

SOCIAL FACILITATION AND CROSS-SEX COMPETITION ANXIETY

by

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B. S. Ed., Northwest Missouri State University, 1977



A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Health, Physical Education and Recreation

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1978

Approved by:

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ACKNOWLEDGEMENTS

Sincere appreciation is expressed to all the members of my committee, Dr. Karen Matthews, Dr. Richard Cox, and Dr. Charles Corbin, for their help and guidance with this thesis.

A special appreciation is expressed to Dr. Corbin for his patience with me and his inspiration during my graduate studies.

Appreciation is also expressed to Charles Nix, Kay Kennedy, Jane Maderak, and Ross Scott for their generous assistance in serving as confederates and audience in this study.

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Chapter 1

INTRODUCTION

With the enactment of Title IX and the increased proficiency of female athletes, society has begun to concern itself with male-female competition in sports. James Michener, in Sports in America, discusses the problems of male-female competition. He states:

I am therefore attentive to those coaches who have warned me that they would not wish their thirteen- and fourteen-year-old boys to compete against girls in public situations in which a defeat might be interpreted as a failure in manliness. (48:163)

He further quotes a coach's pungent statement:

They (boys) are humiliated by being beat in public by girls, and I'm powerless to alter either their judgments or the behavior of society. Suppose that twelve years from now there is a new scale of values. And a better one. Then it won't matter who beats who. But what am I to do with the boys who have to live between now and twelve years from now? Allow them all to be castrated? (48:163-165)

He summarizes the problem by concluding:

...that the traditional athletic separation of boys and girls during the ages of twelve to twenty-two conforms to some permanent psychological need of the human race and that to reverse this custom might produce more harm than good. (48:130)

Several important points can be extracted from these statements. Both quotes concern themselves with male-female competition in public. They imply that the presence of an audience is essential for any possible 'humiliation' to occur. Both statements emphasize that this 'humiliation', caused by a female defeating a male in public, damages the male's self manhood concept. The coach believes this damage to be as

serious as psychological castration. One must ask if the coach's and Michener's fears are warranted. If so, the question also arises if the 'humiliation' does not also occur to the defeated male in male-male competition in public.

Little research exists which investigates the effects of competition on the behavior during or after cross-sex competition. One such study that does exist was run by Corbin (9) at Kansas State University. Corbin studied cross-sex competition anxiety. Using the T.V. pong game as a task and the Spielberger STAI as a measure of competitive state anxiety, he studied the variables of subject's sex, opponent's sex, success-failure ratio, Sport Competition Trait Anxiety levels, and the subject's success expectancies. His findings did not support Michener's (47) fears. But one element of Michener's fears, being defeated in public, was not investigated in Corbin's study.

The phenomenon of competing in public is of concern to the social psychologist who studies social facilitation. Social facilitation, as defined by Zajonc, refers to the positive and negative effects on behavior as a consequence of the presence of others (75). This study, to further question Michener's claim and to follow up on the previous work of Corbin, investigated the effects of social facilitation on the competitive state anxiety of males during male-male and male-female competition. Martens' model of competition (40) was used to insure a definition of competition constant with current research (9, 31, 41, 42, 56, 57). The experiment was designed to produce an objective competitive situation as defined in Martens' model.

STATEMENT OF PROBLEM

Michener advocates forbidding cross-sex competition between the ages of twelve and twenty-two due to the possible defeat of the male and the consequential psychological damage. This thesis attempted to investigate some aspects of cross-sex competition.

The purpose of this study was to determine the effects of social facilitation (both coaction and audience) on the post competition state-anxiety levels of males defeated in a game of T.V. hockey. More specifically the purpose of this study was to:

1. Determine if differences existed in post competition state-anxiety levels between groups experiencing different audience conditions (i.e., male, female, or no audience).
2. Determine if differences existed in post competition state-anxiety levels between groups competing against opponents of the same and opposite sex.
3. Determine if interactions existed between the two major variables (audience conditions and sex of opponent) on the dependent variable post competition state-anxiety.

LIMITATIONS OF THE STUDY

The following limitations were present in this study:

1. The subjects were tested in two different locations.
2. Due to the nature of the T.V. pong game, hockey, it was impossible to control the exact score for each subject.

DELIMITATIONS OF THE STUDY

The following delimitations were made in this study:

1. The major delimitation of this study was the size and role of the audience. The audience consisted of only one person. Due to lack of resources, only one type of audience was used.
2. The subjects involved in this study were Kansas State University male students from the ages of 17 to 22.
3. No subjects were allowed to win in this study since the investigator wanted to determine the effects of a defeat on the competitive state anxiety level.
4. The audience was playing the role of a positive reinforcer to the confederate in the evaluation--apprehension paradigm.
5. No physiological measures of arousal or activation were used.

DEFINITION OF TERMS

To better understand this study the following terms are defined:

1. Confederate

This term refers to the one male and the one female who volunteered to the experimenter to be the opponent of the thirty true subjects in their respective treatments throughout the entire experiment.

2. Objective Competitive Situation

This term refers to a situation "in which the comparison of an individual's performance is made with some standard in the presence of at least one other person who is aware of the criterion for comparison and can evaluate the comparison process" (40:8).

3. Social Facilitation

This term refers to the phenomena of the positive and negative effects of performance as a consequence of the presence of others (7).

4. State Anxiety

This term refers to "the subjective consciously perceived feelings of apprehension and tension, accompanied by or associated with activation or arousal of the autonomic nervous system" (63:17).

Chapter 2

REVIEW OF LITERATURE

Both in physical education and in psychology the literature abounds with research concerning competition, anxiety, and social facilitation. An attempt was made to review these areas most relevant to the study. The following review of literature is divided into the areas of competition, anxiety, and social facilitation.

COMPETITION

Competition is a controversial topic in America today. Parents, teachers, and coaches both advocate and criticize its value in preparing youth for today's competitive society. Research is plentiful in this area to aid the educator in his use of competition, but for the most part this research offers no answers. Competition research, in the past, has been atheoretical. Competition has not been defined nor has it been operationalized (40:68). The meaning of competition consisted of it being a process, specific behaviors, behavioral tendencies, or a specific situation (40:68). Martens eliminates these ambiguities by defining competition and creating a conceptual model of competition with the individual as the focal point. From this construct, meaningful research can result.

Martens defines competition as a process involving four stages of events: the objective competitive situation, the subjective competi-

tive situation, the response, and the consequences of the response (40:68). The person is the focal point of this process with his attitudes, motives, abilities, previous experiences, and personality dispositions interacting with the process. Each stage is also influenced by external factors in the environment.

Derived from social evaluation theory and research, Martens defines the objective competitive situation as a situation "... in which the comparison of an individual's performance is made with some standard in the presence of at least one other person who is aware of the criterion for comparison and can evaluate the comparison process" (40:69). This definition improves on the reward definition of competition as it provides the objective competitive situation instead of how the competitor perceives his competition. The competitor's perception of the objective competitive situation is the subjective competitive situation.

When confronted with an objective competitive situation, the individual then evaluates the situation. His evaluation or his perception of the situation is the subjective competitive situation. His competitiveness as well as his motives, attitudes, abilities, and personality dispositions influence his perception. Other contributing factors to the individual's perception are whether he sought out the situation himself, what he perceives as his ability and chances to win, and what he considers as the importance of his success (40). At this point the individual decides on participation or non-participation. The subjective competitive situation will determine the responses and consequences.

The response stage of competition occurs when the individual after perceiving the objective competitive situation decides to continue

in the process. The person's response occurs at three levels: physiological, psychological, and behavioral. The factors previously mentioned, i.e., motives, also influence the resulting response (40:70).

Consequences result from the previous three stages of the competition process and all interacting factors. Consequences will influence the entire process for the next objective competitive situation with which he is confronted.

Martens' four stage model of the process of competition establishes a clear construct on which to base competition research. Unlike previous definitions, the response and consequences of participating in an objective competitive situation may be methodically studied. Current researchers (9, 31, 42, 43, 56, 57) have begun to use this model.

COMPETITION AND ANXIETY

Numerous studies exist concerning anxiety and competition. These studies differ in many variables, i.e., nature of the task, model of competition, expectancy of performer, and audience. Therefore, it is difficult to make generalizations concerning anxiety and competition.

The effects of anxiety on performance of motor skills is unclear. In different experiments which measured anxiety levels, high anxiety levels yielded different results. Saltz and Rioch (53) demonstrated a decrease in performance. Ulrich and Burke (69) concluded that stress facilitated performance. Others reported no basis for such conclusions (24, 52).

Research utilizing state anxiety measures has found fluctuating levels of state anxiety before, during, and after competition. Martens and Gill (42) established the construct validity of the Sport Competition Anxiety Test (SCAT) while also finding that as the number of games won decreased, the state anxiety levels increased. Scanlan and Passer's (57) research supported the basic assumption that losing players exhibited greater post game state anxiety than winning players. This assumption is supported by most anxiety competition research (9, 31, 42, 43, 56, 57).

Utilizing Martens' model, Corbin (9) studied the effects of success-failure in cross-sex competitive situations on competitive state anxiety. In two studies, a total of one hundred and sixty college age students played the T.V. pong game. The experimenter controlled the win-loss of each match. Spielberg's STAI, Martens' revised short form, of competitive state anxiety was administered to the subjects after the competition was complete to determine competition state anxiety. The data from both studies revealed that cross-sex competition does not create high state anxiety levels as a function of sex but high state anxiety levels depend on success-failure rate.

The personality disposition of anxiety has also been studied to determine its effects on social facilitation. Abel (1) studied anxiety levels and their relationships to group performance. She found that 'high strung' individuals are overstimulated and a corresponding decrement in performance results. Cox (13) in his study observed an increase in the rate of performance of low anxious children whileas the high anxious children's performance decreases when both perform in the presence of an audience. Ganzer's (20) research indicated that observer

presence caused a decrement in performance for high and moderately anxious females but not for low anxious females. Geen (22), using Sarason's test anxiety, found the subjects high in test anxiety experienced greater decrements in performing a difficult task than subjects low in test anxiety. All research previously cited supports the concept of the presence of an audience causing a decrement in performance of these highly anxious subjects. Research exists which does not support this idea.

Martens (40) found no relationship between anxiety level and motor task performance in front of an audience. Other research suggests that an audience may actually reduce the anxiety level of the performer. Schachter (58) found that a highly anxious person may find the presence of other people comforting and thus experience decrease in anxiety. Kieffer (31), using children and a pursuit rotor task, found support for the hypothesis that a spectator comforts, consoles and reassures a learner. Martens (40) suggests that presence of others decreases high arousal states and increases low arousal states. Geen and Gange (23) summarize the conflicting literature in this area with the hypothesis that the presence of others leads to increased arousal when the others stimulate in them an anticipation of negative outcomes.

Summary

The literature contains many articles in the area of competition and anxiety. Ambiguous results exist from this research due to the researchers' inability to use the appropriate model for competition and the appropriate concept of anxiety. The distinction between state and

trait anxiety must be made. Most researchers have found that failure during competition creates higher state anxiety levels in the performer but researchers have not determined at what point this anxiety becomes detrimental to the individual.

SOCIAL FACILITATION

The phenomenon of social facilitation has been a topic of research since the 1890's. Social facilitation refers to the effect of others (coactors or audience) have on performance. Before Zajonc's theory in 1966, social facilitation research was basically atheoretical. Current studies based on Zajonc's constructs have tested his theory. Most studies have supported Zajonc's theory. Some researchers (10, 11, 12, 31) dispute the role of the audience, i.e., mere presence versus apprehension evaluation. Cottrell (12) suggests that the presence of other people does not increase drive unless it arouses anticipations of positive or negative outcomes. Other variables which determine how the presence of others affect an individual's performance are the performer's personality, anxiety level in the performer, the familiarity of the task, the nature of the task, and various characteristics of the audience.

Social facilitation, a term coined by Allport (3) in 1924, was actually first studied by Triplett in 1898 (68). Triplett, a social scientist, tested the hypothesis that bicyclists performed better against another person than in a race against time. His research, entitled the "Dynamogenic Factor in Pace-making" supported this hypothesis (68). As Martens delineates early social facilitation research from current

theory, Triplett's research referred to any increment of individual behavior resulting from the presence of another individual (68:24). Several early researchers reinforced the belief of the facilitory effect of social facilitation. Meumann (40) in 1904 found his students' performance improved on a finger ergograph in his presence as opposed to performing alone. Allport (3) found that an audience generally facilitated verbal-cognitive performance in quantity and vigor at the expense of the intellectual quality. Travis (67), using a pursuit rotor task, introduced an audience and found a distinct improvement in subject performance. Abel (1) used a simple maze box and Gurnee (26), using a large visual maze, reported improved performance in front of an audience. Dashiell (15), the first researcher to question the role of the audience, i.e., passive versus active, also found that performance output increased in the presence of an audience. Although he did note a decrease in accuracy. This decrease in accuracy became apparent in other research and began to be interpreted as a decrement in performance.

In 1928, Travis (67) replicated Allport's chain word association study and obtained the opposite results. Performance became worse in the presence of an audience. Pessin (50) had subjects learn nonsense syllables alone and in the presence of an audience. Errors made and time span needed to learn were greater in the audience condition. Husband's research illustrated that an audience interfered with the learning of a finger maze. These results contradicted the research which supported the facilitory effects of social facilitation.

A lack of social facilitation research between the thirties and the sixties perpetuated the confusing and contradictory concepts of social

facilitation. Zajonc, during the 1960's, synthesized previous research and formulated a viable theory of social facilitation. He defined social facilitation as "both the positive and negative effects as a consequence of the presence of others" (40). Much current research has resulted from his definition and theory.

In postulating his theory, Zajonc reviewed the social facilitation literature and extracted one consistency from a seemingly contradictory, atheoretical body of knowledge: "Performance is facilitated and learning is impaired by the presence of spectators" (74). Using the construct of dominant response, Zajonc stated that the dominant responses while learning are incorrect responses, whereas upon mastering that which is to be learned, the dominant responses are correct responses. He further theorized that the presence of an audience elicits the dominant response from the performer. Knowing that three psychological processes, drive, arousal, and activation, are known to enhance the emission of dominant responses, Zajonc felt the accuracy of his theory could be demonstrated if the presence of an audience has arousal consequences for the subject. Through application of activation theory, Zajonc linked adrenocortical function in emotional arousal with the mere presence of others (audience) (74). In Zajonc's theory, arousal then serves as a drive that energizes the dominant responses at the expense of subordinate ones (74). Zajonc's theory clarified research in social facilitation by accounting for both increment and decrement in performance. This drive theory of social facilitation has provided basic constructs on which most current social facilitation research is based.

Zajonc and Sales (75) had subjects perform a pseudorecognition task alone or in the presence of two passive spectators. Response probability was a function of the number of times each stimulus had previously been seen. Analysis of the data revealed that the presence of an audience enhanced the emission of the responses governed by the strongest habit. This directly supported Zajonc's theory of the emission of the dominant response in the presence of an audience.

Cottrell, Rittle and Wack (10) hypothesized that audience-produced drive would facilitate the learning of lists of low response competition but would hinder the learning of high response competition by emitting dominant responses over subordinate responses. Subjects performed poorly on high competition lists before an audience as compared to being alone. An audience slightly facilitated the performance of subjects on low competition lists.

Matlin and Zajonc (46) increased drive by using a within subject design where the subject was continuously alone and then observed during a word association task. In the observer-alone order, the presence of the observer facilitated the emission of the common response. No social facilitation occurred in the alone-observer order. This partially supported Zajonc's drive theory.

Cottrell (12) shortly after Zajonc had postulated his drive theory of social facilitation, proposed an alteration to Zajonc's theory. Zajonc believed that increased drive due to the mere presence of others was innate. Cottrell proposed that drive due to the presence of others is learned through social experiences. This further accounts

for the performer's perception of potential positive or negative feedback from the present other (audience or coactor). The performer thus anticipates the evaluative function of the other which results in an increased drive state. Only through past social experience will the performer learn the evaluative function of others. From Cottrell's hypothesis, Fisher (19) finds interesting implications. Two testable implications exist: 1) coaction in itself does not inhibit or facilitate performance unless rivalrous conditions exist, and 2) the amount and type of the performer's social experiences will determine the audience and coaction effects.

Coaction

Zajonc's theory groups both coaction and audience effects together. Much research exists separating these areas. Early research found a coactor to enhance performance (3, 68). Hollingworth (29) states from his studies that a coactor serves as a pacemaker, providing rivalry and causing greater effort. Thibaum and Kelley (66) found that coactors caused a greater production in performance during physical work but a lesser quantity of work during intellectual processes.

Seidman, Bensen, Miller, and Meeland (59) studied the effects of coaction on the ability to tolerate an electric shock. They found that the subjects tolerated more shock with a coactor also receiving shock than when alone. Ader and Tatum (2) also tested coaction using an electric shock. Subjects, graduate and medical students, failed to learn a shock avoidance task when with a coactor. The subjects learned the task while working alone. These findings support Zajonc's theory that dominant responses are elicited by the presence of others.

Martens and Landers (44) investigated the effect of the number of coactors on muscular endurance. Three age groups of boys were divided into three sub-groups within their age group. Their task was to extend one leg horizontally while sitting and to maintain that position as long as possible. The subjects performed in groups of one, two, and four. For all three age groups, the group of four maintained the extended position significantly longer than the pairs or alone group. This task involved no learning.

Martens and Landers (45) studied the effects of four different coaction situations on the learning and subsequent performance of a difficult and novel motor skill task. Results indicated that the larger the number of coactors the greater the motor impairment during initial learning. Burwitz and Newell (5), in a similar study, investigated the effects of the mere presence of one or three coactors on the learning of a motor skill. The mere presence of a group of coactors sufficiently facilitated the subject's performance. This supported Zajonc's innate drive and did not support Cottrell's learned drive hypothesis.

Garment (6) investigated the interaction between competition and coaction. Subjects performed a simple motor task, half alone and half with a coactor. Half were also given instructions to increase competitive motivation. The interaction indicated that subjects in the presence of a coactor under competitive conditions made a larger number of responses than under non-competitive conditions. Under alone competitive conditions subjects made fewer responses than alone-noncompetitive situations. In a related study, subjects performed a motor task in the

presence or absence of the experimenter as well as alone or in a coaction setting. In the alone condition, the absence of the experimenter slightly facilitated performance. Geen and Gange (23), in their review of social facilitation, interpreted these results as the experimenter "fostered feelings of rivalry among coactors that were not otherwise experienced" (23:1281).

Wankel (71) investigated the induction of rivalry into a coaction study. He attempted to exactly test Cottrell's hypothesis of learned drive but allowed the experimenter to be present during testing. This inadvertently introduced an audience condition. He independently manipulated the three variables, audience, coaction, and rivalry, on the reaction time of the subject. In groups to whom instructions intended to foster rivalry were administered, reaction times were shorter than non-rivalrous groups. Only one variable, rivalry, produced a sustained high level of heart rate throughout the experiment. Wankel concluded, "It (coaction) may help to intensify feelings of rivalry and thus may indirectly influence performance" (71).

Evans (17) also attempted to separate the social facilitation effects of coaction from rivalry. Eighty males competed against each other on a form board under a rivalry, nonrivalry, social facilitation, and no social facilitation conditions. Tonic heart rate was monitored and recorded. A significant difference in heart rate between the rivalry and no rivalry conditions was found. No significant difference existed between social facilitation and non-social facilitation conditions. Evans interpreted these results as indication that rivalry served as an incentive and not social facilitation.

Van Tuinen and McNeel (70) compared Zajonc's and Cottrell's differing theories. Eighty male subjects were divided into alone-noncompetition, alone-competition, dyad-noncompetition, dyad-competition, and alone-incentive groups for 150 test trials (after completing 150 baseline trials consisting of predicting the occurrence of two stimuli on a PDP-12 computer screen). The alone-incentive group was paid one cent per correct prediction to determine the effects of drive on the dominant prediction. Only the alone-incentive and dyad competition groups showed facilitation of the dominant prediction from baseline to test session. Cottrell's contention that facilitation will not occur unless coactors anticipate positive or negative outcomes as they do when competing was supported by this research.

Laughlin and Jaccard (35) compared performance of individuals with performance of cooperating pairs. Their findings contradict the drive theory of social facilitation regarding learning. Subjects working in cooperation performed as well during observation as did the alone performers. Contrary to the theory, though, coaching cooperating pairs learned the concept more readily than subjects learning alone.

Seta, Paulus, and Schkade (60) investigated the possibilities of both arousal reducing and inducing qualities of coaction in competitive and cooperative conditions. In competitive conditions, rote learning of a list was poorer in coaching groups of four than in coaching groups of two. In the cooperative conditions, the opposite result was obtained. More learning occurred in coaching groups of four than in coaching groups of two. These results indicate that rivalry must be implicit to elicit social facilitation effects in a coaction setting. In cooperation

coaction, the social facilitation which occurs reduced arousal.

In an attempt to determine if rivalry is implicit in coaction, Seta, Paulus and Risner (23) designed an experiment with coactors doing either the same maze task or one doing a maze task and the other a multiplication table. They reasoned that implied rivalry should be more apparent with coactors performing the same task. Evaluation-apprehension producing instructions were given to half of the pairs. Subjects in heterogeneous dyads under the high evaluation apprehension performed better on the maze task than the homogeneous dyads. Under low apprehension conditions, no difference in performance occurred. Thus, coaction on the same task produces implicit rivalry which may elevate arousal.

Several studies have attempted to investigate the effect of knowledge of results (KR on one's own performance) and the coactor's performance. KR of performance could increase competitiveness and thus produce social facilitation effects. Klinger (32) found that subjects performing a signal detection task, who received KR of both their own errors and a coactor's errors performed better with a coactor than alone. Subjects who had visual contact with their coactors but received no KR, performed no better than when they were alone. A basic weakness in Klinger's design was that a condition of subjects working alone and receiving KR did not exist. Martens and Landers (45) using a difficult motor task found poorer performance in subjects who received KR and maintained visual contact with their coactors than subjects who received neither. Subjects who maintained visual contact but received no KR were no better than those who received only KR. These results suggest that visual contact is an important variable in the coaction paradigm of social

facilitation.

Audience

The study of the audience paradigm of social facilitation has created much contradictory literature. Zajonc's original theory states that the mere presence of others is arousing, which subsequently enhances the emission of dominant responses (74). Cottrell (12) altered Zajonc's theory by hypothesizing that "the presence of others is a learned source of drive, rather than a source of drive which is innate or 'wired into' the organism as is tacitly assumed in the Zajonc's hypothesis" (12). This theoretical battle between Zajonc and Cottrell has become known as "mere presence versus evaluation apprehension" (23). To be considered in reviewing the literature on the audience paradigm are various characteristics that exist.

To properly study the mere presence and evaluation-apprehension hypothesis, three conditions should exist: 1) the subject worked alone, 2) an audience was present physically but was not judged to be evaluative, and 3) an audience was physically present and evaluative (23). From these conditions, one could evaluate which condition elicited the dominant response. Though many experiments do not meet these requirements, the experiments that do are quite well done.

Cottrell, Wack, Sekerak, and Rittle (11) had their subjects perform pseudorecognition tasks alone, in the presence of two observers, and in the presence of two inattentive, blind-folded observers. Subjects who performed in front of the two blind-folded observers emitted dominant responses at the same rate as the subjects who performed alone.

The most dominant responses emitted resulted from the condition with two attentive observers. This experiment provides support for the evaluation apprehension hypothesis. Sasfy and Okun (55) used observers designated as experts or non-experts as an audience. The expert observer was also given information on the subject's performance. The greater number of errors occurred in the subjects performing in front of the expert observer with knowledge of the subject's performance than subjects performing alone. Subjects performing in front of experts or non-experts who possessed no knowledge of the subject's performance committed no more errors than subjects performing alone.

Paulus and Murdoch (49) using a pseudorecognition task and various audience conditions also supported the evaluation apprehension hypothesis. Employing the pursuit motor task, Gore and Taylor (25) had subjects perform alone and under one of six combinations of observers and expertness. Findings reported which supported the evaluation apprehension hypothesis were that the arousal level was higher in the audience condition than the alone, and higher in the presence of experts than non-experts.

Martens and Landers' (45) research using a complex motor skill, supported the evaluation apprehension hypothesis. College males performed the task under one of three conditions: direct evaluation, indirect evaluation, and no evaluation. The results indicated that direct evaluation elicited more dominant responses than indirect evaluation than no evaluation.

One study by Cohen and Davis (8) supported both the mere presence and evaluation apprehension hypotheses. Subjects learned to solve

hidden-word problems in such a way that a problem solving set constituting a dominant response was established. Subjects who were observed but not evaluated, emitted less non-set solutions than the nonobserved controls and were further inhibited through audience evaluation. This research suggests that mere presence and evaluation apprehension may be additive rather than mutually exclusive (23).

Henchy and Glass (27) using pseudorecognition task had subjects perform alone, or in front of an audience of either experts or nonexperts, or being videotaped for later evaluation. The data failed to support the evaluation apprehension hypothesis, thus giving implicit support to the mere presence hypothesis. Interesting to note is the finding that those who were videotaped demonstrated less emittance of dominant responses than those who performed in front of experts. This finding highlights the importance of the subject's perception of the evaluation.

Zajonc (75) illustrates this point in his argument against evaluation apprehension. He postulates that the presence of other augments a subject's drive level by creating uncertainty not because of the fear of evaluation. Sanders and Baron (54) showed that subjects who were distracted by an irrelevant stimulus manifested behavior of increased drive. They extrapolated from their experiments that an audience heightened arousal by distracting the subject from the task. Both Zajonc and Baron, et al. (23) support the concept of the mere presence of others which creates uncertainty in the subject or distractedness from the task. This uncertainty or distractedness increases the drive

in the audience paradigm in social facilitation not evaluation apprehension.

When studying the effects of an audience, the different characteristics it possesses must be considered. Interesting questions to ask are: How does the atmosphere/attitude of the audience affect the performers? What are the effects of the sex, size and proximity of the audience on the performers? How does social distance of the audience affect the performers? Little research is available to answer these questions.

The attitude/atmosphere of the audience is quite relevant to sports today. Crowds cheer and boo their unfavorites as well as their favorites. The difficulty in studying the effects of an active audience is how to control the action of the audience so that they are equal for each subject. In 1923, Laird (34) using four motor tests had subjects perform first before a quiet audience and the second time the subject was razzed before the performance. A decrement in performance was noted in the razzing condition. Gates (21) investigated the effects of an encouraging audience on performance with only a small favorable difference recorded. These studies were admirable in their attempt but are inherently weak in design, control, and applicability to a sports situation. Roberts and Martens (40) studied the effects of positive versus negative reinforcement on the learning of a motor task. Surprisingly, all performances improved with no significant difference between treatments. One explanation of this result is that the subjects did not perceive the reinforcement the same as the experimenters' intent. Kozar (33) using a gross motor balancing task employed a supportive and non-

supportive audience to study an audience's effect on performance. Neither audience caused a difference in performance.

The size and proximity of the audience may also affect performance (19). This phenomenon has not been studied. Practicality in research often dictates a small number of observers in the audience. Most studies utilize one to ten persons for an audience. Wanke1 (72) studied how trait anxiety and audience size affected state anxiety and motor performance. Subjects performed on the pursuit rotor task under one of three treatment conditions (alone, two evaluative observers, or six evaluative observers). He found that trait anxiety significantly affected both state anxiety pursuit rotor performance. There were no significant audience interaction effects of main effects. The effect of the size and proximity of the audience on the performer needs to be considered in terms of the game, the arena, and the number of people playing.

The sex of the audience in relation to the sex of the performer has not often been studied. One such study that has been completed found no interactive effects between sex of subject and sex of the audience (4). More research needs to be completed in this area.

The emotional closeness between performer and audience, social distance, is believed to greatly influence social facilitation (14, 19). Sparse experimental literature exists on which to base this belief. Fisher (19) states that the presence of these "significant others" enacts a stronger evaluation apprehension. Cratty emphatically states that a close social relationship between performer and audience "can be

counted on to severely impede the accurate performance of perceptual motor skills" (14:163).

Other Factors Affecting Performance

Many other variables have been found to have an effect on how social facilitation affects performance. These variables are familiarity of the task, nature of the task, personality of the performer, and anxiety and arousal level of the performer (4). These variables are studied under both the coaction and audience paradigm. Therefore, a brief summary of the research will be cited.

The familiarity of the task to the subject (whether the task is learned or unlearned) has been found to have a great effect on social facilitation of the subject's performance. Zajonc's (74) research, using both the audience and coaction paradigm, indicated that social facilitation inhibited the learning of new responses, but facilitated responses which had already been learned. Singer (61) hypothesized that social facilitation occurs more frequently when the task is familiar and well learned. Martens' (38) research involving the performance of a coincident timing motor task also supported the evidence that social facilitation facilitates a well learned task. Other studies which support this variable of familiarity and its effect on social facilitation were completed by Allport (3), Dashiell (15), Travis (67), and Ganzer (20). The nature of the task (whether the task is simple or complex) has also been found to affect social facilitation. Martens (40) explained that the complexity of a skill is determined by the difficulty to respond correctly. Garment and Latchford (7) found that coactors

facilitated response on simple motor tasks as compared to a complex motor task. Sorce and Fouts (62), utilizing a simple motor task in the presence and absence of an audience, found that the audience facilitated performance of the task. The literature seems to indicate that simple tasks are facilitated by social facilitation whileas complex tasks are not.

Personality also influences the way in which social facilitation may affect performance. May and Doob (47) state that it is not so much social facilitation that affects performance but the interpretation of the situation by the unique personality involved. Abel (1) in her study concluded that individual personality traits were related to the effects of social facilitation. Singer (61) believes that the personality of an individual influences the manner in which he will interact with a group. Cratty (14) and Jones and Gerard (30) research also supports the concept of personality relating to the effects of social facilitation.

Summary

Zajonc's original theory of social facilitation has been studied and expanded on by many social-psychologists. Zajonc's contention of the mere presence of others causing social facilitations is challenged by Cottrell's belief that evaluation apprehension is induced by the presence of others thus causing the social facilitation of performance. Research has been conducted which supports both theories.

The role of the audience is a disputed theory in social facilitation research. Social facilitation research studies the effect the

performer's personality, the nature of the task, the familiarity of the task, the coactors, and/or the audience have on the performance of the subject. The personality of each subject uniquely influences the effects that social facilitation has on him. State and trait anxiety level as well as the susceptibility to motivation and arousal greatly affect social facilitation. Generally, a well-learned skill is more facilitated than the unlearned and unfamiliar skill. A simple skill experiences an increase in performance as a result of social facilitation, whileas a complex skill does not.

A review of social facilitation literature reveals that most completed research has studied its interaction with performance and learning. No studies have been done to investigate social facilitation effects on other areas (i.e., post competition state-anxiety level).

SUMMARY

Martens' four stage model of the process of competition has established a clear construct on which to base competition research. Martens and Gill (41), Scanlan and Passer (56), and Corbin (9) have used this model to study competition and anxiety. Their research and that of others support the concept of losers demonstrating higher state anxiety than winners (9, 31, 41, 42, 55, 56). None of these studies have introduced the variable of social facilitation.

Social facilitation research has been mostly concerned with performance and learning. Though anxiety's interaction with social facilitation has been studied with its effects on performance and

learning, its interaction with social facilitation as a post performance state has not been studied. Corbin (9) in "Cross-Sex Competition," suggests that social facilitation, as an external factor, may affect post competition state-anxiety levels.

Thus, to further investigate Michener's claim of psychological harm due to cross-sex competition and to follow up on Corbin's study, social facilitation and its interaction with cross-sex competition as demonstrated in post competition state-anxiety levels must be studied.

Chapter 3

PROCEDURES

The purpose of this study was to determine the effects of social facilitation (both coaction and audience) on the post competition state-anxiety levels of males defeated in a game of T.V. hockey.

SUBJECT, CONFEDERATE, AND AUDIENCE SELECTION

Sixty male Kansas State University students ranging in age from seventeen to twenty-two served as subjects for this experiment. The subjects were solicited from Goodnow and Marlatt dormitories or basic physical education classes.

The confederates and audience consisted of two male and two female university age students who volunteered their assistance to the experimenter. The same confederates and audience were used throughout the study.

EXPERIMENT DESIGN

The experiment design was a 2×3 factorial. There were ten subjects to a cell. Subjects were randomly assigned to one of the six treatment cells. Treatments consisted of either playing a male or female confederate with either one male, one female, or no one as an audience. Thus the six treatments were as follows: male playing

confederate male with a male audience, male playing confederate male with a female audience, male playing confederate male with no audience, male playing female confederate with female audience, male playing female confederate with a male audience, and male playing female confederate with no audience. The experiment design with treatment conditions is outlined in Table 1.

Table 1
Treatments by Experiment Cell

No Audience Male Coactor	Male Audience Male Coactor	Female Audience Female Coactor
No Audience Female Coactor	Male Audience Female Coactor	Female Audience Female Coactor

LOCATION

Fifty of the subjects were tested in the stereo room of a coed dormitory, Goodnow Hall, on the Kansas State University campus on February 18 and 19, 1978. The remaining ten subjects were tested the following week in the Motor Development Research Laboratory in Ahearn Gymnasium at Kansas State University. Two testing locations occurred because ten subjects failed to keep their original testing appointments.

EQUIPMENT

An electronic Jokari game, commonly referred to as a T.V. game, was used to provide the objective competitive situation. A Sears telegame model 362.997310 was used to transmit the game on a 21" diagonal T.V. screen. Each player used a control knob to control his paddles. A separate T.V. monitor equipped with a specially designed bias control allowed the experimenter to control the electronic paddle of each subject by ten percent (9). For this experiment, the T.V. hockey game was used for all subjects. The ball speed was set at slow and the size of the paddle at large and the angle of the ball at low.

TESTS

Martens' revised competitive short form of Spielberger's Self-Evaluation Questionnaire, STAI, Form X-1 (see Appendix 1) was administered after the competition to evaluate the post competition state anxiety level of each subject. This form consists of ten statements to which the subject determines how he feels by indicating either not at all, somewhat, moderately so, or very much so.

PROCEDURE

Each subject reported to the testing location at his assigned time. The confederate was waiting in line as if he/she were also a subject. A rights and welfare form (see Appendix 2) was given to both the subject and confederate to be signed. They both were then escorted

by the experimenter into the testing area and seated in two chairs in front of the T.V.

As the experimenter handed the subject and confederate the controls to the game, these directions were read to them:

You are going to be playing the T.V. pong game, hockey. The object of the game is to hit the ball past your opponent's paddle through your goal. One point is awarded for doing so and will be shown on your side of the screen. A game consists of fifteen points. You will be playing a two out of three game match. The winner will be whomever wins two games. The object is to win! I will leave the room while you are playing. When someone reaches fifteen points, call me and I will record the score and start a new game. Remember, the object is to win.

The subject and confederate were then allowed to practice for one minute. At this time the experimenter reiterated that the object was to win. The first game was then started. Out of the view of the subject, behind a partition or in another room, the experimenter controlled the subject's paddle ten percent to insure that the confederate would win. At the announcement of the end of the first game, the experimenter would come out, record the score, have the subject and confederate change chairs, and start the second game. At the end of the second game (the confederate winning both), the Spielberg's Self-Evaluation questionnaire, STAI, Form X-1, was administered to both the confederate and the subject. The experimenter read aloud the directions as printed on the questionnaire while the subject also read them to himself. The experimenter was not present while the subject completed the questionnaire. Upon completion of the form, the subject was debriefed and thanked for his participation in the study. Debriefing consisted of informing the subject that his opponent was a confederate and that the outcome of the game was controlled. The subject was also asked not to discuss the experiment with anyone.

In the audience treatments, the procedures were the same except the audience (either one male or one female) was seated in a chair behind the subject. The audience's presence was not explained to the subject. The audience was instructed to give positive verbal feedback, i.e., good shot, on every point scored by the confederate. The confederate and the experimenter were not present while the STAI forms were completed.

ANALYSIS OF THE DATA

An analysis of variance in a double entry table as described by Lindquist (36) was used to analyze the data.

Chapter 4

RESULTS

The procedures as outlined in Chapter 3 were followed. The STAI were scored as previously indicated. An analysis of variance was used to analyze the scores. Table 2 indicates each subject's score on the STAI Form X-1 and the mean for each cell.

Table 2
STAI Scores and Treatment Means

No Audience	Male Audience	Female Audience	Row
MALE CONFEDERATE			
32	17	18	
32	29	30	
27	20	22	
29	21	14	
30	16	32	$\bar{X}_1=26.2$ $\bar{X}_2=21$ $\bar{X}_3=21.5$ $\bar{X}_{R1}=22.9$
19	24	27	
20	17	21	
30	24	15	
27	24	22	
16	18	14	
FEMALE CONFEDERATE			
31	17	18	
13	18	23	
23	16	21	
24	21	14	
26	30	17	$\bar{X}_4=21.6$ $\bar{X}_5=21.3$ $\bar{X}_6=20$ $\bar{X}_{R2}=20.96$
27	36	13	
20	22	25	
12	22	24	
10	18	17	
30	13	18	
Column	$\bar{X}_{C1}=23.9$	$\bar{X}_{C2}=21.15$	$\bar{X}_{C3}=20.75$
			Grand Mean 21.93

Computations were completed for an analysis of variance as described by Lindquist (36). The summary table is shown in Table 3.

Table 3
ANOVA Summary Table

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Square	Calculated F	Required F for .05 Significance
Audience Type (AT)	2	117.633	58.81	1.581	3.15
Sex of Confederate (SC)	1	56.06	56.06	1.507	4.0
Cells	(5)	(253.133)			
AT x SC	2	61.434	30.717	.825	3.15
Within Cell	54	2008.6	37.196		
Total	59	2243.733			

An a priori level of significance of .05 was selected by the investigator. As indicated by Table 3, the calculated F ratios were not significant at the .05 level. The table also indicates that no interaction existed.

DISCUSSION

Corbin (9) in his study "Cross Sex Competition" found that high post competition state-anxiety levels are a function of the success-failure rate at the task. He concluded, contrary to Michener's conjecture, that the sex of the competitor does not serve as the main catalyst

of the perception of threat after a competitive situation. He suggests that other factors, both internal and external, may interact to cause a certain anxiety level. In examining the external factors, one must consider the subject's perception of the objective competitive situation (i.e., sex-role stereotype or value of activity), nature of the task, rewards, and social facilitation effects. Internal factors consisted of personality factors and age.

Of interest in this study was the social facilitation variable. A review of social facilitation literature revealed no direct evidence to suggest clear expectations concerning the outcome of this study. However, results reported by Zajonc (75) and Cottrell (12) suggest that audience conditions may create higher post competition state-anxiety levels in the subjects than the coaction conditions. One must note that most of these studies concerned decrements in performance rather than the explicit measuring of state anxiety levels. Zajonc and Cottrell differ in their conception of the role of the audience (i.e., Zajonc-mere presence vs. Cottrell-evaluation apprehension). Within Cottrell's evaluation apprehension theory, researchers vary in the role of the active audience. Schacter (58) and Kieffer (31) suggest in their research that an audience may serve as an anxiety reducer in the performer, while Cox (13), Ganzer (20), and Geen (22) suggest that an audience would serve to heighten anxiety.

In this study, there was no social facilitation effect or sex of confederate effect, nor was there a social facilitation X sex of confederate interaction. The relatively high post competition state-anxiety levels were a result of losing as opposed to treatment differences.

The grand mean for this study was 21.9 which is similar to the anxiety levels reported for subjects who lost. It is considerably higher than values reported for subjects who win. This suggests that the experiment treatments did create a heightened anxiety level in all subjects.

As noted earlier in this paper, males or females may differ in their post competitive responses as a result of internal or external factors. It was speculated that social facilitation, an external factor, might be responsible for heightened post competition state-anxiety and that the sex of the coactor or audience might be a factor. The results of this study suggest that for this task and these conditions, the presence or lack of an audience and the sex of the audience or the coactor do not affect post competition state anxiety levels. This supports Corbin's (9) findings who used a similar task. This does not mean that the type of the audience and the sex of the coactor and the audience may not be a factor under other conditions. For example, if the task was stereotyped as "male" in nature, as many sports tasks are, the post competition state anxiety levels might be different than those found in this study. Apparently for this task, the audience did not heighten the subjects' post competitive state anxiety levels as Zajonc (75) and others (12, 13, 20, 21) might suggest, nor did the audience "console" the subjects as Kieffer (31) and Schacter (58) suggest.

In future studies of this nature, it is suggested that a questionnaire be used to check the subjects' perceptions of the objective competitive situation. This would serve to check if the task had been predetermined as a sex-role stereotyped game, if the subject valued winning or losing the game, or if the subject's perception of the

audience was the same as the experimenter's desired role for the audience. Any one of these factors, or a combination of the three, could affect the results of similar studies. Further research will delineate these causes.

Michener's (48) claims of psychological harm induced by the defeat of a male by a female in public, questioned and refuted by Corbin, have further been tested by this study. This study supports Corbin's (9) findings that the sex of competitors in itself does not create high post competition state-anxiety levels. Furthermore, the induction of an audience into the competitive situation does not cause significantly different post competition state-anxiety levels. Therefore, Michener's claims appear unwarranted. One must reiterate Corbin's (9) emphasis that concern must exist for anyone who is defeated regardless of sex. Competition and its effects on state-anxiety level must be constantly evaluated.

Chapter 5

SUMMARY, CONCLUSIONS, RECOMMENDATIONS

SUMMARY

A conflict between Michener's (48) claims and Corbin's (9) findings concerning cross-sex competition and its effects suggested a need to investigate the relationship between cross-sex competition and social facilitation. The purpose of this study was to determine the effects of social facilitation (both coaction and audience) on the post-competition state-anxiety level of males defeated in a game of T.V. hockey. Comparisons of subjects exposed to different social facilitation treatments were made.

Sixty male Kansas State University students were randomly assigned to one of six treatments: male confederate-male audience, male confederate-female audience, male confederate-no audience, female confederate-female audience, female confederate-male audience, female confederate-no audience. The subject was defeated the first two games of a supposed three game match of the T.V. hockey game. After the defeat, the experimenter administered Martens' revised competitive short form (41) of Spielberger's STAI Form X-1 to the subject. In the audience conditions, the audience played the evaluation-apprehension role of a positive reinforcer to the confederate. The audience was composed of either one male or of one female. An analysis of variance revealed no significant differences in treatments, and no interaction.

CONCLUSIONS

As in Corbin's research (9), high post competition state-anxiety levels did not appear to be an independent function of the sex of the coactor. Also, social facilitation treatments did not produce significantly different state-anxiety levels between treatments.

These findings suggest that the role of the audience as a positive reinforcer to the confederate did not produce negative evaluation apprehension in the subjects. Though the audience did not serve to heighten anxiety neither did it comfort or console the true subject. It is possible that the use of a different task might have yielded different results.

Michener's (48) claims of psychological harm induced by the defeat of a male by a female in public, questioned and refuted by Corbin, have further been tested by this study. This study supports Corbin's (9) findings that the sex of competitors in itself does not create high post competition state-anxiety levels. Furthermore, the induction of an audience into the competitive situation does not cause significantly different post competition state-anxiety levels. Therefore, Michener's claims appear unwarranted. One must reiterate Corbin's (9) emphasis that concern must exist for anyone who is defeated regardless of sex. Competition and its effects on state-anxiety level must be constantly evaluated.

RECOMMENDATIONS

Further research in this area would be improved by using a questionnaire to evaluate the subjects' perception of the situation; by having a control cell of a non-social facilitation treatment; and by having other cells of different audience roles.

Researchers in this area need to investigate the various stereotypes of sport-related tasks and their possible interactions with cross-sex competition anxiety.

Researchers, educators, and parents need to concern themselves with the after-effects of competition and its interaction with social facilitation in light of psychological good or harm (i.e., state-anxiety level), as opposed to the present concern with only improving performance.

Social-psychologists and researchers should reevaluate and validate the use of current social facilitation theory created to explain improvements and decrements in learning and performance for explaining post performance states.

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APPENDIX 1

SELF-EVALUATION QUESTIONNAIRE

Developed by C. D. Spielberger, R. L. Gorsuch and R. Lushene

STAI FORM X-1

NAME _____ DATE _____

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you *feel* right now, that is, 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 best.

		NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
1. I feel at ease.....	①	②	③	④	
2. I feel nervous.....	①	②	③	④	
3. I feel comfortable.....	①	②	③	④	
4. I am tense.....	①	②	③	④	
5. I feel secure.....	①	②	③	④	
6. I feel anxious.....	①	②	③	④	
7. I am relaxed.....	①	②	③	④	
8. I am jittery.....	①	②	③	④	
9. I feel calm.....	①	②	③	④	
10. I feel over-excited and rattled.....	①	②	③	④	



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APPENDIX 2

CONSENT FORM

I agree to participate in this study concerning competition by playing the T.V. pong game and then taking a ten-question pen and paper test. I understand that my name will be in no way associated with the data from this experiment. I also understand that I may withdraw from the experiment at anytime.

name

date

SOCIAL FACILITATION AND CROSS-SEX COMPETITION ANXIETY

by

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B. S. Ed., Northwest Missouri State University, 1977

AN ABSTRACT OF A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Health, Physical Education and Recreation

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1978

The purpose of this study was to determine the effects of social facilitation (both coaction and audience) on the post competition state-anxiety level of males defeated in a game of T.V. hockey. An attempt was made to determine if differences existed in post competition state-anxiety levels between groups experiencing different audience conditions; to determine if differences existed in post competition state-anxiety levels between groups competing against opponents of the same and opposite sex; and to determine if an interaction existed between the two major variables, audience condition and sex of opponent, on the dependent variable post competition state-anxiety.

Sixty male Kansas State University students were randomly assigned to one of six treatments: male confederate-male audience, male confederate-female audience, male confederate-no audience, female confederate-female audience, female confederate-male audience, female confederate-no audience. The T.V. game, hockey, served as the task. The subject was defeated the first two games of a supposed three game match. After the defeat, the experimenter administered Marten's (41) revised competitive short form of Spielberg's STAI, Form X-1. In the audience conditions, the audience played the role of a positive reinforcer to the confederate. The audience consisted of either one female or of one male. An analysis of variance revealed no significant differences in treatments, and no interaction between variables.

The experimenter concluded that neither the sex of the coactor nor the social facilitation treatment produced relatively higher or lower state-anxiety levels. These findings supported Corbin's findings concerning cross-sex competition.