. It has been proposed by Wine (1980) that "cognitive anxiety misdirects attention from task-relevant cues to task-relevant self or social evaluation cues" (cited in Burton, 1988). However, instead of a debilitating effect on performance, increases in anxiety had an unclear effect on performance in this study. While subjects did reveal increases in anxiety and performance across trial blocks, virtually no relationships were found between these two measures.

The lack of significant relationships between anxiety and the learning phase of a motor task under an evaluative audience plagued another study (e.g., Martens, 1969a). Martens blamed his inconsistent results on the anxiety scale's insensitivity. Certainly, there are numerous problems associated with self-report measures which may have also affected this study. However, the lack of significant findings may also be attributed to the task itself, as task variables have been shown to be important mediators of the anxiety-performance relationship (Landers & McCullagh, 1976; Burton, 1988).

All subjects perceived the two audience members to be evaluative of and attentive to their performance as indicated by the manipulation check. According to Schlenker (1982) these perceptions are essential in invoking social anxiety in individuals. However, subjects revealed rather low levels of anxiety on the State Anxiety Questionnaire and virtually no relationship between their anxiety measures and performance scores. Subjects' baseline and pre-task anxiety levels may have been buffered by their oversimplified perception of the task, resulting in heightened self-efficacy and perceived ability. In other words subjects felt that the task looked so easy, resulting in high self-efficacy and perceived ability, that it would not matter who watched them, they would still do well. Yet, even after subjects were introduced to the task's true difficulty, resulting in a significant increase in anxiety, it did not seem to hinder their learning of the Bachman Ladder. This occurrence may have to do with the nature of the Bachman Ladder itself.

According to Landers and Boucher (1986), task complexity and task

duration influence the audience-performance relationship. Task duration refers to the length of time it takes to complete a task while task complexity deals with the decision characteristics, perceptual characteristics, and motor response characteristics associated with a task. Landers and Boucher concluded that lower levels of arousal were better for tasks of high complexity and/or short duration.

Assuming that the Bachman Ladder can be classified as a complex motor task by Landers and Boucher's(1986) definition, one could conclude that optimal performance on this ladder could best be achieved when one exhibits low levels of anxiety. This is because "tasks high in complexity have a narrower optimal arousal range" (Martens, 1987). This line of reasoning could help account for subjects' consistent improvement in performance on the Bachman Ladder. However, it is interesting to note that even a significant increase in anxiety at the post-task time period, albeit from low to moderate anxiety, did not seem to effect performance. This could be due to the task itself. As previously mentioned, learning has been shown to continue past 80 trials on the Bachman Ladder (Schmidt et al., 1971) and that past research has found subjects to significantly increase in performance over 30 trials on the Bachman Ladder despite fluctuations in self-efficacy (Lirgg & Feltz, 1991). Therefore, because the task is easily learned, subjects' increased in performance despite reductions in self-efficacy and perceived ability and increases in anxiety.

Exploratory Analyses. It was hypothesized that the lack of support for this study's hypotheses could be attributed to the failure to adequately dichotomize task- from ego-oriented subjects. This was partially

supported by the exploratory analysis, using only subjects who had more extreme differentiations between their task- and ego-orientation scores. While no more significant findings resulted from this reanalysis as compared to the original analysis, there were some trends towards significance for task- and ego-oriented subjects on performance and perceived ability. Thus, if the TEOSQ can be revised to better dichotomize task- from ego-oriented subjects, more significant interactions may be found. Suggested modifications for the TEOSQ will be presented in the following section.

Future Directions

As suggested by the reanalysis, an attributional approach to social facilitation may help unlock the mysteries surrounding the audience-performer relationship. However, in order to ascertain the ongoing cognitive processes which affect behavior, more sensitive instruments need to be developed to capture this interaction.

As discussed previously in this chapter, the TEOSQ appears insensitive to situational and socially desirable factors. Therefore, revisions in this scale's format are necessary in order to adequately measure both task- and ego-orientation.

In order to address situational components, the TEOSQ needs to be modified, whether it is used as a dependent or independent variable. First, its general questions must be made sport-specific. That is, the questions need to reflect the terminology used by the particular sport in question. If the TEOSQ were to be given to tennis players, then questions need to address specific tennis terms, such as aces, winners, passing shots, etc.

For example, instead of the current question "I feel most successful in sport when...I score the most point/goals/hits, etc" the modified question would be as follows: "I feel most successful in tennis when...I hit the most aces/passing shots/winners." This type of modification will allow subjects to better vent their true motives.

Second, questions need to relieve individuals from the perils of social stigmatization. The use of the third person and using hedging phrases such as "sort of true for me" as found in Harter's (1981) Perceived Competence Scale, instead of the first person and more direct questions, may help alleviate these fears. For example, a current TEOSQ question is the following: "I feel most successful in sport when... I learn something that is fun to do." A revised question using this suggestion as well as the previous suggestion would appear as follows: "Some (senior) tennis players feel most successful in tennis when...they learn something that is fun to do."

Third, because Nicholls (1984a) proposes that only one ability orientation is dominant per situation and the fact that it was very difficult to pull apart task- from ego-orientation, it is probable that the TEOSQ may need to have subjects choose one orientation over another in a given situation. This could be done again using Harter's (1981) Perceived Competence Scale bipolar format. For example, a question using all three suggestions might be: "Some (male high school) tennis players feel most successful in tennis when...they're the best vs they do their very best." Such a question would be measured using Harter's hedging phrases such as, "really true for me" and "sort of true for me." This type of question would

allow individuals to choose which question is most pertinent for them.

Finally, the TEOSQ needs to reflect the particular situation at hand as the situation dictates the type of ability orientation used by an individual, as proposed by Nicholls (1984a). According to Nicholls (Nicholls & Miller, 1984) an audience causes individuals to focus upon an ego-oriented frame of reference. Therefore, an appropriate question used by the TEOSQ would be "Some (women's jr. high school) tennis players feel most successful when playing tennis in front of an audience when...they work harder than others vs they just work really hard."

Whether a revised TEOSQ could be used as an independent measure is unclear at the moment. Nicholls (1984a) contends that ability orientations are situationally-specific, implying that an individual would have only one orientation per situation. However, he does not define what he means by "situation." It would seem that in athletics, where events are very fast paced and changes in individual variables such as anxiety and self-efficacy, among others, occur throughout an event, athletes may also change in ability orientation. For example, as mentioned before, a marathon runner moderately ahead of the competition, may have originally had as a goal to best his/her personal record (task-orientation), but when s/he sees that victory is in sight (ego-orientation), may actually attempt to conserve energy instead of pushing ahead, risking "hitting the wall." This example, may seem to indicate that ability orientation may need to be used as a repeated measures variable, given over the course of an event, in order to fully capture the cognitive changes ongoing in an individual.

In sum, within this study, only main effects for perceived ability,

self-efficacy, anxiety, and performance were found. These could be attributed to subjects' misperceived difficulty level of the Bachman Ladder as well as to the nature of the Bachman ladder itself. The lack of interaction effects were attributed to methodological and conceptual problems. Of most importance was the failure in reflecting Nicholls' (1984a) conceptualization of ability orientations in the TEOSQ. Because the TEOSQ, in its current form, fails to address particular situational variables which may result in individuals' using congruent ability orientations, it could have contributed to the nonsignificant interaction effects and hence, the lack of support for this study's hypothesis. The argument that the TEOSQ fails to adequately dichotomize subjects in particular situations was partially supported by the exploratory analysis that was conducted using only subjects who had extreme differences between their task- and ego-orientation scores. The results of this analysis revealed that when subjects are dichotomized based upon more extreme differences between task- and ego-orientation trends towards significance for perceived ability and performance result. Therefore, the TEOSQ must be revised in order to adequately measure ego-orientation, sport-specific, and situationally-specific orientations. In addition, the TEOSQ may need to be used multiple times in the future, reflecting situational changes in ability orientations.

REFERENCES

Allport, F.H. (1924). Social psychology. Boston, MA: Houghton Mifflin.

Atkinson, J.W. (1957). Motivational determinants of risk-taking behavior. Psychological Review, 64, 359-372.

Atkinson, J.W. (1964). An introduction to motivation. Princeton, NJ: Van Nostrand.

Bachman, J.C. (1961). Specificity vs. generality in learning and performing two ladder muscle motor tasks. Research Quarterly, 32, 3-11.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. Psychological Review, 84, 191-215.

Bandura, A. (1986). Social foundation of thought and action: A social cognitive theory. Englewood Cliffs, NJ: Prentice-Hall.

Baumeister, R.F. (1982). A self-presentational view of social phenomena. Psychological Bulletin, 91, 3-26.

Baumeister, R.F., Cooper, J., & Skib, B.A. (1979). Inferior performance as a selective response to expectancy: Taking a dive to make a point. Journal of Personality and Social Psychology, 37, 424-432.

Bell, P.A., & Yee, L.A. (1989). Skill level and audience effects on performance on a karate drill. Journal of Social Psychology, 129(2), 191-200.

Bond, C.F. (1982). Social facilitation: A self-presentational view. Journal of Personality and Social Psychology, 42, 1042-1050.

Bond, C.F., & Titus, L.J. (1983). Social facilitation: A meta-analysis of 241 studies. Psychological Bulletin, 94, 265-292.

Borden, R.J. (1980). Audience influence. In P.B. Paulus (Ed.), Psychology of group influence. Hillsdale, NJ: Erlbaum.

Borg, W.R., & Gall, M.D. (1989). Educational research: An introduction (5th ed.). New York: Longman, Inc.

Brawley, L.R., & Roberts, G.C. (1984). Attributions in sport: Research foundations, characteristics, and limitations. In J.M. Silva III & R.S. Weinberg (Eds.), Psychological foundations of sport (pp. 197-213). Champaign, IL: Human Kinetics.

Burton, D. (1988). Do anxious swimmers swim slower? Reexamining the elusive anxiety-performance relationship. Journal of Sport Psychology, 10(1), 45-61.

Chapman, A.J. (1974). An electromyographic study of social facilitation: A test of the "mere presence" hypothesis. British Journal of Psychology, 65, 123-128.

Cohen, J.L. (1980). Social facilitation: Audience versus evaluative apprehension. Motivation and Emotion, 4, 21-34.

Corbin, C.B., Landers, D.M., Feltz, D.L., & Senior, K. (1983). Sex differences in performance estimates: Female lack of confidence vs male boastfulness. Research Quarterly For Exercise and Sport, 54(4), 407-410.

Cottrell, N.B. (1968). Performance in the presence of other human beings: Mere presence, audience, and affiliation effects. In E.C. Simmel, R.A. Hoppe, & G.A. Milton (Eds.), Social facilitation and imitative behavior. Boston, MA: Allyn & Bacon.

Cottrell, N.B. (1972). Social facilitation. In C.G. McClintock (Ed.), Experimental Social Psychology. New York: Holt, Rinehart & Winston.

Cottrell, N.B., Rittle, R.H., & Wack, D.L. (1967). The presence of an audience and list type (competitional or noncompetitional) as joint determinants of performance in paired-associates learning. Journal of Personality, 9, 245-250.

Cottrell, N.B., Wack, D.L., Sekerak, G.J., & Rittle, R.H. (1968). Social facilitation of dominant responses by the mere presence of an audience and the mere presence of others. Journal of Personality and Social Psychology, 9, 245-250.

Covington, M.V., & Omelick, C.L. (1979). It's best to be able and virtuous too: Student and teacher evaluative response to successful effort. Journal of Educational Psychology, 71, 688-700.

Cratty, B.J. (1967). Social dimensions of physical activity. Englewood Cliffs, NJ: Prentice-Hall.

Dashiell, J.F. (1935). Experimental studies of the influence of social situations on the behavior of individual human adults. In C. Murchison (Ed.), Handbook of social psychology. Worcester, MA: Clark University Press.

Dekalb, S.E. (1981). Expectancies, causal attributions, and anxiety in collegiate women basketball players. Unpublished masters thesis, Pennsylvania State University, University Park, PA.

Duda, J.L. (1987). Toward a developmental theory of children's motivation in sport. Journal of Sport Psychology, 9, 130-145.

Duda, J.L. (1988). Goal perspective, participation and persistence in sport. International Journal of Sport Psychology, 19, 117-130.

Duda, J.L. (1989). The relationship between task and ego orientation and perceived purpose of sport among high school athletes. Journal of Sport and Exercise Psychology, 11(3), 318-335.

Duda, J.L. (1992). Motivation in sport settings: A goal perspective approach. In G. Roberts (Ed.), Motivation in sport and exercise. Champaign, IL: Human Kinetics.

Duval, S., & Wicklund, R.A. (1972). A theory of objective self-awareness. New York: Academic Press.

Ewing, M.E. (1981). Achievement orientations and sport behavior of males and females. Unpublished doctoral dissertation. University of Illinois, Champaign-Urbana.

Feltz, D.L. (1982). Path analysis of the causal elements in Bandura's theory of self-efficacy and an anxiety-based model of avoidance behavior. Journal of Personality and Social Psychology, 42, 764-781.

Feltz, D. (1988a). Self-confidence and sports performance. In K.B. Pandolf (Ed.), Exercise and sport sciences reviews (pp. 423-457). New York: Macmillan.

Feltz, D. (1988b). Gender differences in the causal elements of self-efficacy on a high avoidance motor task. Journal of Sport and Exercise Psychology, 10, 151-166.

Festinger, L., & Carlsmith, J.M. (1959). Cognitive consequences of foced compliance. Journal of Abnormal and Social Psychology, 47, 382-389.

Forgas, J.P., Brennan, G., Howe, S., Kane, J.F., & Sweet, S. (1980). Audience effects on squash player's performance. Journal of Social Psychology, 111, 41-47.

Geen, R.G. (1979). Effects of being observed on learning following success and failure experiences. Motivation and Emotion, 4, 355-371.

Geen, R.G. (1980). The effects of being observed on performance. In P.B. Paulus (Ed.), Psychology of group influence. Hillsdale, NJ: Erlbaum.

Geen, R.G. (1981). Effects of being observed on persistence at an insoluable task. British Journal of Social Psychology, 20, 211-216.

Gill, D.L. (1981). Current research and future prospects in sport psychology. In G.A. Brooks (Ed.), Perspective on the academic discipline of physical education (pp. 342-378). Champaign, IL: Human Kinetics.

Gill, D.L., Gross, J.B., Huddleston, S., & Shifflett, B., (1984). Sex differences in achievement cognitions and performance in competition. Research Quarterly For Exercise and Sport, 55(4), 340-346.

Goffman, E. (1959). The presentation of self in everyday life. New York: Doubleday & Co., Inc.

Guerin, B. (1986). Mere presence effects in humans: A review. Experimental Social Psychology, 22, 38-77.

Haas, J., & Roberts, G.C. (1975). Effect of evaluative others upon learning and performance of a complex motor task. Journal of Motor Behavior, 7, 81-90.

Harter, S. (1981). A model of intrinsic mastery motivation in children: Individual differences and developmental change. In A. Collins (Ed.), Minnesota symposium on child psychology Vol. 14 (pp. 215-255). Hillsdale, NJ: Erlbaum.

Heider, R. (1958). The psychology of interpersonal relations. New York: Wiley.

Henchy , T., & Glass, D. (1968). Evaluation apprehension and the social facilitation of dominant and subordinate responses. Journal of Personality and Social Psychology, 10, 446-454.

Klinger, E. (1969). Feedback effects and social facilitation of vigilance performance: Mere coaction versus potential evaluation. Psychonomic Science, 14, 161-165.

Kukla, A. (1972). Foundations of an attributional theory of performance. Psychological Review, 79, 454-470.

Kukla, A. (1978). An attributional theory of choice. In L. Berkowitz (Ed.), Advances in experimental social psychology, Vol. II., New York: Academic Press.

Landers, D.M. (1975). Social facilitation and human performance: A review of contemporary and past research. In D.M. Landers (Ed.), Psychology of sport and motor behavior II (pp. 195-208). University Park, PA: Pennsylvania State University.

Landers, D.M., & Boutcher, S.H. (1986). Arousal-performance relationships. In J.M. Williams (Ed.), Applied sport psychology: Personal growth to peak performance (pp.163-184). Palo Alto, CA: Mayfield.

Landers, D.M., & Landers, D.M. (1973). Teacher versus peer models: Effects of model's presence and performance level on motor behavior. Journal of Motor Behavior, 5, 129-139.

Landers, D.M., & McCullagh, P.D. (1976). Social facilitation of motor performance. Exercise and Sport Science Review, 4, 125-162.

Landers, D.M., Snyder-Bauer, R., & Feltz, D.L. (1979). Social facilitation during the initial stage of motor learning: A re-examination of Marten's audience study. Journal of Motor Behavior, 10, 325-337.

Latane, B., & Nida, S. (1980). Social impact theory and group influence: A social engineering perspective. In P.B. Paulus (Ed.), Psychology of group influence. Hillsdale, NJ: Erlbaum.

Lirgg, C.D., & Feltz, D. (1991). Teacher versus peer models revisited: Effects on motor performance and self-efficacy. Research Quarterly for Exercise & Sport, 62(2), 217-224.

Maehr, M., & Nicholls, J.G. (1980). Culture and achievement motivation: A second look. In N. Warren (Ed.), Studies in cross-cultural psychology. New York: Academic Press.

Martens, R. (1969a). Effect of an audience on learning and performances of a complex motor skill. Journal of Personality and Social Psychology, 12, 252-260.

Martens, R. (1969b). Effect of performance on learning a complex motor task in the presence of spectators. Research Quarterly, 40, 371-374.

Martens, R. (1974). Effects of an audience on learning and performance on a complex motor skill. Journal of Personality and Social Psychology, 12, 252-260.

Martens, R. (1977). Sport competition anxiety test. Champaign, IL: Human Kinetics.

Martens, R. (1987). Energy management: Coaches guide to sport psychology. Champaign, IL: Human Kinetics.

Marten, R., & Landers, D.M. (1969). Coaction effects on a muscular endurance task. Research Quarterly, 40, 733-737.

Martens, R., & Landers, D.M., (1972). Evaluation potential as a determinant of coaction effects. Journal of Experimental Social Psychology, 8, 347-359.

McClelland, D.C. (1951). Personality. New York: Holt, Rinehart & Winston.

Mischel, W. (1973). Toward a cognitive social learning reconceptualization of personality. Psychological Review, 80, 252-283.

Murray, H.A. (1938). Explorations in personality. New York: Oxford University Press.

Neeley, R.K., & Ewing, M.E. (1989, June). Precompetitive anxiousness: Is it apprehensive anticipation, eager anticipation, or a combination of both? Paper presented at the meeting of the North American Society for Psychology of Sport and Physical Activity, Kent, OH.

Nicholls, J.G. (1975). Causal attributions and other achievement-related cognitions: Effects of task outcome, attainment value, and sex. Journal of Personality and Social Psychology, 31(3), 379-389.

Nicholls, J.G. (1976). Effort is virtuous, but it's better to have ability: Evaluative responses to perceptions of effort and ability. Journal of Research in Personality, 10, 306-315.

Nicholls, J.G. (1984a). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. Psychological Review, 91, 328-346.

Nicholls, J.G. (1984b). Conceptions of ability and achievement motivation. In R. Ames & C. Ames (Eds.), Research on motivation in education: Student motivation, Vol. I. New York: Academic Press.

Nicholls, J.G., & Miller, A. (1984). Development and its discontents: The differentiation of the concept of ability. In J.G. Nicholls (Ed.), Advances in motivation and achievement: The development of achievement motivation (pp. 185-218). Greenwich, CT: JAI Press.

Nideffer, R.M. (1978). The relationship of attention and anxiety to performance. In W.R. Straub (Ed.), Sport psychology: An analysis of athlete behavior. Ithaca, NY: Mouvement Publications.

Roberts, G.C. (1984a). Toward a new theory of motivation in sport: The role of perceived ability. In J.M. Silva III & R.S. Weinberg (Eds.), Psychological foundations of sport (pp. 214-228). Champaign, IL: Human Kinetics.

Roberts, G.C. (1984b). Achievement motivation in children's sport. In J.G. Nicholls (Ed.), Advances in motivation and achievement, Vol. 3, (pp. 251-281). Greenwich, CT: JAI Press.

Roberts, G.C., & Pascuzzi, D. (1979). Causal attributions in sport: Some theoretical implications. Journal of Sport Psychology, 1, 203-271.

Rotter, J.P. (1966). Generalized expectancies for internal vs external control of reinforcement. Psychological Monographs, 81, 132-154.

Sanders, G.S., & Baron, R.S. (1975). The motivating effects of distraction on task performance. Journal of Experimental Social Psychology, 40, 1102-1117.

Sanna, L.N., & Shotland, R.L. (1989). Valence of anticipated evaluation and social facilitation. Journal of Experimental Social Psychology, 26, 82-92.

Schlenker, B.A. (1975). Self-presentation: Managing the impression of consistency when reality inteferes with self-enhancement. Journal of Personality and Social Psychology, 32, 1030-1037.

Schlenker, B.A., Forsyth, D.R., Leary, M.R., & Miller, R.S. (1980). A self-presentational analysis of the effects of incentives on attitude change following counterattitudinal behavior. Journal of Personality and Social Psychology, 39, 553-577.

Schlenker, B.A., & Leary, M.R. (1982). Social anxiety and self-presentation: A conceptualization and model. Psychological Bulletin, 92, 641-669.

Schmidt, R.A., Zuckerman, J., Martin, H.A., & Wolfe, K.F. (1971). A novel discrete gross motor learning task: Modifications of the Bachman Ladder. Research Quarterly, 42(1), p.78-82.

Schunk, D.H. (1989). Self-efficacy and cognitive skill learning. In C. Ames and R. Ames (Eds.), Motivation In Education: Goals and Cognitions, Vol 3 (pp. 13-41). San Diego, CA: Academic Press.

Spielberger, C.D., Gorsuch, R.L., & Lushene, R.E. (1970). Manual for the state-trait anxiety inventory (self-evaluation questionnaire). Palo Alto, CA: Consulting Psychologists Press.

Spink, K., & Roberts, G.C. (1980). Ambiguity of outcome and causal attributions. Journal of Sport Psychology, 2, 237-244.

Triplett, N. (1897). The dynamogenic factors in pacemaking and competition. American Journal of Psychology, 9, 507-533.

Wankel, L.M. (1975a). Social facilitation: A review of theory and research pertaining to motor behavior. In B.S. Rushall (Ed.), The status of psychomotor learning and sport psychology research. Dartmouth, NS: Sport Science Associates.

Wankel, L.M. (1975b). A new energy source for sport psychology research: Toward a conversion from D.C. (drive conceptualizations) to A.C. (attributional cognitions). In D.M. Landers (Ed.), Psychology of sport and motor behavior II. University Park: Pennsylvania State

University.

Wankel, L.M. (1980). Social facilitation of motor performance: Perspective and prospective. In C.H. Newell, W.R. Halliwell, K.M. Newell, & G.C. Roberts (Eds.), Psychology of motor behavior and sport--1979 (pp. 130-148). Champaign, IL: Human Kinetics.

Wankel, L.M. (1984). Audience effects in sport. In J.M. Silva III & R.S. Weinberg (Eds.), Psychological foundations of sport. Champaign, IL: Human Kinetics.

Weiner, R. (1972). Theories of motivation: From mechanism to cognition. Chicago, IL: Markham.

Weiner, B. (Ed.). (1974). Achievement motivation and attribution theory. Morristown, NJ: General Learning Corporation.

White, R.W. (1959). Motivation reconsidered: The concept of competence. Psychological Review, 66, 297-333.

Wine, J.D. (1980). Cognitive-attentional theory of test anxiety. In I.G. Sarason (Ed.), Test anxiety: Theory, research and applications (pp. 349-385). Hillsdale, NJ: Erlbaum.

Wurtele, S.K. (1986). Self-efficacy and athletic performance: A review. Journal of Social Clinical Psychology, 4, 290-301.

Zajonc, R.B. (1965). Social facilitation. Science, 149, 269-274.

Zajonc, R.B., (1980) Compresence. In P.B. Paulus (Ed.), Psychology of group influence. Hillsdale, NJ: Erlbaum.

Zajonc, R.B., & Sales, R.M. (1966). Social facilitation of dominant and subordinate responses. Journal of Experimental Social Psychology, 2, 160-168.

Zanna, M.P., & Cooper, J. (1974). Dissonance and the pill: An attribution approach to studying the arousal properties of dissonance. Journal of Personality and Social Psychology, 29, 703-709.

APPENDICES

APPENDIX A

HUMAN SUBJECTS APPROVAL LETTER

Appendix A

MICHIGAN STATE UNIVERSITY

OFFICE OF VICE PRESIDENT FOR RESEARCH
AND DEAN OF THE GRADUATE SCHOOL

EAST LANSING • MICHIGAN • 48824-1046

February 20, 1991

Mr. Steven G. Simensky
2781 Northwind Drive #44
East Lansing, MI 48823

RE: THE EFFECTS OF AN AUDIENCE ON ANXIETY AND SELF-EFFICACY OF TASK- AND EGO-ORIENTED COLLEGE MALES, IRB#90-616

Dear Mr. Simensky:

The above project is exempt from full UCRIHS review. The proposed research protocol has been reviewed by another committee member. The rights and welfare of human subjects appear to be protected and you have approval to conduct the research.

You are reminded that UCRIHS approval is valid for one calendar year. If you plan to continue this project beyond one year, please make provisions for obtaining appropriate UCRIHS approval one month prior to February 5, 1992.

Any changes in procedures involving human subjects must be reviewed by UCRIHS prior to initiation of the change. UCRIHS must also be notified promptly of any problems (unexpected side effects, complaints, etc.) involving human subjects during the course of the work.

Thank you for bringing this project to my attention. If I can be of any future help, please do not hesitate to let me know.

Sincerely,

David E. Wright

David E. Wright, Ph.D.
Chair, UCRIHS

DEW/deo

cc: Dr. Martha Ewing

APPENDIX B

TASK AND EGO ORIENTATION SPORTS QUESTIONNAIRE

Appendix B

Name_____ **Class**_____ **Instructor**_____
Telephone Number_____

Directions: Please read each of the statements listed below and indicate how much you personally agree with each statement by circling the appropriate response.

When do you feel most successful in sport? In other words, when do you feel a sport activity has gone really good for you?

I feel most successful in sport when...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I'm the only one who can do the play or skill.	1	2	3	4	5
2. I learn a new skill and it makes me want to practice more.	1	2	3	4	5
3. I can do better than my friends.	1	2	3	4	5
4. The others can't do as well as me.	1	2	3	4	5
5. I learn something that is fun to do.	1	2	3	4	5
6. Others mess-up and I don't.	1	2	3	4	5
7. I learn a new skill by trying hard.	1	2	3	4	5
8. I work really hard.	1	2	3	4	5
9. I score the most point/goals/hits etc.	1	2	3	4	5
10. Something I learn makes me want to go and practice more.	1	2	3	4	5
11. I'm the best.	1	2	3	4	5
12. A skill I learn really feels right.	1	2	3	4	5
13. I do my very best.	1	2	3	4	5

Have you ever climbed a free-standing ladder before? (A free-standing ladder is one which can be balanced in an upright position while not touching on or leaning against anything else). Please circle one answer: **Yes** **No**

If you answered "Yes", please detail on the back side of this questionnaire your experience on such a ladder.

APPENDIX C

DEMOGRAPHIC QUESTIONNAIRE

Appendix C

Study Identification Number_____

1. Sex: Male_____ Female_____

2. Age_____

3. Have you ever participated, or do you still participate, in any type of physical activity? (circle one) Yes No

4a. If you answered "**no**" to question #4, then you are finished with this questionnaire. Please inform the investigator for your next questionnaire.

4b. If you answered "**yes**" to question #4, please go to page 2 of this questionnaire.

Study Identification number_____

5. Please list all of the physical activites in which you've participated **most** either in the past or currently. Also, please list your age at the time of involvement, the total number of years of participation, and if the activity was organized (e.g., Little League Baseball, high school swimming, etc.) or unstructured (e.g., hiking, swimming laps at the YMCA, frisbee, etc.).

   In cases where you've played both unstructured and organized forms of a physical activity, list only the organized form.

example:	athletic activity	age played	total # years	was the activity organized?
	1. football with friends	7-10	4	no
childhood	2. Soccer League	6-11	6	yes

Please list all of the athletic activities in which you've participated either in the past or currently.

		athletic activity	age played	total # years	was the activity organized?
childhood	1.				
	2.				
jr. high	1.				
	2.				
high school	1.				
	2.				
college to	1.				
present	2.				

APPENDIX D

STATE ANXIETY QUESTIONNAIRE

Appendix D

Study Identification Number_____

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel right now, at this moment. There are no right or wrong answers. Do not spend too much time on any one statement, but give the answer which seems to describe your present feelings RIGHT NOW.

	Not At All	Somewhat	Moderately So	Very Much So
1. I feel calm.	1	2	3	4
2. I feel secure.	1	2	3	4
3. I am tense.	1	2	3	4
4. I am regretful.	1	2	3	4
5. I feel at ease.	1	2	3	4
6. I feel upset.	1	2	3	4
7. I am presently worrying over possible misfortunes	1	2	3	4
8. I feel rested.	1	2	3	4
9. I feel anxious.	1	2	3	4
10. I feel comfortable.	1	2	3	4
11. I feel self-confident.	1	2	3	4
12. I feel nervous.	1	2	3	4
13. I am jittery.	1	2	3	4
14. I feel "high strung".	1	2	3	4
15. I am relaxed.	1	2	3	4
16. I feel content.	1	2	3	4
17. I am worried.	1	2	3	4
18. I feel over-excited and rattled.	1	2	3	4
19. I feel joyful.	1	2	3	4
20. I feel pleasant.	1	2	3	4

APPENDIX E

BACHMAN LADDER SELF-EFFICACY SCALE AND PERCEIVED ABILITY SCALE

Appendix E

Study Identification number_____

Directions: Please check the boxes indicating how confident you feel in successfully climbing to each of the following rung levels of the Bachman Ladder. When you feel 0% confident at any rung level, you may stop filling out this section of the questionnaire and go to the next section below.

How confident are you that you can do this task?

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
climb 1 rung											
climb 2 rungs											
climb 3 rungs											
climb 4 rungs											
climb 5 rungs											
climb 6 rungs											
climb 7 rungs											
climb 8 rungs											
climb 9 rungs											
climb 10 rungs											
climb 11 rungs											
climb 12 rungs											
climb 13 rungs											
climb 14 rungs											

Directions: Please circle the response that best reflects your feeling about the following question. Please do not circle in between answers.

I feel that I have the ability to do well at this task.

5	4	3	2	1
strongly agree	**agree**	**not sure**	**disagree**	**strongly disagree**

APPENDIX F

MANIPULATION CHECK

Appendix F

Study Identification Number_____

1. The surrounding exercise science graduate students were attentive to my performance.

5	4	3	2	1
strongly agree	**agree**	**not sure**	**disagree**	**strongly disagree**

2. The surrounding exercise science graduate students are knowledgeable in analyzing motor performance.

5	4	3	2	1
strongly agree	**agree**	**not sure**	**disagree**	**strongly disagree**

3. The surrounding exercise science graduate students were evaluating my motor performance.

5	4	3	2	1
strongly agree	**agree**	**not sure**	**disagree**	**strongly disagree**

4. The surrounding exercise science graduate students made me anxious.

5	4	3	2	1
strongly agree	**agree**	**not sure**	**disagree**	**strongly disagree**

APPENDIX G

SUBJECT PARTICIPATION SCHEDULE

Appendix G

Subject Participation Time

I. Participation Time = 1 hour/subject.

a. Number of trials = 30
   1. Length of time to complete 30 trials. = 10 minutes

b. Number of questionnaires = 4
   1. Length of time to complete pre-task questionnaires. = 15 minutes
   2. Length of time to complete post-task questionnaires. = 15 minutes

c. Miscellaneous.
   1. Length of time to intro experiment. = 10 minutes
   2. Length of time to intro Bachman Ladder procedures and goals. = 10 minutes

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Total time per subject = approx. 60 minutes

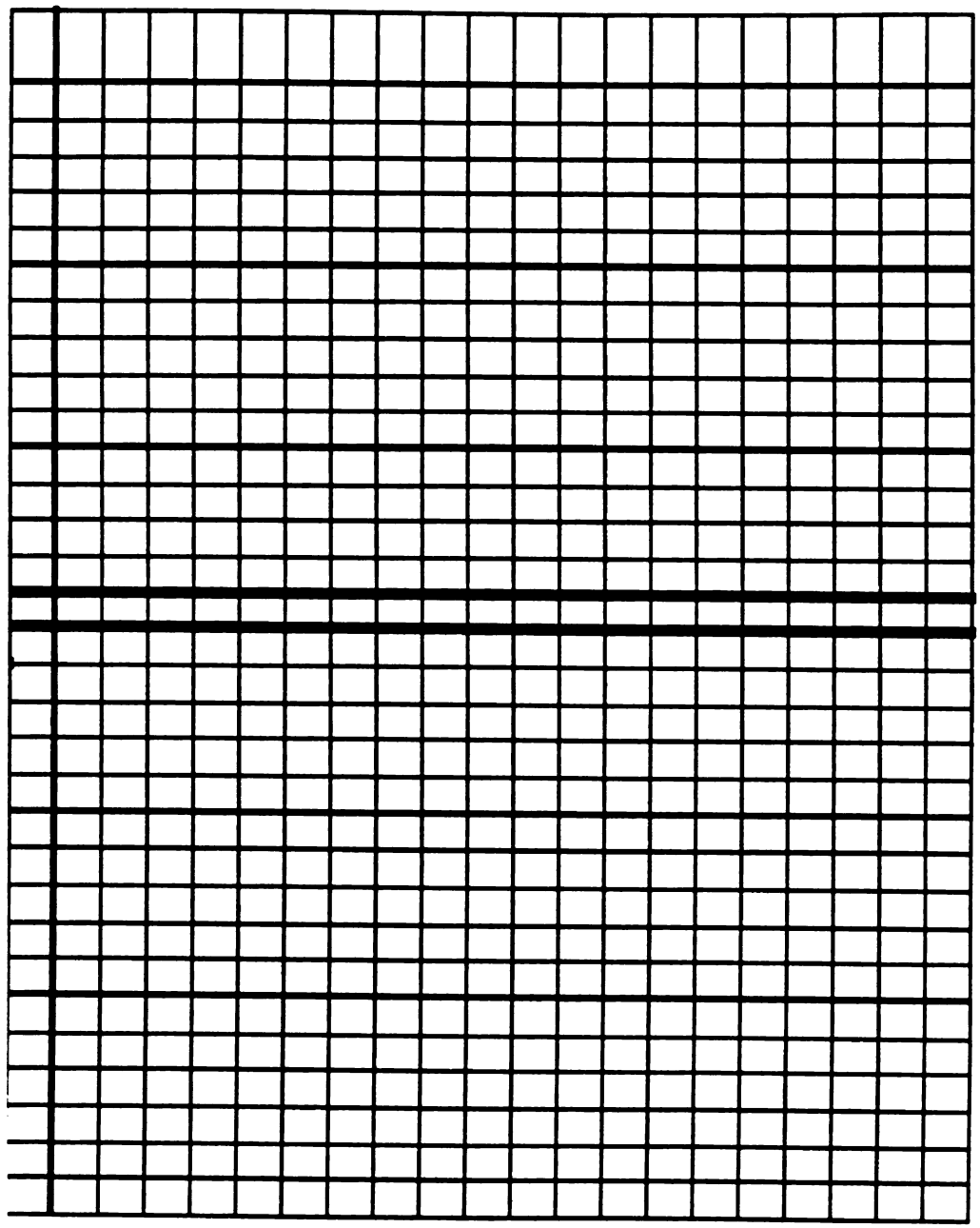
APPENDIX H

PERFORMANCE RATING SHEET

Appendix H

Performance Sheet

Subjects' study identification number



APPENDIX I

PERFORMANCE MEANS AND STANDARD DEVIATIONS

Appendix I

Means and Standard Deviations for the Alone and Audience Conditions by Task- and Ego-Oriented Groups by Trial Blocks for Performance on the Bachman Ladder

	Trial Block					
	1	2	3	4	5	6
Audience						
Task	2.69 (.99)	3.44 (.84)	3.50 (.99)	3.84 (.98)	4.46 (1.12)	5.00 (1.11)
Ego	3.05 (.82)	3.56 (.86)	4.39 (1.09)	4.47 (1.43)	5.29 (1.43)	5.26 (1.31)
Alone						
Task	2.94 (.78)	3.89 (.55)	4.36 (1.19)	4.30 (1.22)	4.98 (1.23)	5.18 (1.22)
Ego	2.74 (1.54)	3.72 (1.46)	4.20 (1.49)	4.65 (1.20)	5.06 (1.49)	5.34 (1.76)

APPENDIX J

PERCEIVED ABILITY MEANS AND STANDARD DEVIATIONS

Appendix J

Means and Standard Deviations for Perceived Ability for Alone and Audience Conditions by Task- and Ego-Oriented Subjects by Baseline, Pre-task, and Post-task measures on the Bachman Ladder

	Baseline		Pre-task		Post-task	
	M	SD	M	SD	M	SD
Audience						
Task	3.58	.51	3.63	.50	3.21	.92
Ego	3.95	.76	3.90	.85	3.30	.82
Alone						
Task	3.70	.66	3.60	.60	3.25	.72
Ego	3.60	.82	3.55	.69	3.00	.72

APPENDIX K

SELF-EFFICACY MEANS AND STANDARD DEVIATIONS

Appendix K

Means and Standard Deviations for Self-Efficacy for Task- and Ego-Oriented Subjects by Alone and Audience Conditions Per Baseline, Pre-task, and Post-task Measures on the Bachman Ladder

	Baseline		Pre-task		Post-task	
	M	SD	M	SD	M	SD
Audience						
Task	45.57	16.20	45.03	15.37	33.57	12.96
Ego	48.21	15.25	51.70	17.56	39.29	10.99
Alone						
Task	52.35	17.31	54.72	18.41	39.96	13.46
Ego	52.35	20.49	51.46	20.69	41.78	14.86

APPENDIX L

ANXIETY MEANS AND STANDARD DEVIATIONS

Appendix L

Means and Standard Deviations for Anxiety for Task- and Ego-Oriented Groups by Audience and Alone Conditions by Baseline, Pre-task, and Post-task Measures on the Bachman Ladder

	Baseline		Pre-task		Post-task	
	M	SD	M	SD	M	SD
Audience						
Task	35.80	4.61	37.75	5.22	42.30	5.99
Ego	35.40	8.82	40.30	8.21	42.20	9.05
Alone						
Task	35.05	7.90	38.15	9.08	41.75	11.48
Ego	37.30	7.31	39.90	9.45	44.70	8.82

APPENDIX M

SUBJECT CONSENT FORMS

Appendix M

Bachman Ladder Study Consent Form

The forthcoming study will investigate the performance of college males on a novel motor task. The task used in this study is called the Bachman Ladder. This ladder, whose base is fixed to the floor, moves in only a vertical line of motion, allowing individuals to climb it as long as balance is maintained. A safety feature prevents the ladder from falling forward more than 45 degrees. Extra padding will be placed around the foot of the ladder as a safety precaution, although the chance of injury is very minimal. The total time of participation is approximately 1 hour.

I understand that I will be asked to climb as high up as possible on this ladder until the top is reached or my blance is lost and my feet touch the floor. I also understand that I will be asked to fill out several motor performance questionnaires. I understand that I am required to wear flat, rubber-soled sneakers (no running sneakers or shoes).

My participation in this study is voluntary and I reserve the right to quit at any time without penalty. I understand that all data collected in this study will remain anonymous and kept in the strictess of confidence. That is, I understand that all data will be kept in a secure manner and that no information collected about me will be made available to anyone other that the experimenter. Furthermore, I understand that by the end of the study, no none, including the experimenter, will be able to associate my questionnaire or performance scores with me.

I understand that I have the right to refuse participation in this study and may discontinue the experiment at any time without penalty.

_____ _____

Subject Signature Date

APPENDIX N

RAW DATA

Appendix N

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