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THE PERCEIVED COMPETENCE OF COMPETITIVE SWIMMERS AS DEFINED BY THE COMPETITIVE SWIMMING SELF-COMPETENCY QUESTIONNAIRE

BY

MARIAN JOHNSTON 

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FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled "The Perceived Competence of Competitive Swimmers as Defined By theCompetitive Swimming Self-competency Questionnaire" submitted by Marian Johnston in partial fulfilment for the degree of Master of Arts.

J M Hogg
(Supervisor)

Date: October 4, 1989

DEDICATION

To my mother and father (Homie and Dori) for sharing their lives and visions.

ABSTRACT

Competitive Swimming provides a unique opportunity to study the perceived competence of young athletes due to the distinct demands that are placed on the individuals within the cognitive, social, physical and self-esteem domains, as defined by Harter (1978). Through the use of the "Competitive Swimming Self-competency Questionnaire", derived from Harters' (1978, 1982) "Perceived Competence Scale" it is possible to examine closely the perceived competence of competitive swimmers.

The initial purpose of this study was to investigate the relationships that exist as a result of age, gender and level of achievement from the scores of the Competitive Swimming Self-competency Questionnaire. A second purpose was to determine the reliability and feasibility of the Competitive Swimming Self-competency Questionnaire as a measuring instrument. Lastly, the study offered an opportunity to evaluate the simularities and differences within and between the individual domains of cognitive, social, physical and self-esteem.

The Competitive Swimming Self-competency Questionnaire was administered to male and female Alberta swimmers 11 years of age and older (n=266).

The statistical analysis revealed that the most influential variable in relation to the perceived competence of competitive swimmers is level of achievement. Gender was a significant factor within the physical and self-esteem domains. However, age was not an influential factor in the perceived competence of competitive swimmers.

The Competitive Swimming Self-competency Questionnaire, while perhaps still needing further refinement and testing, was found to be useful in determining the perceived competence of competitive swimmers.

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To the swimmers and coaches who participated in this study, my sincere thanks.

I owe more than I can put into words to my family and friends, for their support, guidance, patience and encouragement has been extraordinary.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

In recent years the notion of perceived competence has become a topic of discussion in youth sport research. Researchers have increasingly found perceived competence to be an extremely useful concept when trying to assess an individual athlete's own perception of his/her particular competence within a specific sport. The concept of perceived competence is defined, within this study, to be a competitive swimmer's perception of his/her individual abilities within the defined domains of cognitive, social, physical and self-esteem.

Perceived competence is a concept that has been redefined and adapted for applied use in psychology. The Perceived Competence Scale as defined by Harter (Harter, 1979,1982) has been modified many times in order to test various populations such as mentally handicapped and physically awkward children. This goes beyond the initial scope of Harter's Perceived Competence Questionnaire (Harter,1979; Harter and Silon, 1985). The questionnaires that have been adapted for use in the sports setting have only required changes in the physical and social subscales, as used in Harter's questionnaire, to fit a particular population. Remaining scales within Harter's questionnaire have either not been used or were not specifically adapted in these studies. The questionnaire designed for use in the present study utilizes Harter's format but has been adapted to meet the various physical, social, cognitive and self-esteem demands that might relate to the needs of competitive swimmers, assuming that competitive swimming has many and varying demands that are particularly exclusive to the sport. Thus the questionnaire, while based on Harter's original, is both adapted for and targeted to the unique demands of the competitive swimming population.

The aim of this study was to find what relationships existing among the variables directly affect the perceived competence of a select group of competitive swimmer.

Statement of the Problem

The principal purpose of this study was to determine whether relationships exist as a particular function of age, gender and level of

achievement established by the Competitive Swimming Self-competency Questionnaire.

Sub-problems: In this connection two sub-problems exist:

1. To determine whether the competitive swimmer's questionnaire can be a reliable and feasible testing instrument for measuring perceived competence.

2. To evaluate the specific differences within and among the various scores of each of the four subscales: physical, cognitive, social and self-esteem.

Purpose

The main purpose of this study was to examine whether relationships may exist among and within the defined independent variables of gender, age and level of achievement with particular reference to the competence scores as devised from the four subscales. If it is possible to determine what relationships exist, then one may have a useful tool to diagnose the problems within an individual competitive swimmer's perceived competence profile. Parents, coaches, researchers as well as educators could strive to enhance the perceived competence of any competitive swimmers who have unfavorable evaluations which are reflected in a score which is either too low or too high on one or all of the subscales.

A secondary purpose of this study was to test the feasibility and reliability of the Competitive Swimming Self-competency Questionnaire.

Predictions

1. It was hypothesized in accordance with other previous studies (Horn and Hasbrook, 1987; Feltz and Brown, 1984), that level of achievement would be a significant factor in accounting for any differences that may occur between the various perceived competence scores of the individual swimmers.

2. Previous research (Feltz and Petlichkoff, 1983) has indicated that the perceived competence scores of females tend to be lower than the perceived competence scores of males; therefore a gender difference was predicted within this study.

3. Finally, it was hypothesized that the age of competitive swimmers will not be a factor of any significance in their perceived competence. Feltz and Brown (1984) found no differences among age groups across all the subscales.

Justification of the Study

A frequent research topic in the recent sport motivation literature concerns the importance of the perceived ability of individual athletes as a significant predictor of both performance and behavior in the athletic environment. Several writers (Weiss, 1983; Roberts, Kleiber and Duda, 1981) have suggested that the evaluations or judgements that individual athletes form concerning their personal competence in their particular sport can significantly affect their individual performances, their achievement behaviors, such as motivation, task persistence, and anxiety and their affective reactions to their performance outcomes.

The importance of perceived competence as a significant predictor of individual behavior in various athletic endevours has been investigated by many researchers (Roberts et al. , 1981; Vallerand and Reid, 1984; Horn, 1983). Comparatively little research has been done to determine what relationships exists between or among specific populations in various sports. Several researchers have studied the concept of perceived competence in a global sense (Harter, 1978,1979, 1981, 1982; Horn, 1985; Feltz and Petlichkoff, 1983) but few have looked at perceived competence in the specific sense as applied to a sport (Feltz, 1984; Feltz and Brown, 1984). This study assumes that feelings of perceived competence in particular individuals will vary across several domains. Competitive swimming places a unique set of demands on the athlete across all the domains as advocated in Harter's theory.
These unique demands include:

a) Extrinsically motivated techniques of coaches to promote excellence devoid of a feeling or awareness of the child's need for a sense of "competence" and self-determination.
b) Lack of opportunity for free interaction due to the independence required during training alone in the water.
c) Emphasis placed heavily on the need for discipline, perhaps at the expense of the more intrinsically rewarding attractions of informal versions of similar activities.

(Watson, Blanksby and Bloomfield, 1984)

Thus, in this specific swimming situation, the assumption is that competitive swimmers develop an internal set of performance criteria or standards which can be used in subsequent competitive swimming situations. Swimmers are also able to make various independent judgements of their skill competencies.

This study has set out to establish what relationships do exist between the perceived competence of the competitive swimmers and the independent variables of age, gender and level of achievement when addressing the many specific demands the competitive swimming environment places on these young athletes.

Delimitations

The sampling of subjects was limited to 266 competitive swimmers 11 years of age and older, currently swimming competitively with a year-round swim club within the province of Alberta.

Limitations

1. On any given day a swimmer's attitude, mood, anxiety levels and other personal variables will directly affect responses to any self-report measure such as the Competitive Swimming Self-competency Questionnaire.

2. Complete understanding of the questionnaire procedures by the swimmers and coaches is mandatory with regard to the correct interpretation and delivery of the questionnaire.

3. The questionnaire's accuracy is dependent upon the honest responses from the subjects.

4. The credibility of the results is dependent on the assumption that the questionnaire measures with validity (Hughes, 1984).

5. Some of the independent variable categories (e.g. 11-12 year old females at the national level of achievement) had no available subjects.

6. The word changes that exist between the 11 to 12 year old questionnaire and the 13 years of age and older questionnaire may alter the response given by the subjects and accordingly could diminish the reliability and the validity of the questionnaire. These minor word changes were made to accommodate differences in comprehension levels that may be associated with age.

7. Since this is only an exploratory questionnaire the data has certain limitations in terms of validity and reliability.

Definitions of Terms

Competence Motivation- " An organism's capacity to interact effectively with the environment" (White, 1959; page 297).

Social Competency- The swimmers' perception of their social skills specific to the demands of the competitive swimming environment.

Cognitive Competency- The swimmers' perception of their ability to deal with problems and situations that require cognitive skills within the competitive swimming environment.

Physical Competency- The swimmers' perception of their physical abilities as they relate to the physical requirements of competitive swimming.

Self-esteem- The value competitive swimmers place on their success, capabilities, values, aspirations and self-concept within the competitive swimming context. This evaluation is a reflection the individual specifically as a competitive swimmer.

Perceived Competence- The notion that one has the ability to demonstrate specified knowledge, skills and attitudes at a certain level of achievement and under given conditions. (Feltz and Petlichkoff, 1983; Harter, 1981; Roberts, Kleiber and Duda, 1981).

Global Self-esteem- The evaluation which the individual makes and customarily maintains with regard to the self; it indicates the extent to which the individual

believes himself to be capable, significant, successful and worthy (Coopersmith, 1967).

Athletic Self-esteem - " Rosenberg's definition of self-esteem can be interpreted as the degree to which individuals respect their sporting skills, and consider themselves worthy in the face opposition while recognizing their own strengths and weaknesses" (Hogg, 1982, page 49).

CHAPTER 2

REVIEW OF LITERATURE

Introduction

Recent theory and research found in sport psychology literature illustrates the importance of the perceived level of achievement in performance. Various writers (Harter, 1981; Roberts, 1984) predict that the perception of personal competence will significantly affect any performance outcome. This hypothesized relationship of performance to perceived competence is one of the questions this study addresses. Other variables discussed that may affect the perceived competence levels in young athletes are age and gender. These variables were chosen because previous studies provide mixed results as to whether or not they influence perceived competence.

A discussion of perceived competence in the current research as well as the basic theory underlying the concept will help clarify the hypotheses to be tested within this study. While the research in these areas often takes quite different forms, the common thread of concern is the relationship between the perceived competence of the subjects and influential performance factors such as age, gender and level of achievement.

Perceived Competence- An Overview

A more recent approach to motivation theory employs a developmental interpretation of White's Mastery of Competence Model (Harter, 1979,1981). Competence motivation leads an individual to deal effectively with the problems encountered within environment and, in so doing, to engage in mastery attempts - the actions leading to competence in a skill or task.

If a mastery attempt is successful, the individual experiences feelings of inherent pleasure or efficacy. The perceived outcome will in turn maintain or increase competence motivation for the task at hand. Mastery, curiosity, challenge and play are all viewed as activities in which the individual's urge toward competence is satisfied by feelings of intrinsic pleasure.

Over the last decade Harter and her colleagues (Harter, 1978, 1979, 1981, 1982; Harter and Connell, 1982, 1982) have reconceptualized the components of White's (1959) original model. Harter's theoretical framework is thus especially well suited for the study of youth sport participants (Weiss and

Bredemeier, 1983). The tenets of Harter's competence motivation theory emphasize developmental changes and individual differences. Interrelationships among these constructs distinguish her model from other motivational models.

Effectance Motivation

White (1963) stated that behaviors such as exploration, curiosity, mastery, play and a general attempt to deal competently with one's environment all manifest an "urge toward competence" as a motive which impels the organism toward competence and is to be satisfied by a feeling of efficacy. In White's (1963) presentation he seemed to vacillate between labelling this new construct as competence motivation or effectance motivation. This researcher has adopted the term effectance motivation due to its more descriptive qualities that relate to several facets of the motive: a) the organisms' desire to produce an effect on his/her environment, b) the added goal of dealing effectively with the environment, c) the resulting feelings of efficacy.

According to White's basic model, effectance motivation impels the individual to engage in mastery attempts. Success or competence with these attempts brings feelings of efficacy or pleasure to the individual, thus increasing or maintaining the level of effectance motivation. The individual is continuously interacting with his/her immediate environment and thus adapting to improve the interaction with the environment.

However, White's initial concept of effectance motivation does not present a theoretical framework that is testable . Effectance motivation is too global, too imprecise. Although it has good explanatory value it needs to be elaborated and redefined in order to provide empirically testable hypotheses. Harter (1978) took White's (1963) original model and attempted to present a workable conceptual model in the developmental mold.

Perceived Competence- A Developmental Model

Harter (1978) redefined , extended and elaborated White's (1963) concept of effectance motivation to bring forward a new framework that she proposed to be more comprehensive and testable, while at the same time maintaining the concept of effectance motivation as a central focus.

The considerations by which Harter formulated the new model are summarized as follows:

a) Effectance motivation should not be viewed as global and unitary but as having components with a developmental framework, which describe both the structure and content of the motive system.
b) The implications of success and failure are both examined as to their influence on the components of effectance motivation.
c) Success derived from a mastery attempt will result in a feeling of efficacy or well being. Successful mastery attempts that provide an optimal degree of challenge produce the greatest sense of satisfaction.
d) The role of socializing agents in one's environment should be a major consideration due to their effect in maintaining, enhancing or attenuating the components of effectance motivation; a search for the antecendents and/or determinants of this motive system will elucidate changes that may occur in its strength or structure. In considering the effect of the reinforcing agents in one's socialization history, attention should be directed to the various functions of these rewards, and how they affected this motive system.
e) A developmental consideration of reinforcement over time elucidates the process by which children internalize both a self-reward system and a set of mastery goals.
f) Extrinsic motivation must also be considered as well as the relative strength of intrinsic versus extrinsic motivational orientations.
g) Attention must also be given to such constructs as one's perceived competence or self-esteem and one's perception of locus of control; these would appear to be important consequences as well as mediators of one's motivational orientation.

A review of Harter's model of perceived competence confirms that the concepts of White's theory are the central focus. With Harter's (1978) component model, researchers using White's thesis are now able to ask more precise developmental questions. Harter's model enables researchers to

examine the cognitive, social, and physical domains within a child's life and the effects these domains have on mastery attempts.

Harter's model includes the effects of failure and success on the mastery attempts and the interaction of these two effects. Because of its simplicity, the model enables one to see the basic concept, the interaction of failure and success.

The effects of a child's socialization history are also acknowledged within Harter's (1978) model. The role of negative reinforcement is illustrated on the right side of Harter's (1978) model; the role of positive reinforcement on the left. Harter has acknowledged an important developmental distinction of the dependency of very young children on the significant adults in their lives. Although older youths are obviously not impervious to adult evaluation, studies such as Harter's (1978) have suggested that they internalize standards of success and failure and utilize these intrinsic norms in making their judgement in conjunction with social reinforcement. Harter (1978) extended this general concept by discussing implications for development:

> The argument to be advanced is that with sufficient positive reinforcement for independent mastery attempts during early childhood, the child gradually internalizes two critical systems, a self-reward system and a system of standards or mastery goals (p. 50).

Harter also explains that one should not expect to find individuals capable of existing without any external reinforcement, but, alternatively, such individuals are seen as being able to operate with a relatively thin schedule of reinforcement.

Harter's (1978) model postulates that an individual's reinforcement history has particular implications for his/her sense of control.

> The evaluative function of reward was highlighted as a particularly critical determinant of the child's self-esteem, that is, positive evaluation of performance not only paves the way for the internalization of an approving voice or self-reward system, but also enhances the child's own feelings of competence or self-esteem. Negative evaluative statements would have the converse effect (p. 57).

Therefore, it would appear that the combination of perceived competence or high self-esteem and an internal perception of control should in turn enhance the child's feeling of efficacy or intrinsic pleasure. Thus, perceptions of competence serve as important mediators in maintaining, if not increasing, effectance motivation. In contrast, the combination of low self-esteem or perceived lack of competence and an external perception of control should lead to anxiety in mastery situations and should decrease one's effectance motivation.

Harter assumes that individuals do not feel competent to the same degree in everything that they do. A major contention of Harter's is that the constructs of self-esteem and perceived competence must be viewed as distinct and must be measured as such. Thus, in keeping with her domain philosophy- that people view themselves at varying levels of competence depending on the task- Harter devised a scale to tap into the most relevent skill domains in a child's life, namely a) cognitive competence, b) social competence, and c) physical competence. In addition a fourth scale was developed to estimate the child's global self-esteem. In the decision to include the self-esteem scale Harter (1980) contends that there are children who do not see themselves as competent but nevertheless still feel good about themselves. This scale is qualitatively different from the other three in that the terms used contain no reference to competence.

In Harter's model, the final assumption involves the internalized evaluation of perceived competence. This is viewed as a critical variable which best predicts the achievement evaluation, affect and intrinsic motivation that begins to develop as the child internalizes a system of mastery goals, criteria for success and failure, and a set of perceptions concerning the source of control; out of this, a sense of competence becomes crystalized. Harter (1980) points out:

> If children do not know who or what is in control, or view powerful others as responsible, it is likely that their sense of competence will be relatively negative (p. 11).

Thus, a positive sense of competence develops when a child's perceptions of control are healthy. But, alternatively, when the child perceives that control is beyond his/her grasp, a negative sense of competence may be developed.

Harter's model of perceived competence is just one theoretical contention that attempts to explain psychosocial and/or behavioral changes within individuals across their lifespan. Harter's theoretical perspective stresses the developmental changes and individual factors that correspond to a child's perceived competence, sense of control, and motivational orientation.

According to John Nicholls' "Developmental Theory of Achievement Motivation ", the defining feature of achievement behavior is the feeling of competence (Nicholls, 1984; Nicholls and Miller, 1983). Nicholls' perceptions of competence or incompetence are the central mediators of performance and persistence. In achievement situations, Nicholls contends that individuals behave in such a way as to maximize the display of high ability and minimize the display of low ability. Consequently, perceptions of success and failure are founded on the perceived demonstration of high and low competence, respectively.

Whereas Harter's focus is on how much competence one perceives oneself to have and the corresponding effect of this perception on behavior, Nicholls tends to emphasizes performance and persistence in achievement settings.

While models such as Nicholls' provide additional research and understanding into achievement motivation, focusing on too many perspectives may confuse the issue. Harter's model provides the means of empirically supporting or defeating the contentions she hypothesizes in her model in such an achievement arena as sport in general and, more specifically, in competitive swimming, as in this study. Thus for the purpose of this research, Harter's developmental theory of achievement motivation provides the means for assessing the hypothesized relationships in the current study.

Perceived Competence - Its Relationship to Sport

The development of optimum levels of perceived competence for enhanced performance has been identified as crucial to achievement (Harter, 1980; Evans and Roberts,1987; Kleiber, 1980). Performance achievement level is the all important factor affecting perceived competence, control and reward orientation. The extent to which one attends primarily to the outcome of an individual's effort during the earliest years, ignoring those behavioral attempts which constitute the process of production toward a goal, may ultimately

attenuate the individuals' desire to engage in the mastery process itself, and may weaken the child's sense of control.

Thus, the issue of whether experience at one period of life affects the development of attitudes, fears and expectations at a later point in life is crucial. If it were possible to show continuity over time and across situations, one would have a better understanding of the roots of competence and the nature of human development. Competence viewed developmentally is not an end-state but a process related to an individual's particular stage of life.

Perceived competence is thought to be an especially important determinant of motivation in young athletes (Harter, 1978, 1981; Klint and Weiss, 1987; Horn and Hasbrook, 1987). Harter's model predicts that individuals (e.g. young competitive swimmers) who perceive themselves to be highly competent in a particular skill will maintain interest in mastering the skill (Feltz and Petlicholoff, 1983). Because young athletes do place high values on their competence in activities, adult feedback in sport may be especially influential in the athletic context in which young peoples' motoric competence is continually being evaluated in situations where performance outcome, i.e., winning or losing, is perceived by players, coaches and spectators to be crucial.

The underlying tenets of Harter's competence motivation theory emphasize developmental changes and individual differences, and the interrelationships among these constructs distinguish her model from other motivational models. This model is thus especially well suited for the study of youth sport participants (Weiss and Bredemeier, 1983).

The domain of sport is a classic achievement oriented context, conforming to most definitions of an achievement oriented environment in the existing literature (Atkinson, 1964). In sport the process is evaluative in that others present, such as teammates, opponents, coaches, parents and spectators, assess the performance as favourable or unfavourable in terms of reaching a goal or a standard of excellence.

The very structure of sport involves competition and social comparison processes, which intensifies competitive ability assessments. Evidence also shows that the achievement domain of sport is a very important achievement arena for young people (Duda, 1987). Thus, their perceptions of low ability and their implications causes much concern to young athletes (Orlick, 1974).

Because performance outcome is emphasized in sports, individuals often use outcome to infer ability. Consequently, degree of effort may be closely related to their perceived attainment in sports.

This phenomenon is unfortunate among young people pursuing various sports, especially during early and middle adolescence. This is the age category of greatest variance in a person's psychological and physiological maturity and it is commonly the more mature person who is the most likely to excel and win, thus making the most favourable ability assessments due to the likelihood of success (Evans and Roberts, 1987). Therefore, those athletes who perceive themselves to be high in ability expect to succeed and accordingly they exert great effort; yet, at the same time, they are not necessarily the ones who are/or will be the best athletes in the long term.

If it is the belief that sport experiences are valuable experiences for youth, then coaches and sport administrators are responsible to retain the interests of all young individuals - not just those who presently excel . This is why it is so important for parents, coaches, and peers to actively and positively encourage all participants who wish to persist in competitive sports. Coaches, parents and significant others should not weed out or discourage those athletes who do not show early promise. However, given the competitive structure of sport, the question arises as to how coaches, parents and significant others are to change or maintain the motivation of all participants with reference to winning and losing and the inevitible competitive ability assessments that children make.

Research utilizing Harter's model of competence motivation covers a wide range of investigations examining the relationship of perceived competence to the sport participant. (Horn,1985; Horn, 1983; Weiss, Bredemeier, and Shewchuk,1986; Roberts, Kleiber, and Duda,1981; Feltz,1984). Roberts, Kleiber and Duda (1981) used competence motivation theory in a study examining the relationship between perceived competence and sport participation and non-participation among children between nine and eleven years old. The study revealed that the level of perceived competence using Harter's perceived competence scale was related to sport participant status. Sport participants scored significantly higher on the physical, cognitive and self-esteem subscales when compared to non-participants in sport.

Horn (1985) examined the relationship between coaches' feedback and changes in self-perception of female athletes of twelve to fifteen years during

the athletic season. One of the measures used was Harter's perceived competence scale in pre- and post season assessments of the players' self-perception. Multivariate regression analyses revealed that a significant portion of the player's psychosocial growth existed as a function of the player's demonstrated sport competence. According to Harter (1978), it is clear that a player's psychological and sociological development is affected by or actually affects the player's perception of sport competence.

Feltz and Petlichoff (1983) examined the relationship between perceived physical competence and length of involvement in sport for sport participants and for their counterparts no longer involved in sport. The results showed a significant relationship between participants and dropouts in a number of school sponsored sports. Significant differences were found with years of experience and gender on perceived physical competence and between participants length of participation. Also males were found to score significantly higher in the perceived physical competence than females.

Feltz and Brown (1984) studied youth soccer players eight to thirteen years old using a modified perceived physical subscale and Harter's (1981) general self-esteem and physical subscales. Their objective was to see whether or not a physical subscale that dealt specifically with the sport participant would give a more accurate perception of mastery than a general physical subscale. They concluded that "it maybe beneficial to use sport-specific and physical perceived competence measures in future investigations of perceived competence" (p. 386). It was verified that the perceived soccer competence subscale was closely related to actual soccer competence. It was further recommended that future investigations examine the construct validity of sport-specific measures. For instance, demonstrated soccer ability should be positively related to one's perceived competence in soccer according to Harter's (1978) theory.

Horn and Hasbrook (1987), using a large group of young soccer players (n=229), 8 to 14 years of age, studied the perceived competence, perceived performance control and the criteria children used for self-evaluation. They used Harter's (1982) perceived competence scale as well as the other measures. Multivariate regression analyses found a significant relationship between players perceived competence, perceived performance control and preference for particular sources of competence information. The data provided support for the developmental hypotheses inherent in Harter's (1981) theory

regarding competence motivation. Specifically, Harter postulates that individuals who develop in their young years, a high perception of competence and a strong belief in their capability to control the outcome of their performance in a specific achievement domain, later develop, and ultimately internalize a set of achievement standards of performance goals that enables them to evaluate a performance outcome relative to the task at hand. In contrast, individuals who develop, during their younger years, an external locus of control and lower evaluations of physical competence do not in any way acquire such an internal set of standards and will continue even into their older years, to be dependent on external sources of information to help them evaluate their particular competence.

The results from this study support the developmental notion that youths aged 10 to 14 years who had higher perceptions of competence and an internal perception of control did have a greater tendency to use internal standards. Correspondingly, those individuals with an external focus of control exhibited greater dependence on the use of the game outcome and feedback from significant other's (coaches, parent, teachers, peers) as important sources of competence information. This relationship between perceived competence, control and information sources was not significant for children in the eight and nine year old age group. This age difference in these relationships supports Harter's notion that the internalization of achievement standards and the use of such standards for personal evaluation can occur only with an adequate level of cognitive maturation.

Klint and Weiss (1987) studied the assumptions based on Harter's (1978, 1981) competence motivation theory, and they found that a young gymnast perceptions of competence is related to the particular motives he/she has for sport participation. The physical, social and cognitive subscales of Harter's (1982) Perceived Competence Scale and a questionnaire examining motives for gymnastic participation were given to 67 young gymnasts. Discriminant function analyses revealed support for competence motivation theory as a practical explanation for the relationship between competence perceptions and motives for participation in sport. Specifically, gymnasts with high scores in perceived physical competence were motivated by skill development reasons, and gymnasts with high scores in social competence were more motivated by the affiliation aspects of sport when compared to their counterparts with low perceived competence.

While these studies attempt to connect sport competence into the theoretical framework of Harter's competence motivation theory, further investigations should not be limited to Harter's model. Other theories may also provide a base for understanding competence within the sport context. For example, according to Nicholls' (1984) Achievement Motivation theory, the primary achievement goal of young athletes is to minimize their demonstration of low ability. Demonstration of ability can be achieved in two ways either by an emphasis on sport competence (in which social comparison and outcome goals are equally important) or by sport mastery (in which comparison to personal standards and performance goals predominate), (Klint and Weiss, 1987). It could be hypothesized from Nicholls' theory that athletes who score high in sport competence achievement goals are motivated to be in sport by reasons such as a desire to win. By contrast those who score high in sport mastery may be more highly motivated by such factors as a desire to improve or to learn new skills. When the young athlete's motives are not fulfilled, they may drop out of sport.

The literature supports Harter's theory of competence motivation insofar as it is suited to those researchers studying sport psychology. But there is a need for further investigation using sport specific measures of perceived competence. The purpose of this study was to develop a sport-specific perceived competence questionnaire and use it to clarify the relationship between perceived competence of competitive swimmers and age, gender and level of achievement.

CHAPTER 3

METHODS AND PROCEDURES

Introduction to Method

The purpose of this study was to explain the relationship between competitive swimmers' perceived competence and three background variables age, gender, and level of achievement. The perceived competence of competitive swimmers was measured using four sport-specific subscales of a modified version of Harter's (1979, 1982) Perceived Competence Questionnaire.

Subjects

The two hundred and sixty-six subjects for this study were selected from male and female swimmers who were currently active with a year round swim club. The sample was restricted to individuals between 11 and 19 years of age. Younger swimmers were excluded due to the comprehension level necessary to complete the questionnaire successfully. The swimmers were divided into three age categories- 11 to 12 years, 13 to 14 years and 15 years of age and older. The swimmers were divided into three levels of achievement: national, provincial and club, according to their best event time and the standards, set by the provincial and national swimming associations for each swimmers particular age category and event (see Appendix 11, Table 20).

Instrument

The Competitive Swimming Self-competency Questionnaire was developed for use in a competitive swimming setting (see Appendix 4 and 5). The instrument was designed as a specific modification of the P ~ceived Competence Scale for Children (Harter, 1979,1982) and consists of four subscales, three of which measure the degree of competence the swimmer feels in a particular achievement domain. The three achievement domains are:

a) Cognitive competence, which was oriented to swimmers' perception of their ability to effectively understand, evaluate, and assimilate information directed towards them by stimulus within the swimming environment.

b) Social competence, which assessed perceptions of their social circle as it relates to their involvement in competitive swimming.

c) Physical competence, which measured their perceived ability in swimming skills.

The subjects' general feelings of worth or self-esteem, independent of any particular achievement domain (social, physical and cognitive) were measured by the self-esteem subscale. The complete set of four subscales contains 28 questions, each scored on a four-point ordinal scale. There were also two forms: Form-C for those swimmers 11 to 13 years of age and older (Appendix 4) and Form-A for those swimmers 14 years of age and older (Appendix 5). There were only minor changes in wording between the two questionnaires to accommodate differences in comprehension levels that may be associated with age.

Data Collection

Coaches of the Alberta Section of the Canadian Amateur Swimming Association were invited to participate in this study (Appendix 1). Those coaches who agreed to take part were given clear instructions regarding the correct testing procedures in a handout . The coaches in turn invited their swimmers to participate in the study. The swimmers were then expected to complete either Form-A or Form-C depending on their age prior to their evening training session or workout. To obtain the best possible testing conditions coaches were asked to test the swimmers in groups of 24 or fewer and to conduct the test in a relatively quiet area where it would be possible to complete the test in relative comfort. The coaches were asked to encourage the swimmers to read carefully and to respond to each question in turn. The coaches were also asked to stress that the test would only be useful if the swimmers were truthful in their replies. The questionnaire was designed to take about 15 minutes to complete, but due to individual differences, the coaches were requested not to pressure the subjects into answering the questions with undue haste. Before tackling the questionnaire, the swimmers were expected to complete a special Profile Form on the Answer Sheet (Appendix 3). These profiles were to be double-checked by the coach to ensure accuracy, especially in the terms of level of achievement and age. The Answer Sheets were then returned to the researcher for analyses. The coaches were also asked to take note of any difficulties or questions in administering or responding to the

questionnaires. Thus, if any problems did occur they could be corrected before further testing (Appendix 1).

Statistical Analysis

Exploratory analyses of the dependent variables physical, social, and cognitive competences and self-esteem - provided the foundation for some initial remarks. The relationship of these variables with age, gender and level of achievement was also reviewed descriptively. Following these initial analyses, a three-way analysis of variance and a Scheffé analysis were performed on two revised age-groups. The use of only two age-groups was brought about by insufficient numbers of swimmers in certain cells. The revised age-groups were 11 to 14 years of age and 15 years of age and older. A one-way analysis of variance was performed on the initial age categories. Pearson correlations were also calculated between all the variables. These correlations were carried out initially with no level of achievement designated. Cronbach's Alpha was also calculated in order to estimate the reliability of this sport-specific questionnaire.

CHAPTER 4

RESULTS

Participation Status

There was a relatively even distribution of subjects within the three designated age groups sampled (Table 1). In contrast, there was great variance in achievement levels.

In Table 1 a clear relationship between age and level of achievement is apparent. As age increases, the level of achievement generally increases. The 11 to 12 year old age group, had swimmers only at the club and provincial level of achievement, whereas the group of swimmers within the 13 to 14 year old age range consisted of a small percentage of club and national swimmers and a large percentage of provincial swimmers. Swimmers within the provincial and national levels of achievement made up the majority of subjects within the 15 years of age and older category, while club level swimmers represented only thirteen percent.

Those swimmers who have not attained a higher level of achievement by approximately 15 years of age, tend to drop out of swimming. This maybe due to some of the "negative" attributes of swimming, such as the strict training required, self-discipline, time restrictions, and the competitive stress associated with the element of constant evaluation. These attributes interfere or become overwhelming and cannot be justified when the rewards of swimming are viewed as limited, and alternative leisure interests conflict (Watson, Blanksby, and Bloomfield,1984).

The swimmers were evenly divided between males and females; however, within the individual levels of achievement there is clearly an uneven division between the genders. It was found that the female swimmers made up the greater percentage of subjects in the lower age groups and levels of achievement, whereas within the higher achievement levels and age categories male swimmers were in the majority. This may be due to more female swimmers dropping out of swimming as they grow older because they experience greater conflict in areas directly related to athletic performance than

TABLE 1

PARTICIPATION STATUS
ABILITY

	Club	Provincial	National
11-12 male	15	22	0
11-12 female	17	20	0
13-14 male	7	27	2
13-14 female	5	26	5
15+ male	4	35	21
15+ female	22	23	15
# TOTAL	70	153	43

do males. As a consequence alternative leisure interests may become more appealing (Volp and Keil, 1987).

Reliability

An examination of the internal consistency of the responses to the competitive swimming self-competency questionnaire indicated that two scales met reliablility standards and two did not (Table 2). The two scales not within the acceptable reliablility range,the physical and social scales, had the greatest number and degree of modifications from Harter's original Perceived Competence Questionnaire. The cognitive and self-esteem scales had reliability coefficients just beyond the standard of 0.60. While the Competitive Swimming Self-competency Questionnaire is a potentially useful research tool, it needs more intensive testing and careful evaluation before it can be used for individual assessment of perceived competence among competitive swimmers. In reading and interpreting the results that follow, it is important to remember that in the present sample the cognitive and self-esteem variables are measured more reliably than the social and physical. This suggests that it may be more difficult to find significance in relationships involving the latter two variables than compared with cognitive and self-esteem.

Analysis of Variance

The results of the analysis of variance should be viewed with caution. There were too few subjects at the national level of achievement within the 11 to 12 and 13 to 14 years of age categories, thus making it impossible for a three-way analysis of variance to be completed. Two revised age groups, 11 to 14 years of age and 15 years of age and older were formed to allow a three-way analysis of variance to be performed on the data (age by level of achievement by gender). These revised age groups are referred to within the tables as "Age (revised)".

As secondary analyses, one-way analyses of variance (Appendix 10) were carried out using the initial age group categories to see if any age related findings from the primary analysis extended to the original categories.

TABLE 2

CRONBACH'S ALPHA

Present Study	Harter's Study (1982)
Number of Cases = 266	Number of Cases = 2400
Number of Items (per scale) = 7	Number of Items (per scale) = 7
Cognitive Alpha = 0.60	Cognitive Alpha = 0.76
Social Alpha = 0.42	Social Alpha = 0.78
Physical Alpha = 0.37	Physical Alpha = 0.83
Self-esteem Alpha = 0.62	Self-esteem Alpha = 0.73

* Alpha Coefficient considered acceptable is 0.60.

Three-Way Analysis of Variance

The results of these analyses exhibited significant effects within each scale with reference to some of the main effects (Tables 3,4,5, and 6). The social scale exhibited the only significant interaction effects, and these were the two-way interactions between level of achievement and age, ability and gender. There were no significant three-way interactions on any of the four scales.

Level of achievement was the only significant variable within both the cognitive ($p = .03$) and social ($p = .06$) scales. Neither gender nor age accounted for any significant degree of the variance within these scales. Scheffé tests listed in Table 8 show the cognitive mean scores of the national level of achievement swimmers to be significantly greater than either the provincial or the club achievement levels. Thus the perceived competence of swimmers within the cognitive and physical domains is a particular function of their levels of achievement.

Perceived competence mean scores of swimmers correspondingly improved as their level of achievement increased. Athletes within the higher ability levels tend to have long-term experience upon which to base their competition strategies. Experience provides tremendous learning opportunities for these athletes to develop greater knowledge of the specific strategies that work for them. This results in higher levels of confidence within their competitive swimming cognitive domain. Athletes of higher achievement levels are often considered "special" by their peers, coaches and significant others. This is a tremendous reinforcer of their own personal perception of social competence, for they are given respect and status within their own peer group.

This may also suggest that as a result of a high perception of social competence, their level of achievement improved, but there is no real evidence of a direct relationship between positive social competence and level of achievement. It seems reasonable to suggest that level of achievement will improve with dedication and hard work and not as a result of social competence. It could be argued however, that an environment which is conducive to enhancing the training is undoubtedly of benefit. It may be that those individuals who have the potential ability, but feel socially incompetent, may never reach their full potential, simply because they tend to drop out as a result of these feelings of social unease. Kurdek and Krile (1983) found that high levels of perceived social competence related directly to favored peer

status. Those athletes of greater level of achievement are given "favored" peer status within their competitive swimming situation. They develop cognitive and social competence with the maturity of their own abilities and experiences.

Level of achievement was of greatest significance within the physical scale ($p = .001$). The overall mean of the national level of achievement group (Nat. mean = 2.74) was shown by the Scheffé post hoc test to be significantly greater, than either the provincial and club achievement group (Prov. mean = 2.46 Club mean = 2.44). The degree to which swimmers have been successful throughout their sport experience will have a greater influence on their perceived physical competence than will length of involvement. However, the longer swimmers have been involved in the sport, the more likely it is that they have had more successful mastery experiences. Within this study there were few individuals of lower achievement levels in the older age categories. Continued failures usually lead to discouragement and attrition. Feltz and Brown (1984), in studying young soccer players, found actual soccer ability to be the major contributor to perceived physical competence.

Gender was significant within both the physical ($p = .03$) and self-esteem ($p = .001$) scales (Tables 5 and 6). The results of the Scheffé post hoc test listed in Table 7 show that while the physical mean scores are higher for males than for females, this difference is not statistically significant. On the self-esteem scale however males scored significantly higher than females within each ability level. That males were found to be higher in both the self-esteem and physical scales in this study is consistent with the results found by other researchers (Hogg, 1981; Feltz and Petlichkoff, 1983; and Scott, 1979). All found that females tended to overestimate the contribution of luck in their performance and underestimate the influence of ability. Males, on the other hand, could be overestimating their actual level of achievement. Hogg (1982) found males to score higher in both global and specific self-esteem than females. Females, on the other hand demonstrated higher scores on the scales that related to trust in coaches. Hogg suggests that this trust in coaches shown by female swimmers is reflected in more dependent behaviors. Their perceived physical competence could be a direct result of their greater need for the approval of significant others. In achievement settings females swimmers tend to score higher in competitive anxiety (SCAT measures) compared to males. Hogg (1978) suggests this is reflected in the significance of gender within the self-esteem scale. With females making up the greatest percentage of

TABLE 3

THREE-WAY ANALYSIS OF VARIANCE- COGNITIVE BY LEVEL OF ACHIEVEMENT, GENDER AND AGE (REVISED)

Source of Variation	Sum of Squares	DF	Mean Squares	F	Significance of F
Level of Achievement	1.98	2	0.99	3.65	0.027*
Gender	0.62	1	0.62	2.29	0.132
Age (revised)	0.33	1	0.33	1.23	0.268
Achievement-Gender	0.56	2	0.28	1.04	0.356
Achievement-Age(rev.)	0.17	2	0.09	0.32	0.730
Gender-Age(rev.)	0.08	1	0.17	0.64	0.425
Achievement-Gender-Age(revised)	0.08	2	0.04	0.14	0.870
Residual	68.89	254	0.27		
Total	73.62	265	0.28		

Total Cases= 266

*Significant at 0.05.

TABLE 4

THREE-WAY ANALYSIS OF VARIANCE- SOCIAL BY LEVEL OF ACHIEVEMENT, GENDER AND AGE (REVISED)

Source of Variation	Sum of Squares	DF	Mean Squares	F	Significance of F
Level of Achievement	1.17	2	0.59	2.81	0.062**
Gender	0.26	1	0.26	1.24	0.266
Age (revised)	0.04	1	0.04	0.20	0.658
Achievement- Gender	1.46	2	0.73	3.50	0.032*
Achievement-Age(rev.)	1.76	2	0.88	4.23	0.016*
Gender-Age(rev.)	0.22	1	0.22	1.05	0.306
Achievement-Gender-Age (revised)	0.01	2	0.01	0.02	0.978
Residual	53.04	254	0.21		
Total	57.70	265	0.22		

Total Cases = 266

* Significance at 0.05. ** Significance at 0.10.

TABLE 5

THREE-WAY ANALYSIS OF VARIANCE - PHYSICAL BY LEVEL OF ACHIEVEMENT, GENDER, AND AGE (REVISED)

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Level of Achievement	2.58	2	1.29	6.74	0.001*
Gender	0.87	1	0.87	4.54	0.034*
Age(revised)	0.01	1	0.01	0.04	0.845
Achievement-Gender	0.13	2	0.06	0.33	0.717
Achievement-Age(rev.)	0.00	2	0.00	0.01	0.992
Gender- Age(rev.)	0.01	1	0.01	0.03	0.873
Achievement-Gender-Age (rev.)	0.09	2	0.05	0.24	0.791
Residual	48.64	254	0.19		
Total	52.79	265	1.97		

Total Cases= 266

* Significance at 0.05.

TABLE 6

THREE-WAY ANALYSIS OF VARIANCE- SELF-ESTEEM BY LEVEL OF ACHIEVEMENT, GENDER, AND AGE (REVISED)

Source of Variation	Sum of Squares	DF	Mean Squares	F	Significance of F
Level of Achievement	0.95	2	0.47	1.65	0.194
Gender	7.44	1	7.44	25.83	0.000*
Age(rev.)	0.56	1	0.56	1.96	0.163
Achievement-Gender	0.36	2	0.18	0.62	0.540
Achievement-Age(rev.)	0.12	2	0.06	0.20	0.816
Gender-Age(rev.)	0.19	1	0.19	0.66	0.417
Achievement-Gender Age(rev.)	0.05	2	0.03	0.09	0.915
Residual	73.12	254	0.29		
Total	82.81	265	0.31		

Total Cases= 266

*Significance at 0.05.

TABLE 7

RESULTS OF SCHEFFE TESTS FOR DIFFERENCES OF MEANS BETWEEN MALES AND FEMALES FOR SIGNIFICANT SCALES

SCALE	NAT.		PROV.		CLUB		SIG. AT 0.05
	M	F	M	F	M	F	
Cognitive	3.14	3.07	2.85	2.81	3.03	2.79	None
Social	3.02	3.15	3.19	3.03	2.87	3.02	None
Physical	2.82	2.64	2.50	2.43	2.55	2.34	None
S.Est.	2.89	2.60	2.87	2.57	2.85	2.41	M>F

TABLE 8

RESULTS OF SCHEFFE TESTS FOR DIFFERENCES OF MEANS BETWEEN LEVELS OF ACHIEVEMENT THAT WERE SIGNIFICANT

SCALE	NAT.	PROV.	CLUB	SIG. AT 0.05
Cognitive	3.11	2.83	2.88	Nat. >Prov.
Social	3.06	3.12	2.96	None
Physical	2.74	2.46	2.44	Nat.>Club Nat.> Prov.
S.Est.	2.76	2.73	2.58	None

swimmers at the club level and males having greater numbers within the provincial and national ability groups, the significance of gender within the physical and self-esteem scales is understandable.

Secondary Analysis of Variance Main Effects Using the Original Age Categories

The results of these analyses were nearly identical to that of the three-way analyses of variance, which had used two instead of three age categories. In no case was age significant (Appendix 10).

Correlations

Correlations were calculated in two ways: firstly using the entire group without regard to levels of achievement and secondly within each of the national, provincial and club levels of achievement. To ensure consistency of interpretation within this study any correlation greater than 0.30 was considered to be worthy of comment (in all cases 0.30 is significant).

Correlations Across Achievement Levels

The correlations of significance within these analyses suggested possible relationships among the individual scales of cognitive, physical, and self-esteem (Table 9). The social scale correlations were low, which might indicate that perceived social competence is reasonably independent of the other domains.

The self-esteem scale was the only scale to have a significant relationship with gender; no other scale correlations with gender were greater than 0.14. This suggests that individuals' self-esteem level may be determined in some part by their gender. The pattern previously established in the literature cites females as having lower perceived competence than males (Feltz and Petlichkoff,1983). It should also be noted that Harter (1982) found no significant relationship between gender and self-esteem among children eight to twelve years of age (Harter, 1982). It could be proposed that with the onset of puberty males have greater self-esteem perceived competence than do females.

The highest correlation in the table is the relationship between the independent variables of level of achievement and age; the magnitude of this correlation, 0.54, confirms the expected relationship between level of achievement and age. Individuals in the higher achievement levels were for the

most part older than those in the lower achievement levels of competitive swimming.

Similar to Harter (1982) the self-esteem scale showed correlations that were consistently greater overall than the other scales. The between-scale correlations of the cognitive domain were the highest overall ranging from 0.29 to 0.39. This result differs from Harter's (1982) study in which the interscale correlations of the cognitive scale were of the least significance.

Correlations with the Level of Achievement Designated

The most interesting result of this correlational analysis was the large degree of variability among the individual levels of achievement. Overall the national level of achievement had correlations that were higher than the provincial and club levels of achievement. With reference to the correlations across all achievement levels, one would expect the correlation for the total group to be greater than the separate correlations for the individual achievement levels, but in this case the national achievement level correlations were generally greater than the correlation for the total group (Tables 10,11, and 12). Because these differences were small, it is difficult to interpret the reasons for this finding. It may be worthwhile to further investigate in the future using a larger national achievement level sample.

The interscale correlations with each level of achievement were greater overall than the correlations with the independent variables. The one exception was a correlation of 0.41 between gender and self-esteem within the club level. Previous research has confirmed that males tend to score higher levels of self-esteem than females and that high self-esteem is more closely aligned with the qualities associated with masculinity (Brockner, 1979; Gelfand and Hartman, 1969; Froehlich, 1978; Primavera, Simon and Primavera, 1974; Suslavitz, 1979; Hogg,1982). Therefore the significant relationship of self-esteem with gender suggests that at the club level, males generally have greater self-esteem than do females.

Within the national level of achievement, the largest correlations were among the scales. Those interscale correlations considered significant within this achievement level ranged from 0.36 which was the interscale correlation between the cognitive and social scales, to 0.48, which was the correlation between the cognitive scale and the self-esteem scale. There were great differences in the levels of correlation and the number of these relationships

TABLE 9

PEARSON CORRELATIONS ACROSS ALL LEVELS OF ACHIEVEMENT

	Level of Achieve.	Gend.	Age	Cog.	Soc.	Phy.	S.Est.
Level of Achieve.	1.00	0.12	0.54*	0.11	0.14	0.20	0.12
Gender		1.00	0.11	0.09	0.09	0.14	0.31*
Age			1.00	0.18	0.04	0.16	0.06
Cog.				1.00	0.29	0.39*	0.32*
Soc.					1.00	0.24	0.23
Phy.						1.00	0.39*
S.Est.							1.00

* Correlations significant at 0.30.

within each achievement level, suggesting that the individuals at the national level of achievement showed greater congruence across all of the self-competency domains than those in the club and provincial levels of achievement. In short, those individuals within the national level of achievement have perceived competence levels within the individual domains which are related more closely to each other than the competency scores found among swimmers at the other two designated achievement levels.

The perceived social competence of competitive swimmers was more independent of the other scales, with the exception of the national achievement level, which showed greater congruence than the provincial and club levels of achievement.

Overall the correlations within the competitive swimming competency questionnaire tended to be lower in number and not as significant as those within Harter's questionnaire (Harter, 1982). The relationships between the variables identified within the Competitive Swimming Self-competency Questionnaire for competitive swimmers were more independent of each other than were those within Harter's research, with the exception of the correlations within the national level of achievement.

Summary

The results of this study provide statistical support for the three hypotheses although there are exceptions to this conclusion. Overall, level of achievement was the variable of greatest influence in explaining the perceived competence of competitive swimmers. Among the four subscales of the questionnaire, the only exception to this relationship was in the self-esteem scale for which it was found that gender was the variable of greatest significance. Harter had intended for the self-esteem scale to be an independent measure of perceived competence and the results of this study confirm that self-esteem varies independently of the other domains. As was previously stated in hypothesis #1, perceived competence mean scores of competitive swimmers correspondingly increased as their level of achievement increased.

Females swimmers did have lower perceived competence scores than the males, but the degree of difference was only significant in the physical and self-esteem scales. Thus, in partial agreement with hypothesis #2, gender was a

TABLE 10

PEARSON CORRELATIONS
LEVEL OF ACHIEVEMENT DESIGNATED-CLUB

	Gend.	Age	Cog.	Soc.	Phy.	S.Est.
Gend.	1.00	0.09	0.22	0.15	0.20	0.41*
Age		1.00	0.12	0.01	0.01	0.19
Cog.			1.00	0.26	0.30*	0.22
Soc.				1.00	0.23	0.26
Phy.					1.00	0.30*
S.Est.						1.00

* Correlations significant at 0.30

TABLE 11

PEARSON CORRELATIONS
LEVEL OF ACHIEVEMENT DESIGNATED-PROVINCIAL

	Gend.	Age	Cog.	Soc.	Phy.	S.Est.
Gend.	1.00	0.07	0.04	0.18	0.09	0.25
Age		1.00	0.18	0.01	0.01	0.03
Cog.			1.00	0.29	0.37*	0.34*
Soc.				1.00	0.19	0.20
Phy.					1.00	0.42*
S.Est.						1.00

*Correlation significant at 0.30.

TABLE 12

PEARSON CORRELATIONS
LEVEL OF ACHIEVEMENT DESIGNATED-NATIONAL

	Gend.	Age	Cog.	Soc.	Phy.	S.Est.
Gend.	1.00	0.33*	0.11	0.03	0.21	0.33*
Age		1.00	0.28	0.31*	0.22	0.22
Cog.			1.00	0.36*	0.46*	0.48*
Soc.				1.00	0.45*	0.20
Phy.					1.00	0.44*
S.Est.						1.00

*Correlations significant at 0.30.

significant factor in predicting perceived competence scores of competitive swimmers.

Hypothesis #3 stated that age will not be a significant factor in the perceived competence scores of competitive swimmers. This assumption was accepted within this study, with the exception of when level of achievement is interacting with age in the social scale.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The central purpose of this study was to examine certain defined variables in competitive swimming; namely, a competitive swimmer's age, gender and level of achievement with particular reference to the competence scores as devised from the four scales of cognitive, social, physical and self-esteem. The questionnaire used was based on the previous work of Susan Harter. Her Perceived Competence Scale for Children (1978, 1982) was used as the model for developing a test that could be used to examine the self-perceptions of competitive swimmers in the four domains. This questionnaire provided greater understanding of what motivates a competitive swimmer to engage in the mastery behavior associated with competitive swimming. The goal of this motivation is to deal effectively with the specific environment of competitive swimming. The ultimate goal for this activity are feelings of efficacy and intrinsic pleasure.

Effective participation in competitive swimming provides its own reward. Whereas most athletes participate in sport to experience success in the physical domain, the ultimate goal for at least some would be to experience the feeling of efficacy within all the defined domains.

To draw any definitive conclusions would be premature, but there appear to be some clear relationships between perceived competence and other traits of competitive swimmers.

The conclusions drawn from the results of this study found the independent variable of level of achievement to be the factor that accounts for the greatest degree of variance among the perceived competence scores. This reslult is only true within the cognitive, social, and physical domains. The independent variable of gender is the variable of greatest consequence within the self-esteem scale. Gender is also significant in the physical scale. As was previously hypothesized, age is not a significant factor in relation to the perceived competence of competitive swimmers.

Summary of Results

The results are summarized in two ways: by independent variables and by dependent variables.

Independent Variables:

1. Age- Age was not a significant factor in relation to the perceived competence of the competitive swimmer. The one noteworthy result was the rise of achievement level as age increased.

2. Gender- Gender was a significant factor in the perceived competence of the competitive swimmers within the physical and self-esteem scales. Although there were equal numbers of females and males overall, female swimmers constituted a higher percentage of those swimmers in the lower achievement and age categories, and males predominated in the higher achievement and age categories. This is due to a greater number of female swimmers dropping out of the sport as they get older, thus perhaps denying themselves the opportunity of reaching their full potential.

3. Level of Achievement- Overall, level of achievement was the most significant variable in relation to the perceived competence of the competitive swimmer. Level of Achievement was significant in the cognitive, social, and physical scales but not significant within the self-esteem scale.

Dependent Variables:

1. Cognitive Scale- The independent variable of greatest significance within this scale was level of achievement.

2. Social Scale- Level of Achievement was the variable of greatest significance within the social domain. Age and gender were also significant within this scale when interacting with level of achievement.

3. Physical- Both gender and level of achievement are significant within the physical scale.

4. Self-esteem- The self-esteem scale is the only scale where level of achievement was not a significant factor. Gender was found to be the only significant variable within this scale.

Recommendations

The following recommendations were derived either from conclusions reached within the study or problems that were confronted in its analyses.

1. To what degree does experience affect the perceived competence within the competitive swimmer? Does familiarity with the particular and unique demands of competitive swimming influence the athletes' perceptions of competence? The variable of age is not necessarily a measure of experience; thus, it is necessary to determine how experience should be defined.

2. Roberts et al (1981) suggested, as a possible explanation of their results, that the experience of sport participation may not influence a participant's perceptions of competence, but rather individual's with higher self-perceptions of competence may select a sport as an activity to demonstrate their abilities. An alternative explanation suggested by Roberts et al (1981), was that Harter's (1979) question format was construed to measure perceived competence relative to past performances of peers. The results of this study suggested that competence judgements may vary with level of achievement, experience and gender. Therefore, a longitudinal study examining perceived competence will provide greater understanding as to whether experience is a major factor in determining competence judgements or not.

3. A previous study of gymnasts (Klint and Weiss, 1987) found a relation between competence perceptions and motivations for participating. Those gymnasts high in physical perceived competence were motivated by skill development. Those athletes high in social perceived competence were motivated more by the affiliation aspects of sport than were their low perceived social competence counterparts. Does motive change with experience and skill level?

4. Will drastic changes within the administration, coaching staff, friends, or other significant factors within the competitive swimming environment alter swimmers' perceptions of their competence?

5. The measure of level of achievement should be more diverse and precise in order that the differences in perceived competence among competitive swimmers can be distinguished more accurately.

For example:

National

Age group TAG rankings top 25 swimmers
National A qualifier
National B qualifier

Provincial

Provincial A qualifier
Provincial B qualifier

Club

All swimmers who do not meet any of the above standards.

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APPENDIX 1

COACHES LETTER

February, 1987

Dear Coach,

We share the objectives of improving the performances of Alberta swimmers. To that end I hope you will be able to participate in the project outlined below. Previous research indicates that motivation improves if there is harmony between how swimmers see themselves, particularly with regard to their physical, social, intellectual and general self-esteem assessments as well as how others might perceive or judge them to be. In other words, there is a link between performance and how a swimmer perceives his or her competence.

The enclosed COMPETITIVE SWIMMING SELF-COMPETENCY QUESTIONNAIRE is designed to determine a swimmer's current self-assessment of his of her competency and may provide some useful feedback for the coach and the swimmer.

At this time, we are analyzing some select individual profiles from among Alberta's competitive swimmers at different age groups and levels of achievement. The information may help facilitate interpretations and comparisons with competitiors at earlier stages of development, indentify those swimmers who may be experiencing problems, and eventually allow for the design of a program that could help swimmers get closer to their potential.

We would like you to administer this test to a cross-section of your club swimmers, both boys and girls, age groups (11 years and over) and at different skill levels. Your swimmers should not be forced to take part in the project but rather freely choose to be a participant.

It is important to respect confidentiality, but I hope to present the broader results of this project with its practical implications, to the Alberta Swim Coaches Association at their annual Conference Scheduled for September of this year.

Test conditions and instructions are attached and we ask that you return the completed QUESTIONNAIRES and ANSWER SHEETS as soon as possible. We may provide you with some early information if necessary following the initial analyses.

If you have any questions please do not hesitate to call me at 432-5910.

Many thanks for your cooperation.

Yours sincerely,

John M. Hogg Ph.D. Regional Coordinator,
C.A.S.A. Research and Development.

APPENDIX 2

TEST CONDITIONS AND INSTRUCTIONS

TEST CONDITIONS AND INSTRUCTIONS.

Enclosed are 24 COMPETITIVE SWIMMING SELF-COMPETENCY QUESTIONNAIRE BOOKLETS and some ANSWER SHEETS. It is best to have your swimmers fill out the ANSWER SHEETS in groups of 24.

The QUESTIONNAIRE only takes a few minutes to answer, but it will be best if you supervise this by having your swimmers fill it out in your presence.

It will also be better to have your swimmers fill out the ANSWER SHEET immediately before your usual afternoon (p.m.) workout time.

However, it is important that you stress that their answers are only useful if they indicate what is true for them.

There are two forms of QUESTIONNAIRE. Form CSSC/A should be given to those swimmers 14 years of age and older, while Form CSSC/C should be given to those swimmers aged 11-13 years because the wording is easier to understand.

Since this is a pilot project, we would ask you to note any difficulties or questions that might arise in understanding the statements or in administer--ing the test so that we can improve things for the next round.

If you have any input or wish to know more about the project, please feel free to contact me at 432-5910.

Try to have as many swimmers as possible in your club respond, but please check the accuracy of their profile information before sending in the ANSWER SHEETS so that all swimmers are placed in the correct category.

We would like to have all the ANSWER SHEETS to hand by March 31st.,1987.

Please return all QUESTIONNAIRES and ANSWER SHEETS to:

Dr.John M Hogg,
Faculty of Physical Education and Recreation,
Pavilion 220,
University of Alberta,
Edmonton. Alberta. T6G 2H9.
Phone: (403) 432-5910.

Many thanks for your cooperation and the best of luck for the season.

APPENDIX 3

ANSWER SHEET

ANSWER SHEET.

Please provide the INFORMATION requested below: Today's Date/Year:_____

Name:_____ Swim Club:_____

Address:_____Postal Code_____

Best Event/Stroke:_____. Best Time for that Event/stroke:_____

Please tick one of the following levels of Competitive Ability and also indicate your age.

National Qualifier: ___
Provincial Qualifier: ___
Neither of the above: ___

AGE: 11 yrs ___ 12 yrs ___
13 yrs ___ 14 yrs ___
15 yrs ___ 16 yrs ___
17 yrs ___ 18 yrs ___
19 yrs and over: ___

	REALLY TRUE For me	SORT OF TRUE For me		REALLY TRUE For me	SORT OF TRUE For me
Q1.	_____	_____	but	_____	_____
Q2.	_____	_____	but	_____	_____
Q3.	_____	_____	but	_____	_____
Q4.	_____	_____	but	_____	_____
Q5.	_____	_____	but	_____	_____
Q6.	_____	_____	but	_____	_____
Q7.	_____	_____	but	_____	_____
Q8.	_____	_____	but	_____	_____
Q9.	_____	_____	but	_____	_____
Q10.	_____	_____	but	_____	_____
Q11.	_____	_____	but	_____	_____
Q12.	_____	_____	but	_____	_____
Q13.	_____	_____	but	_____	_____
Q14.	_____	_____	but	_____	_____
Q15.	_____	_____	but	_____	_____
Q16.	_____	_____	but	_____	_____
Q17.	_____	_____	but	_____	_____
Q18.	_____	_____	but	_____	_____
Q19.	_____	_____	but	_____	_____
Q20.	_____	_____	but	_____	_____
Q21.	_____	_____	but	_____	_____
Q22.	_____	_____	but	_____	_____
Q23.	_____	_____	but	_____	_____
Q24.	_____	_____	but	_____	_____
Q25.	_____	_____	but	_____	_____
Q26.	_____	_____	but	_____	_____
Q27.	_____	_____	but	_____	_____
Q28.	_____	_____	but	_____	_____

Please be sure you have responded to all the statements as requested and that this ANSWER SHEET is returned to your coach. Many thanks for your help.

If you have answered this QUESTIONNAIRE before please give approx.date _____

CODE #:_____ For Official Use only.

MJ/JMH/CASA 87.

APPENDIX 4

COMPETITIVE SWIMMING SELF-COMPETENCY QUESTIONNAIRE FORM CSSC/C

mj/jmh.casa 87
Self-Competency

Form CSSC/C.
Swimmers 11-13 years.

COMPETITIVE SWIMMING QUESTIONNAIRE

University of Alberta.
1987.

MJ/JMH/CASA 87.

COMPETITIVE SWIMMING SELF-COMPETENCY QUESTIONNAIRE

University of Alberta.

February 1987.

Dear Swimmer,

I am inviting you to take part in a research project currently being conducted at the University of Alberta. It is hoped that the results will help competitive swimmers come closer to their true potential. The QUESTIONNAIRE only takes a few minutes to complete, but please answer all questions as honestly as you can.

Please read the QUESTIONNAIRE INSTRUCTIONS carefully before filling out the ANSWER SHEET. I need some profile information from you which is requested at the beginning of the ANSWER SHEET. Please be accurate.

When you have finished, be sure to give the QUESTIONNAIRE and your ANSWER SHEET to your coach. Many thanks for your help.

Dr.John M Hogg,
University of Alberta.

****

INSTRUCTIONS

We would like to know how you feel about yourself as a competitive swimmer in a variety of different situations. There are no right/wrong answers. The only right answer is the one your feel to be true for you.

First: Decide whether you more or less agree with the first statement which corresponds to the left side of the ANSWER SHEET or whether you relate best to the second statement which corresponds to the right side of the ANSWER SHEET.

Second: Once you decide which statement you favour, indicate how strongly you feel by checking whether you feel this is SORT OF TRUE or REALLY TRUE for you.

Respond to each statement by checking the box on the ANSWER SHEET.

Here are a couple of examples to consider:

1. Some swimmers like anchovies on their pizza
   but
   others do not.

2. Some swimmers do not like to compete at meets in their home towns
   but
   others prefer to compete at home.

	REALLY TRUE For me	SORT OF TRUE for me		REALLY TRUE for me	SORT OF TRUE for me
1.	_____	_____	but	_____	_____
2.	_____	_____	but	_____	_____

****

COMPETITIVE SWIMMING SELF-COMPETENCY QUESTIONNAIRE

Form CSSC/C. For swimmers 11-13 yrs.

Please read each statement carefully and decide which one of the pairs is more true for you. Put your answer in the proper box on the ANSWER SHEET. Do not spend too much time thinking about each statement. Usually, the answer that comes irto your head first, is the correct one for you.

Q1. Some swimmers have a good idea of the best way to swim a stroke
but
others have problems knowing just how the stroke needs to be done.

Q2. Some swimmers find it hard to make friends
but
others find it quite easy.

Q3. Some swimmers wish that they could perform better at their swimming
but
others feel that they are good enough.

Q4. Some swimmers feel that there are a lot of things that they would change about themselves as individuals if they could
but
others would like to stay pretty much the same.

Q5. Some swimmers do not always understand what the coach wants them to do
but
others know what the coach wants.

Q6. In team activities outside of regular workouts and swim meets, some swimmers never take part because they feel out of place
but
others usually take part because they want to be with their friends.

Q7. Some swimmers feel that they swim all the strokes and events equally well
but
other swimmers do not.

Q8. Some swimmers feel pretty sure of themselves most of the time
but
others are not so sure of themselves.

Q9. Some swimmers feel that most of the time they swim their races correctly
but
other swimmers are not so sure.

Q10. Some swimmers feel that they are not very important to their team mates
but
others do regard themselves as important.

Q11. Some swimmers find it quite easy to make any stroke changes the coach suggests
but
others need more time to make these changes correctly.

Q12. Some swimmers feel good about how they act
but
others wish they could act differently than they do.

Q13. Some swimmers quickly forget what the coach has taught them
but
others remember easily.

Q14. Some swimmers like to be around other people
but
others like to be by themselves.

Q15. Some swimmers feel that they are stronger than others their own age
but
others feel that they are weaker.

Q16. Some swimmers feel that they are not as good a person as others
but
other swimmers see themselves as a good person.

Q17. Some swimmers find it difficult to understand and to try out the suggestions made by the coach regarding how to swim a race
but
others are able to both understand and try the suggestions quite easily.

Q18. Some swimmers feel okay talking to their coach
but
others fee somewhat shy or uneasy.

Q19. Some swimmers do not perform well at important swim meets
but
others always do well when it really counts.

Q20. Some swimmers are happy with their swimming performances
but
others wish they could do better.

Q21. Some swimmers wish they could more easily understand what it is the coach really wants them to do
but
others understand quite easily.

Q22. Some swimmers are popular among their peers whether these are other swimmers or not
but
others feel that they are not so popular.

Q23. Some swimmers are more likely to quit when they feel that their workouts are too hard
but
others tend to keep on going when it is tough.

Q24. Some swimmers are greatly influenced by what the coach thinks of their efforts and performances both in training and in competition
but
others rely more on their own views and feelings.

Q25. Some swimmers feel just as smart as their friends
but
others feel that they are not as smart.

Q26. Some swimmers are easy to get along with
but
other swimmers are not.

Q27. Some swimmers perform better in practice than in the actual competition
but
others perform best in the actual race.

Q28. Some swimmers are very happy the way they are
but
others wish that they were different.

APPENDIX 5

COMPETITIVE SWIMMING SELF-COMPETENCY QUESTIONNAIRE FORM CSSC/A

mj/jmh.casa 87
Self-Competency

Form CSSC/A.
Swimmers 14 yrs & over

COMPETITIVE SWIMMING QUESTIONNAIRE

University of Alberta.
1987.

COMPETITIVE SWIMMING SELF-COMPETENCY QUESTIONNAIRE

University of Alberta.

February 1987.

Dear Swimmer,

I am inviting you to take part in a research project currently being conducted at the University of Alberta. It is hoped that the results will help competitive swimmers come closer to their true potential. The QUESTIONNAIRE only takes a few minutes to complete, but please answer all questions as honestly as you can.

Please read the QUESTIONNAIRE INSTRUCTIONS carefully before filling out the ANSWER SHEET. I need some profile information from you which is requested at the beginning of the ANSWER SHEET. Please be accurate.

When you have finished, be sure to give the QUESTIONNAIRE and your ANSWER SHEET to your coach. Many thanks for your help.

Dr.John M Hogg,
University of Alberta.

****

INSTRUCTIONS

We would like to know how you feel about yourself as a competitive swimmer in a variety of different situations. There are no right/wrong answers. The only right answer is the one your feel to be true for you.

First: Decide whether you more or less agree with the first statement which corresponds to the left side of the ANSWER SHEET or whether you relate best to the second statement which corresponds to the right side of the ANSWER SHEET.

Second: Once you decide which statement you favour, indicate how strongly you feel by checking whether you feel this is SORT OF TRUE or REALLY TRUE for you.

Respond to each statement by checking the box on the ANSWER SHEET.

Here are a couple of examples to consider:

1. Some swimmers like anchovies on their pizza
   but
   others do not.

2. Some swimmers do not like to compete at meets in their home towns
   but
   others prefer to compete at home.

	REALLY TRUE For me	SORT OF TRUE for me		REALLY TRUE for me	SORT OF TRUE for me
1.	_____	_____	but	_____	_____
2.	_____	_____	but	_____	_____

****

COMPETITIVE SWIMMING SELF-COMPETENCY QUESTIONNAIRE

Form CSSC/A. For swimmers 14 yrs and over

Please read each statement carefully and decide which one of the pair is more true for you. Put your answer in the proper box on the ANSWER SHEET. Do not spend too much time on each question. Usually, the response that comes to mind first is the more accurate.

Q1. Some swimmers have a good understanding of the correct stroke mechanics
but
others lack a real understanding and appreciation.

Q2. Some swimmers find it hard to make friends
but
others find it quite easy.

Q3. Some swimmers wish that they could perform better at their swimming
but
others feel that they are good enough.

Q4. Some swimmers feel that there are a lot of things that they would change about themselves as individuals if they could
but
others would like to stay pretty much the same.

Q5. Some swimmers find it hard to apply the coaches suggestions in a way that best suits them
but
others can integrate or carry out the coaches suggestions immediately.

Q6. In team activities outside of regular workouts and meets, some swimmers rarely participate because they tend to feel uncomfortable
but
others usually participate because they want to be with their friends.

Q7. Some swimmers feel physically competent at all the strokes and events they compete in
but
other swimmers do not.

Q8. Some swimmers feel pretty sure of themselves most of the time
but
others are less confident.

Q9. Some swimmers are usually confident that the strategy they are using in a race is correct and appropriate
but
others are not so sure whether they are using the best strategy

Q10. Some swimmers feel that they are not very important to their teammates
but
others regard themselves as key members.

Q11. Some swimmers are able to adjust to any new stroke modification or improvement that the coach might suggest
but
others take a considerable time before corrections or suggestions really sink in.

Q12. Some swimmers feel good about the way that they behave
but
other swimmers wish that they could behave differently.

Q13. Some swimmers often forget what the coach has taught them
but
others remember and retain information more easily.

Q14. Some swimmers tend to engage in activities that involve other people
but
others like doing things by themselves.

Q15. Some swimmers feel that they are physically stronger than others their own age
but
others feel physically weaker than those swimmers within their own age group.

Q16. Some swimmers tend to regard themselves as having little worth
but
others tend to see themselves as worthwhile.

Q17. Some swimmers are slow to understand and implement competitive strategies the coach might introduce
but
others immediately grasp and put into effect the strategies suggested.

Q18. Some swimmers seem to talk to or communicate with their coaches quite easily
but
others are more reserved or less at ease.

Q19. Some swimmers do not perform well at important swim meets
but
others always do well when it really counts.

Q20. All things being equal, some swimmers feel proud of their performance accomplishments
but
others wish that they were more successful.

Q21. Some swimmers wish it was easier to understand and appreciate what the coach wants them to do
but
others have little trouble both understanding and appreciating what is required precisely.

Q22. Some swimmers are popular among their peers (whether swimmers or not)
but
others do not enjoy the same kind of popularity.

Q23. Some swimmers are more likely to quit when the workouts are too physically demanding
but
others tend to persevere when it is tough.

Q24. Some swimmers are greatly influenced by what coaches think of their efforts and performance both in training and competition
but
others rely more on their own views and feelings.

Q25. Some swimmers feel that when it comes to intellectual thinking they are just as smart as their friends
but
others think of themselves as less gifted.

Q26. Some swimmers are easy to get along with
but
others are not.

Q27. Some swimmers perform better in practice than in the actual competition
but
others exceed their practice performance when it comes to the actual race.

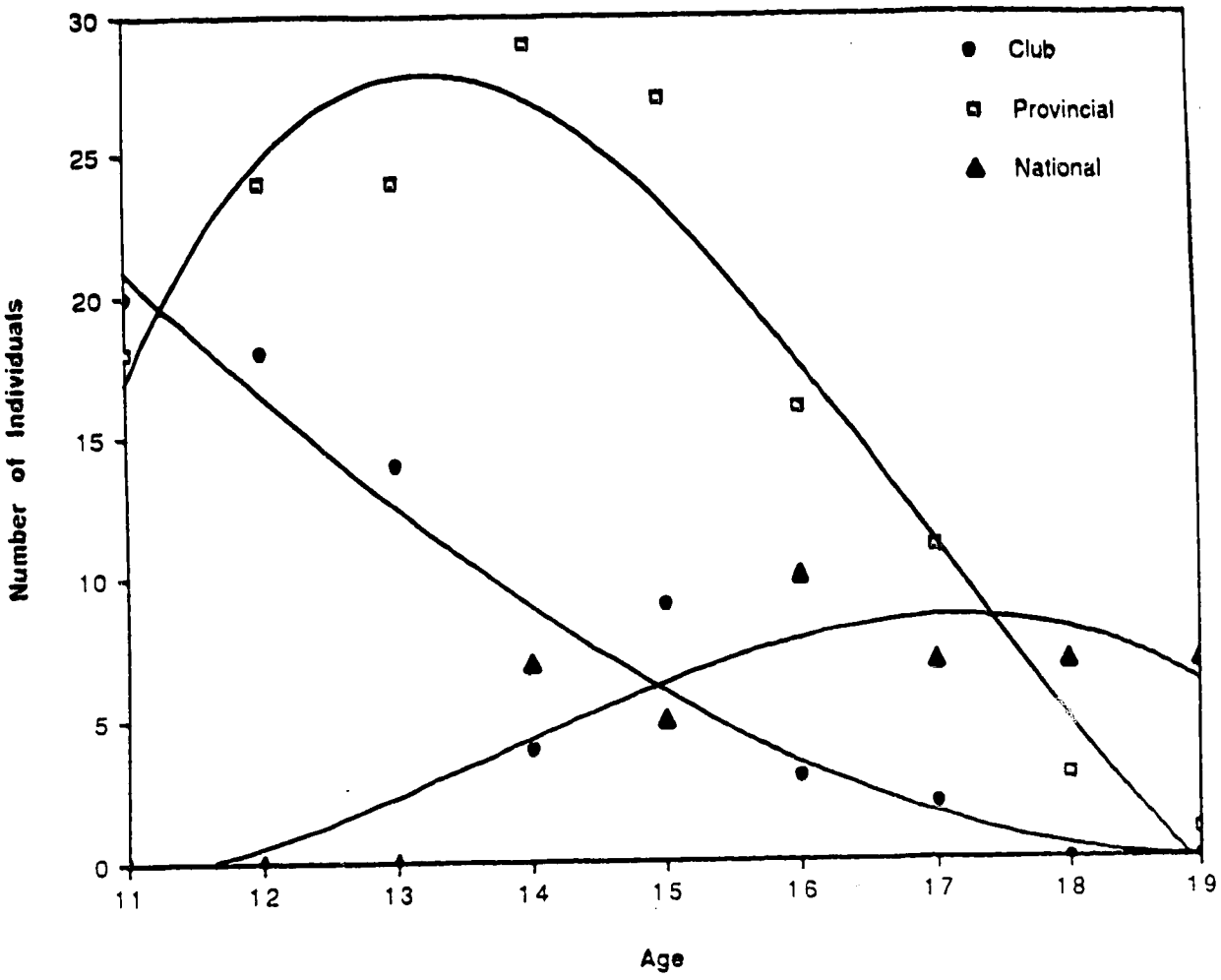
Q28. Some swimmers are very happy the way they are
but
others wish that they were different.

APPENDIX 6

GRAPH OF SAMPLE DISTRIBUTION
LEVEL OF ACHIEVEMENT

FIGURE 1

GRAPH OF SAMPLE DISTRIBUTION
AGE-LEVEL OF ACHIEVEMENT



APPENDIX 7

GRAPH OF MEAN AND MEDIAN SCORES FOR EACH SCALE- QUESTION BY QUESTION

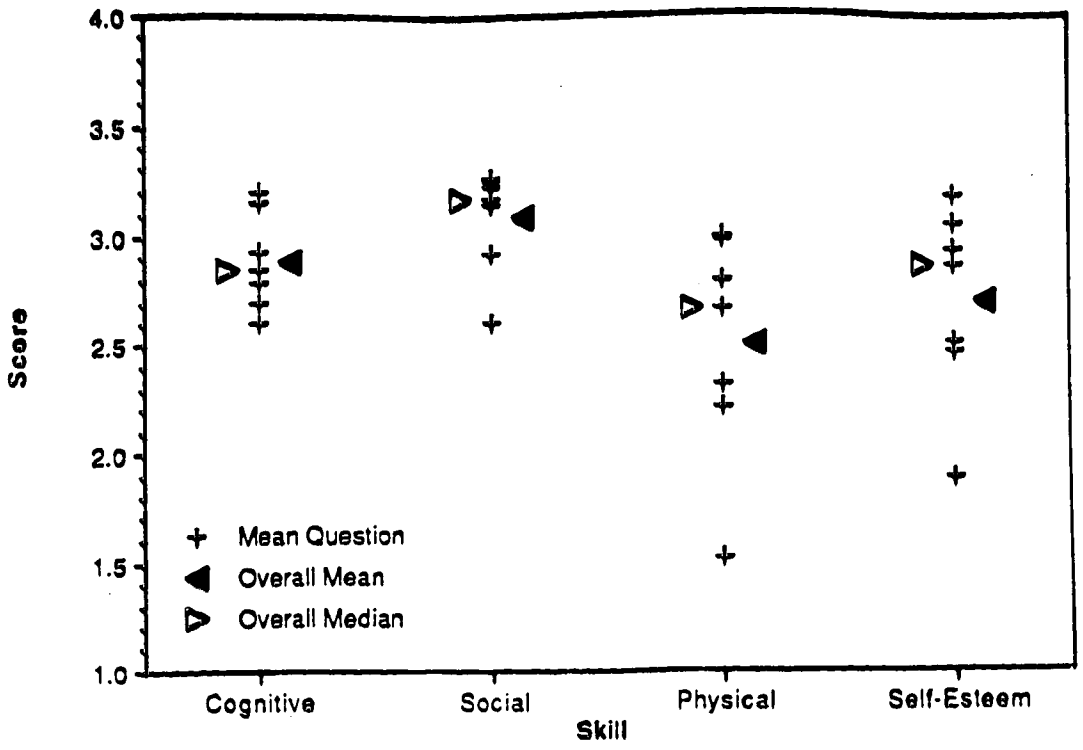


FIGURE 2

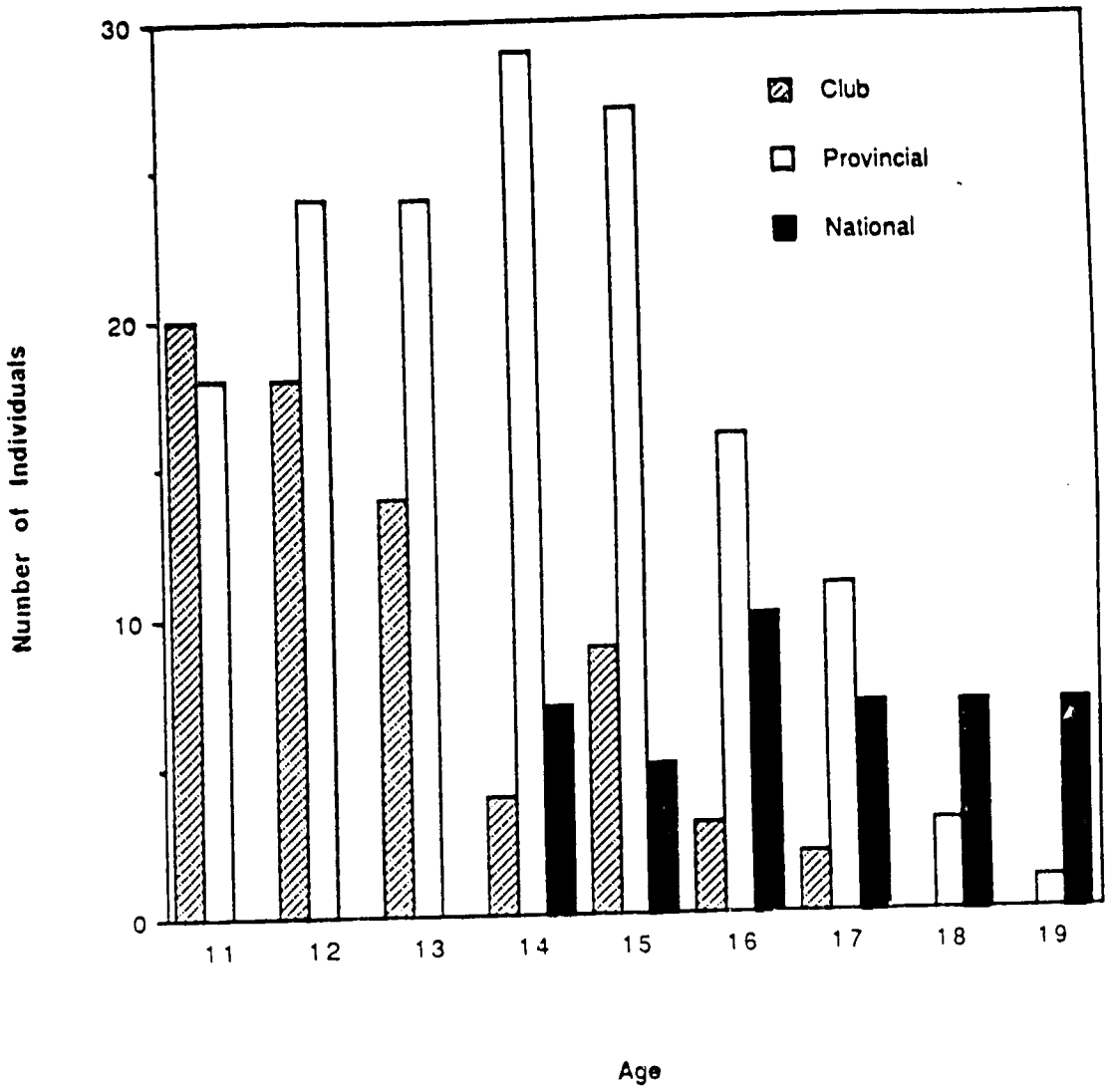
MEAN AND MEDIAN SCORES FOR EACH SCALE
QUESTION BY QUESTION

APPENDIX 8

AGE DISTRIBUTION WITHIN EACH LEVEL OF ACHIEVEMENT

FIGURE 3

AGE DISTRIBUTION WITHIN EACH LEVEL OF ACHIEVEMENT

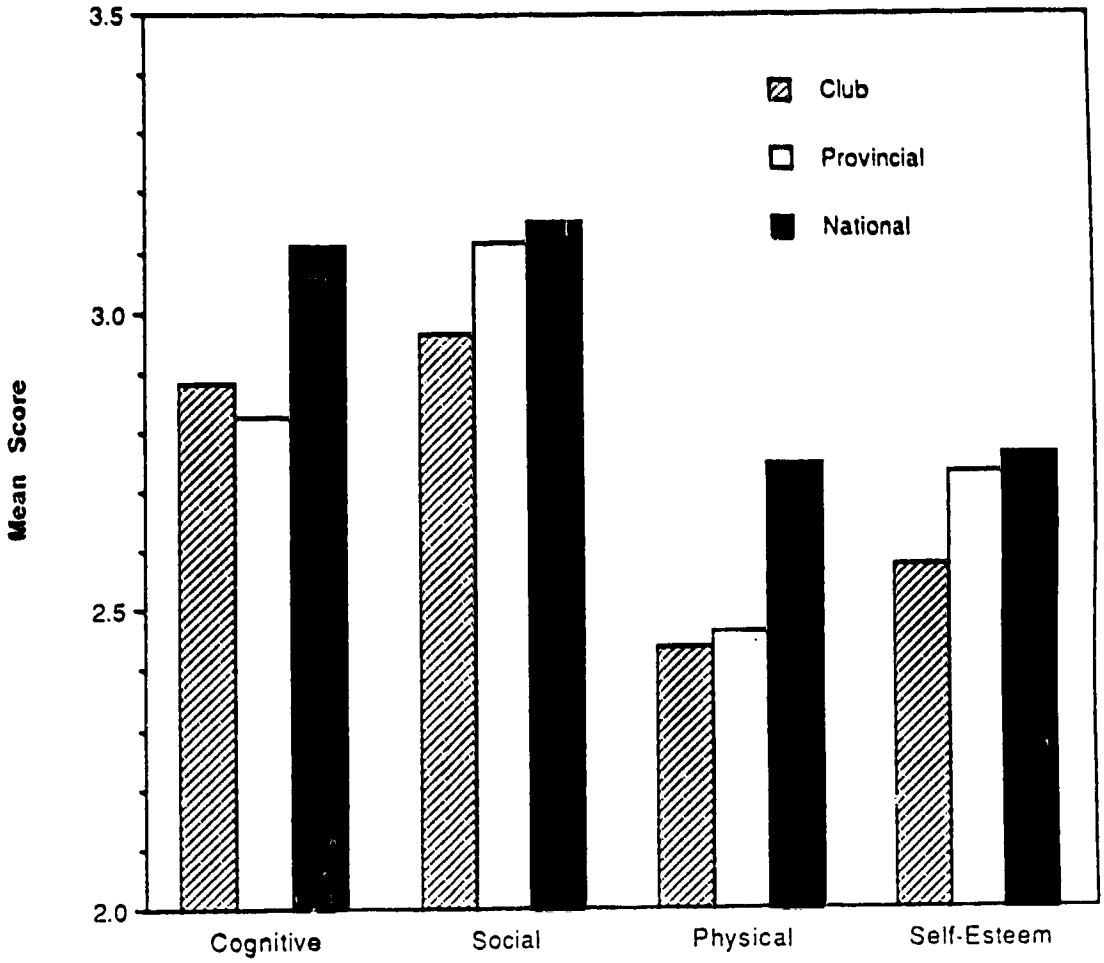


APPENDIX 9

LEVEL OF ACHIEVEMENT MEAN SCORES WITHIN EACH SCALE

FIGURE 4

LEVEL OF ACHIEVEMENT MEAN SCORE WITHIN EACH SCALE



APPENDIX 10

ONE-WAY ANALYSIS OF VARIANCE

TABLE 13

ONE-WAY ANALYSIS OF VARIANCE: COGNITIVE BY LEVEL OF ACHIEVEMENT, GENDER AND AGE (CATEGORIZED)

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Level of Achievement	1.98	2	0.99	3.69	0.026*
Gender	0.62	1	0.62	2.29	0.131
Age (cat.)	0.34	2	0.17	0.64	0.530
Residual (within)	69.85	260	0.27		
Total	73.62	265	0.28		
Total Cases = 266					

*Significant at the 0.05 level.

TABLE 14

ONE-WAY ANALYSIS OF VARIANCE: PHYSICAL BY LEVEL OF ACHIEVEMENT, GENDER AND AGE (CATEGORIZED)

Source of Variation	Sum of Squares	DF	Mean Squares	F	Sigificance of F
Level of Achievement	1.40	2	0.70	3.25	0.040*
Gender	0.24	1	0.24	1.13	0.288
Age (cat.)	0.34	2	0.17	0.80	0.451
Residual (within)	55.77	260	0.21		
Total	57.70	265	0.22		
Total Cases = 266					

*Significant at the 0.05 level.

TABLE 15

ONE-WAY ANALYSIS OF VARIANCE:SOCIAL BY LEVEL OF ACHIEVEMENT, GENDER AND AGE (CATEGORIZED)

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Level of Achievement	2.59	2	1.30	6.90	0.001*
Gender	0.86	1	0.86	4.59	0.033*
Age (cat.)	0.02	2	0.01	0.05	0.947
Residual (within)	48.85	260	0.19		
Total	52.79	265	0.20		
Total = 266					

Significant at the 0.05 level

TABLE 16

ONE-WAY ANALYSIS OF VARIANCE: SELF-ESTEEM BY LEVEL OF ACHIEVEMENT, GENDER AND AGE (CATEGORIZED)

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F
Level of Achievement	0.76	2	0.38	1.38	0.261
Gender	7.48	1	7.48	26.48	0.000*
Age (cat.)	0.68	2	0.34	1.91	0.305
Residual (within)	73.55	260	0.28		
Total	82.81	265	0.31		
Total Cases = 266					

*Significant at the 0.05 level.

APPENDIX 11

RAW DATA TABLES

TABLE 17

FIVE NUMBER SUMMARIES

COGNITIVE SCALE		
Upper fence - 3.85	2.826	
Lower fence - 2.00	2.695	3.158
	2.605	3.195
SOCIAL SCALE		
Upper fence - 3.75	3.169	
Lower fence - 2.41	2.914	3.248
	2.605	3.263
PHYSICAL SCALE		
Upper fence - 4.15	2.673	
Lower fence - 1.05	2.214	2.989
	1.515	3.00
COGNITIVE SCALE		
Upper fence - 3.93	2.861	
Lower fence - 0.565	2.459	3.049
	1.880	3.177

TABLE 18

MEAN SCORES

SCALE BY SCALE

COGNITIVE	1 - 3.158	SOCIAL	1 - 3.218
	2 - 2.605		2 - 3.147
	3 - 2.793		3 - 2.605
	4 - 2.925		4 - 3.263
	5 - 2.846		5 - 3.169
	6 - 2.695		6 - 2.914
	7 - 3.195		7 - 3.248
PHYSICAL	1 - 1.515	SELF-ESTEEM	1 - 2.508
	2 - 2.214		2 - 2.861
	3 - 2.316		3 - 3.177
	4 - 2.805		4 - 2.929
	5 - 2.673		5 - 2.459
	6 - 2.989		6 - 1.880
	7 - 3.000		7 - 3.049

MEAN AGE - 14.0
MEAN COGNITIVE - 2.888
MEAN PHYSICAL - 2.502
MEDIAN COGNITIVE - 2.846
MEDIAN PHYSICAL - 2.673

VARIANCE - 4.7
MEAN SOCIAL - 3.081
MEAN SELF-ESTEEM - 2.694
MEDIAN SOCIAL - 3.169
MEDIAN SELF-ESTEEM - 2.861

TABLE 19

BREAKDOWN OF SUBJECTS

LEVEL OF ABILITY

National- 43	Provincial- 153	Club- 70

GENDER

Male- 133 Female- 133

AGE

11-12 years-80	13-14 years- 78	15-19 years- 108
11 years- 38	12 years- 42	13 years- 38
14 years- 40	15 years- 41	16 years- 29
17 years- 20	18 years- 10	19 years- 8

REVISED AGE

11- 14 years - 158

15 years > - 108

TABLE 20

AGE BY ABILITY

AGE	NATIONAL	PROVINCIAL	CLUB
11	-------	18	20
12	-------	24	18
13	-------	24	14
14	7	29	4
15	5	27	9
16	10	16	3
17	7	11	2
18	7	3	----
19	7	1	----

TABLE 21

DESCRIPTIVE RESULTS - SCALE BY SCALE-CLUB

Average age - 12.73 Variance - 2.78 S.D. - 1.67

Scale	Mean	Variance	Standard Deviation
Cognitive	2.884	0.268	0.517
Social	2.963	0.236	0.486
Physical	2.437	0.177	0.421
Self-esteem	2.576	0.277	0.527

TABLE 22

DESCRIPTIVE RESULTS - SCALE BY SCALE-PROVINCIAL

Average age - 13.89 Variance - 3.57 S.D. - 1.89

Scale	Mean	Variance	Standard Deviation
Cognitive	2.827	0.295	0.543
Social	3.115	0.219	0.468
Physical	2.463	0.206	0.454
Self-esteem	2.730	0.350	0.592

TABLE 23

DESCRIPTIVE RESULTS - SCALE BY SCALE-NATIONAL

Average age - 16.54 Variance - 2.83 S D. - 1.68

Scale	Mean	Variance	Standard Deviation
Cognitive	3.113	0.180	0.425
Social	3.150	0.160	0.400
Physical	2.744	0.147	0.384
Self-esteem	2.761	0.216	0.465

APPENDIX 12

REVIEW OF INCORRECTLY MARKED ANSWER SHEETS

TABLE 24

REVIEW OF INCORRECTLY MARKED ANSWER SHEETS

CLUB	# GOOD	# BAD
Keyano	57	1
Olympian	23	11
Grande Cache	2	9
Ponoka	3	7
Fort McMurray	31	--
Cascade	10	16
Red Deer	17	1
Stettler	14	--
Leduc	19	--
Killarney	26	1
Rocky Mt. House	12	--
Thornhill	--	15
Lethbridge	20	--
Calgary Elite	12	2
Edmonton Elite	20	--
TOTAL	266	63