

## INFORMATION TO USERS

This reproduction was made from a copy of a document sent to us for microfilming. While the most advanced technology has been used to photograph and reproduce this document, the quality of the reproduction is heavily dependent upon the quality of the material submitted.

The following explanation of techniques is provided to help clarify markings or notations which may appear on this reproduction.

1. The sign or "target" for pages apparently lacking from the document photographed is "Missing Page(s)". If it was possible to obtain the missing page(s) or section, they are spliced into the film along with adjacent pages. This may have necessitated cutting through an image and duplicating adjacent pages to assure complete continuity.
2. When an image on the film is obliterated with a round black mark, it is an indication of either blurred copy because of movement during exposure, duplicate copy, or copyrighted materials that should not have been filmed. For blurred pages, a good image of the page can be found in the adjacent frame. If copyrighted materials were deleted, a target note will appear listing the pages in the adjacent frame.
3. When a map, drawing or chart, etc., is part of the material being photographed, a definite method of "sectioning" the material has been followed. It is customary to begin filming at the upper left hand corner of a large sheet and to continue from left to right in equal sections with small overlaps. If necessary, sectioning is continued again—beginning below the first row and continuing on until complete.
4. For illustrations that cannot be satisfactorily reproduced by xerographic means, photographic prints can be purchased at additional cost and inserted into your xerographic copy. These prints are available upon request from the Dissertations Customer Services Department.
5. Some pages in any document may have indistinct print. In all cases the best available copy has been filmed.

**University  
Microfilms  
International**

300 N. Zeeb Road  
Ann Arbor, MI 48106



EHRHORN, WILLIAM GRAY

DIFFERENCES IN PERSONALITY CHARACTERISTICS BETWEEN MEN AND WOMEN  
COMPETING AT THE NATIONAL LEVEL IN COLLEGIATE SWIMMING.

THE UNIVERSITY OF ARIZONA,

M.A., 1982

University  
Microfilms  
International

300 N. Zeeb Road, Ann Arbor, MI 48106



DIFFERENCES IN PERSONALITY CHARACTERISTICS BETWEEN  
MEN AND WOMEN COMPETING AT THE NATIONAL  
LEVEL IN COLLEGIATE SWIMMING

by

William Gray Ehrhorn

---

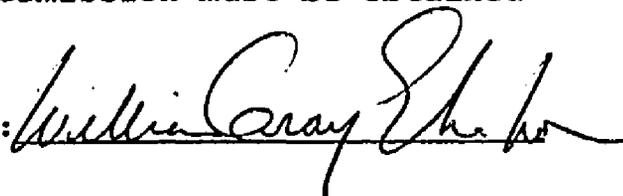
A Thesis Submitted to the Faculty of the  
COLLEGE OF EDUCATION  
In Partial Fulfillment of the Requirements  
For the Degree of  
MASTER OF ARTS  
WITH A MAJOR IN EDUCATIONAL PSYCHOLOGY  
In the Graduate College  
THE UNIVERSITY OF ARIZONA

1 9 8 2

STATEMENT BY AUTHOR

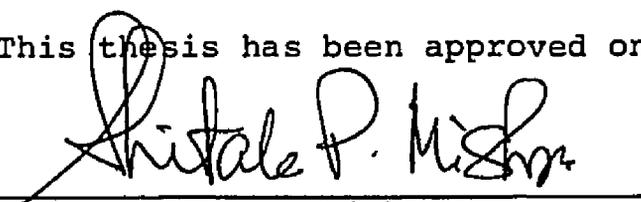
This thesis has been submitted in partial fulfillment of requirements for an advanced degree at The University of Arizona and is deposited in the University Library to be made available to borrowers under rules of the Library.

Brief quotations from this thesis are allowable without special permission, provided that accurate acknowledgment of source is made. Requests for permission for extended quotation from or reproduction of this manuscript in whole or in part may be granted by the head of the major department or the Dean of the Graduate College when in his judgment the proposed use of the material is in the interests of scholarship. In all other instances, however, permission must be obtained from the author.

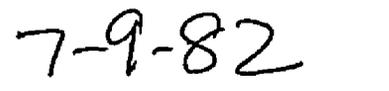
SIGNED: 

APPROVAL BY THESIS DIRECTOR

This thesis has been approved on the date shown below:



S. P. Mishra  
Professor of Educational Psychology

  
Date

## ACKNOWLEDGMENTS

Special gratitude and appreciation are extended to Dr. Shitala P. Mishra for his assistance, understanding, and support. Thanks also to Dr. Robert E. Calms for serving as a member of this thesis committee. Special thanks to Dr. Richard M. Jochums, who gave me the opportunity to fulfill a lifelong dream.

Thoughts of appreciation are extended to Dr. Keith E. Meredith for his assistance and insight into the statistical details of this study.

Many thoughts of love to my wife, Kelley, for the love, understanding, and confidence which ultimately made all this possible.

## TABLE OF CONTENTS

	Page
LIST OF TABLES . . . . .	v
ABSTRACT . . . . .	vi
1. INTRODUCTION . . . . .	1
Purpose of the Study . . . . .	2
Hypotheses . . . . .	2
Definitions of Terms . . . . .	2
2. REVIEW OF LITERATURE . . . . .	5
Peers and Their Influence on Performance . . . . .	7
The Coach-Athlete Bond . . . . .	7
Summary . . . . .	8
3. METHODOLOGY . . . . .	9
Sample . . . . .	9
Instruments . . . . .	11
Competitive State Anxiety Inventory . . . . .	11
Sport Competition Anxiety Test for Adults . . . . .	12
Procedure . . . . .	13
4. RESULTS AND DISCUSSION . . . . .	17
Results . . . . .	17
Discussion . . . . .	19
APPENDIX A: COMPETITIVE SPORT ANXIETY INVENTORY . . . . .	21
APPENDIX B: SPORT COMPETITION ANXIETY TEST FOR ADULTS . . . . .	23
SELECTED BIBLIOGRAPHY . . . . .	25

LIST OF TABLES

Table	Page
1. Sample Characteristics . . . . .	10
2. Returned Sport Competition Anxiety Tests . . .	15
3. Overall Scores . . . . .	18

## ABSTRACT

Previous research has shown significant relationships between sex type and anxiety, and their effects upon competition. This study analyzed such relationships using a sample of 100 national class collegiate swimmers. The trait anxiety levels and success orientation were measured using the Sport Competition Anxiety Test for Adults. State anxiety levels were assessed via the Competitive Sport Anxiety Inventory. The results revealed that men have a lower trait anxiety level and a higher state anxiety level than do women. It was also found that males are more individualistic in their orientation toward success than are females.

## CHAPTER 1

### INTRODUCTION

With the development of Title IX (of the Educational Amendments of 1972) for women's athletics, it is apparent that women's swimming careers are becoming longer. Much like their male counterparts, women are now swimming competitively up to and past the age of 22.

Many college swimming programs have a common coach for both the men's and the women's swim teams. To be a successful coach in the realm of swimming, it is imperative to understand differences in the personality characteristics between the two sexes. This understanding will assist the coaches of both men's and women's swim teams to develop effective and successful programs and to enhance the swimmers' ability to reach their full potential.

An important factor bearing on their performance is the swimmer-coach coalition (Bergin, 1978). The swimmer-coach coalition assumes that the personalities of both the swimmer and the coach are important aspects in the process of effective coaching. It is the job of this coalition to produce an "ultimate swim."

### Purpose of the Study

The purpose of this study was to assess the differences in the personality characteristics of men and women competing at the national level in collegiate swimming.

### Hypotheses

This study tested the following hypotheses at the .01 level of significance:

1. There will be no significant difference in trait anxiety levels of males and females competing at the national level in collegiate swimming as measured by the Sport Competition Anxiety Test (SCAT).

2. There will be no significant difference between male and female swimmers in state anxiety levels as measured by the Competitive Sport Anxiety Inventory (CSAI).

3. There will be no significant difference in success orientation (individual vs. team) of males and females competing in collegiate swimming at this level as measured by the Sport Competition Anxiety Test (SCAT).

### Definitions of Terms

Collegiate Swimmer: A person competing in a Division I university-level collegiate swimming program, abiding by the rules set up by the National Collegiate Athletic Association (NCAA) and the Association of Intercollegiate Athletics for Women (AIAW).

Success: The ability to place in the finals (fastest six in the NCAA Swimming and Diving Championships and the fastest eight in the AIAW Swimming and Diving Championships) in any particular event.

Dependency: There are two kinds of dependency in this study. One is the dependency of the swimmer on the coach, the need of strong guidance and support. The other is the dependency of swimmers on each other, their teammates. This is a "pulling together" to help each other strive for a common goal.

Title IX: A portion of the Educational Amendments of 1972 which forbids discrimination on the basis of sex in educational programs or activities which receive federal funds.

Distance Freestylers: Those swimmers whose specialty would be the 500, 1000, and 1650 yard freestyles in short course, and 400, 800, and 1500 meters in long course.

Middle Distance Freestylers: Those swimmers who specialize in the 200 and 500 freestyles in short course and 200 and 400 meters in long course.

Sprint Freestylers: Those swimmers who specialize in the 50, 100, and 200 yard freestyles in short course and 50, 100, and 200 meters in long course.

Short Course: The winter swim season, where competition is held in a 25-yard pool. The season lasts from September through March.

Long Course: The summer swim season, from April through mid-August, where competition is held in a 50-meter pool.

Anxiety:

a. Trait Anxiety is regarded as a behavioral disposition an individual possesses which causes him or her to perceive objectively non-dangerous things as threatening.

b. State Anxiety is a transitory emotional state of tension and apprehension varying in intensity for the individual who perceives a situation as threatening.

Aggression: A mode in which the individual is vigorously energetic, especially in the use of initiative and forcefulness; to be boldly assertive.

ASCA: American Swimming Coaches Association.

Social Price: The actions of an individual that do not fit the sex-stereotyped roles; therefore, the society does not offer any encouragement and may use some form of ostracism.

National Class Swimmer: A swimmer who has risen to the top echelon of swimming, to be placed among the top six swimmers in the country in any particular event.

Swimmer-Coach Coalition: A relationship which develops through the hardships, stresses, and successes in situations that are shared by the coach and the athlete.

Ultimate Swim: The moment or particular race in which the swimmer has actualized full potential.

## CHAPTER 2

### REVIEW OF LITERATURE

Successful athletes possess superior mental and emotional health (Morgan, 1980). They score well below average in tension, depression, fatigue, and confusion. Ogilvie and Tutko (1966), in analyzing the results of a test administered to 27 Olympic swimmers, suggested that swimmers score above average in the need to be the best performer, the need for attention and acclaim, the need for freedom, and in self-direction. Thus, "certain psychological traits are needed by both the male and female for success in sports. It has been noted that characteristics like aggression, motivation to achieve, and determination are some of the variables that contribute to an athlete's ability to perform psychologically well in a competitive situation" (Neal, 1975).

According to Glazer-Malbin (1977), women are taught from birth to be passive and dependent. The female who breaks away from this stereotype by being goal-oriented and independent usually ends up by paying the social price.

The ability to compete has always depended on how important the competition is to the individual. The nature of such competition demands sacrifices, discomfort, and pain.

To deal with these stressful situations, women typically seek the assistance of close friends, parents, and coaches. "Society still doesn't provide as much external reinforcement, such as encouragement for women in their quest for athletic excellence, as it does for men" (Remley, 1980).

#### Peers and Their Influence on Performance

Men, on the average, are not concerned with the attitude of others concerning their performance. Contrary to this, women, however, feel that how others perceive their performance has an enormous impact on their athletic performance. Females are more sensitive than males to peer acceptance. "Rather than first being themselves, they're a bit more aware of their friends and what their friends think of them" (Bergin, 1978).

Women additionally find the social aspect of competition very rewarding. Identifying with a peer group in which they have the freedom of developing physical potential yields an extremely strong bond of friendship.

Females are motivated to achieve primarily in areas related to interpersonal relations. The female's efforts to achieve are primarily motivated by the desire to please others, so regardless of the area of achievement they care about praise and approval for their performance, whereas males are more motivated by intrinsic interest of the task (Maccoby and Jacklin, 1974).

One personality characteristic often considered to be important for athletic excellence is aggression. Haines (1976), for example, found that there was a significant

difference in state anxiety levels of male and female athletes. Such a pattern of findings led to the contention that male athletes experiencing higher anxiety levels seem to be more success-oriented. Female athletes, on the other hand, felt no pressure to succeed. However, when trait anxiety was measured, the data of 275 swimmers showed that females were found significantly higher than males across all age groups. It is thought that there are some psychosocial reasons for this discrepancy.

#### The Coach-Athlete Bond

The coach and the athlete share a unique bond in life relationships. Often, the coach's influence is even greater than the parent's (Haines, 1976). Coaches can instill external motivation, knowledge, and discipline. The athlete, though, is the one who has to perform. This performance, however, is to a great extent the reflection of the coach and his abilities to provide effective training. Therefore, when a competition arises, both the coach and the athlete are put to the test.

Cratty (1975) found that the personality of the male coach training females that is most likely to work is that of authoritarian type. The women are looking for a coach who is firm. In many cases they are looking for advice. Coaches as authoritarian figures often fill the void of a less strong father figure. This "father/god" image allows

the male coach to train females as he would a male, pushing them to do their best. These facts, along with society's reluctance to accept the female athlete, develop a relationship between the male coach and the female athlete that is unreplicable.

#### Summary

The way that society molds males' and females' personalities has a marked impact on their styles of achieving success. Males who are raised in our culture to be aggressive and independent carry these qualities over to their athletic tasks and performances. This supports the thought that males are less conscious of "the team" aspect and more aware of individual success. Females, on the other hand, have been brought up to be dependent and hold the misconception that participation in sports masculinizes them. In athletics, women are more dependent upon their coach and their peers in the sports arena for support and encouragement, aspects that society has yet to produce in the same quality and quantity as for men in athletics. The coach-athlete bond is a unique relationship due to the pains and sacrifices the athlete endures. This bond is seen as being strongest between the male coach and the female athlete.

## CHAPTER 3

### METHODOLOGY

The purpose of this chapter is to describe the methodology of the present study. Included in this section will be a description of the sample, the instruments, and the procedures.

#### Sample

One hundred national class swimmers were asked to participate in the study. The swimmers were selected from the top five teams in the men's, National Collegiate Athletic Association, and women's, Association of Intercollegiate Athletics for Women, swimming and diving championships. A purposive sampling method was used; therefore the selection of the sample was not at random. All sampling was on a voluntary basis and was conducted in the spring of 1981.

Female. The top five women's teams completing the tests were: University of Texas, Stanford University, University of North Carolina, Arizona State University, and the University of Florida. The mean ages for the women participating on these teams were 19.7, 19.0, 19.2, 19.1, 18.9 years of age, respectively. The mean age for all the women in the sample was 19.2 years old.

Male. The top five men's teams included: University of Texas, University of California at Los Angeles, University of Florida, Southern Methodist University, and Auburn University. The mean ages of the men's teams participating in the sample were 20.9, 21.0, 20.5, 19.9, and 21.2, respectively.

The coach from each team was asked to select the ten best swimmers on his swimming team to participate. The respondents included 50 males and 50 females. The ages of all the subjects ranged from 17 to 22, with the mean ages being 20.6 and 19.2 for men and women, respectively. Table 1 shows the sample characteristics by source.

Table 1.  
Sample Characteristics

Source	Number	Males	Females	Mean Age	
				Males	Females
Texas	20	10	10	20.9	19.7
Florida	20	10	10	20.5	18.9
UCLA	10	10	--	21.0	--
SMU	10	10	--	19.9	--
Auburn	10	10	--	21.2	--
Stanford	10	--	10	--	19.0
UNC	10	--	10	--	19.2
ASU	10	--	10	--	19.1
TOTAL	100	50	50	20.6	19.2

### Instruments

Two instruments were used for the collection of data in this study. The first device used was the Competitive State Anxiety Inventory (CSAI). The CSAI was developed by Martins (1976) to determine exactly how a person feels just before a major competition, the state anxiety level one reaches. The second instrument which was administered was the Sport Competition Anxiety Test for Adults (SCAT), also developed by Martins (1976). The SCAT was used to determine how a person usually feels when he or she competes in sports, the level of trait anxiety.

#### Competitive State Anxiety Inventory (CSAI)

The CSAI (Martins, 1976) is designed to determine the state anxiety level that a person reaches immediately before a major competition (Appendix A). The first part of the Inventory contains directions regarding the procedures to be used in responding to the questions. Additionally, the directions emphasize the confidentiality of subjects' responses to test items. Also the subjects are told that there are no right or wrong answers. The subjects were advised that the results would be released to their coaches on or before August 1, 1981.

The second part of the Inventory contained nine items from Spielberger's State Anxiety Inventory which appear to be the most sport-specific. The test included only one

response type, which asked the subjects to blacken in the response which best applied at that given moment.

The first section of the Inventory established name, sex, age, and date. The other section pertained to the measuring aspect of the state anxiety level. These items included measures related to how the subjects feel just before competing: nervous, comfortable, secure, anxious, calm, at ease, tense, relaxed, or jittery. The four various aspects of the state anxiety level that were used as predictor variables in this study were the degrees of nervousness, calmness, tenseness, and anxiousness.

The CSAI was evaluated for reliability and validity by Martins (1976). The findings indicated that reliability coefficients range from a low of .85 to a high of .92. The validity coefficients range from .83 to .96.

#### Sport Competition Anxiety Test for Adults (SCAT)

The Sport Competition Anxiety Test--Form A of the Illinois Competition Questionnaire (Martins, 1976)--was used to measure how a person usually feels when he or she engages in competitive sports (Appendix B). The test included basic instructions for completing the test, followed by 15 questions, each with three possible responses. The response options are not to be scored as right or wrong, but are designed to describe how a person usually feels when competing in sports.

The SCAT determined the trait anxiety level that the subjects possess. The factors used to determine these anxiety levels included: good sportsmanship, goal setting, relaxed vs. tense before a competition, and worrying about performance.

A portion of the SCAT (SCAT-sub) was also used to determine the type of orientation toward success the subjects possessed, individual or team. The factors used as predictor variables were competition being socially enjoyable and team sports vs. individual sports.

The reliabilities for the SCAT range from .81 to .95, and the validities range from .84 to .95 as reported by the Human Kinetics Inc. (Martins, 1976).

#### Procedure

The primary Inventory administered was the CSAI, on the first day of the NCAA and AIAW Swimming and Diving Championships. The introductory statements were read to the subjects, who then completed the Inventory. They recorded their responses to the CSAI directly on the form.

The SCAT was mailed to the coaches to be administered to the selected athletes one week after the last day of the competition. The coaches were verbally instructed to read the directions of the SCAT to the subjects and to have them respond directly on the test. The coaches were instructed to then mail the completed tests back to the

tester in a given stamped and self-addressed envelope. The return percentage was a surprising 75 percent. Table 2 summarizes the number of returned tests from various testing sites.

Each inventory included an identification number which allowed for the two separate instruments and the two sets of subjects to be correlated. This number also provided for an identification as to place of origin of the data. All of the subjects completed the Inventories in less than five minutes.

The raw scores were obtained by attaching a score of one for the response "hardly ever," two for "sometimes," and three for "often" on the SCAT. The raw scores for the CSAI were obtained in the same fashion, by attaching a score of one for the response "not at all," two for "somewhat," three for "moderately," and four for "very much so."

The person scoring low on the SCAT indicates a low trait anxiety level. A low score on the SCAT is indicative of the fact that such a person tends to be calm, relaxed, and confident. A high-scoring person, on the other hand, tends to be anxious, nervous, and/or concerned with what others think about him or her.

People who score low on the CSAI tend not to get nervous or anxious before competition. Generally they feel that the competition is not very important. Those who score high see the situation as threatening and feel it is

Table 2.  
Returned Sport Competition Anxiety Tests

Source	Number Given		Number Returned	
	Male	Female	Male	Female
Texas	10	10	10	10
Florida	10	10	7	10
UCLA	10	--	5	--
SMU	10	--	5	--
Auburn	10	--	7	--
Stanford	--	10	--	10
UNC	--	10	--	3
ASU	--	10	--	7
TOTAL	50	50	35	40

necessary to come out the victor. Persons who score low on the SCAT-sub tend to be more individualistic in their orientation towards success. In contrast, a high score indicates a team orientation.

All the information was transferred onto IBM cards and was analyzed by the correlational programs included in the Statistical Package for the Social Sciences (SPSS). The variables entered into the program were school, sex, and the scores on SCAT, CSAI, and SCAT-sub.

## CHAPTER 4

### RESULTS AND DISCUSSION

This chapter is devoted to the discussion of the obtained results and to substantiating the previously stated hypotheses in light of the obtained results.

#### Results

Table 3 summarizes the obtained findings. It is evident from reviewing the data that there is a significant difference in personality characteristics of men and women competing in collegiate swimming at the national level. The data indicated that male athletes respond to the stress presented by competition differently than do female athletes. Male athletes scored significantly higher on the state anxiety test with a mean of 29.60 as compared to their female counterparts, whose average score on this test was 28.18. Females, on the other hand, scored higher on the train anxiety scale with a mean of 35.33 than did males ( $\bar{x} = 31.39$ ). Women also had a mean score of 6.10 as compared to men, who averaged 4.88 on the SCAT-sub. This data indicates that women seem to be more team-oriented toward success than are their male counterparts.

Table 3.  
Overall Scores

Combined Sample	$\bar{x}$	SD
SCAT	31.39	6.48
SCAT-Sub	5.54	1.38
CSAI	25.18	5.21
-----		
Male *		
-----		
SCAT	26.77	.81
SCAT-Sub	4.88	.21
CSAI	29.60	.42
-----		
Female *		
-----		
SCAT	35.33	.79
SCAT-Sub	6.10	.20
CSAI	20.76	.36

\*Differences between males and females on these three tests were found to be significant at the .01 level.

### Discussion

The major finding of this study indicated that there is a significant relationship between sex type and anxiety, and their effects upon competition. This finding is consistent with previous research studies by Bergin (1978) and Maccoby and Jacklin (1974).

Although all relationships were found significant, the correlation between sex type and success orientation was surprisingly low. A possible reason for this inconsistency may be the small number of questions used as variables. This process of consolidating has a tendency to broaden the characteristics of the traits being studied. This in turn makes them more encompassing. In other words, the fewer and less specific the traits, the more they represent the general personality.

Another implication of the results may be the limitation of the instructions for the SCAT-sub test. Being a part of the overall trait anxiety test (SCAT), the SCAT-sub fell under the same general instructions. Although they are within one test, the SCAT and SCAT-sub measure different personality characteristics. Therefore, having one set of instructions for two different tests may have reduced the possible relationship between sex type and success orientation.

The results of this study can be of value to parents, swimmers, educators, psychologists and coaches by providing

the knowledge that sex type may very well affect certain aspects of coping with stress that will arise through competition.

APPENDIX A  
COMPETITIVE SPORT ANXIETY INVENTORY

**PLEASE NOTE:**

Copyrighted materials in this document have not been filmed at the request of the author. They are available for consultation, however, in the author's university library.

These consist of pages:

22

---

24

---

---

---

---

---

**University  
Microfilms  
International**

300 N Zeeb Rd., Ann Arbor, MI 48106 (313) 761-4700

APPENDIX B  
SPORT COMPETITION ANXIETY TEST FOR ADULTS

## SELECTED BIBLIOGRAPHY

- Bergin, Paul. "Coaching Girls, or How to Grow Grey Fast." American Swimming Coaches Association World Clinic Yearbook, Ft. Lauderdale, Fla.: ASCA, 1978.
- Butt, Dorcas. Psychology of Sport. New York: Van Nostrand Reinhold Company, 1976.
- Cratty, Bryant. Learning About Human Behavior Through Active Games, Englewood Cliffs, N.J.: Prentice Hall, 1975.
- Glazer-Malbin, Nola. Women in a Man-Made World. Chicago: Rand-McNally Company, 1977.
- Haines, George. "A Post-Olympic Evaluation of American Coaching." American Swimming Coaches Association World Clinic Yearbook, Ft. Lauderdale, Fla.: ASCA, 1976.
- Hogg, John. "Competitive Anxiety and the Swimmer." American Swimming Coaches Association World Clinic Yearbook, Ft. Lauderdale, Fla.: ASCA, 1978.
- Jackson, Charles, and Jackson, Christina. "Sex Gap in Swimming Performance Narrows." Swimming Technique 16 (Spring, 1979), 21-24.
- Maccoby, Eleanor, and Jacklin, Carol. The Psychology of Sex Differences. Stanford: Stanford University Press, 1974.
- Martins, Rainer. Sport Competition Anxiety Test, Champaigne, Ill.: Human Kinetics Publishers, 1976.
- Martins, Rainer. Competitive State Anxiety Inventory, Champaigne, Ill.: Human Kinetics Publishers, 1976.
- Morgan, William. "Test of Champions: The Iceberg Profile." Psychology Today 14 (July 1980), 92-108.
- Neal, Patsy. Coaching Methods for Women. Philippines: Allison Wesley Publishing Company, Inc., 1969.
- Neal, Patsy, and Tutko, Thomas. Coaching Girls and Women. Boston: Allyn and Bacon, Inc., 1975.
- Ogilvie, Bruce and Tutko, Thomas. The Problem Athlete and How to Handle Them. London: Pelham, Inc., 1966.

Remley, Mary L. Women in Sports. Detroit: Gale Research Company, 1980.

Richardson, Pokey. "Women's Intercollegiate Swimming in 1976-1977." American Swimming Coaches Association World Clinic Yearbook, Ft. Lauderdale, Fla.: ASCA, 1978.

Singer, Robert. Coaching, Athletics, and Psychology. New York: McGraw-Hill Company, 1972.

Ward, Nancy. "Motivational Psychology for Coaches." Swimming Technique 16 (Winter 1980), 25.