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Attachment, Competitive Anxiety and Self-Confidence among Competitive Swimmers

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Abstract

Attachment has been associated with the way individuals adjust themselves in various social, emotional and behavioral contexts. Attachment and sports performance remains one of the most unexplored topics in sport psychology. Thus, the aim of this study was to examine possible relationships between attachment styles, competitive anxiety, self-confidence and performance among competitive swimmers aged 17-20. The participants were 44 swimmers from all over Sweden (24 elite and 20 sub-elite). It was hypothesized that elite swimmers differ significantly from sub-elite swimmers in their attachment, competitive anxiety and self-confidence scores. The hypotheses were partially supported by the findings. The study found one significant result, which stated that insecure anxious attachment style combined with young age predicted lower performance results among swimmers. Interestingly this style was found to be prevalent among sub-elite swimmers. The findings should be treated in a very delicate and careful way and ethical considerations should be considered.

Keywords: attachment, competitive anxiety, self-confidence, swimming, performance

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Table of Contents

Introduction.....	5
Attachment Theory.....	6
Anxiety and Performance.....	9
State versus Trait Anxiety.....	10
Self-Esteem, Self-Confidence and Performance.....	11
Integration of Theories.....	12
Research methodology.....	14
Design.....	14
Operationalization of the Study's Main Variables.....	14
Participants.....	15
Measures.....	16
Procedure.....	18
Results.....	20
Descriptive Statistics.....	20
Attachment Data.....	21
Competitive Anxiety and Self-Confidence Data.....	22
Correlation Data.....	23
Multiple Regression Data.....	25
Discussion.....	25
Summary of Findings.....	27
Attachment Style, Self-Confidence, Competitive Anxiety and Performance.....	29
Elite versus Sub-Elite Group.....	30
Limitations of the Study.....	29
Implications.....	30
Conclusion.....	31
References.....	32
Index of tables and figures.....	40
Appendices.....	41
Appendix A: Invitation letter.....	41
Appendix B: Volunteer Information Sheet And Consent Form.....	42
Appendix C: The Online Survey Template, including, SBST, ASQ AND SCAI-2.....	44

Attachment theory studies the nature of early experiences during childhood and the later impact of these experiences on personality and general functioning of the individual. The key assumption of this theory is that secure individuals grow up self-confident, are trusty towards others and use adaptive strategies to deal with stress, whereas insecure individuals tend to experience feelings of mistrust, low self-confidence and use maladaptive strategies while dealing with stress. These early experiences usually affect the way individuals will think, behave and interact with others in the world in general.

With this knowledge background it should be possible to deduce that attachment can in some way affect different domains of functioning including performance. Thus, the focus of the present study was to investigate the relationship between attachment, competitive anxiety and self-confidence among competitive swimmers aged 17-20.

The relationship between type of attachment and sport performance has not yet received much attention from the scientific sport psychology community (Carr, 2012). So far most of the research has focused on the impact of attachment on adolescents' academic performance, general well-being, peer and romantic relationships, adjustment during transition periods, self-esteem, anxiety and specific mental disorders. The few studies that have linked attachment theory to the sports domain concentrate mainly on how attachment affects performance in relation to perceived parental support, quality of peer-relationships, ways of coping with stress, group cohesion and sport motivation (Carr, 2009; 2012). A recently published book, "Attachment in Sport, Exercise and Wellness", by Carr (2012), however, could be seen as a change of trends, since it represents an attempt to study sport and exercise theories in the light of attachment theory.

Krane (1992) and his colleagues, have argued that one of the major problems in the research field is the use of different operational definitions of the same concept, which in turn leads to confusion and discrepant findings. Thus, the first part of this research study will focus on presenting definitions, theoretical foundations and empirical findings about attachment theory, competitive anxiety and self-confidence in relation to sport performance. The last part of the introduction will present a brief review of the existing literature on the relationship between attachment, competitive anxiety and self-confidence.

Attachment Theory

Attachment refers to an affectionate long-lasting bond that connects one person to another across time and space (Mary Ainsworth, 1978; John Bowlby, 1969). According to Bowlby (1969), the author of this theory, behavior is biologically based and is manifested in order to increase individuals' sense of security, especially in times of need and stress and does not necessarily imply dependency.

This behavior is initiated during early childhood and is highly affected by the quality of the relationship the child develops with the main caregiver, usually the mother. If the relationship with the main caregiver was considered warm, stable and responsive, then there are great chances of developing a positive parental relationship and a secure attachment. Instead, if the relationship with the main caregiver was characterized by ups and downs, rejections and unresponsiveness in times of need and stress, then the child will develop a negative model of the parental relationship, which will manifest itself with avoidance or ambivalent behaviors toward others in the future (Ainsworth et al., 1978).

Consequently, these repetitive patterns of interactions will form the future base of a child's thinking in relation to him or herself, others and the world in general. Thus, while growing up the child will learn to interpret, select and influence people and circumstances around him or her in a way that will confirm his or her existing beliefs and additional pathways (Scarr & Mc. Cartney, 1983; Sroufe, Egeland & Kreutzer, 1990). These patterns of interactions were called '*internal working models*' in Bowlby's terms. Concerning their stability, Hazan and Shaver (1994) outlined:

"Bowlby (1973) explicitly stated that working models of attachment are gradually constructed out of experiences throughout infancy, childhood, and adolescence. Only then do they become relatively resistant to, but still not impervious to, change. Our view is that they are sufficiently stable to warrant consideration and study" (p.21).

During adolescence, all the multiple past attachment experiences are integrated into a more stable stance of personal attachment and are generalized into future interactions (Main, Kaplan, & Cassidy, 1985). Hesse (1999) indicated that by late adolescence the attachment system has already been developed, displays stability and predicts future behavior both within and beyond the family.

Meanwhile, in his theory, Bowlby referred to two main types of attachment: secure and insecure. Ainsworth and Bell (1970), conducted further investigation on his theory. They concluded that insecure attachment patterns could be explained based on two underlying mechanisms: anxiety and avoidance. Hereby, insecure attachment, according to her, stands either for insecure anxious or insecure avoidant.

Extended research in this area identified another category of children, whose behavior did not meet Ainsworth's classification scheme. Therefore, it was called the disorganized attachment type (Main & Solomon, 1990).

Since attachment theory became very famous, different researchers have developed various ways of assessing attachment in children and adults and have used different terms and notions for the same concepts. In order to avoid confusion, a summary of Hesse's (1999) work on attachment categories during childhood and adulthood is presented in Table 1.:

Table 1.
Attachment Categories

<i>Infant Attachment Category</i>	<i>Corresponding Adult Attachment Category</i>	<i>View of Self</i>	<i>View of Others</i>
Secure	Autonomous	+(positive)	+(positive)
Anxious/ Resistant	Preoccupied	-(negative)	+(positive)
Avoidant	Dismissing	+(positive)	-(negative)
Disorganized/Fearful	Unresolved	-(negative)	-(negative)

More specifically, there are four identified distinct prototypical attachment classification types and the main difference between them stands in the way they react to transitory distressful situations.

Secure attachment type. - The early parent-child relationship serves as a model for future interactions. Parents are perceived as "safe heaven" in times of need and stress, which will allow in turn the kid to feel secure and freely explore the environment. Through this kind of experience, the child will learn competence and independence. The more securely attached to a caregiver the child is, the bigger is the probability to become independent and develop healthy relationships with others in the future (Malekpour, 2007). Secure adolescents are characterized by a positive, open, engaged style of interaction with others and the problems (Behrens et al., 2007). When distressed, they seek help and engage in productive problem-solving that allows them to preserve the relationship while asserting autonomy (Allen & Land 1999; Allen et al., 2003).

Insecure resistant/anxious.- This category sometimes is also referred to as the ambivalent type and those who usually score high on the attachment anxiety dimension are characterized by high levels of preoccupation. According to Ainsworth (1970), the child's needs are sometimes met and sometimes ignored by the primary caregiver, leading to a perception of inconsistency. For this reason the child is insecure if or not to explore the surrounding environment and if his or her

expressions of anxiety and distress will be suitably attended (Malekpour, 2007). When their needs are not met, they show strong reaction behaviors (hyper activating strategies) in order to draw the attention of their inconsistent caregivers. They learn how to “amplify” their emotions in order to get what they need (Benoit, 2004). As adults they grow up with the idea that they do not deserve better attention and therefore develop a negative self-image, still sticking to the old mechanism of exaggerating their emotions as a way to gain others attention (Kobak et al., 1993). In distressful situations they want the attachment figures to be near them, have trouble separating from them and experience difficulty recovering from upset (Hodges et al., 2000).

Insecure avoidant. - This type of attachment comes from a history of unresponsive primary care. The child learns that the expression of his/her needs has no influence on the parents, so there is no need to show them. Typically, their caregivers respond to distress in an insensitive rejecting way such as ignoring or becoming annoyed by the child’s needs. From the child’s perspective this leads to attachment behaviors such as avoiding one’s caregiver in a situation of stress and minimizing the display of negative emotions (Benoit, 2004). Therefore, they learn how to avoid caregivers in times of need and deal with their own problems, leading to the frequent use of deactivation strategies. As adolescents they avoid becoming emotionally close and do not communicate distress or vulnerability. They may communicate dysfunctional levels of anger or just avoid such discussions (Allen & Land 1999; Crittenden 1992; Hodges et al., 2000; Main & Cassidy 1988; Stevenson - Hinde & Verschueren, 2002). Their avoidant behavior is a defense mechanism against anger, so that the attachment figure will not reject or separate from them (Gillath et al., 2009).

Insecure disorganized attachment type. - The fourth category refers to a disorganized way of coping with stress, where it is not known exactly how the child will behave if his or her needs are not met by the primary caregiver. They usually come from histories of caring and parenting that are considered distorted and “atypical”. Parents usually have histories of traumas such as unresolved mourning or unresolved emotional, physical or sexual trauma and don’t have time to deal with their child’s issues (Zeanah et al., 1999). As adolescents, these individuals behave confident, yet brittle and anxious in order to reduce uncertainty (Stevenson - Hinde & Verschueren, 2002). Sometimes their play may be characterized by violence and helplessness (Lyons - Ruth & Jacobvitz, 1999).

As previously mentioned, different types of attachment react differently to transitory distressful situations. Sports in itself represents an environment which continuously places demands on athletes and faces them with different stressors such as fear of failure, injury, trauma, pain, self-doubts about

talent and team selection, competitive pressure, lack of self-confidence, anxiety, coach stress, financial issues (e.g. Dale, 2000; Gould et al., 1993; Holt & Hogg, 2002; Nicholls & Polman, 2007).

If the athlete won't be able to cope effectively with these stressors then he/she will possibly face a number of negative consequences where motivation, commitment and satisfaction will be affected and his or her performance will suffer (Nicholls & Polman, 2007). This pressure to either adapt or change lead people to cognitively appraise their resources, coping skills and the ability to respond to the environmental demands (Lazarus & Folkman, 1984). Most of the times, this process is mediated by type of attachment and is associated with high levels of anxiety.

Anxiety and Performance

Anxiety refers to a group of reactions caused by a stressful situation (Spielberger, 1972). One of the most compelling relationships in sport psychology is the one between anxiety and performance. Much research has been carried out in relation to anxiety and sport performance and several theories have been presented, but no definitive conclusions have been reached yet (Weinberg & Gould, 2011).

The Multidimensional Anxiety Theory divided the anxiety reactions into somatic and cognitive. According to this theory, cognitive subcomponents represented the mental aspect of anxiety caused by negative expectations about success and negative self-evaluations, whereas somatic subcomponents referred to the physiological arousal of the anxiety experience (Martens, Vealey, & Burton, 1990). The Multidimensional Anxiety Theory stated that different parts of anxiety influence performance differentially. Particularly, cognitive anxiety exhibited a negative-linear relationship to performance, whereas somatic anxiety tended towards a non-linear relationship expressed in the inverted-U form (Martens, Vealey, & Burton, 1990).

The two theories mostly used in sport psychology research related to anxiety and sport performance are the inverted U-hypotheses theory and the IZOF theory.

The inverted U-hypothesis theory argued that the relationship between performance and arousal was curvilinear, where moderate levels of arousal led to better performance and extreme levels of arousal, too high or too low, led to poor performance results (Gould & Krane, 1992). However, the inverted U-hypothesis theory has been criticized. Mostly the critique given has been in relation to whether the optimal arousal occurs at the midpoint of the curve or somewhere else (Gould & Udry, 1994). In order to fill the gap of the inverted U hypothesis, Yuri Hanin (1980) introduced the *IZOF theory* (Individualized Zones of Optimal Functioning) which stated that athletes have a zone of optimal state anxiety where their best performance occurs. Outside this zone, performance deteriorates.

IZOF theory has received strong empirical support (Annesi, 1998; Robazza et al., 2000; Robazza et al., 2004) and it has been emphasized that optimal arousal is something totally individual and therefore does not always fall in the midpoint of the curvilinear continuum of the performance.

Contrary to general beliefs that anxiety and its subcomponents negatively affect performance, IZOF model confirmed that certain levels of anxiety are beneficial to performance (Edwards & Hardy, 1996; Woodman et al., 1997; Jones & Swain, 1992).

Jones and his colleagues (1994) argued that one of the most important factors to understand the anxiety-performance relationship was to focus on the way the athlete interpreted his/her own symptoms of anxiety, either as a facilitative or as a debilitating. It is believed that this interpretation of anxiety depended mostly on the athletes' level of self-confidence and perceived control related to performance. Jones and Swain (1992) confirmed this with a study conducted on elite swimmers versus non elite swimmers where better performance was attributed to those who interpreted cognitive and somatic anxiety as more facilitative and less debilitating. Similar results were also found in a study by Lundqvist and colleagues (2010), showing that elite athletes rated anxiety items more as facilitative rather than debilitating to their performance contrary to sub-elite athletes.

Overall, it is believed that there is a wide fluctuation with regard to athletes' optimal level of anxiety during performance. Most of the athletes learn to identify these anxiety symptoms and coexist with them, performing successfully despite their intensity (Hanin & Syrja, 1995; Pijpers et al., 2003).

State versus Trait Anxiety. Spielberger's (1966) original theory of stress stated a positive relationship between trait and state anxiety. According to him, state anxiety referred to a transitory emotional response to a stressful situation, whereas trait anxiety represented individual differences in the tendency to react to stressing circumstances with elevations in state anxiety. He noted that under stressful situations high trait anxious performers were expected to demonstrate high levels of state anxiety. In addition, the competitive anxiety theory (Martens, 1977), argued that before a sport competition, an individuals' competitive trait anxiety was thought to mediate the level of state anxiety by affecting the perception of threat (Smith, Smoll, & Wiechman, 1998). Research in this area has found that global trait anxiety was consistently highly related to cognitive and somatic state anxiety responses (Crocker, Alderman, & Smith, 1988; Gould, Petlichkoff, & Weinberg, 1984; Maynard & Howe, 1987). Also, studies that approached both one-dimensional and multidimensional measures of competitive state anxiety have supported this relationship (e.g. Cooley, 1987; Martens & Simon, 1976; Martens, Vealey, & Burton, 1990).

Self-esteem, though, is thought to be one of the most common sources of stress and anxiety, according to Weinberg and Gould (2011, p.85), who stated that:

“High trait anxiety and low-self-esteem are related to heighten state anxiety reactions on athletes and also low self-esteem athletes experience more state anxiety and have less confidence than high self-esteem athletes.”

Self-Esteem, Self-Confidence and Performance

Self-esteem or self-evaluation refers to the way people feel about or perceive themselves. The state self-esteem refers to how a person feels about him- or herself at a particular moment, whereas trait self-esteem refers to how a person generally or most typically feels about him - herself.

On the other hand, self-confidence indicates the belief one has about one's own internal resources or abilities to achieve success in different specific situations (Horn, 2008, p. 66), and should not be confused with self-esteem which refers to global feelings of one's own value and worth (Rosenberg, 1965).

According to the strength of the belief one has over one's abilities to perform in a specific situation, self-confidence can be high or low. If the athlete doubts his or her performance skills, even though the coach, training hours and results prove the opposite, then it is believed that the athlete displays low levels of self-confidence.

Self-confidence is a subject of large fluctuations depending mostly on immediate feedback and thus is considered less stable than self-esteem (Cassidy, 1988). Also it is argued that self-confidence is one of the most important factors that distinguish highly successful from less successful athletes (Jones & Hardy, 1990; Valey, 2005). On this account, research results showed a very strong positive relationship between confidence and performance (Feltz, 1984; Vealey, 2001).

According to Weinberg, Yukelson and Jackson (1980), the level of self-confidence affected especially the extent of personal efforts in achieving performance goals. Trait self-confidence, which is strongly related to trait self-esteem, according to socio-meter theory, evolves through the person's history of past relationships and experiences, more specifically to the degree to which they were rejected or accepted by important others over time. A number of research studies indicated that people who grew up being rejected, neglected or abused have high tendencies to develop low self-esteem (Briere, 1992), whereas people with high self-esteem felt generally accepted and loved by important others (Cheek & Buss, 1981; Schmidt & Fox, 1995). On the other hand, Deci and Ryan (1995) suggested that a healthy self-esteem/self-confidence arises more from personal achievements than social approval. Nevertheless, it is very difficult to separate the personal feeling of efficacy from others' approval of one's personal achievements, especially if these "others" are considered important figures.

Integration of Theories

To conclude, previous research has indicated a strong positive relationship between self-esteem and self-confidence and a strong negative relationship of both the concepts in relation to anxiety (Battle, Jaratt, Smit, & Precht, 1998; Rawson, 1992). In addition, Leary and McDonald (2003) found in their review that people with low self-esteem tended to be more anxious and less securely attached compare to those with high self-esteem. Also, Collins and Read (1990) found that securely attached individuals scored higher in trait self-esteem than those with either preoccupied (Feeney & Noller, 1990) or fearful styles of attachment (Brennan & Morris, 1997). Surprisingly, dismissing attachment style scored higher on self-esteem, the same as secure attachment style, due to the lack of trust in others which led to an emphasis of independence, self-reliance and the ability to work without proximal social support of loved ones (Bartholomew & Horowitz, 1991; Brennan & Morris 1997; Ein-Dor et al., 2012). Same results were found in the study conducted by Ein-Dor et al. (2012), which showed that avoidant attachment style was beneficial for tennis players in their performance.

Also, according to Gillath, Giesbrecht, and Shaver (2009), avoidant people performed better than non-avoidant ones on basic attention tasks. Their ability to regulate their attention was due mainly to ignoring or suppressing perceptions of potential distracters, an ability that Posner and Petersen (1990) interpreted as “executive control”. In short, the above mentioned, suggests a developmental trajectory with relation to self-esteem, attachment, self-confidence and the way they are associated with athletic performance.

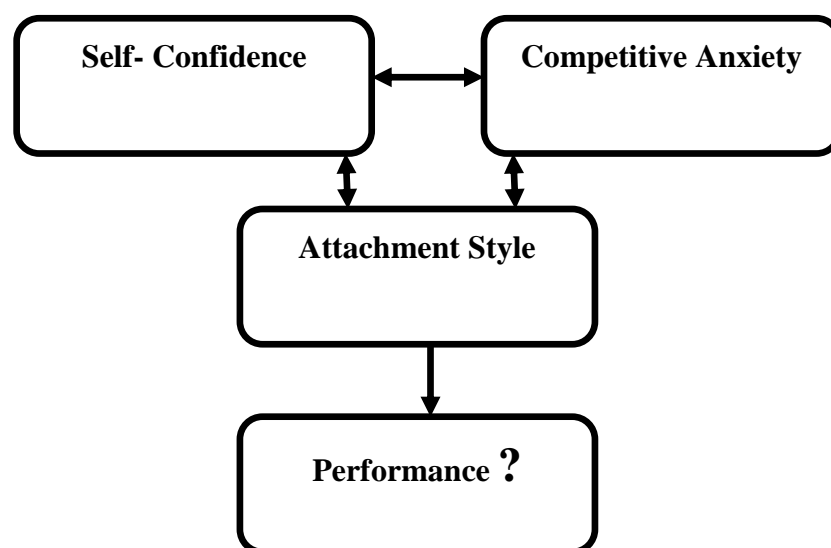


Figure 1. *Predictive model of performance based on three controlling variables: self-confidence, competitive anxiety and attachment style.*

Thus, the aim of this study was to see whether different scores in terms of type of attachment, anxiety scores and self-confidence between high-elite and sub-elite swimmers predicted their performance results or ranking scores. The research questions and hypotheses of the study were:

Research Question I.:

- Are attachment, competitive anxiety and self-confidence related to one another and if yes, in what way are they related?

Hypothesis I.:

High self-confidence is negatively related to competitive anxiety and anxious attachment type, but positively related to secure attachment and avoidant type.

Hypothesis I.I:

Competitive anxiety is positively correlated to anxious attachment type and negatively correlated to both secure (confident) and avoidant type.

Research Question II. :

- Is there any difference in trends of attachment between elite and sub-elite swimmers?
- Do elite swimmers tend to be more securely attached (or score higher on avoiding category) than sub-elite swimmers?

Hypothesis II. :

Elite swimmers score higher on secure and avoidance categories of attachment, while sub-elite swimmers score higher on the anxious category of attachment.

Research Question III. :

- Do elite swimmers score higher in self-confidence and lower in competitive anxiety items than do sub-elite swimmers?
- Do elite swimmers perceive their anxiety symptoms more as a facilitative rather than debilitating to their performance, contrary to sub-elite swimmers?

Hypothesis III. :

Elite swimmers score higher in self-confidence, lower in competitive anxiety and perceive anxiety more as facilitative than debilitating to their performance, whereas sub-elite swimmers score lower in their self-confidence items, higher on competitive anxiety items and perceive anxiety as more debilitating than beneficial to their performance.

Research Methodology

Design

A cross-sectional design using quantitative and qualitative methods for data collection was applied in order to investigate the questions of interest. All the instruments involved in the study produced quantitative data.

Operationalization of the Study's Main Variables

Performance outcomes. In the present study participants were carefully chosen in a way that they could share common characteristics such as age and sport. At the same time they were chosen so they could differ significantly in terms of training hours per week, career goals and objective performance results.

They were categorized into two big groups; high-competitive elite athletes and sub-elite athletes focusing only on objective performance results. Annual points of each swimmer, collected during the previous year 2011- 2012, in different national and international events, according to Swedish Swimming Federation Database, were taken in consideration. In the database the swimmers were ranked from the first best one, who scored 961 points to the last one who scored 515 points. Each list had in total the results of 240 swimmers.

The research group defined as high-competitive elite- athletes those swimmers, who were ranked from number 1 to 40 in the Swedish Swimming Ranking Database list and scored from 961 to 715 points. On the other hand, sub-elite swimmers were defined as those in the lowest part of the ranking list, starting from number 200 to 240, who scored from 552 to 515 points.

Attachment outcomes. Research on attachment has categorized attachment measures in dimensional (continuous) versus categorical and self-reporting versus coding of observed data (Ravitz et al., 2005). Categorical measures usually strictly assign individuals in one of the four categories of attachment, whereas dimensional models measure the degree to which various dimensions of attachment styles (security, anxiety and avoidance), are mostly presented in one person.

It is believed that self-reporting measures are based on currently conscious attitudes toward relationships with important others and therefore they cannot detect defense mechanisms of distorted responses. On the other hand, coding of observed data measures, such as interviews or projective and narrative tests, tend to reduce the response biases through activating thoughts and feeling in relation to early attachment patterns.

Therefore, to have a clear view of the swimmers attachment style, in the current study, two different attachment instruments were used: the ASQ and the SBST. ASQ represents a self-reporting instrument resulting in continuous attachment data and the SBST represents a projective instrument based on narrative stories, and results in both continuous and categorical data.

Competitive Anxiety outcomes. Competitive anxiety was measured by CSAI-2, which is known for assessing intensity and direction of cognitive anxiety, somatic anxiety and self-confidence.

Participants

Recruitment of the sample. A description of the research project was delivered to the Swedish Swimming Federation and the Swedish Aquatic Research, asking for their collaboration on February 15th 2013 (see Appendix A). Both organizations approved to be part of the study and provided two performance ranking lists, according to gender, one for boys and one for girls. Each performance ranking lists contained the contact addresses of 240 competitive swimmers, aged 17-20, in Sweden, and their respective performance results during the previous year 2011-2012. In order to compare elite and sub-elite swimmers, from the two lists, only the forty best swimmers ranked from number 1 to 40 (40 boys and 40 girls) and the swimmers ranked from number 200 to 240, again 40 boys and 40 girls, were included in the study.

In total, 80 boys (40 elite and 40 sub-elite) and 80 girls (40 elite and 40 sub-elite) were included in the study.

160 invitation letters were delivered to the sample on 21th of March 2013, one month before the official data collection (see Appendix A). From this sample, 16 swimmers sent back their e-mail addresses and agreed to participate. Of these swimmers, 14 approved to participate and filled out the online questionnaires. To achieve broader recruitment, another information email was sent out to each swimming club, asking their collaboration in the study. As a result, three swimming clubs made available the names and email addresses of their swimmers. In total, 11 swimmers were contacted and only 7 filled out the online questionnaire. As a last attempt, the researcher called 54 swimmers to their private telephones, obtained from the Swedish Swimming Database, explained the aim of the study and asked if they would like to participate. From these 23 swimmers agreed to participate and filled out the online questionnaire. The process of data collection was closed on 7th of May 2013.

Information and Consent. An email with detailed information about the study, the consent form and a link to the online questionnaires was sent back. It took the participants, on average, 30 minutes to fill out the questionnaires. Participation was voluntary and all the swimmers were informed that they could discontinue being part of the study at any time without consequences. The

coaches and swimmers interested in the result of the study were offered a copy of the final thesis. All participants signed a written informed consent, and all procedures followed ethical standards. (See Appendix B).

Sample size. In total, 44 swimmers from all over Sweden (22 boys and 22 girls), aged 17-20 ($M=19$ years old; $SD=1.3$), agreed to participate in the study.

24 were elite swimmers (performance scores ranking from 961 to 715) (8 girls and 16 boys), training on an average 20 hours per week ($M=20.4$, $SD=3.6$) and 20 (14 girls and 6 boys) were sub-elite swimmers (performance scores ranking from 552 to 515), training on average 15 hours per week ($M=14.6$, $SD=4.5$).

Most of the participants started to compete officially between 12 and 13 years of age ($M=12.6$, $SD=2.1$), independently of rank. The average age of elite swimmers was $M=19.4$ and the average age of sub-elite swimmers was $M=19.3$, so the mean age of participants was the same in both groups.

Measures

All the questionnaires used were administered in Swedish and have been shown to have acceptable reliability and validity. The online survey was divided into four parts. The first part consisted of general questions concerning the athletes' training hours per week, future career goals, and support from important others. The second part addressed attachment style through two instruments: The Secure Based Script (SBST: Psouni & Apetroaia, *in press*) which represents a narrative based assessment and the Attachment Style Questionnaire (Feeney et al., 1994) a self-reported measure of attachment in relation to personal thoughts and feelings. The fourth part was an assessment of performance anxiety intensity and direction and self-confidence through the Competitive State Anxiety Inventory-2 (Martens, Burton, Vealey, Bump, & Smith, 1990).

Secure Base Script Test (SBST: Psouni & Apetroaia, *in press*): This instrument is a projective test that tries to explore scripted attachment knowledge, based on narrative stories about close relationships in transitional situations. The aim of the test was to activate thoughts and feelings in relation to attachment issues, in order to deduce individuals' type of attachment. The test was based on the assumption that if secure based support was provided during early childhood, then this experience will be stored into memory as scripts of those experiences, and, with time, merge into a secure based script (Waters & Rodrigues-Doolabh, 2001). Instead, if the secure support was denied during childhood, then the individual would develop incomplete, inconsistent and not well configured scripts in regard to personal relationships. On account of this, respondents were asked to

create stories based on a set of 12 words. All the words are chosen in a way to depict various attachment situations and suggest a prototypical story line such as: tournament, nervous, mom/dad, need for help, opponent, discuss, tactics, beginning of the game, lose, look, mom/dad, thumbs up (The set of the words are taken from the story with the title: Swimming Competition Story).

The swimmers created four stories, from which three storylines were adopted from the SBST (Psouni & Apetroaia, 2009; 2011, *in press*) and one storyline, “The Swimming Competition”, was developed by the author in collaboration with Psouni, for the needs of the present study.

All stories were scored on a 7-point scriptedness scale reflecting how much they resemble a prototype of secure based script. Narratives characterized by very high levels of resemblance with the prototypical, well developed secure based scripts were scored as 7 and narratives characterized by high levels of resemblance were scored as 6. Narratives that contained some elements of the secure based script were scored as 5 and those who met the minimal criteria of evidence of a secure based script were scored as 4. Stories focused on actions or events without displaying any emotional states or interactions were scored as 3. Narratives lacking secure base content were scored as 2 and narratives that didn't make sense at all were scored as 1 (Psouni & Apetroaia, 2009; 2011). 176 stories from 44 swimmers were transcribed and scored by a trained, reliable coder, twice, with a week's interval between scorings. The test- retest scoring reliability varied between .89 (swimming competition) and .96 (the accident story). Averaged scores were used. The internal consistency among the stories was .89. Scores from the non-sports related scripts were averaged (see Appendix C).

Attachment Style Questionnaire (ASQ; Feeney, Noller, & Hanrahan, 1994). This questionnaire consists of 40 items and has been validated in Swedish by Håkansson and Tengström (1996). Participants were asked to rate themselves, on a 6 - point Likert-type scale, on how they perceive themselves and others in general relationships such as: *I worry when people get too close with me. I worry that I might not be as good as other people. It is very important for me to have a close relationship.* ASQ is suitable for both youth and adults and its items aim to measure attachment styles through investigating different dimensions of adult attachment such as confidence, need for approval, preoccupation with relationships, discomfort with closeness and relationship as secondary. Through combining discomfort with closeness and relationships as secondary, estimates of avoidance tendencies were calculated. Similarly, through summing up the scores of need for approval and relationship as secondary, anxiety attachment dimension was measured. Average scores of confidence items indicated secure attachment. Low average scores on both anxiety and avoidance dimensions combined with high scores on confidence items reflected attachment security. Feeney and colleagues (1994) reported internal consistencies for the English version with Cronbach alphas for the subscales Security (.83), Avoidance (.83), and Anxiety (.85). The same results were

achieved for the Swedish version (Håkansson & Tengström, 1996). The test-retest reliability over a period of approximately ten weeks was .74, .75 and .80 for the three subscales. In the present study, the internal consistencies for the three sub-scales; .82 for the Security dimension, .84 for the Avoidance and .80 for the Anxious dimension (see Appendix C).

Competitive State Anxiety Inventory-2 (CSAI-2; Martens, Burton, Vealey, Bump, & Smith, 1990). The Swedish validated version (Lundqvist & Hassmén, 2007) was used to assess intensity and direction of competitive state anxiety of swimmers. CSAI-2 has 27 items, which describe athletes' feelings before an important performance event, in order to measure cognitive anxiety (*I'm afraid that I'll lose calm and do not do well under pressure; I'm losing patience; I am afraid others will be disappointed from my performance*), somatic anxiety (*I feel tension in my stomach; My pulse rises; My hands are wet*) and self-confidence (*I feel confident; I am confident that I can perform well; I feel safe*).

Participants were asked to rate their feelings into two subscales. In the first one, they rated the extent to which they identified with the specific state before the competition and on the second scale they rated how they believed the specific feelings were to affect their performance. In the present study, the three subscales of CSAI-2 reported high internal consistencies, specifically: Cognitive Anxiety (.85), Somatic Anxiety (.84) and Self-Confidence (.78) (see Appendix C).

Procedure

Procedures for testing. All the quantitative data were saved in an Excel spreadsheet and then moved to a SPSS file. Regarding the transcription and scoring of the SBST data, a blinding procedure was used. All the narratives were sent to the coder to score them. To each swimmer was randomly assigned a number, which the coder had no knowledge of. After coding each story, the scores from the SBST, were included into SPSS, with the rest of the data for further analysis.

Data preparation and statistical analysis. Statistical analysis was conducted using SPSS 20.0 for Windows.

All attachment, competitive anxiety and self-confidence variables were screened for skewness, kurtosis and normality of distribution. Outliers and answers with unusual patterns were not considered, especially if they revealed a disposition to repeat exactly the same response along the entire questionnaire. Around 7% of the data was considered lost after this removal.

Kolmogorov-Smirnov statistic was computed for all the variables respectively (attachment style, competitive anxiety and self-confidence) in order to test normality. They scored more than .05, which indicated normality of distribution and suggested the use of parametric statistical tests

(Pallant, 2010). Upon satisfactory reliability of the items, sub-scores were computed by adding up individual item scores and averaging them.

Descriptive statistics, T-test, correlations and multiple regressions were subsequently performed to evaluate differences between groups (elite versus sub-elite) and to explore relationships and correlation among different variables. The significance level was determined a-priori to be less than $\alpha \leq .05$ and a significance level less than .01 was defined as highly significant. Thus, every value over $p=.05$ was considered not significant. If the results appeared to be statistically significant, then an estimate of the effect size was provided by the calculation of the Partial Eta Squared (μ^2). According to Pallant (2010), the effect size statistics provides an indication of the magnitude of the differences between groups not just that the result could have occurred by chance.

Results

Descriptive statistics

Career Goals and Support Figures. Elite and Sub-Elite swimmers differed significantly in terms of career goals. Elite swimmers aimed more towards European and World Championships events, whereas sub-elite swimmers were more focused on national events as shown in Figure 2.

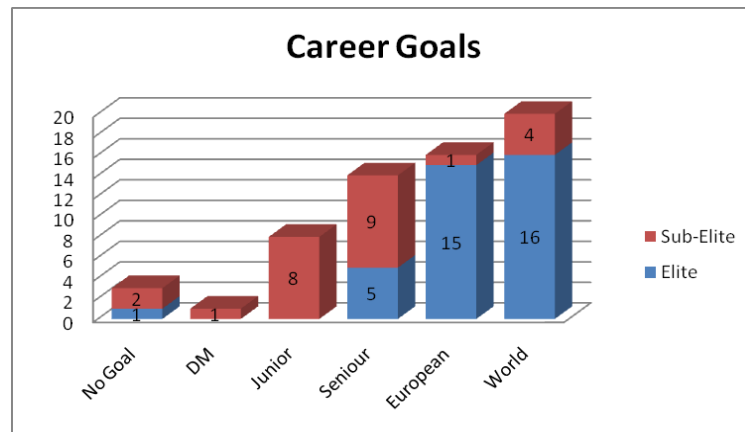


Figure 2. *Personal Career Goals for Elite and Sub-Elite Swimmers.*

(From No Goal at all towards District, Junior, Senior, European and World Championships).

Since one of the aims of the current investigation was to explore attachment in relation to performance, the athletes were asked about important others who support them in sports experience. As Figure 3 shows, athletes reported their parents to be most important in supporting them in sports, with coach and friends following closely. The category “other” referred mostly to romantic partners.

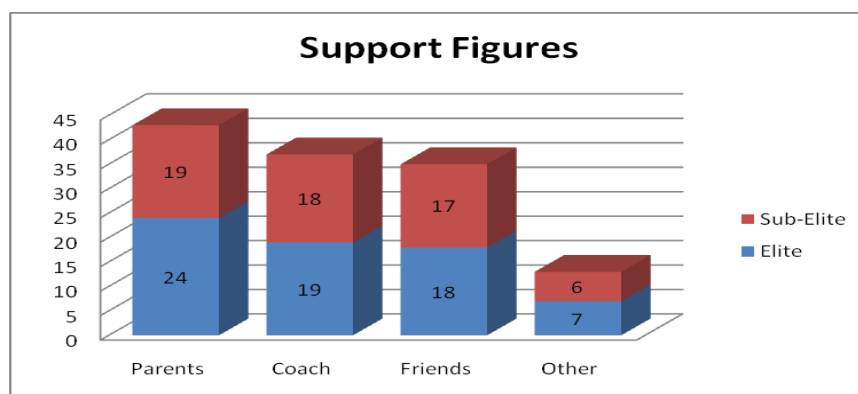


Figure 3. *Support Figures of Competitive Swimmers.*

Attachment Data

Table 2.

Means, Standard deviations, p and t values of ASQ and Scripts of SBST, for both Elite and Sub-Elite Swimmers.

	Elite (N=24)		Sub-Elite		(N=20)
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>
Avoidance	2.9	.74	3.1	.70	1.29
Anxiety	3.2	.78	3.7	.73	-.90*
Confidence	4.6	.63	4.2	.95	-2.04
Scripts	3.8	1.2	3.7	1.1	1.6

* $p < .05$ (2-tailed)

ASQ subscale scores were compared between elite and sub-elite swimmers (see Table 2), through independent sample t-tests. Regarding avoidance scores, there was no significant difference between the elite and sub-elite swimmer groups ($t(40) = 1.29, p = .2, 9, two-tailed$). The magnitude of the differences in the means (mean difference = .31, 95% CI: -.17 to .79) was small ($\mu^2 = .02$) even though the sub-elite group scored higher in this dimension. There was a significant difference between the scores of the elite group compared to the sub-elite group ($t(40) = -.90, p = .04, two-tailed$) in the anxiety dimension, with a large effect size of $\mu^2 = .10$ (mean difference = .19, 95% CI: -.64 to .24). In relation to confidence, the elite group scored higher than the sub-elite group ($t(40) = -2.04, p = .05, two-tailed$) with a very small significant difference in the means ($\mu^2 = .02$; mean difference = -.47, 95% CI: -.93 to .006). There was no significant difference between elite and sub-elite swimmers in terms of scriptedness in their secure based script stories.

The results showed nevertheless a strong significant negative relationship between confidence/security and avoidance attachment dimensions ($p < .01$), where high levels of attachment confidence were associated with low levels of attachment avoidance. Also there was a negative significant relationship between confidence and anxiety attachment dimension ($p < .01$).

Avoidance and anxiety dimensions of attachment in the ASQ ($p < .01$), were positively and significantly correlated to each other. On the other hand, data from the stories suggested that they tap the same construct, which stands for secure based knowledge ($p < .01$).

Interestingly, SBST scores indicating stories where there was a secure base knowledge and stories where there was not were not correlated with ASQ scores (see Table 6).

In order to investigate statistical associations between elite and sub-elite swimmers and attachment classification based on SBST results, a Chi-square analysis was performed (Table 3). For this analysis, SBST scores were dichotomized using a cut off of 4 as in the manual (Psouni & Apetroaia, 2009), a score of 4 is definitive of the presence of a secure base script (see also Psouni & Apetroaia, *in press*). The analysis showed that more securely attached individuals were found among the elite group (N=24) and more insecurely attached individuals (N=20) among the sub-elite group, as a trend, since the results were not statistically significant

Table 3.

Cross-tabulated statistics: Level and Attachment

	Insecurely Attached	Securely Attached
Elite	9	15
Sub-Elite	11	9

* $p = .25$ (2-tailed)

Competitive Anxiety and Self-Confidence Data

From CSAI-2, it was possible to calculate intensity and direction of somatic and cognitive anxiety items and self-confidence in elite swimmers and compare these results with sub-elite swimmers (see Table 4).

Table 4.

Descriptive Statistics and p. values of the CSAI-2 measure for Elite and Sub-Elite Swimmers.

	Elite (N=24)		Sub-Elite (N=18)		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>
<i>Cognitive Anxiety Intensity</i>	17.6	4.41	19.7	6.04	-.132
<i>Cognitive Anxiety Direction</i>	33.4	8.30	32.6	9.47	.293
<i>Somatic Anxiety Intensity</i>	13.7	3.06	14.0	4.44	-.216
<i>Somatic Anxiety Direction</i>	38.1	7.09	39.1	7.03	-.428
<i>Self-Confidence</i>	26.9	5.36	24.9	6.23	1.12

Independent- samples t-test were conducted in order to compare cognitive anxiety intensity and direction, somatic anxiety intensity and direction and self-confidence scores between elite and sub-

elite swimmers. The differences between the two groups were not significant, however the sub- elite group scored higher on cognitive anxiety intensity and lower on cognitive anxiety direction compared to the elite group. This reflected a tendency for the sub-elite group to experience more cognitive anxiety symptoms and perceive them more debilitating to their performance than the elite groups does. Regarding somatic anxiety intensity, the elite group scored higher than the sub-elite group but they did perceive these symptoms as more debilitating to their performance than the sub-elite group did. Lastly, the elite group scored higher than sub- elite group on the self-confidence dimension.

Self-confidence was negatively significantly related to competitive anxiety ($p < .01$).

Correlation Data

Correlations were computed in order to delineate the kind of the relationship (strength and direction) among the variables included in the theoretical model. Since the aim of the study was to explore relationships among variables of interest, in elite and sub-elite swimmers, correlation statistics were first conducted for the two groups separately (Table 5). Then, a second correlation analysis was conducted for the sample group as a whole (Table 6).

Preliminary analyses were performed to ensure no violation of normality and linearity.

Table 5.

Pearson Product-moment Correlations between Measures of Attachment, Competitive Anxiety and Performance scores for Elite Swimmers (N=24) referring the right upper side of the table and Sub-Elite Swimmers (N=20) referring to the lower left side of the table.

<i>Scale</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
1.Self-Confidence		-.578**	.357	-.385	-.135	-.268	-.278
2.Somatic+Cognitive Anxiety	-.850**		-.295	.048	.187	.196	-.090
3.Confidence	.503**	-.473*		-.768**	-.488*	-.145	.049
4.Avoidance	-.340	.437	-.610**		.528**	.095	.002
5.Anxiety	-.561*	.471**	-.450*	.508*		-.043	-.088
6. Scripts	.233	-.050	-.124	-.023	-.370		
7.Performance	.193	-.033	.102	-.172	-.229	-.218	

* $p < .05$ (2-tailed)

** $p < .01$ (2-tailed)

Table 6.

Pearson Product-moment Correlations between Measures of Attachment and Competitive Anxiety for all participants (N=44)

<i>Scale</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
1. Self-Confidence	-	-.734**	.454**	-.377*	-.355*	.008	.129
2. Cognitive+Somatic Anxiety		-	-.429**	.264	.352*	.020	-.166
3. Confidence			-	-.673**	-.484**	-.092	.202
4. Avoidance				-	.532**	-.002	-.141
5. Anxiety					-	-.229	-.316*
6. Scripts						-	-.126
7. Performance							-

* $p < .05$ (2-tailed)

** $p < .01$ (2-tailed)

Self-confidence was significantly positively related to attachment confidence (ASQ) ($p < .01$) and negatively related to anxiety and avoidance (ASQ) ($p < .05$) and somatic and cognitive anxiety. The relationships between all the other variables are in the same direction but none of the attachment or competitive anxiety variables were associated with performance. No significant results were found from the scripts and all the other variables. Scriptedness was not associated with performance.

The relationship between performance and self-confidence showed to be negative in the elite group and positive in the sub-elite group, but the results were not statistically significant.

Competitive anxiety was significantly negatively correlated with confidence/secure dimension of attachment ($p < .01$) and positively correlated with insecure attachment anxiety and avoidance dimension ($p < .05$). The relationships were considered stronger in the case of the sub-elite group ($p < .05$).

Performance results were negatively correlated with competitive anxiety, attachment avoidance and anxiety dimension ($p < .05$) and positively correlated with self-confidence and secure attachment (confidence), but no significant result was achieved.

From all the control variables included in the correlational analysis, anxiety attachment dimension was the only result statistically significant in relation to performance results.

Multiple Regression Data

In order to assess the contribution of each of the independent variables in the present study, hierarchical regression statistics was computed. All the possible correlations among variables were checked in order to avoid multicollinearity. According to Pallant (2010), if two independent variables highly correlate to each other, usually above .7, it should be considered to omit one of the variables or to form a composite variable from the scores of both the variables together. In our study, total anxiety and self-confidence were highly correlated ($r = -.735$), therefore while computing regression we used one of the two, according to the purpose of the investigation. Variance inflation factor (VIF) and tolerance, were scanned either to examine whether a predictor had a strong linear relationships with other predictor(s) (Field, 2009). According to Myers (1990), tolerance values less than .10 and VIF values above 10, should be considered as a concern for multicollinearity. None of the values in the present study showed multicollinearity.

Before performing hierarchical regression analysis, standard multiple regression analysis was conducted, in order to examine all the predictors together and see which of them contributed substantially to the model's ability to predict the outcome (Field, 2009). Once the model was checked, it was established that only attachment anxiety dimension showed a significant relationship with performance ($r = .33$), which confirmed our correlation statistics. Later, hierarchical stepwise analysis statistics was computed to further explore the relationship of each of the predictors in relation to performance.

In order to examine the relationship between different attachment styles and all the other variables; sex, age, competitive anxiety, and performance, stepwise regression analysis was conducted. This procedure was repeated three times, entering each time a different attachment style variable (confidence, avoidance and anxious). In the case of confident and avoidant attachment style, stepwise hierarchical multiple regression excluded all the controlling variables maintaining only age and sex, as factors that captured the most significant amounts of variance in performance results ($R^2 = .148, p < .05$).

Interestingly, this was not the case of the attachment anxious style, which was kept by the model. More specifically, age and sex were entered at the Step 1, explaining 15% of variance in swimmers overall performance results. After entering all the remaining controlling variables plus anxious attachment dimension in Step 2, the analysis again excluded all the variables, maintaining only sex, age and anxious attachment as predictive variables. The total variance explained by the model 2 was 23.2%, $F(3, 38) = 3.83, p < .05$.

Therefore, insecure attachment anxiety dimension explained an additional of 8.5% of the variance in performance, after controlling for age and sex variables, $R^2 \text{ change} = .08$, $F \text{ change } (1, 38) = 4.194$, $p < .05$. In the final model anxious attachment dimension highly contributed to make the difference with $\beta \text{ values} = 1.63$, $p < .05$, (Table 7).

Table 7.

Stepwise hierarchical multiple regression data for age sex at Step 1 and age, sex, competitive anxiety and anxious attachment style entered at Step 2.

	<i>B</i>	<i>SE B</i>	β	ΔR^2
<i>Step 1</i>				
<i>Constant</i>	1.64	2.91		
<i>Anxiety</i>	1.84	.822	.333	.111
<i>Step 2</i>				
<i>Constant</i>	6.47	3.62		
<i>Anxiety</i>	1.79	.790	.325	
<i>Age</i>	-.935	.448	-.299	.089

To examine the impact of attachment and self-confidence onto competitive anxiety another stepwise regression analysis was conducted. Participants sex and age were entered in a first block, followed by self-confidence, attachment confidence and attachment anxiety and competitive anxiety. The model maintained only self-confidence as a significant predictor of competitive anxiety capturing 54% of the variation of competitive anxiety in swimmers $F (1, 40) = 46.65$, $p < .01$ with beta values ($\beta = -.734$ $p < .01$).

Discussion

Previous to this study, the relationship between attachment and swimming performance had not been addressed. Therefore, the aim of this study was to examine associations between type of attachment, competitive anxiety, self-confidence and performance. It was hypothesized that elite athletes differ significantly from sub-elite athletes in their trends of attachment, competitive anxiety and self-confidence scores. Overall, results partially supported our hypotheses. Anxious attachment style, combined with young age, was found to be strongly related to lower performance results. Also, low levels of self-confidence predicted high levels of perceived competitive anxiety among swimmers.

Summary of Findings

Attachment style, self-confidence, competitive anxiety and performance. Hypothesis number one, which stated that high self-confidence was negatively related to competitive anxiety and anxious attachment type, but positively related to secure attachment and avoidant type was partially supported. The other sub-hypothesis number one, which stated that competitive anxiety was positively correlated to anxious attachment type and negatively correlated to both secure (confident) and avoidant type, was also partially supported.

More specifically, the results indicated that swimmers with high levels of self-confidence experienced less competitive anxiety than swimmers with low levels of self-confidence, but this relation did not affect significantly their performance results. As predicted, self-confidence showed a strong negative relationship to competitive anxiety and a positive relationship to performance (although not statistically significant). The results between self-confidence and competitive anxiety were consistent with relevant literature on this topic, which stated that high levels of self-confidence were usually related to low levels of experienced anxiety (Weinberg & Gould, 2011; Lundqvist et al., 2010; Jones et al., 1993). Unfortunately, the present findings couldn't demonstrate a significant relation between competitive anxiety, self-confidence and performance results. The weak associations between self-confidence, competitive anxiety and performance may be due to the small sample size of the group of interest involved in the study. Other research strongly supported the significant positive effect of self-confidence and negative effect of competitive anxiety into performance (Weinberg & Gould 2011, Jones & Hardy, 1990; Valey, 2005).

Securely attached swimmers were more self-confident, experienced less competitive anxiety and had better performance results than insecurely attached swimmers. This finding was consistent with relevant literature in the field which studied the effect of secure attachment in different domains especially with regard to academic and sports performance results and self-confidence (Ein-Dor et al., 2012; Fass & Tubman, 2002; Moss & St-Laurent, 2001). On the contrary, anxious and avoidant attached swimmers displayed low levels of self-confidence, high levels of competitive anxiety and poor performance results. Surprisingly, this finding was expected for the anxious type, but not for the avoidant type. Research in this area has indicated that individuals with avoidant attachment style usually score higher on self-esteem (Bartholomew & Horowitz, 1991; Brennan & Morris, 1997) and performed better in individual sports such as tennis (Ein-Dor et al., 2012). Somehow the present result made sense, since both of the categories fell into attachment insecurity style and attachment insecurity is usually related to negative results on dimensions that are detrimental to performance (Ein-Dor et al., 2012).

Again, the avoidant attachment category scored differently than expected in relation to competitive anxiety. Avoidant swimmers experienced high levels of competitive anxiety. Updated research emphasized that children with avoidant attachment histories did not develop so much anxiety symptoms compared to other categories of attachment, possibly due to the high vigilance sense they had developed during their early childhood. Therefore in distressful situations such as competition events, individuals with avoidant attachment styles were expected to experience less anxiety than other categories (Cassidy & Shaver, 2008).

Elite versus Sub-Elite Group. Hypothesis number two, which stated that elite swimmers scored higher on secure and avoidance categories of attachment, while sub-elite swimmers scored higher on the anxious category of attachment, was again partially supported. Hypothesis number three, which stated that elite swimmers scored higher in self-confidence, lower in competitive anxiety and perceived anxiety more as facilitative than debilitating to their performance compared to sub-elite swimmers, was supported even though the findings were not statistically significant.

Specifically, elite swimmers showed to be more securely attached than sub-elite swimmers, who scored higher in both insecure dimensions of attachment. The difference between the two groups was significant only in the case of anxious attachment type, where the sub-elite group dominated this dimension. Again, the avoidant style did not occur in the elite group, which was predicted in our hypothesis number two. Given that securely attached individuals accessed more adaptive strategies for dealing with stress than insecurely attached individuals, sub-elite group might be inclined to approach the insecure dimension (Mikulincer & Shaver, 2007).

Consistent with the previous reasoning, it was expected that elite swimmers experienced less competitive anxiety than sub-elite swimmers and perceived anxiety symptoms as facilitative rather than debilitating to their performance. Surprisingly, the two groups did not differ significantly in their competitive anxiety intensity and direction scores, even though there were found different associations between attachment and performance anxiety in both groups. This finding was partly in line with updated research within the field supporting actual difference between elite and sub-elite athletes in the way they experienced and perceived anxiety symptoms either as facilitative or as debilitating to their performance. According to Lundqvist et al. (2010), sub-elite athletes tended to rate higher percentages of anxiety items as debilitating to their performance in contrast to elite athletes.

Limitations of the Study

This study provided relevant findings regarding attachment and its relation to performance, competitive anxiety and self-confidence. However, several limitations were identified, which should be taken into account for future research.

First and the most important limitation of the study is the small sample size of the two groups involved into the research. Despite all efforts, it was difficult to recruit a substantially large group. From 160 swimmers who were invited to be part of the study, only 44 agreed to fulfill the online questionnaires. The major problems with small sample sizes consist in the fact that they may decrease the probability to find significant associations where they may actually exist (Field, 2009). According to Tabanichick and Fidell (2007), the number of cases required to conduct statistical analysis, especially multiple regression, should exceed 90 for a number of variables over five, which was obviously not achieved in this study.

Another concern, related with the first limitation, was the drop-out rate of swimmers who consented to be part of the study but never finished the online questionnaire. It is impossible to determine the reasons of about 10 % of drop-outs but one of the possible explanations could be the large amount of data requested, which made the online survey five to six pages long. Therefore, in future research, it is suggested to be specific especially with elite adolescents swimmers.

A second limitation of this study was that the CSAI-2 measures self-confidence and state competitive anxiety together. CSAI-2 has shown high levels of validity and reliability and it was chosen mainly for this reason but also for the fact that it provided a large amount of data such as anxiety intensity levels, anxiety direction and self-confidence, within the same items. The results showed high correlations between self-confidence and competitive anxiety scores, something that we knew previously from other studies which have used the same instrument. Therefore, it was difficult

for us to determine whether the high associations between the variables were due to the fact that they were part of the same instrument or that an actual significant relationship previously existed. It could have been quite interesting if this relationship was explored in the light of two different specific instruments such as Rosenberg scale for self-confidence and SAS (Sport Anxiety Test: A Measure of Trait Anxiety) and check their relationships.

A final note about the recruitment process which was considered time consuming. First of all it was sent a short invitation letter to every swimmer, then the swimmers' clubs were contacted and at the end swimmers were called directly by phone. From contacting them directly, the response rate increased dramatically, which emphasized the importance of critical reflection related to the strategies used for data collection. Therefore, future research that considers conducting the same typology of study, in order to avoid data collection problems, it is strongly suggested to contact the athletes in advance, two to three months before the time for the data collection and to contact them personally instead of contacting the clubs or sending general invitation letters and e-mails.

Implications

Since this study tried to explore something new that has never been addressed before, this thesis can be considered a pioneer study in the field of attachment and swimming performance. The findings suggested that insecurity attachment (the anxious type) combined with young age, predicted lower performance results. This was a very strong assumption, especially when considered the high interest of coaches and clubs to identify talents and factors that affect performance. Future research, which may wish to reconsider this approach, should take into consideration also different sports, larger groups and check further the impact of secure and avoidant attachment styles into performance. As previously mentioned, the study conducted by Ein-Dor (2012) found that avoidant type was beneficial to performance, a significant result which was not supported in the current study.

However, if our findings find future support, ethical issues may arise. This could be due to claiming that insecure anxious attachment type lead to poor performance results, which may lead to different consequences for the athlete's career depending on how the coaches and clubs use this information. Reflections should arise in regard if coaches and clubs should be in knowledge of athlete types' of attachment and who will be in control of the use they make of this information. It could happen that clubs may start to choose athletes based on the assumption that insecure anxious attached athletes can hardly be elite athletes. Therefore, categorizing them could have tremendous negative consequences on the young athletes' career.

But on the other hand, this information can be used also in a constructive way. Dozier and colleagues (1994) have stated that different attachment styles reflected different needs and represented different mechanisms for emotional regulation, thus they required different training and communication strategies. That is to say that knowing previously the attachment styles of the athletes may help coaches and clubs to avoid communication problems and use different intervention approaches and training strategies towards different styles of attachment. For example, knowing that the anxious attachment type exaggerate their emotions in order to get the attention they need, that the avoidant attachment type do not like to communicate distress or vulnerability in front of others and that the secure ones communicate clearly about their problems and seek help, may represent in itself an important tool to help coaches achieve their goals in relation to specific athletes. Also we know that coaches are human themselves and they do have a specific attachment style too; therefore it may also be interesting for clubs to look for similar patterns of interactions between secure and insecure coaches in their relationships with athletes.

Conclusions

This study investigated the effect of attachment, competitive anxiety and self-confidence into performance among elite and sub-elite swimmers, aged 17-20. Findings of this research-study confirmed the basic assumptions of attachment theory, where secure attachment is beneficial to self-confidence, competitive anxiety and therefore performance. On the other hand, insecure attachment distorts general functioning, including self-confidence, competitive anxiety and performance. Interestingly this study showed that insecure anxious attachment style combined with young age predicted lower performance results. Therefore, it is suggested that these findings should be treated in a very delicate and careful way, where providing clubs and coaches' information about athletes types of attachment, should happen only with the total consent of the athletes themselves, otherwise the misuse of this information could lead to irreparable ethical consequences. Future research within this focus area is highly recommended in order to investigate more specifically the effect of attachment construct related to sport performance.

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Index of Tables and Figures

Table 1. Attachment Categories.....	8
Table 2. Means, standard deviations, p and t values of ASQ and Scripts of SBST, for both elite and sub-elite swimmers.....	21
Table 3. Cross-tabulated statistics: Level and Attachment.....	21
Table 4. Descriptive statistics and p. values of the CSAI-2 measure for elite and sub-elite athletes..	22
Table 5. Pearson Product-moment Correlations between Measures of Attachment, Competitive Anxiety and Performance scores for Elite referring the right upper side of the table and Sub-Elite referring to the lower left side of the table.....	23
Table 6. Pearson Product-moment Correlations between Measures of Attachment and Competitive Anxiety.....	24
Table 7. Stepwise hierarchical multiple regression data for age sex at Step 1 and age, sex, competitive anxiety and anxious attachment style entered at Step 2.....	26
Figure 1. Predictive model of performance based on three controlling variables: self-confidence, competitive anxiety and attachment style.....	14
Figure 2. Personal career goals for elite and sub-elite swimmers. (From no goal at all, district, junior, senior, European, ending with world championship).....	22
Figure 3. Support figures of competitive swimmers.....	22

Appendices

APPENDIX A: Invitation Letter



Invitation Letter

Dear Mr. /Mrs.

We are a group of researchers from Lund University and are carrying out, in collaboration with Swedish Center for Aquatic Research and Swedish Swimming Federation, a National Investigation about the wellbeing of competitive swimmers. We are very interested in this issue and we would like to invite you to take part in a research study called 'Attachment and Performance.'

The study aims to understand how psychological wellbeing of competitive swimmers could in some ways affect their results and performance. We hope to use the information from this research to help in future both coaches and swimmers to understand better how different psychological factors affect competing performance in Swimming.

You are a very important person; you have been competing for years already in the swimming and we would like to find more about your experience. We are inviting swimmers age 17-20, who live in Sweden and their data is registered in the Swedish Swimming Federation.

-Can you help us? Your participation will take at all **30 min.** of all your valuable time, where you will be ask in Swedish to fill an online questionnaire. In order to do so, we need your email address so we can send the link for the online survey.

If within 3-5 days, after receiving this letter, we get an email from you, with your name and surname as a text to the following email address: sep11hdi@student.lu.se, we will know for sure you have accepted to be part of the study and help us. As soon as we will get your email, we will send you the link with all the detailed information about the study and the online questionnaire.

We ask 30 min. of your worthy time, in front of a computer, to make a difference in understanding the underlying mechanisms of swimming performance. We do hope we will have your collaboration.

Thank you in advance,

The research group,

Contact Person: Msc. Helga Dizdari (sep11hdi@student.lu.se) (mob: 0760752497)

Phd. Sofia Bunke(sofia.bunke@psy.lu.se)

Phd. Elia Psouni: elia.psouni@med.lu.se

APPENDIX B: Volunteer Information Sheet and Consent Form**Volunteer Information Sheet**

You have been invited to take part in a psychological study at the Sport and Exercise Psychology Unit, Department of Medicine, Lund University. Before you decide whether to take part in the study, please read the following information carefully. If you want to know more about the study, or wish to talk with us, please ask the investigators.

- Introduction

We are a group of researchers from Lund University and are carrying out, in collaboration with Swedish Center for Aquatic Research and Swedish Swimming Federation, an investigation about the wellbeing of competitive swimmers. It is generally accepted that there is a strong relationship between competitive anxiety, self-esteem and performance. Furthermore, some evidence suggest that early relationships with important people, such as our parents, siblings or peers, strongly affect the way we perceive ourselves. With your co-operation, this study aims at determining a number of facts on how the psychological wellbeing of competitive swimmers could in some ways affect their performance. We hope that the current study will make a significant contribution to the current understanding of the way different psychological factors affect competing performance.

- What will the study involve?

First you will be asked to make up 4 stories with the help of 12 words each. Then you will be asked to fill in an online questionnaire . Participation will take about 30 minutes of all your time and all the testing will be held in Swedish.

- Are there any risks of being a volunteer in this study?

No risk is involved.

- Am I free to withdraw from the study once I have agreed to take part?

Your participation in this study is voluntary. You are free to withdraw from the study at any time without reason. The consent form that you sign prior to entry in the study is in no way binding. It simply ensures that you have read the information sheet and are willing to begin the study. Before you begin or during the study, please feel free to ask the investigators any questions you may have on any aspect of the investigation.

- Confidentiality

Your study results will be recorded in a case record form for the study investigator but your name will not appear in this or on any report/publication of the results. Your contribution is therefore entirely anonymous, we use a code (for example KLFG54) to annotate each participant. Your records will be kept strictly confidential all the same, and all information and data will be kept in locked cabinets and on password-protected computers. Information obtained from the study may be published in scientific journals but in the form of average group values. No identifiable individual results will be used, published or presented at any occasion.

- Investigators

HELGA DIZDARI : sep11hdi@student.lu.se

SOFIA BUNKE: sofia.bunke@psy.lu.se (Tel. 46-222 1537)

ELIA PSOUNI: elia.psouni@med.lu.se (Tel. 046-2228503)

If you have any queries please do not hesitate to contact us.

Special thanks to THORBJÖRN HOLMBERG (Swedish Aquatic Research) for supporting the research project.

I projektet behandlas personuppgifter om Dig datoriserat. Lunds universitet (Box 117, 221 00 LUND, tel. 046-222 00 00, registrator@lu.se, org.nr. 202100-3211) är personuppgiftsansvarig enligt personuppgiftslagen för denna behandling av personuppgifter Du bör känna till att uppgifterna om dig kommer att skyddas av sekretess enligt 24 kap 8 § offentlighets- och sekretesslagen (2009:400) och 7 § offentlighets- och sekretessförordningen (2009:641). Publicering av forskningsresultat kommer endast att ske i avidentifierat skick, genom statistiska siffror. Du har enligt 26 § personuppgiftslagen (1998:204) rätt att gratis, en gång per kalenderår, efter skriftligt undertecknad ansökan ställd till oss, få besked om vilka personuppgifter om Dig, som vi behandlar och hur vi behandlar dessa. Du har också rätt att enligt 28 § personuppgiftslagen begära rättelse i fråga om personuppgifter som vi behandlar om Dig. Ansvariga för projektet är Elia Psouni, 046 – 2228503 och Sofia Bunke, 046-2221537, Institutionen för Psykologi, Lunds Universitet.

CONSENT SHEET

I have read the accompanying Information Sheet relating to the study on Attachment and Performance.

2. I have clear the purposes of the project and what will be required of me. I agree to the arrangements described in the Information Sheet in so far as they relate to my participation.

3. I understand that participation is entirely voluntary and that I have the right to withdraw from the project any time without stating a reason, and that this will be without detriment to any care or services I may be receiving or may receive in the future.

4. I have received a copy of this Consent Form and of the accompanying Volunteer Information Sheet.

Signed by:

(Name Surname)

Date:

APPENDIX C: The Online Survey Format, including, SBST, ASQ and SCAI-2.**BAKGRUNDSFÅGOR****Kön**

- ☐ Kvinna
- ☐ Man

Ålder

- ☐ 15
- ☐ 16
- ☐ 17
- ☐ 18
- ☐ 19
- ☐ 20
- ☐ 21
- ☐ 22
- ☐ 23
- ☐ 24
- ☐ 25

Vid vilken ålder började du tävla mer målinriktat och seriöst inom simningen?

Hur många timmar tränar du per vecka?

Vem stödjer dig, generellt sett, i din simkarriär?

- ☐ Föräldrar
- ☐ Tränare
- ☐ Träningskompisar
- ☐ Någon annan

**Vilket är ditt långsiktiga mål med simningen?**

- ☐ Inget mål
- ☐ DM
- ☐ Junior SM
- ☐ Senior SM
- ☐ EM (European championship)
- ☐ VM (World championship)

SBST

RELATIONER

Vi är intresserade av att se hur olika personer skapar berättelser om relationer. Metoden som vi använder här används sedan några år tillbaka exakt likadant i många olika länder. För att hjälpa dig skapa dina berättelser har vi i grova drag skissat på konturerna till fyra berättelser. För varje berättelse får du en titel och en ordlista som skall hjälpa dig att skapa berättelsen. När du går uppifrån och ner i den första kolumnen och därefter från den första kolumnen till den andra och sentill den tredje, så ger orden dig en grov vägledning om vad berättelsen kan handla om.

Du behöver inte använda alla orden om du inte vill, du kan ändra den inbördes ordningen och du kan även ändra själva orden, men försök att ta med lite detaljer så att berättelsen blir bra. Huvudsaken är att du skriver den första berättelse som du kommer att tänka på, och den bästa du kan åstadkomma utifrån orden - men detta är inget kreativitetstest, vanliga berättelser är bra! Skriv utan att alls tänka på stavning eller språkfinesser, men ta in så mycket information och så många detaljer som du kan. Är du redo?

Här är första berättelsen. Den handlar om Robins olycka. Robin är ca 10 år. Kom ihåg, skriv snabbt, som om du skulle berätta, utan att bry dig om stavfel och sådant. :)

ROBINS OLYCKA

Robin	skadad	stygn
ny cykel	mamma/pappa	krama
snabbt	tårar	cykelreparation
olycka	doktor	titta på film

Här är nästa berättelse. Den handlar om Ebba när hon inte blev bjuden. Ebba är i sena tonåren. Kom ihåg, skriv snabbt, som om du skulle berätta, utan att bry dig om stavfel och sådant. :)

FESTEN

lördagskväll	jätteledsen	mamma/pappa
fest	soffa	hyra film
Ebba	mamma/pappa	popcorn
inte bjuden	prata	leende

Nästa berättelse handlar om en gång när Robin skulle tävla. Robin är i sena tonåren. Kom ihåg, skriv snabbt, som om du skulle berätta, utan att bry dig om stavfel och sådant. :)

TURNERINGEN

turnering	motståndare	förlora
nervös	diskutera	titta
mamma/pappa	taktik	mamma/pappa
be om hjälp	spelet börjar	tummen upp

Nästa berättelse handlar om en gång när Ebba skulle tävla. Ebba är i sena tonåren. Kom ihåg, skriv snabbt, som om du skulle berätta, utan att bry dig om stavfel och sådant. :)

Sista berättelse handlar om Ebba simtävling. Skriv snabbt, som om du skulle berätta, utan att bry dig om stavfel och sådant.

SIMTÄVLINGEN

Ebba och Anna	Anna	mamma/pappa/tränare
vänner	Robin förlorar	uppmuntra
tillsammans	ledsen	funderingar
kvalificeringstävling	ge upp	bättre

ASQ

Läs följande påståenden och välj det svarsalternativ som du tycker bäst stämmer in på dig som person. Detta gör du genom att markera det på det svarsalternativ du föredrar. Svara så uppriktigt som möjligt, det bästa svaret är oftast det du först kommer att tänka på. Det finns inga "rätt" eller "fel" svar, det handlar om vad du själv känner och tycker.

I stort sett är jag en person som är värd att lära känna.

Fullständigt oense

Ganska oense

Lite oense

Instämmer lite

Instämmer ganska mycket

Instämmer fullständigt

- Jag är lättare att lära känna än de flesta andra.
- Jag känner mig säker på att andra kommer att finnas till hands för mig när jag behöver dem.
- Jag litar hellre på mig själv än andra människor.
- Jag föredrar att hålla mig för mig själv.
- Att be om hjälp är att medge att man är misslyckad.
- Människorvärde bör bedömas utifrån vad de åstadkommer.
- Att åstadkomma saker är viktigare än att bygga upp relationer.
- Att göra sitt bästa är viktigare än att komma överens med andra.
- Om det är något du skall göra bör du göra det även om någon blir sårad.
- Det är viktigt för mig att var omtyckt.
- Det är viktigt för mig att undvika att göra saker som andra inte skulle gilla.
- Jag tycker det är svårt att fatta beslut när jag inte vet vad andra tycker.
- Mina relationer till andra är oftast ytliga.
- Ibland tycker jag att jag inte duger någonting till.
- Jag tycker det är svårt att lita på andra människor.
- Jag tycker det är jobbigt att vara beroende av andra.
- Jag upplever att andra inte vill komma så nära mig som jag skulle vilja ha dem.
- Jag har ganska lätt att komma nära andra människor.
- Jag tycker det är lätt att lita på andra.
- Det känns bra för mig att vara beroende av andra människor.
- Jag oroar mig för att andra inte skall bry sig lika mycket om mig som jag bryr mig om dem.

- Jag oroar mig för att människor skall komma mig för nära.
- Jag oroar mig för att jag inte skall vara lika bra som andra människor.
- Jag har blandade känslor inför närhet till andra.
- Samtidigt som jag vill komma andra nära så känner jag obehag inför det.
- Jag undrar varför människor skulle vilja engagera sig i mig.
- Det är mycket viktigt för mig att ha en nära relation.
- Jag oroar mig mycket över mina relationer.
- Jag undrar hur jag skulle klara mig utan någon som älskar mig.
- Jag känner mig trygg i min kontakt med andra.
- Jag känner mig ofta utanför eller ensam.
- Jag oroar mig ofta för att jag inte riktigt passar in bland andra människor.
- Andra människor har sina problem så jag besvärar dem inte med mina.
- När jag pratar om mina problem med andra känner jag mig för det mesta skamsen eller dum.
- Jag är för upptagen med annat för att lägga alltför mycket tid på relationer.
- Om det är något som bekymrar mig så märker andra oftast det och bryr sig om mig.
- Jag är säker på att andra människor kommer att tycka om och respektera mig.
- Jag blir orolig om andra inte finns till hands när jag behöver dem.

PRESTATIONER

Nedan finns en rad påståenden som beskriver känslor som idrottare kan ha inför en tävling.

Hur många dagar är det fram till din nästa simtävling?

Hur viktig är den kommande tävlingen för dig?

Mycket viktig

Viktig

Inte så viktig

Oviktig

CSAI-2

Välj ut en närliggande tävling som utgångspunkt för dina ställningstaganden, läs varje påstående och klicka på det påstående som bäst beskriver hur du känner dig just nu inför ditt lopp. Det finns inga rätta eller felaktiga svar. Fundera inte för mycket kring varje påstående utan ange spontant dina känslor just nu.

Efter varje påstående finns dessutom en skattningsskala som går från -3 till +3. Försök att avgöra om du tror att din känsla som du just skattat graden av kommer att vara NEGATIV (-3) för din prestation eller om den kommer att vara POSITIV (+3) för din prestation. Du svarar genom att klicka på en av siffrorna på den sjugradiga skalan. Var noga med att besvara samtliga påståenden på båda skalorna!

- Jag är orolig för den här matchen.
- Jag känner mig nervös.
- Jag känner mig lugn.
- Jag är osäker på mig själv.
- Jag känner mig skakis.
- Jag känner mig avslappnad.
- Jag känner mig orolig att jag kanske inte kommer att lyckas i den här tävlingen så bra som jag vet att jag skulle kunna.
- Jag känner spänningar i kroppen.
- Jag känner självförtroende.
- Jag är rädd att jag ska förlora.
- Jag har spänningar i magen.
- Jag känner mig trygg.

- Jag är rädd för att jag ska förlora lugnet och inte göra bra ifrån mig under press.
- Jag känner mig avslappnad i kroppen.
- Jag känner att jag kan klara av den här utmaningen.
- Jag är orolig för att jag ska göra en dålig prestation.
- Min puls stiger.
- Jag är säker på att jag kan prestera bra.
- Det är viktigt för mig att nå mitt mål.
- Jag tappat modet.
- Jag känner mig psykiskt avslappnad.
- Jag är rädd att andra ska bli besvikna på min prestation.
- Mina händer är fuktiga.
- Jag känner mig säker på mig själv – i min inre syn ser jag hur jag uppnår mitt mål.
- Jag är rädd för att jag inte kommer att kunna koncentrera mig.
- Kroppen känns låst.
- Jag är säker på att jag klarar mig under påfrestning.