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"the effects of self-modeling and self-selected music
on efficacy beliefs"

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Abstract

This study investigated the effectiveness of two self-modeling procedures, one with self-selected music and one without, on self-efficacy (SE) and collective efficacy (CE). The study had an RCT design with two intervention groups and one control group. The procedures were conducted in a jr. elite soccer team (n= 22). It was hypothesized that both procedures would enhance SE and CE and increase the correlations between the constructs. Further it was hypothesized that the combination of self-modeling and self-selected music would be a more potent efficacy source than self-modeling solely. Results suggest, as according to the hypothesis, that self-modeling accompanied by self-selected music can enhance SE. The results also suggest that such a modeling procedure might enhance CE. Counter to the hypothesis, self-modeling alone does not in this study seem to effect neither SE nor CE. An explanation to these results is that the music might act as an attention aid, focusing the observer's attention towards the modelled behaviour, and or it might function as a retention trigger, there is also the possibility that the music solely has effected SE and CE.

Keywords: Collective efficacy, self-efficacy, self-modeling, Soccer, positive-self review, self-selected music

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1.0 Introduction

Soccer is a diverse sport, which has specific demands to the player, both as an individual and as a part of a unit. Hence, soccer is a sport with several dimensions (Bergo, Johansen, Larsen & Morisbak, 2003). According to Bergo and associates (2003) the soccer player's ability to use their individual skills within the context of the team, sometimes more independent than others, determines the team performance. Accordingly, soccer is a sport with high interdependence (Feltz, Short & Sullivan, 2007). The skills needed in soccer ranges from technical to psychological at both the individual and the group dimension (Bergo et al., 2003; Reilly, 1993).

As identified by Jordet (2009a, 2009b) soccer can be a sporting context with the potential to place the players under tremendous pressure. Thus, one could suggest that there is a need among the players to learn adequate skills and strategies to cope and prepare for such pressure. According to Beswick (2001) it is of great importance for a soccer player to attain the right mental state to achieve excellent performance, especially under pressure. Further, Beswick notes confidence as an important factor in achieving the adequate mental state. The significance of both individual and group confidence in soccer was illustrated by Pensgaard and Duda (2002), who especially described the belief in the team as a *facilitator* of team performance.

Banduras (1997) concept of efficacy beliefs, judgments about capabilities in specific situations, relates to both the individual and the group dimension that has been identified in soccer. According to Bandura the most potent source of efficacy, both at individual and at the group dimension, is past behaviour. Accordingly an adequate method of manipulating efficacy would be to watch one-self and your team perform successfully. The athlete's use of music in the intent of achieving the right mental state has been identified and studied by Bishop, Karageorghis and Loizou (2007). Bishop and associates reports an positive psychological response, including enhanced efficacy beliefs among athletes who use music as a part of their pre-game routine.

As video analysis of soccer matches is becoming more and more important and commonly used as an assessment tool (Carling, Williams & Reilly, 2005) and music is ever so available, the opportunity to create a tool to facilitate the player's efficacy beliefs has probably never been greater.

2.0 Theoretical framework and literature review

The purpose of this chapter is to present a theoretical framework and relevant research that place this study in context. More precisely it is from the theories, models and research presented here, the hypotheses are drawn.

Initiating this chapter the framework, for the theory of Self-Efficacy will be described. Following, the theory will be related to the sporting context. Next self-efficacy will be related to the self-modeling procedure and relevant research.

Further the notions and dynamics of collective efficacy, an expansion of self-efficacy theory, will be explained. There next relevant research concerning collective efficacy will be described.

The second part of this chapter concerns music and emotions. First a theoretical perspective of emotions will be introduced. Following the relationship between emotions and music will be presented.

2.1 Self-Efficacy

The theory of Self-Efficacy (Bandura, 1997) was created within the assumptions of *social cognitive theory*. Social cognitive theory is a theoretical approach for understanding human cognition, motivation, action and emotion (Bandura, 1986, 1997; Feltz, Short & Sullivan, 2007; Maddux, 1995).

The basis for this framework was initially created by Miller and Dollard (1941) who put forth their theory of social learning. The work of Miller and Dollard was continued and extended by Bandura and Walters (1963) who introduced several new notions. According Pajares (2002) Bandura later on became aware that an important element was absent in the contemporary learning theories, including his own. This element was identified and elaborated by Bandura (1977) as self-efficacy.

Bandura (1986) manifested his work within social cognitive theory with the publication of the book *Social Foundations of Thought and Action: A Social Cognitive Theory*. According to social cognitive theory the individual actively use forethought, self-reflection and self-regulation.

A key feature of social cognitive theory is *the principle of triadic reciprocal causation*. According to this principle *behaviour, personal factors* and *environmental conditions* interact in a circular manner. The interaction between these three variables accounts for

the individual's behaviour and motivation. More precisely, the individual's behaviour and personal factors, such as cognition and affect, will be influenced by environmental conditions. But the human cognitive ability enables the individual to control his or her own behaviour. Behaviour than in turn will influence personal factors and environmental factors (Bandura, 1986). This principle is illustrated in figure 2.1.

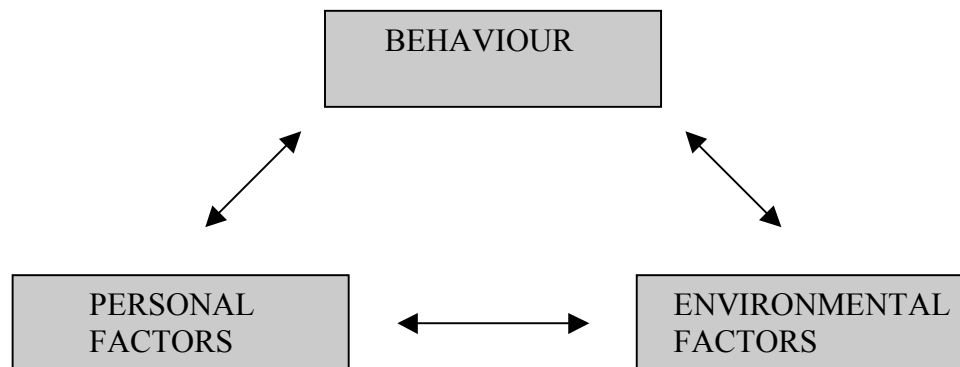


Figure 2.1: the principle of triadic reciprocal causation within social cognitive theory. Based on Bandura's (1986, pp. 24) figure 1.

“Within this framework of social cognitive theory of human functioning, self-efficacy theory addresses the role of self-referent beliefs as the core agentic factor that determines people's goal-directed behaviour” (Feltz, Short & Sullivan, 2007, pp. 5).

Bandura (1997, pp.3) defines *self-efficacy* (SE) as “beliefs in one's capabilities to organize and execute the course of action required to produce given attainments.”

According to Bandura (1997) a highly efficacious individual will seek more challenging goals, cope better with pain and endure longer and tougher setbacks than an individual with low SE. Hence, the higher the SE the more challenging goals the individual seeks and the more persistent he or she will be in achieving the goal.

SE beliefs are hypothesized to affect the individuals functioning primarily through four processes. These are the *cognitive*, *motivational*, *affective* and the *selection* process (Bandura, 1997).

Most action is according to Bandura (1997) shaped and initiated in thought, so the cognitive constructions act as a behavioural guide. Efficacy beliefs effect how people

interpret actual and anticipatory situations but also how they visualize and construct future situations. Highly efficacious individuals visualize successes that give guidance to adaptive behaviour and facilitate performance. Individuals with a lower sense of efficacy on the other hand visualize failure, which can lead to maladaptive behaviour and undermine performance (Kruger & Dickson, 1994).

Motivational processes represented by self-motivation derive from cognitive processes. Bandura (1997, pp. 122) states, “By being cognitively represented in the present, conceived future states are converted into current motivators and regulators of behaviour”. Bandura (1997) recognizes three different cognitive motivators with concurring theories; these are attributions – Attribution theory (Weiner, 1985), outcome expectancies – Expectancy-Value Theory (e.g., Ajzen & Fishbein, 1980) and – Goal theory (e.g., Mento, Steel & Karren, 1987).

SE believes effects self-regulation of *affective* states in three ways according to Bandura (1997). These are, the personal control the individual has over *thought*, *action* and *affect*. Thoughts can affect the emotional state in two manners.

Efficacy beliefs create attentional biases and influences whether life events are constructed, cognitively represented and retrieved in ways that are benign or emotionally perturbing. The second form of influence centers on perceived cognitive abilities to control perturbing trains of thoughts when they intrude on the flow of consciousness (Bandura, 1997, pp.137).

In the action-oriented mode, efficacy beliefs can by supporting efficient routes of action and manipulate the emotional state so that the environments emotive potential can be changed. The affect-oriented mode of influence relates to the efficacy towards changing or improving negatively perceived emotional states once they have occurred (Bandura, 1997).

According to Bandura (1997), SE beliefs influences the environment and the activity the individual chooses to engage in. Through such *selection* processes the individual somewhat produce his or hers environment and cultivate certain behaviours and lifestyles. The individual will actively seek social environments and activities that match their

efficacy beliefs. Hence, the individual will undertake increasingly challenging activities as the SE beliefs increases (Meyer, 1987).

Bandura (1997) stresses the importance of distinguishing between *efficacy beliefs* and *outcome expectations*. Efficacy beliefs are recognized by being pre behaviour and is related to mastering a specific situation. While outcome expectations on the other hand are post behaviour and relates to the consequences of the behaviour. Bandura identifies three different ways outcome expectancies can be manifested. These are *physical*, *social* and *self-evaluative*. Physical outcome effects relate to sensory experience. Social outcome effects on the other hand concerns compensation or disapproval from the social environment that surrounds the individual. While self-evaluative outcome effects is in regard to self-sanctions or satisfaction. Within self-efficacy theory outcome expectations are highly depended on SE expectations. Bandura notes that outcome expectations may be an additional predictor for behaviour but isolated from SE it is of less value.

SE differs from other self-constructs such as *self-esteem* (global) and *self-confidence* (contextual) by being situation and goal specific. Although, Bandura (1997) to somewhat extent uses SE and self-confidence interchangeably (Feltz & Payment, 2005).

Bandura (1997) notes that SE beliefs have three dimensions, namely *level*, *strength* and *generality*. Level of SE indicates the individuals expected performance accomplishment in concurrence with the different levels of difficulty a situation or task could be mastered. Strength of SE, on the other hand, refers to the individual's certainty of the belief that he or she can achieve the different levels of performance.

Generality of SE concerns the transferability of SE belief from one situation and context to another.

According to Bandura (1997) efficacy beliefs is formed by cognitive processing of efficacy information. Bandura sorts the different efficacy sources into four main categories. These are: *performance accomplishments*, *vicarious experiences*, *verbal persuasion* and *physiological and affective states*.

Performance accomplishments is considered by Bandura (1997) as the most powerful efficacy source since they are based on the individuals own mastery experience. If a past

performance accomplishment is seen as successful it is expected to have a facilitating effect on SE beliefs. On the other hand, if a past performance accomplishment is seen as a failure it is expected to have a debilitating effect on SE beliefs. The effect of a mastery experience on SE beliefs is highly depended of the perceived difficulty of the task. Performance accomplishments from easy tasks with external involvement are expected to have a lower impact on the SE beliefs than accomplishments from tasks with a high degree of difficulty with less external involvement. Bandura (1997) notes that performance accomplishments that has required much effort influences SE beliefs more than performance accomplishments that required little effort.

Vicarious experiences is an efficacy source derived from observing others, widely known as modeling. This is rated as the second most powerful SE source by Bandura (1997). The modeling process is characterized by watching a model mastering a task and than coding the information, for so to determine the quality of ones performance or skill. According to Bandura the similarity between the model and the observer is of significance for the SE beliefs. Bandura suggest that a similar model should be preferred since they should provide the most comparative information in regard to making a decision about one's own capabilities. Bandura classifies imaginal experiences as cognitive self-modeling, whether one sees oneself or others. Maddux (1995) on the other hand classifies imaginal experiences as a separate efficacy source. Maddux does not elaborate this distinguishment but notes that imaginal experiences is considered a less potent efficacy source than performance accomplishments.

Verbal persuasion is considered to have less impact on SE beliefs than the two foregoing sources because of its lack of authentic experiential base. Despite this, it is one of the most commonly used sources due to its availability (Bandura, 1997).

According to Feltz, Short and Sullivan (2007, pp. 10) is "The strength of the persuasive influence on self-efficacy has also been hypothesized to depend on the prestige, credibility, expertise, and trust worthiness of the persuader." One can also apply verbal persuasion one oneself, commonly more known as self-talk.

Physiological and affective states are the last and the least powerful efficacy source according to Bandura (1997). Bandura suggests that the efficacy information provided by

physiological and affective states has greater value in physical domains than in domains that do not require a physical skill or effort.

The individual often recognizes increased physiological activation in stressful situations as a sign of dysfunction. Hence it is the interpretation of the physiological activation and not the physiological activation per se that affects the SE belief.

Bandura (1997) explains that the state of mood often acts as a mediator for physiological information.

Maddux (1995) sees it adequate to separate physiological and affective states into two different sources, namely *physiological states* and *emotional states*. Maddux grounds this in that physiological cues are significant components of emotions. Although, emotional states are not just the result of physiological arousal. Hence, according to Maddux, emotions can occur and be an efficacy source independently from physiological arousal. However, both Bandura and Maddux note that a positive affect facilitates SE beliefs and negative affect debilitates SE beliefs. Furthermore, the intensity also determines the effect it has on SE. The more intense the state the more it is thought to affect SE.

2.1.1 Self-efficacy and sport

When Bandura (1977) first proposed his theory of self-efficacy it was intended to account for the different results one found using different methods in clinical psychology, when trying to treat anxiety and phobia (Bandura, 1977, 1997; Felts, Short & Sullivan, 2007). In time the theory of self-efficacy has become popular and has found its place within several areas of psychological research, including the sporting context. According to Moritz, Feltz, Fahrback & Mack (2000) there has been over 200 publications concerning SE in the field of sport and motor performance.

The SE – performance relationship has been a topic of specific interest among researchers (Felts, Short & Sullivan, 2007). The magnitude and the direction of the relationship have shown to vary a great deal. For instance Martin and Gill (1991) correlated SE and performance to a .79 while MacAuley (1985b) found a correlation at .1 in his study. Such variations are thought to be caused by the methods applied, such as assessment, concordance among the instruments, the research participant's prior experience with the task at hand, and the time of assessment (Bandura, 1997; Moritz, Feltz, Fahrback & Mack, 2000).

Moritz, et al., (2000) found in their meta-analysis a correlation of .38 between SE and performance. This suggests that there is a moderate and significant relationship between SE and performance. They further note that SE is thought to be both the cause and effect of performance. From this one might assume that SE and performance influence each other in a circular manner, which is in concurrence with the perspective of social cognitive theory.

As it has become obvious that there is a significant relationship between SE and performance researchers naturally also addressed mediators thought to influence performance. Thus, there is a substantial body of research investigating the relationship between SE and mediating variables such as choice, goals, effort and persistence (Felts, Short & Sullivan, 2007).

Boyce and Bingham (1997) revealed that SE level of the individual influenced the difficulty of the goals he or she set. They also found by investigating research participants in the control group, who were not assigned to a goal procedure, that individuals with high SE was more likely to spontaneously set goals for themselves.

The results of Boyce and Bingham (1997) were further supported by the study of Escarti and Guzman (1999). The researchers investigated the effect of SE on task choice with an experimental design. SE was manipulated by giving bogus feedback. The results showed that highly efficacious individuals performed better and chose more challenging tasks than less efficacious individuals.

According to findings of Weinberg (1985) who tested leg endurance, but also assessed perceived effort, highly efficacious individuals put forth more effort than individuals with low efficacy. A series of research conducted by Weinberg, Gould and Jackson (1979) and Weinberg, Yukelson and Jackson (1980) and Weinberg, Gould & Yukelson (1981) indicates that SE also influences persistence, where those with high SE persisted longer than those with lower SE.

A common feature from all these studies is that their published results are all in line with Bandura's (1997) notions that highly efficacious individuals will perform better, choose more challenging tasks, try harder and persist longer than less efficacious individuals will. As SE has shown to facilitate performance and significant mediators the next step according to deductive reasoning would be to investigate how one can effect SE.

2.1.2 Modeling

Bandura early on (1965, 1969) recognized modeling as an effective method for learning. According to Bandura (1986) is most behaviour learned through observation, especially social behaviour. Bandura (1986) explains the procedure of modeling as a four-step process. These steps are, in chronological order; *attention, retention, production* and *motivational*.

The attention felt and shown by the observer is determined by several factors, such as the observers personality, state and the complexity of the modelled event. In cases where the observer exhibits a low level of attention, aids such as verbal cues might be appropriate. Retention is the second step in the process. The retentional process takes place within the observer cognition and can be both verbal and visual. The ability to visualize the modelled event is thought to be of particularly importance when the observer is at a novice level. The process of producing the modelled event into actual behaviour relies on how the observer compares feedback he or she got from watching the model and then comparing this to his or hers own skill and behaviour. The result of this comparison process is altered behaviour. The final step in the procedure is the motivational process. The individual might have shown enough attention and remembered (retention) the modelled event and have the ability to execute the skill, but will not do so due to lack of motivation (Bandura, 1986, McCullagh, Weiss, 2001).

According to the theory of self-efficacy will an individual who remembers the modelled event and has the ability to execute the skill but does not, due to lack of motivation, have maladaptive efficacy beliefs.

Bandura (1997) categorizes *self-modeling* as a vicarious experience, where the observer and the model is the same individual. Banduras distinguishes self-modeling into two types, namely, *reconstructive* and *constructive* self-modeling. Reconstructive self-modeling consists of observing self-behaviour that is within the observer's register of behaviour. Constructive self-modeling on the other hand relates to observing self-behaviour that is not within the observer's register of behaviour. According to Dowrick (1999, p. 23) "*Self modeling* is an intervention procedure using the observation of *images of oneself* engaged in adaptive behaviour."

Video edited into vignettes (2-4minutes) viewed repeatedly in the intent to learn skills or to adapt to an environment as a part of a training regime or therapy is a typical method for conducting self-modeling (Dowrick, 1980, 1991, 1999).

Self-modeling can also be applied using audiotape, photographs, role-play or imagination (imagery). Due to its vividness and reliability videotapes it is the most preferred method. Videotapes can also be an effective assessment-tool in the process of creating a self-modeling tape (Dowrick, 1999).

According to Dowrick (1999) self-observation causes a different reaction from the observer than if the individual were to watch a different model in the same context. More explicit, a self-image gains better attention from the observer and can provide more valuable information than another model.

Dowrick (1999) also identifies two types of self-modeling, namely *positive self-review* and *feedforward*. Positive self-review (PSR) contains images of adaptive behaviour of the individual's best performances. A PSR film is typically created in "...a two-step: process (a) maximizing the performance of target skill (with incentives, rehearsal, etc.) (b) editing out errors and other distracting footage afterward" (Dowrick, 1999, pp. 25).

The agenda when creating a positive self-review tape is capturing the individual's *best performance so far*. Dowrick (1999) states that PSR is especially applicable when one seeks to increase the rate of target behaviour. Whether it concerns a newly learned or old skill does not seem to matter.

Feedforward in contrary to PSR contains images of the individual showing adaptive skills not yet acquired or not demonstrated. Feedforward characteristically shows the individual a step further in the learning process than he or she is at in the presence. Feedforward normally consists of skills that is in the individual's repertoire, but not yet linked together or in the right order. By arranging the sequence of behavioural components in a new order or changing the context of the arena one has created a feedforward tool (Dowrick, 1999).

For instance a soccer player who has no problem scoring on penalties in training but misses in matches could benefit from a feedforward video. Editing spectators and a referee in to a video of the individual at practice can create such a feedforward video. Or if the same player had trouble learning a new complex dribble one could, if it is

possible, edit all the components from other dribbles he or she already manages to the new dribble.

It is obvious that Bandura (1997) and Dowrick (1999) identifies the same types of self-modeling procedures but have given them different names. What Bandura identifies as reconstructive self-modeling Dowrick calls PSR. As to what Bandura calls constructive self-modeling Dowrick has identified as feedforward.

According to Dowrick (1999) is self-modeling a concept that fits well within the framework of Bandura's (1977, 1997) theory of self-efficacy since self-modeling is an obvious source of SE, if the demonstrated behaviour is valued by the observer.

2.1.3 Self-efficacy and modeling

According to Feltz, Short and Sullivan (2007), is modeling the efficacy source within self-efficacy theory that has been subject for most SE manipulation studies.

Initial research (Feltz, Landers & Reader, 1979, McAuley, 1985a) showed that participant modeling has a greater effect on both performance and SE than live-modeling and videotaped modeling.

Model similarity also seems to influence what effect the modeling process has on SE. Gould and Weiss (1981) showed that similar models produce a higher level of SE than dissimilar models do. Lirgg and Feltz (1991) found that models skill is of greater importance than the models status (e.g., peer, teacher etc). So a highly skilled peer should be preferred over a lower skilled model with a higher status.

George, Feltz and Chase (1992) reports similar findings. More specifically they found that the models level of ability was of more importance than the models gender in the intent to enhance both performance and SE.

According to several studies (Corbin, 1967; Finke, 1989) a modelled event have a more facilitating effect on performance than an imagined event. This is thought to be caused by the fact that imagery demands more cognitive processing and relies more on the subject's imagery ability and former training than modelling do.

Since a substantial amount of research suggests that modeling can facilitate learning and performance and that the model similarity seem to impair the effect, a growing body of self-modeling research has emerged the last couple of decades. Based on this body of

research Dowrick (1999) identifies seven categories where self-modeling procedures can be applied. These are:

1. Increase adaptive behaviour (PSR)
2. Transfer context-specific behaviour (Feedforward)
3. Hidden support for anxiety disorders (Feedforward)
4. Improved image for mood-based disorders (PSR)
5. Recombining component skills (Feedforward)
6. Transfer of role-play to real world (PSR & Feedforward)
7. (Re)Engagement of disused skills (PSR)

There have been over 150 publications that fits within at least one of the category suggested by Dowrick (1999). Approximately one third of these concern dissertations, such as aggression, phobias and sexual dysfunctions. The rest of the studies seem to concern communication, academic, vocational issues and physical skills (Dowrick, 1999).

In the sporting context, which falls under physical skills, studies have tested the effect of self-modeling within several sports as for instance gymnastics, swimming and cricket. A study conducted by Dowrick and Dove (1980) initiated the research on the relationship between self-modeling and physical performance. The researchers revealed positive results suggesting that self-modeling could facilitate swimming performance among handicapped children. The research was brought further in to the sporting context by Winfrey and Weeks (1993) with a case control design. The investigators tested the self-modeling procedure on a group of gymnasts. Results showed that the group that applied self-modeling had a more realistic perception of their own level of performance.

However, they did not find any difference between the groups SE or performance. Starek and McCullagh (1999) on the other hand, found in their study, that self-modeling was superior to peer modeling. They also, as Winfrey and Weeks (1993), report that the self-modeling group had a more accurate estimation of their own performance and additionally had greater increase of SE.

There have also been several studies that have presented results suggesting that self-modeling might not effect SE or performance. Templin and Vernacchia (1995) examined the affect of self-modeling on a group of intercollegiate basketball players with a single-

subject multiple-baseline-across-subjects design. According to their statistical analysis self-modeling failed to effect performance.

Law and Ste-Marie (2005) investigated the effect of self-modeling on skating jump performance and several psychological variables. According to the results self-modeling did not affect the performance or SE of the participants.

Barker and Jones (2006) incorporated self-modeling as a part of an intervention strategy hypothesised to enhance SE and performance. Barker and Jones applied a single-subject (A-B) design where the results suggested that self-modeling combined with hypnosis and technique refinement can enhance both SE and performance.

Thus, summarising this research set out to investigate the effects of self-modeling, it is safe to say that the results so far have been inconclusive.

2.2 Collective efficacy

Collective efficacy is an expansion from the individual level of SE until a collective level based on the same assumptions and theoretical framework of self-efficacy theory.

Bandura (1997, pp. 477) defines collective efficacy (CE) as “a group’s shared belief in its joint capabilities to organize and execute the course of action required to produce given levels of attainment”.

CE is not only the sum of the group member’s efficacy beliefs, but should be understood as an evolving dynamic group-level property caused by the groups interactive and coordinate dynamics (Bandura, 1997; Feltz, Short & Sullivan, 2007; Ronglan, 2007).

CE is emerged from the framework of social cognitive perspective, so naturally CE and SE has many common features. CE Beliefs also have the three dimensions level, strength and generality (see section 2.1, pp. 5).

According to Self-Efficacy theory collective efficacy determine the groups ability to continue despite encounter with failure and difficulties. It also affects the group’s goals and affective state . A high level and strength of CE is predicted to facilitate performance and a low level and strength will likewise have a debilitating effect on performance according to the theory (Bandura 1997).

According to Bandura (1997) CE an SE sheer the four efficacy sources performance accomplishments, vicarious experiences, verbal persuasion and physiological and

affective states. Although, no studies has yet examined the effect of vicarious experience and physiological and affective states at a group level (Feltz, Short & Sullivan, 2007).

Bandura (1997) clearly expresses that performance accomplishments and verbal persuasion are the main source of CE, where performance accomplishments is the most powerful one. Further Bandura notes that the sources from the collective's members SE indirectly can influence the CE

Zaccaro, Blair, Peterson & Zazanis (1995) conceptualisation of CE is somewhat different from Banduras (1997), although they have many common characteristics.

Zaccaro et al. (1995, pp.309) defines CE as “a sense of collective competence shared among members when allocating, coordinating, and integrating their sources as a successful, concerted response to specific situational demands.”

Both Bandura and Zaccaro et al. describes CE as a dynamic situational specific confidence, and also agrees up on that the team members interdependence determine the difference between CE and aggregated SE. Bandura and Zaccaro et al. share the definitional similarity by defining CE as a shared belief as well. They further agree upon that the type and nature of the group task at hand must be considered when discussing CE (Feltz, Short & Sullivan, 2007).

The first and foremost biggest conceptual difference between Banduras and Zaccaro et al. CE paradigm relates to the efficacy components coordination, interaction and integration. According to Feltz and associates (2007, pp.127-128)

...Zaccaro and his colleagues emphasize the coordination, interaction, and integration components of collective efficacy and argue that these efficacy components should be directly assessed, whereas Bandura (1997) considers that team members' perceptions of the team's capability to perform a task automatically encompass the coordination and interaction influences operating within a team.

Zaccaro et al. (2005) suggests two additional sources of CE, namely the *group size* and the *group leadership*. The size of the group will according to Zaccaro et al. influence how the group is able to coordinate their activities. Where small groups are better to coordinate their activities than larger groups. Feltz, Short and Sullivan (2007) suggest that as group size increases, CE is expected to decrease. This due to the fact that often some

of the group members get to participate less and would be more absent. This is, according to Feltz and associates, expected to lead to greater disagreement and dissension among the members. Zaccaro et al. on the other can see a positive effect of increased group size. More precisely, as the group size increases more resources would be available for the group, thus they are better equipped to master the task at hand so CE is expected to increase.

The relationship between group size and CE in sports has not been subject for much investigation. However, Watson, Chemers & Preiser (2001) found that group size negatively predicted CE. This result was not replicated by Magyar, Feltz and Simpson (2004) who found that group size did not affect CE when they investigated this relationship within a group of rowers. Although, investigators speculate that this might be a unique feature for sports where all members get to participate and no one is “benched”.

According to Zaccaro et al. (1995, pp. 317-138)

Leadership actions that persuade and develop subordinate competency beliefs may be as critical a determinant of collective efficacy as the group’s prior performance experiences, if not more so. Sport team coaches spend much of their time developing new skills in team members and exhorting them on game day. These acts can indeed be the strongest influences on a teams sense of efficacy.

Such leadership actions that are verbal in nature one can relate to Bandura’s (1997) verbal persuasion efficacy source. However leadership actions that are non-verbal can be considered an additional source. No published research yet has investigated the effect of non-verbal leadership on CE, nevertheless several studies (Haberl & Zaichkowsky, 2003; Vargas-Tonsing & Bartholomew, 2006) have shown that verbal persuasion can affect CE.

Since CE by theory is predicted to have an impact on significant mediators for group performance the relationship between CE and performance has naturally been a subject of interest for scientist conducting research within sporting context.

2.2.1 Implications of collective efficacy

In the last couple of decades several studies have set out to investigate the relationship between CE and performance in a sporting context. Especially in laboratorial studies such

as Bray (2004), Greenles, Graydon and Maynard (1999, 2000), Hodges and Carron (1992) and Lichacz and Partington (1996), results have been quite consistent and strong. Hodges and Carron (1992) for instance manipulated the CE of two randomly assigned groups by giving them bogus feedback. In all trials the most efficacious group won the competition. The objective of the task the groups were tested in was to hold a medicine ball of the ground for as long as possible using one arm each. These results were further supported by the investigation of Lichacz and Partington (1996) who also found that highly efficacious groups outperform less efficacious groups. Lichacz and Partington had a group of undergraduate students compete as groups in a rope-pulling contest. Some of the research participants had a team history and some did not. Analysis revealed that both group history and CE affected performance where group history was the most powerful predictor.

Bray (2004) reproduced Hodges and Carron's (1992) medicine ball experiment. Bray showed that there was a positive relationship between CE and performance. Moreover he also found that the goal level the group set mediated this relationship. By including both genders in his study he found that there were no gender differences related CE, goals and performance in this study.

Greenles, Graydon and Maynard (1999, 2000) studies were set out to investigate the relationship between CE and the effort put forth in reaching a group goal. The task at hand was a race on an ergo metric cycle. The most efficacious groups were the ones that exerted the most effort in the goalpursuit and maintained their goals. The less efficacious groups on the other hand showed a decrease in effort and lowered their goals. CE was manipulated by giving the participants bogus feedback.

Studies conducted in the field such as Feltz and Lirgg (1998) Moritz (1998, in Feltz et al., 2007), Myers, Payment and Feltz (2004), Myers, Feltz and Short (2004) and Ronglan (2007), have shown to reproduce some of the findings in laboratorial studies but also contributed with new knowledge.

Feltz and Lirgg (1998) examined the relationship between SE and CE in several hockey teams at collegiate level. Key findings were that CE was a better predictor of the team's performance than SE. They also found that the teams past performance effected CE but not SE. More specifically, after a win the CE increased and after a loss CE decreased but no significant effect on SE was found.

Mayers, Payment and Feltz (2004) exemplified the circular relationship between CE and team performance. They found when investigating the relationship between CE and team performance that CE had an effect on team performance and that past performance again affected CE. This reciprocal relationship was further supported by the results produced by Myers, Feltz & Short (2004). Myers and associates found, when studying ten different college soccer teams, that CE was a positive predictor of performance and that past performance was a positive predictor of performance, just in line with the results from Myers, Payment and Feltz (2004) investigation. This reciprocal relationship is in concurrence with the framework of the social cognitive theory.

According to Feltz, Short and Sullivan (2007) the CE field studies has been concentrated around interactive team performance task while the general trend among the laboratorial studies has been more focused towards additive tasks.

Such a notion was investigated by Moritz (1998 in Feltz et al., 2007) who set up an experimental study where participants were assigned in pairs to compete in an additive competition or in an interdependent competition. Analyses revealed that CE predicted performance in the interdependent condition but not in the additive condition.

Ronglan (2007) conducted a qualitative study of an elite sport team. This study supports several of the findings in the mentioned quantitative studies but also offers in depth understanding of CE due to the nature of qualitative studies.

According to Ronglan, in concurrence with the quantitative studies, CE is depended on previous performance. Ronglan also mentions several other factors, such as efficacy-building activities and behaviour before, during and after match.

Ronglan's study most of all show that CE is not a constant but a dynamic variable, and that by taking a pro active stand teams can positively effect their CE.

Like Bandura (1997) stated that SE could be a source of CE, Pensgaard and Duda (2002, pp. 233), who like Ronglan (2007) did a qualitative study within the context of an elite sport team, notes that CE also might effect SE. In particular the researchers state that: "...results suggest that high collective efficacy can feed into...the enhancement of a player's personal self-efficacy, given that the player in question feels that she is a positive contributor to the teams result."

Up to date no published study has investigated the relationship between CE and *team/group modeling* (Feltz, Short & Sullivan, 2007), although match analysis and post game video elevation in plenum often is used in team sports such as soccer (Carling, Williams & Reilly, 2005).

Several past self-modeling studies (Templin & Vernacchia, 1995; Winfrey & Weeks, 1993) have also applied music in the modeling procedure. Researchers have not elaborated why music has been incorporated in the procedure, although they obviously have thought that music somehow could facilitate the procedure since it has been incorporated. Following the relationship between music and emotions will be presented.

2.3 Emotions

According to Hanin (2007) it is intuitively understandable what an emotion is, but much more difficult to define the term. The majority of emotion theories, definitions and perspectives characterize three aspects of emotions. These are *subjective experience*, *physiology changes* and *action tendencies*. An example of an emotion theory within this framework is Lazarus's (1999, 2000a) Cognitive-Motivational-Relational Theory of Emotion. Lazarus's (2000b, pp. 230) also prompted a definition of emotion within this framework:

My definition of emotion as a phenomenon is that it is an organized psychophysiological reaction to ongoing relationships with the environment, most often, but not always, interpersonal or social. This reaction consists of responses from three levels of analysis—namely, introspective reports of subjective experience (often referred to as an affect), over actions or impulses to act, and physiological changes that make the emotions organismic.

Lazarus's (1999, 2000a) Cognitive-Motivational-Relational Theory of Emotion has three basic assumptions. Where the first is that emotions are generated by the dynamic relationship between the person and the environment he or she encounters, where each emotion has its own special *person-environment relationship*.

The second assumption is that emotions are stimuli responses to the status of goals in an individual's encounter with the environment. The final assumption is that the individual's pre knowledge and perceived significance of the encounter with the environment determine the emotional response.

Lazarus (2000a) further notes that within Cognitive-Motivational-Relational Theory of Emotion that emotions also can influence cognition, and that cognition actually is a part of emotions. Continuing Lazarus states that goals and motivations effect appraisal, hence also emotions. Based on this deductive reasoning he advocates that emotions, since appraisal is, are influenced by the individual's biological makeup and cultural conditions. Cognitive-Motivational-Relational Theory of Emotion classifies emotions in to four different categories and appraisals in two kinds. Emotion classification is listed in table 2.3.

Lazarus distinguishes between two types of appraisal, namely primary and secondary. These each have three components, and the combination of these determine the representation of emotion. Primary appraisals relates to the individuals assessment of the personal significant of the outcome of the encountered event.

Goal relevance, goal congruence and type of *ego involvement/goal content* are the three components in primary appraisal. When the individual is at the stage of primary appraisal he or she determines if the encountered event is of relevance to the personal goals. If the event is perceived as goal relevant an emotion is produced. Following the individual determines if the event is in concurrent with the personal goal. This determines the affective tone of the emotion. If the encountered event is concurrent with the personal goal the emotion will be positive, if not it will be negative. The type of ego involvement/goal content the individual has is determining for what specific emotions that is generated.

Secondary appraisal on the other hand relates to the coping process. *Blame or credit, coping potential* and *future expectations* are the three components in secondary appraisal. The individual's attributions of the encountered event for him or her determines emotional appraisal of blame or credit. If the blame were directed externally the emotion would be anger, and if it were to be directed internally it would be guilt. Coping potential concerns, if and, to what degree the individual can positively affect the person-environment relationship. Future expectations relate to what the individual do think will change in the prospective perspective, this is also in regard to coping that might the situation worse or better (Lazarus, 2000a).

According to Lazarus's (2000a) are the two first categories quite standard and obvious. As to category three, borderline cases, these are emotions that solely cannot be identified with the other three categories.

Table 2.3: *The Cognitive-Motivational-Relational Theory of Emotion's classification of emotions (Lazarus, 2000b)*

Category	Classification	Example
	Emotions from harms, losses and threats	Anger, anxiety and fear
	Emotions from benefits	Happiness, joy and pride
	Borderline cases	Hope, contentment and relief
	Nonemotions	Efficacy beliefs, grief and curios

Category four, none emotions, on the other hand are separated from category one and two “...according to the presence (or absence) of a clear, personally, significant, relational content; an appraisal of personal harm or benefit; the potential for action readiness; and physiological changes” Lazarus (2000a, pp. 62).

As emotions relates to human behaviour (Hanin, 2000; Lazarus, 2000a, 2000b) manipulation of emotions and coping naturally is an area of interest for psychology research. One of the methods applied for emotional manipulation is music. This has actually become an own field of therapy and research within psychology (Bunt & Pavlicevic, 2001)

2.3.1 Emotions and music

Music has the ability to elicit powerful emotions (Gabrielsson, 2001) and has shown to be a successful mood-regulation strategy (Saarikallio & Erkkilä, 2007).

Scherer and Zentner (2001) identified three different routes emotions can be elicited by listening to music. These are the *appraisal route*, the *memory route* and the *empathy route*.

Within the appraisal route the individual calculates the personal significance of the music for his and hers well being. More precisely,

an object or event is evaluated by a specific person, with respect to a number of criteria or dimensions concerning the implications of the event for needs, goals, or values of the individual and his or her ability to cope with the consequences of the event. The result of this appraisal process is an emotion, which is then expressed or externalized in physiological symptoms and particularly, in motor expressive movements in the face, body and voice. (Scherer & Zentner, 2001, pp. 366)

Within the memory route, music operates as a trigger by recollecting former emotive events. According Scherer and Zentner (2001) music has much the same ability as odours to trigger emotional experiences into awareness, which is thought to be caused by two reasons. First of all is music a pervasive aspect of the individuals social life and accompanies the individual in many significant events. The second reason being "...music, like odours might be treated at lower levels of the brain that are particularly resistant to modifications by later input, contrary to cortically based episodic memory..." (Scherer & Zentner, 2001, pp. 369)

The empathy route distinguishes it self from the appraisal and the memory route by that the emotional response to the music can be mediated through others. Scherer and Zentner (2001, pp. 369) explains,

Even if we are not directly affected by the consequences of the event (e.g. an unreasonable action by a third person), we may evaluate the injustice or unreasonableness in exactly the same fashion as the person directly concerned and react equally...

According to Gabrielson (2001) three main factors determine how the music will influence the individual's emotional state, these are, *musical factors*, *personal factors* and *situational factors*.

Musical factors that are thought to effect the emotional response is the loudness, tempo, mode, rhythm, melody and texture of the music.

As to the personal factors, Gabrielsson suggests that the individual's physical state, cognitions, emotional state and personality is of significance to the emotional response. The individual's cognition, physical and emotional state and personality could for instance determine the individual's receptiveness for the music. If the individual is aroused, has low expectations to the music, is trait anxious and immature the individual might not be so receptive to slow down beat folk music

The situational factors that contribute to the relationship according to Gabrielsson (2001) are; the physical factors, such as the acoustical conditions; the social factor's such as, are one alone or accompanied by others, special occasions such as weddings, and; performance conditions, such as to what degree the music is rehearsed.

Gabrielsson (2001) further note that it is the interaction among these factors that determine the emotional response to the music. The relative importance of these variables vary a great deal, even in some scenarios the musical factors are of less importance than personal and situational.

Knobloch and Zillman (2002) reports that among adolescent it is normal to use a collection of favourite tunes to help them relax when they feel *stressed out*.

Burns, et al (2002) states that classical music which the individual perceives relaxing most likely will evoke positive and relaxing emotions within the individual.

Labbé, Schmidt, Babin and Pahr (2007) supports such a statement based on their findings. Labbé, and colleagues (2007, pp. 168) conclude that "...listening to some types of music genres elicit positive emotional and cognitive states, and reduces sympathetic nervous system arousal compared to sitting in silence or listening to heavy metal music". Further Labbé et al., (2007) suggests that self-selected music one is attracted to can be an effective coping response to negative emotion in a stressful situation.

This and related issues was investigated by Bishop, Karageorghis and Loizou (2007) in a sporting context. The researchers surveyed adolescent tennis player's use of music to manipulate their emotional state. The results imply that their research participants selected, in a consciously manner, music to evoke different emotional states. According to the researcher such use of music leads to improved mood, increased arousal and visual and auditory imagery. Based on their findings, Bishop, et al., (2007) suggest that music can successfully be integrated into athletes pre-game routine and contribute to that they find the adequate emotional state prior to performance. Hence, music might actually facilitate performance.

The theoretical framework that has been presented suggests that SE and CE are determinants for individual and group behaviour. Accordingly relevant research for these

relationships has been illustrated. Following the exact context and the aim of this study will be described.

2.4 Aim of the study

Studies have shown that self-modeling can enhance both performance (Barker & Jones, 2006; Dowrick & Dove, 1980) and SE (Barker & Jones, 2006; Starek & McCullagh, 1999). Additionally research suggests that self-selected music can facilitate both emotional (Bishop et al., 2007; Labbé et al., 2007) and cognitive states (Bishop et al., 2007). According to the self-efficacy theory the combination of these two procedures should result in a potent efficacy source. Feltz and colleagues (2007) yielded the need for research that investigate the effect of SE enhancing procedures on CE and vice versa. It was within this context this study was meant to contribute. The exact aim of this study was to investigate the relationship between self-modeling, self-selected music, self- and collective efficacy. The following hypothesis were tested in the current study:

Hypothesis 1:

Self-modeling combined with self-selected music will enhance self-efficacy.

Hypothesis 2:

Self-modeling will enhance self-efficacy.

Hypothesis 3:

Self-modeling combined with self-selected music will enhance collective efficacy.

Hypothesis 4:

Self-modeling will enhance collective efficacy.

Hypothesis 5:

Self-modeling combined with self-selected music will enhance the correlation between self- and collective efficacy.

Hypothesis 6:

Self-modeling will enhance the correlation between self- and collective efficacy.

Hypothesis 7:

Self-modeling combined with self-selected music is a more potent efficacy source than self-modeling alone.

3.0 Method

Initiating this chapter the design of this study will be described. Next the self-modeling videos will be presented. Following the measures used in the study will be explained. Then a presentation of the research participants and the intervention procedures follows. Further the steps taken to comply ethical considerations will be clarified. There next a presentation of the analysis follows. Finally the reliability and the validity in the study will be presented.

3.1 Design

This study was an experimental study, with a randomized controlled (RCT) study design. An RCT study design is distinguished by the randomisation of the participants into an intervention group and a control group (Thomas & Nelson, 2001). In this study the participants was randomly divided into three different groups. Namely intervention group 1 (IG 1), intervention group 2 (IG 2) and a control group (CG).

With an RCT design, the study was set up and initiated to show *causality*.

There are several criteria that are necessary to consider before establishing the cause and effect relationship between the different variables (Thomas & Nelson, 2001). Bollen (1989, p. 41) defines causality as follows: “Consider one variable, say, Y1, which is *isolated* from all influences except from a second variable called X1. If a change in Y1 accompanies a change in X1, then X1 is the cause of Y1 ”.

This definition of causality is made up from three components, namely: *isolation*, *association* and *direction* of influence. It is from, in ranked order, isolation, association and direction of influence we can establish cause and effect (Bollen, 1989; Thomas & Nelson, 2001).

Isolation is the criteria that cause the fact that there is not any absolute truth in science. This is caused by the fact that it is impossible to isolate Y1 from all other variables then X1. Total isolation could only be attainable in the state of vacuum. Since we cannot create total isolation we have to settle with *pseudo-isolation*, witch is the assumption that the disturbing variables do not correlate with the independent variable. When disturbing variables do correlate with the independent variable we have what is called a violation of the isolation criteria. There are two types of violations of the isolation criteria, which is called *spurious* and *suppressed* relations (Bollen. 1989).

Association refers to the cases where one only has two variables and a change in one variable is followed by a change in the second variable. Before one can establish association one have to meet the criteria for pseudo-isolation. When cause and its effect are isolated association is expected to occur (Bollen, 1989; Thomas & Nelson, 2001).

The last criteria for establishing causality are that the cause must precede the effect in a time perspective, which is referred to as the direction of causation. However, in some cases it is not always possible to decide which comes first. Temporal priority, which means that that the cause precedes that effect in the time line, allows a time lag in the cause-effect relation. Thus, the independent variable must cross a time cap before it effects the dependent variable, within this time gap there is a possibility that a number of intervening variables can affect the dependent variable. Another difficulty with the mentioned time gap is that one can not know for sure how long the gap is necessary to be. If we measure too soon or too late we might miss the effect we are investigating (Bollen, 1989; Thomas & Nelson, 2001).

To meet the criteria of pseudo-isolation, different techniques have been developed. *Observation selection* and *statistical control* are such techniques that can be applied on the data. Observation selection will restrict the analysis to an exact category of the potentially confounding variable. However this technique can lead the researcher to not knowing if the results can be applied to the rest of the population.

Statistical control includes the variables that are suspected to influence the dependent variable in the analysis. Typically used control variables can be demographic data such as gender, income and age (Bollen, 1989).

In this study four different variables was included, namely self-efficacy (SE) and collective efficacy (CE) as dependent variables and the musical positive self-review (MPSR) and the positive self-review (PSR) videos as independent variables.

3.2 The musical positive self-review and the positive self-review videos

The musical positive self-review (MPSR) and the positive self-review (PSR) videos were constructed from video clips where the participant was exclusively showing adaptive soccer skills, such as passing, shooting, dribbling, heading and defending. The raw video came from the national cup 2008, the level two league and the junior Interkrets 2008 and from the 2009 pre-season.

An audio mix from self-selected music was also present on the MPSR. The length of the MPSR and the PSR was approximately three minutes. The exact length of the videos were decided by how much video material the participant had generated.

The MPSR and the PSR was edited with Final Cut 4.

Collins and Holmes (2001) PETTLEP model was used, whenever possible, as a framework for the editing (ED) of the videos. The participants were also instructed to use (U) the MV according to the recommendations of the Collins and Holmes (2001) imagery guidelines. The guidelines from the PETTLEP model was employed as following:

Physical; U; The participants watched the MV in an up right possession.

Environment; ED; as many as possible environmental factors were included in the MV, for example images of the audience and the different stadiums were shown to capture the atmosphere; U; the participants watched the videos wearing their soccer/training gear, and if it was possible they watched it at their training or game facilities.

Task; ED; since the participants were at an expert level the videos was edited in such a way that the emphases was put on entirety of the skills modelled and not details or fractions of it, and whenever possible the different skills were shown in the same sequence/scene. This is predicted to be especially important since the soccer performance is complementary, which means that it's dependent on many different skills.

Timing; ED; in accordance with the model, the videos was edited in real/realistic time, which means that none of the images were edited so that they showed skills executed in fast or slow motion; U; the participants were instructed to not manipulate the time sequence when they watched the video.

Learning; ED; the model suggests that the imagery content should be representative for the individual skill level, therefore "fresh" video material (only from one week to three

months old) was used so the participants could relate to the performances they showed on the video.

Emotions; ED; to trigger the right emotions and regulate the activation to an adaptive level, self-selected music was employed to compliment the self-modeling on the MPSR. Whenever natural positive facial expressions and positive body language were shown in to the end of each executed adaptive skill.

Perspective; all the raw video material was shoot with an external perspective so the videos exclusively showed an external perspective.

3.3 Measures

To inspect the effect of the MPSR and the PSR on SE and CE a soccer specific SE and CE instrument was developed especially for this study. This instrument was named The Soccer Specific Self-Efficacy and Collective Efficacy Test (SSSE & CET).

The Self-Selected Music scheme (SSMS) was especially developed for this study and was applied to assess the participant's music preferences.

3.3.1 The Soccer Specific Self-Efficacy and Collective Efficacy Test

In accordance with Banduras (1997) recommendations a domain specific SE and CE measurement was developed (see appendix A). The specific soccer skills selected to be included in the test was inspired by soccer literature (Bergo et al., 2003; Carling, Williams & Rielly, 2005; Hughes, 1990; Luxbacher, 1996). The different types of skills that were selected were technical skills (16 items), tactical skills (4 items), physical skills (5 items), duelling skills (3 items) and team collective skills (8 items).

The SSSE & CET assesses both *strength* and *level* of SE and CE. The scale's has eleven (0-10) response categories with equal spaced intervals as recommended by both Bandura (1997) and Feltz and Chase (1998). The SSSE & CET assesses the participant's self-referent (participants potential) SE belief in regard to the different skills. Maximum score for SE strength for each skill is ten points per item, and minimum score for each skill is zero. So for instance, the score ranges from a minimum of 0 to a maximum of 160 in technical skills. The same formula applies for CE strength where the score ranges from 0-80. As to SE and CE level the minimum score was 1 and maximum score was 5.

The SSSE & CES uses the CE-CEI method (Myers & Feltz, 2007) to measure CE. The CE-CEI method consists of “aggregating the team members’ individual response to collective efficacy items that are preceded by a stem, which asks an individual to assess his or her own confidence in the team’s capabilities...” (Myers & Feltz, 2007, pp. 802). In team sports where the team’s performance is dependent of a high degree of interdependent effort the CE-CEI method has shown to be superior to other methods in predicting team performance (Feltz & Lirgg, 1998; Myers, Feltz & Short, 2004).

The SSSE & CET scores the participants SE and CE strength by the ratings on table one and three. The level the participant rates that him and his team is capable of playing at scores SE and CE level, level are assessed by table two and four.

3.3.2 The Self-Selected Music Scheme

The Self Selected Music Scheme (SSMS) (see appendix B) asks the participant to list three songs they would like to have on their video.

3.4 Participants and procedures

The research participants consist of twenty-two male junior (15-18 years) elite soccer players. All participants were recruited from the same soccer club. There were two inclusion criteria’s for the participant club, which were that it had to be in the top junior league, Interkrets, or in level three or better in the Norwegian senior league system and that it had to have a minimum of ten video documented games from within the last three months. The inclusion criteria for the participant individuals were that the individual had to be a part of the participant clubs team for the season 2009. The participant also had to have generated at least 270 minutes of film-documented playtime from the Norwegian cup 2008, league of the season 2008 or from the pre-season of 2009. Players who missed either pre or post test was excluded from the study.

After The Regional Ethics Committee and The Norwegian Data Inspectorate approved the study protocol the investigators contacted potential participant clubs.

Two clubs was initially given the opportunity to participate in this study. These clubs was selected due to their near geographic placement to researchers base and the fact that the

researchers already had established contact with individuals in the sports administration due to earlier collaboration. The initial contact was conducted with a phone call in the intent to determine if the clubs had the opportunity and was qualified by the inclusion criteria's to be incorporated in the study. Then an information letter (appendix C) describing the content and intend of the study was sent by e-mail to the clubs. The investigators received a positive respond from one of the clubs. Then one of the researchers went to the clubs location and held a presentation of the study to the team's sports administration. The team's sports administration and the investigators then came to an understanding and agreed upon when the study could be conducted.

One month prior to the intervention a researcher held an information meeting with the participants. During this meeting the participants music preferences and written consent was assessed, they were also given an information letter (appendix D) about the study and were instructed in how to fill out the SSSE & CES. Three weeks prior to the intervention the participants were randomly selected in to the three different groups. IG 1 was assigned to the MPSR procedure and IG 2 was assigned to the PSR procedure. The last three weeks prior to the intervention an investigator meet up with the team once a week to assess their SE and CE. The averaged of these three SSSE & CET established the baseline. When the data collection for the baseline was completed the intervention was initiated and the members of the IG1 and IG2 got their personified MPSR and PSR. All the testing was conducted in the clubs facilities in connection with the team's gatherings to make the participants perception of inconvenience as little as possible. Data collection was conducted at four occasions, whereas the three first was baseline and pre test and one that was post test. Post test was completed four weeks after the pre tests and marked the end of the intervention period. The timeline of the data collection and the intervention is illustrated in figure 3.5.

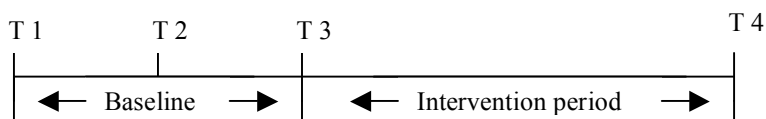


Figure 3.5: Timeline illustration of the data collection and the intervention, T= test.

3.5 Ethics

As earlier mentioned, The Regional Ethics Committee and The Norwegian Data Inspectorate approved the study protocol.

When the data collection period ended, the participant's data was coded. As soon as the analysis was completed the "key information" were destroyed, which means that the participant's participation and results was anonymous. Both the participant club and the individuals received a written information letter about the study's content and intend. The participants signed a written consent (appendix E) and were thoroughly informed that their participation in the study was completely voluntarily and if desired, they could without any consequences quit the study. The participants under 18 had to get one of their guardians written consent. This information was also given to the sports administration to the participant club.

The videos only contained adaptive behaviour and did not show images of the participant getting injured. After ended intervention period the KG was also offered a personified MPSR. The participants were debriefed after ended study. The debrief included a thorough presentation of the aim of the study and a presentation of the findings. The participants also had the opportunity to ask questions about the study.

3.6 Analysis

All SSSE & CET questionnaires were screened before they were included in the statistical analysis. The screening process was applied to prevent erroneous and misleading data references. All data was coded in the analysis process. The data analysis was initiated with looking for missing values and then the data was tested for normal distribution by applying the Shapiro–Wilk test, where the results revealed that $P > .05$. Accordingly the data was classified as normal distributed and since it can be categorized as interval scale parametric test's was applied (Thomas & Nelson 2001; Vincent, 1999). The hypothesis of this study was examined by using T-test for dependent samples, analysis of variance (ANOVA) and Pearson's product moment correlation coefficient. The data was analysed using Microsoft Excel 2004 and the Statistical Package for the Social Science 15 (SPSS).

T-test for dependent samples was applied to test the within group development from pre to post test. To calculate the SE *strength* all sub skill scores where summarized to their

respective main single skill so there was one sum score for each skill. There was also calculated one classification called total skill, which was the sum of all main single skills. The SE *level* was directly assessed from the test and was not pre possessed before tested. To calculate the CE *strength* scores all CE skills was summarized into one classification, called CE strength. This was done since it was no sub categories within CE skills. CE *level* was directly assessed from the test and was not pre possessed before tested. To determine the magnitude of the within group development from pre to post test *effect size* was computed in all skills. As advocated by Looney, Feltz and VanVleet (1994), the *standard deviation* (SD) from the pre test was chosen as the denominator in the formula. The applied formula was: $ES = (M2 - M1) / SD1$. M2 is the group mean from the post test, while M1 is group mean from the pre test. SD1 is the SD from the pre test (Looney, Feltz & VanVleet, 1994; Thomas Nelson, 2001).

One-way ANOVA was applied to test for difference between the groups at pre test, while 2x2 ANOVA was applied to test the development from pre to post test between the groups. Before testing the between group development from pre to post test, the scores was calculated into percent and not real score. The group's percent development was calculated from the percent development from each subject within the group. The applied formula to establish percent was $(M2 - M1 / M1) \times 100$ (Vincent, 2005). Tukey's honestly significant difference was applied following ANOVAs to establish the significance of pairwise cell contrasts.

To test the correlation between SE and CE Pearson's product moment correlation coefficient was applied, these correlations was based on the real scores at pre and post test. The scores from the four main single skills were calculated to one average skill, which was the mean score of all single skills combined.

With a fellow researcher as a witness the data was plotted by a researcher and the data was run trough the statistical analysis two times to prevent mistakes and secure the results (Halvorsen, 2003; Jacobsen, 2005; Thomas & Nelson 2001).

3.7 Pilot testing

The SSSE & CET and the SMSS was examined by four male elite soccer players. The examiners concluded that the SSSE & CET and SMSS made perfect sense and recommended that no changes to the test should be conducted.

A pilot test of a MPSR was also conducted on a male elite soccer player. This was done so that the investigators would be accustomed to the software used to edit the videos. The player felt that the MPSR “captured” his best performances and appealed to his self-efficacy.

3.8 Reliability in the study

Reliability refers to the accuracy and the stability in the measurements. Further one can say that it also makes a statement about the instrument of choice. All measurements may contain errors. The sources of measurement errors are the participant, the testing, the scoring and the instrumentation (Thomas & Nelson, 2001). In this study the potential biggest error of measurement were the participant himself. In this study Cronbach’s Alpha were applied to test the reliability of the measurement. The score of the Cronbach’s Alpha test should be above .70 to be considered reliable (Skog, 2004). The items related to technical skills had a value of .97. The items related to tactical skills had a value of .86. The items related to physical skills had a value of .86. The items related to duelling skills had a value of .72. The items related to the *level* of SE had a value of .88. The items related to team collective skills had a value of .77. All items combined had a value of .97.

SSSE & CET were originally developed in Norwegian since the participant club and most of the participants were Norwegian. Some of the participants were foreign and did not speak or write Norwegian so the test was translated to English so that the participants could choose between a Norwegian and an English version. An associate professor, with soccer as his field of speciality, at the Norwegian School of Sport Sciences contributed to the translation and development of the test. Finally a soccer player who spoke both fluently Norwegian and English checked the translation and suggested only minor alterations.

3.9 Validity in the study

In causal studies it is common to distinguish between four types of validity. These are validity of *measurement*, *statistical*, *internal* and *external* validity (Cook & Campell, 1979).

Validity of measurement may be described as “Degree to which a test or instrument measures what it purports to measure” (Thomas & Nelson, 2001, pp. 181). There are four different forms for validity that can help us determine if a measurement are valid. These are *logical*, *content*, *criterion* and *construct* validity (Thomas & Nelson, 2001). Which of the four different validity types you should apply to determine validity in a measurement, depends on the nature of the measurement.

Statistical validity concerns the effect and the relationship between the independent and the dependent variable. Statistical validity are recognized when the effect are caused by the independent variable and not coincidences. There are two types of statistical conclusion errors one must consider before establishing statistical validity. These are type I error and type II error. Type I error occurs when one rejects the null hypothesis when it is true. A type II error occurs when one accepts the null hypothesis when it is false (Skog, 2004; Thomas & Nelson; Vincent, 1999). In this study the p level is set to .05 which means there is a 5% chance do a type I error.

Internal validity concerns the design of the study, and how it’s set up to prove effect. Studies with high *internal* validity have control over the possible intervening variables and the effect can be traced to the independent variable (Thomas & Nelson, 2001). Campbell and Stanley (1963) identified: history, maturation, testing, instrumentation statistical regression, selection bias, experimental mortality, selection-maturation interaction as threats to the internal validity of experimental studies. Rosenthal (1966) identified and added a ninth, which was expectancy (Thomas & Nelson, 2001)

External validity, in contrary to internal validity, does not concern the cause and the effect relationship but refers to generalization aspect of the study (Thomas & Nelson, 2001). If there can be claimed a high level of *external* validity in a study the findings can with ease be generalized to the rest of the population, however if there’s a low level of external reliability the findings can’t or shouldn’t be claimed to concern the rest of the

population. Campbell and Stanley (1963) identified four threats to the *external* validity. These are; the effects of testing; the interaction between selection bias and the independent variable; the effect of the experimental arrangement and; the interference of other treatments (Thomas & Nelson, 2001).

The following describes the precautions taken to eliminate the threats to the internal validity and the steps taken to strengthen the external validity.

To eliminate potential additional sources of self-modeling, the participants were instructed to not watch any media coverage of them during the intervention period. The team's sports administration also agreed to not show the participants any video analyses of them during the intervention period. The participants did all the tests within a ± 1 hour period of the pre tests to prevent any diurnal variations.

To minimize the test-retest effect the baseline was established by the averaged of three tests, and the same SSSE & CET was used at each test. The group selection of the participants was randomized. All the testing was incorporated into the research participant's daily training regime so that it interfered as little as possible with their routines and therefore minimize the impact it has on the participant.

The participants did not participate in other study or reviewed any treatment that where thought to interfere with this study.

4.0 Results

In this chapter a description of the results from the statistical analyses are presented. First the SE findings are described then the results relating CE follows. T-test was applied to determine the within group development from pre to post test. Whereas repeated measures of variance (ANOVA) was applied to determine distinctions between the groups. To test the concurrence between the efficacy beliefs Pearson's product moment correlation coefficient was applied. The study had an experimental mortality of n=4.

4.1 Self-efficacy

4.1.1 Within group analysis

By ended intervention, analysis revealed that a positive development of self-efficacy (SE) *strength* in all skills had taken place within intervention group 1 (IG 1), although only tactical and total skill was significant. The *effect size* (ES) ranged from low to near moderate. The *level* of SE was identical at pre and post test. Intervention group 2 (IG 2) on the other hand had, a negative development of SE strength in all skills with the exception of tactical skills. No significant changes were found within this group. The level of SE in IG 2 proved to be lower at post than it was by pre test, at a low ES. The control group (CG) showed mixed results. The group had a positive development of SE strength in tactical skills and total skill. As to the other skills the group showed a negative trend. Only in physical skills a significant change was found, and this at a low ES, which all skills within these group was. The level of SE in the CG had developed negatively at an ES between low to moderate. The complete results of the within group development are presented in table 4.1.1.

Table 4.1.1: Within group self-efficacy development from pre to post test. Values are the groups mean of the sum score and standard deviation of each SE category. Effect size (ES).

IG 1:	Pre test	Post test	ES	P
Technical skills	112,20± 21,07	116,42± 18,66	0,20	0,10
Tactical skills	28,64± 5,07	30,71± 4,99*	0,41	0,01
Physical skills	31,57± 9,04	33,42± 5,38	0,20	0,36
Duelling skills	18,88± 4,64	20,71± 4,30	0,39	0,24
Total skill	191,30±34,77	201,28±27,89*	0,29	0,01
Level	4,71± 0,48	4,71± 0,48		.
IG 2:				
Technical skills	100,50± 19,79	96,00± 20,89	-0,23,	0,33
Tactical skills	23,96± 5,22	24,80± 4,81	0,16,	0,60
Physical skills	29,70± 7,44	29,60± 8,47	-0,01,	0,96
Duelling skills	17,32± 3,19	17,20± 3,70	-0,04,	0,85
Total skill	171,48±34,31	167,60±35,80	-0,11,	0,24
Level	4,60± 0,89	4,20± 1,30	-0,45,	1,78
CG:				
Technical skills	83,26± 13,54	86,00± 17,83	0,20,	0,50
Tactical skills	23,75± 3,99	23,66± 3,72	-0,02,	0,92
Physical skills	26,28± 4,54	25,66± 4,84*	-0,13,	0,04
Duelling skills	16,23± 5,56	16,16± 5,94	-0,01,	0,91
Total skill	149,53±24,34	151,50±29,77	0,08,	0,28
Level	4,33± 0,51	4,16± 0,75	-0,33,	0,69

* significant development from pre test to post test $P < 0,05$.

4.1.2 Between group analysis

Analysis between the group's single skill SE strength and level from the pre test are represented in figure 4.1. IG 1 had the highest score in SE strength towards all skills. IG1 also scores higher inn SE level than both IG 2 and the CG. Only one significant difference was found between the groups at the pre test. This was between IG1 and CG in technical skills, where IG 1 scored higher than the CG.

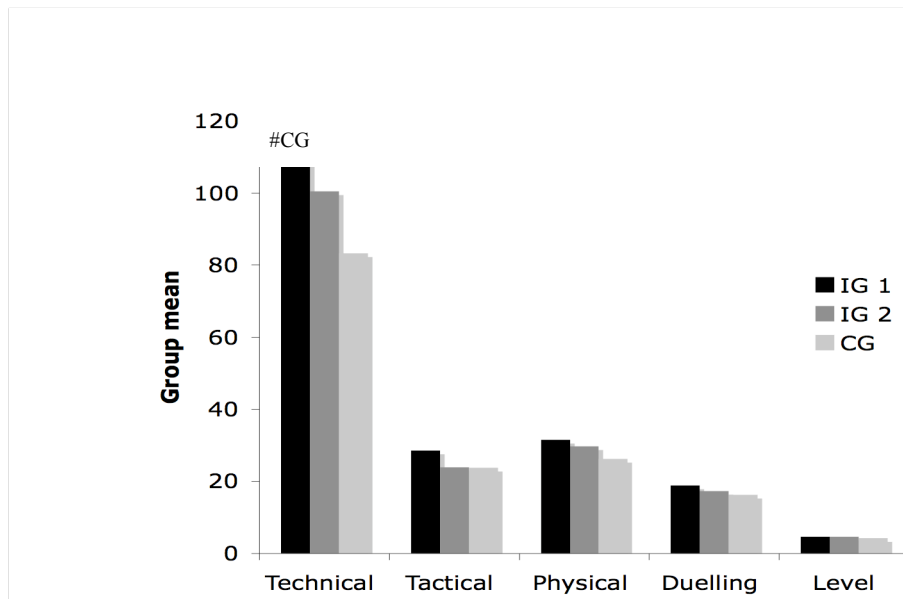


Figure 4.1: Single skill self-efficacy strength and level at pre test. Scale shows the group mean score. # $P < 0,05$

Total skill SE strength from the pre test is presented in figure 4.2. No significant difference was found between the groups. IG1 has the highest score, followed by IG2 than the CG.

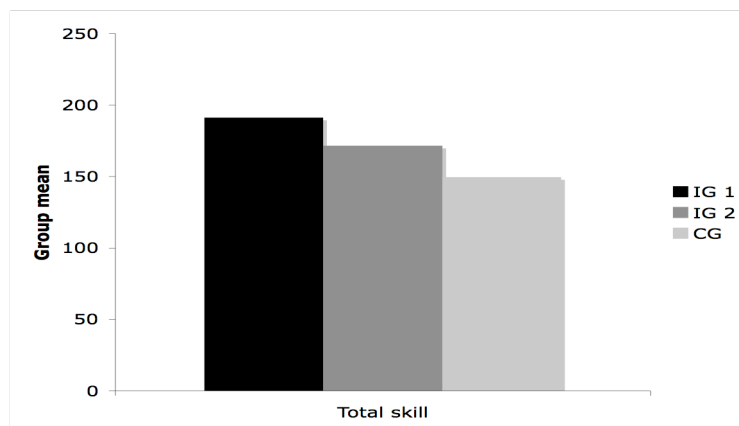


Figure 4.2: Total skill self-efficacy strength at pre test. Scale shows the group mean score. # $P < 0,05$

Analysis between the group's single skill SE strength and level of percent development from pre to post test are represented in figure 4.3. IG 1 had the highest positive percent

development of all groups towards all skills. As seen, IG1 had no change of SE level during the intervention while IG 2 and the CG's level of SE developed negatively. When the single skills were tested none of the group's development differed significant from each other.

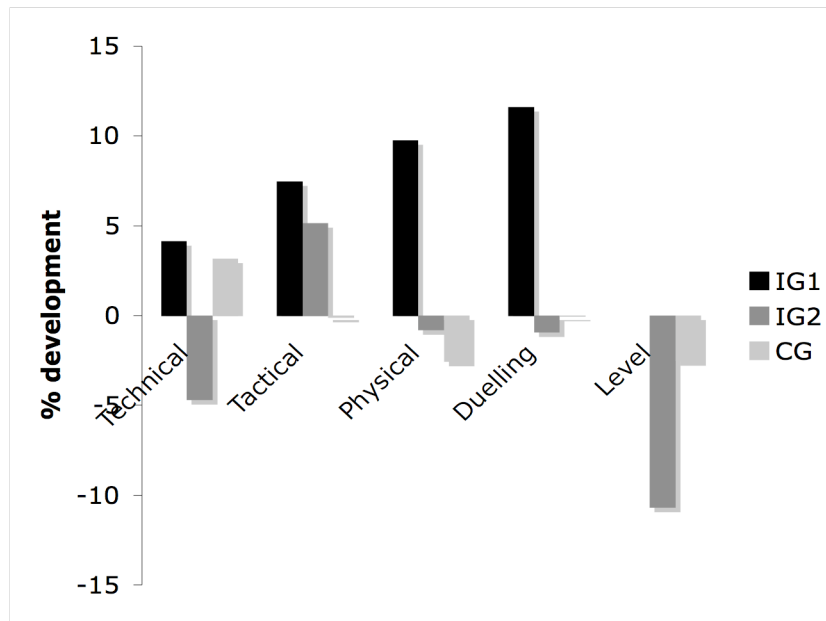


Figure 4.3: Single skill self-efficacy strength and level development from pre to post. Scale indicates %. # $P < 0,05$

Total skill SE strength development is presented in figure 4.4. IG 1's development of total skill differed significant both from IG 2 and the CG. IG 1's total skill SE strength increased by 8,24% from pre to post test. IG 2 on the other hand decreased by 0,3%, while the CG had a slight increase by 0,12%.

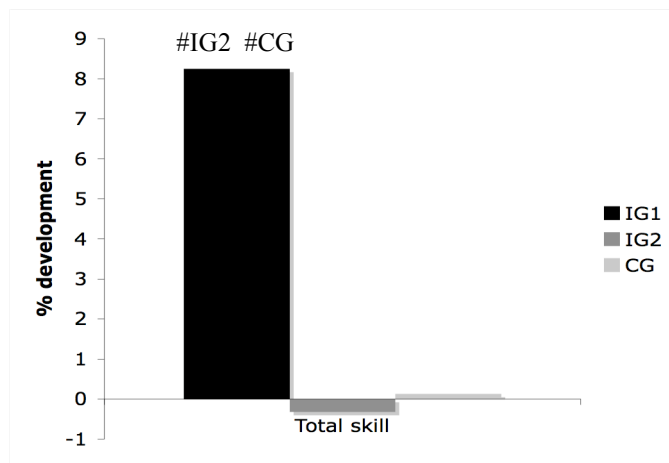


Figure 4.4: Total skill self-efficacy strength development from pre to post. Scale indicates %. # $P < 0,05$

4.2 Collective efficacy

4.2.1 Within group analysis

From pre to post test IG 1's CE strength and level increased. The difference was not significant (ns) but had a moderate to strong ES. IG 2 had a slight increase of CE strength at low ES but ns. The level of CE was identical at pre and post test in IG 2. The CG showed a non significant increase of CE strength at a low ES. The level of CE in the CG decreased, but ns, and was also at a low ES. The complete results of the within group development are presented in table 4.2.1

Table 4.2.1: Within group collective efficacy development from pre to post test. Values are the groups mean of the sum score and standard deviation of each SE category. Effectsize (ES).

IG 1	Pre test	Post test	ES	P
Strength	47,30± 11,44	55,71± 7,93	0,73	0,06
Level	3,85± 0,89	4,28± 0,75	0,48	0,08
IG 2				
Strength	52,28± 10,56	52,80± 11,16	0,04	0,86
Level	3,60± 1,51	3,60± 1,51	.	.
CG				
Strength	49,01±8,49	51,33± 7,44	0,27	0,37
Level	4,50± 0,54	4,28± 0,75	-0,40	0,17

* significant development from pre test to post test $P < 0,05$.

4.2.2 Between group analysis

Analysis between the groups CE strength and level from the pre test are presented in figure 4.5. No significant differences between the groups were found. But one can see that IG 2 has the highest CE strength followed by the CG. The CG had the highest score in CE level while IG 1 and IG 2 were quite equal.

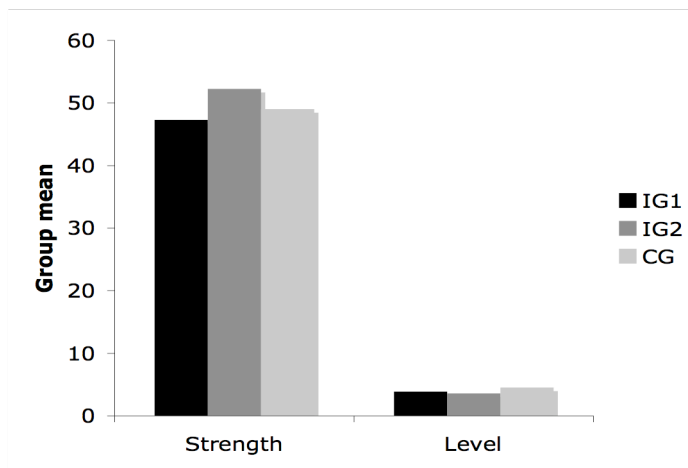


Figure 4.5: Collective efficacy strength and level at pre test. Scale shows the group mean score. # $P < 0,05$

Analysis between the groups CE strength and level of percent development from pre to post test are represented in figure 4.6. IG 1 has the highest percent development of all groups concerning both CE strength and level. Only one significant difference was revealed. This was between IG1 and the CG in CE level. IG 1's CE strength increased by 22,69% whereas their level of CE increased by 13,08% during the intervention. IG 2 increased its CE strength by 1,20 % but their level maintained the same by ended intervention. The CG increased their CE strength by 5,83 % and decreased their level of CE by 8,33%.

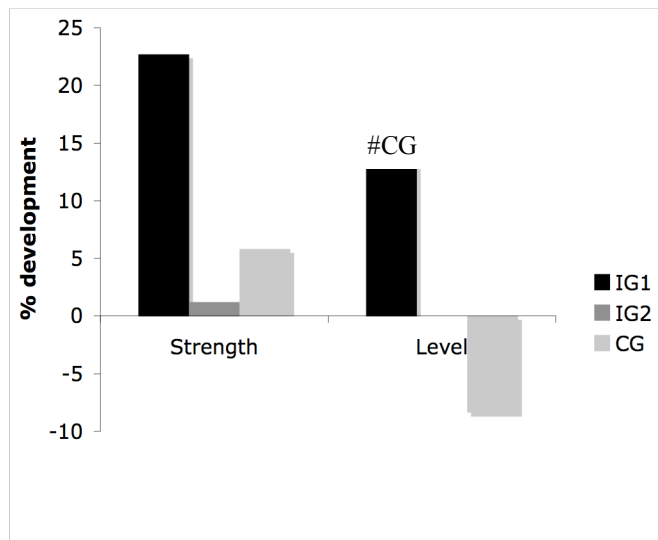


Figure 4.6: Collective efficacy strength and level development from pre to post. Scale indicates %. # $P < 0,05$

4.3 Self-efficacy and Collective efficacy

Correlations between SE and CE strength within the groups at pre and post test are presented in table 4.3. Correlations between SE and CE level within the groups at pre and post test are presented in table 4.4. At pre test was IG 1's correlation of strength at -.25 and ns. At post test it had increased to .65 but still ns.

Table 4.3: Correlations between self (SE)- and collective efficacy (CE) strength (st). Values are Pearson's r .

	SE st pre	SE st post	CE st pre	CE st post
IG 1 SE st pre	.	.	-0,25	.
SE st post	.	.	.	0,65
CE st pre	-0,25	.	.	.
CE st post	.	0,65	.	.
IG 2 SE st pre	.	.	0,9*	.
SE st post	.	.	.	0,82
CE st pre	0,9*	.	.	.
CE st post	.	0,82	.	.
CG SE st pre	.	.	0,48	.
SE st post	.	.	.	0,37
CE st pre	0,48	.	.	.
CE st post	.	0,37	.	.

*significant $P < 0,05$.

Table 4.4: Correlations between self (SE)- and collective Efficacy (CE) level (le). Values are Pearson's r.

		SE le pre	SE le post	CE le pre	CE le post
IG 1	SE le pre	.	.	0,65	.
	SE le post	.	.	.	0,71
	CE le pre	0,65	.	.	.
	CE le post	.	0,71	.	.
IG 2	SE le pre	.	.	0,58	.
	SE le post	.	.	.	0,82
	CE le pre	0,58	.	.	.
	CE le post	.	0,82	.	.
CG	SE le pre	.	.	0,7	.
	SE le post	.	.	.	0,54
	CE le pre	0,7	.	.	.
	CE le post	.	0,54	.	.

*significant $P < 0,05$.

IG 2 had correlation of .9 between SE and CE strength at post test which was significant, at post test the correlation had decreased to .82 and now ns.

At pre test the correlation between SE and CE strength in the CG was at .48 and ns, as to the post test it had decreased to .37 being ns.

The correlation of the SE and CE level was at .65 and ns at pre test in IG 1.

By post test it had increased to .71 but ns. At pre test the level of SE and CE was 0.58 but ns in IG 2, at post test it had increased to .82 post test but ns. At pre test the correlation of SE and CE level was at .7 in the CG. At post test the correlation had decreased to a .54. Neither at pre nor at post test was the correlations of SE and CE level significant in the CG.

5.0 Discussion

The aim of this study was to test the effectiveness of two self-modeling procedures, one with self-selected music and one without, on self-efficacy (SE) and collective efficacy (CE). It was hypothesized that both procedures would enhance SE and CE.

Initiating this chapter the results from the study will be discussed in line with the hypothesis. Following, the applied methodology and the instruments in this study will be evaluated and discussed. Finally comments and reflections on future research will be suggested.

5.1 Self-efficacy

The results from this study suggests that self-modeling accompanied by self selected music can facilitate SE *strength* among junior elite soccer players. However, SE *level* did not in this study seem to have been effected by such a modeling procedure. The results also suggest that self-modeling alone might debilitate SE strength and level. Although there was found no significant changes within the group who where exposed to self-modeling without self-selected music .

Two skills differed significant in IG 1's SE strength from pre to post test, this was in technical and total skill. Both skills had *effect size* (ES) between low and moderate development between the tests. IG 1's total soccer skill SE strength was also positively significant different from both IG 2's and the CG's. No significant difference between the groups surfaced when the single skill percent development from pre to post test was tested.

Hypothesis 1, 2 and 7

Looking at figure 4.3 we can see that IG 1 throughout all single skills had the highest percent increase within all skills. It is also interesting that IG 1 was the only group who had not suffered a decrease in SE strength towards any of the skills.

As to the SE level both IG 2 and the CG had decreased from pre to post test while IG 1 was unchanged.

The results from the pre test reveals that IG 1 had the highest SE strength on all single skills and also in total skill. Based on this, one could argue that it would be more difficult

for IG 1 to increase in SE strength then it was for the two other groups (Winfrey & Weeks, 1993). This again can underpin and strengthen the results from the between group analysis.

The results concerning IG 2 on the other hand were not as the researchers had expected. IG 2 decreased in SE strength on all single skills except towards tactical from pre to post test. Thus, they decreased in total skill SE strength, although the changes were not significant (ns). IG 2 also had a ns negative change in SE level at a strong ES. Compared to the CG, IG 2's SE strength in total skill was higher at pre test but had such a negative development that it ended up lower than the GC's at post test. The same development can be seen between the groups level of SE.

An explanation to the development of SE in IG 2 could be that the self-modeling video did not exhibit their skill development from pre to post test. According to Schunk and Hanson (1989) an individual who does not perceive their progress, actually might start believing that he or she is not capable of improving. Thus, by watching the same video for four weeks they might be influenced to believe that they performed at a lower level than they actually did. Hence, the video did not facilitate their SE.

If this was the case one could expect that the same results would be found in IG 1 since all the videos were edited from the same matches. As the results in IG 1 was quite the contrary, it weakens the hypothesis of Schunk and Hanson validity in this study.

According to Dowrick (1999, pp. 25) an important factor in creating a positive self-review (PSR) video, which the videos in this study was intended to be, is to exhibit the individual "...maximizing the performance of a target skill...", thus the individual's *best performance so far*. The films created for all individuals in both modeling procedures came from the same *bank* of raw film. These were ten games, partly from the fall season of 2008 and the pre season 2009. Due to this limited amount of film it would be reasonable to assume that for some of the participants their *best performance so far* was not presented in this bank. Hence, the effect of the film was not optimal for those individuals. This could be a logical explanation to why SE was not facilitated by self-modeling in IG 2. Again, if this was the case one could expect that this would effect both groups equally since they had the same bank of films and the groups where randomly divided.

An alternative explanation is that IG 2 started out with a SE that was not representative of their actual level of skill. So that when they viewed their PSR video their SE were guided towards their actual level of skill. Such an explanation has proven to be valid in other studies (Winfrey & Weeks, 1993; Starek & McCullagh, 1999). Winfrey and Weeks (1993) experimental study tested the effect of self-modeling video with energetic music on a group of gymnasts, where the dependent variables were SE and performance. The study did not produce any significant differences between the experimental and the control group in SE or performance.

However, they found a significant correlation between the experimental groups predicted and actual performance. They also note that there was a significant group difference between actual and self-rated results that benefited the experimental group. Which indicates that the experimental group had a more realistic perspective of their performance

Starek and McCullagh (1999) investigated the effect of two types of modeling; self- and peer-modeling, on novice swimmers performance. One of their more interesting findings was the correlation between SE and self-rated performance. When the groups were exposed to their respective modeling conditions, the correlation in the self-modeling group was at a low level, whereas in the peer-modeling group the correlation was moderate. As swimming performance increased in the self-modeling group the correlation also increased, now to a moderate level. In the other group the correlation also kept raising, now to a high level. But their actual swimming performance stayed quite unchanged. So, the self-modeling group had a quite accurate relationship between SE and performance, whereas the peer-modeling group, based on their SE, overestimated their swimming abilities.

Based on this observation, the investigators suggested that individuals exposed to self-modeling use the information provided in a different manner than other modeling conditions. Continuing to speculate, Starek and McCullagh (pp.284) suggest: "Perhaps, then, it is the accuracy of self-efficacy beliefs as it relates to actual behaviour that increases performance, and not the presence of increased self-efficacy alone".

Such a statement appeals to the deductive reasoning when one has the results of Winfrey and Weeks (1993) in mind. However, if one takes a step back to theoretical framework, Bandura (1997) would argue that behaviour change would take place mediated through

enhanced SE beliefs. However, it is obvious that such reasoning is not able to explain the results of Winfrey and Weeks (1993) and Starek and McCullagh, (1999).

In the current study one could only speculate if the SE in IG 2 has been directed towards a more accurate relationship between SE and performance. To determine this relationship a measurement of performance is needed, which the current study does not have. This is because the main focus of this study was to investigate the relationship between self-modeling, self-selected music, SE and CE.

With the recent speculations regarding the cause of the absences of SE reinforcement in IG 2 in mind, one would expect that much of the same results were found in IG 1. However, this was not the case. The next step is to compare the two intervention procedures. Self-selected music was the only variable separating the two procedures from each other.

According to Bandura (1997) physiological and affective states are one of the four sources of efficacy information. Maddux (1995) acknowledges Bandura's view when it comes to that both physiological states and affective states are efficacy sources. However, Maddux lists them as individual sources, as emotions have additional components to the physiological dimension. Nevertheless, both recognize that emotions can effect SE beliefs. They both note that a positive affect facilitates SE beliefs and negative affect on the other hand debilitates SE beliefs. This is supported in several studies (Forgas, Bower & Moylan, 1990; Kavanagh & Bower, 1985; Salovey & Birnbaum, 1989) where researchers typically have investigated the effect of mood on efficacy judgments or similar constructs.

As music has shown to affect emotions (Bishop et al., 2007; Burns et al, 2002; Labbé et al., 2007) a linkage, or mediator if preferred, between music and SE has been identified. Based on this one could propose that the development of SE in IG 1 was caused by the self-selected music and not the self-modeling. Such a notion is supported by Bishop and associates (2007) study, which report that that music in fact helped athletes remember past mastery experiences and made them feel more confident. Especially participant 12 in Bishop et al., 's (2007) study describes a strong cognitive reaction to the lyrics of a special song: "Um there's like, 'I can climb a mountain high'. ...It's just like, I can do anything. It makes me think of that when I listen to it" (pp.600).

According to Labbé, and colleagues (2007) self-selected music is the most effective method of music selection to reduce emotions such as anger. Based on music's ability to evoke emotional states, Bishop et al., (2007) suggest that self-selected music can be a successful part of athlete's pre performance routine. When Winfrey and Weeks (1993) investigated the effect of self-modeling the music applied on their films where not self-selected. As earlier noted they did not find any significant differences between the intervention and the control group. If this is caused by the fact that the research participants did not get to select their music, one could only speculate. However, Tempelin and Vernacchia (1995) conducted a self-modeling study where the research participants got to select their own music. This study had a single subject multiple-baseline-across-subject design where the researcher was not able to establish causal relationships between the procedure and performance. Post interviews suggest that the procedure might have facilitated SE as four out of five participants relates watching video directly towards feeling more confident. Based on these two studies it is safe to say that it is not possible to determine the importance of the selection procedure of music when conduction self-modeling studies. However, the results of this study and the findings made in Tempelin and Vernacchia's (1995) study could be an indication that SE is more effected by the method of musical selection than performance. Then again, this is highly speculative, as the current study had no measurement of performance and Tempelin and Vernacchia (1995) had no quantitative measurement of SE. On the other hand, since this study did not include a group who where solely exposed to self-selected music, it is not possible to determine if music solely caused the enhanced SE in IG 1. Hence, it could have been the combination of the two variables that caused the affect.

Bandura (1986) explained the procedure of observational learning as a four-step process. The first step in the process is attention. From this perspective the self-selected music might have been an attention aid. In this manner the music captured IG 1's attention towards the screen where the modelled behaviour where exhibited. As to IG 2 who had no attention aids available, their attention could have been less focused towards the modelled behaviour. Hence one may speculate that IG 1 actually where exposed to a larger quantum of self-modeling than IG 2 was.

The musical aspect of the modeling procedure in IG 1 could also be related to the second step in Banduras (1986) observational learning process, retention. Retention is the

cognitive recreation of the modelled behaviour. Music's ability to trigger emotions and cognitive states has been recognized by Scherer and Zentner (2001) and has been identified in several studies (Labbé, et al., 2007; Bishop, et al., 2007). Bishop and associates (2007) for instance, found when investigating how young athletes used music to manipulate emotional states, that music also in some cases manipulated cognitive states and improved visual imagery. Quotations from participant 11 and 8 in Bishop et al.,'s study give an interesting illustration of music's ability trigger memory and imagery.

If I listen to this song before a match, and I play really well...if I hear it again, then I'll think of stuff in the match, how well I did, if I'm just like in my room. (Participant 11) (pp. 595).

I can actually picture one of the goals I scored when this is playing.... I just can't think of anything bringing back such a strong memory as this song...it's so vivid, especially if I close my eyes, especially when I'm listening to this song. I remember the goal I scored, the pitch we were playing on, I remember everything. (Participant 8) (pp.600).

Based on this one could argue that the music on the musical positive self-review (MPSR) video might have triggered or facilitated images from the MPSR when, and if, the individual was exposed to the music alone. Since the participants in IG 1 got to select their own music on the MPSR, it is not unlikely that they selected music they liked. Hence, one could expect that IG 1 where exposed to the music on their MV also when they were not watching their MPSR video, for instance whenever they listened to self-selected music, which could be quite frequent. In this way IG 1 could have, unintended, used the music from their MPSR video to trigger the recreation of the modelled behaviour. So this could also contribute to enhanced SE. Such a notion could be supported by Shearer, Holmes and Mellalieu (2009) who states that athlete's memory and reflective imagery contribute to their determination of efficacy beliefs. Shearer et al's point of view will be further elaborated when discussing CE.

5.2 Collective efficacy

The results from this study suggest that self-modeling accompanied by self-selected music might facilitate collective efficacy (CE) strength and level among jr. elite soccer players. However, self-modeling alone does not in this study seem to affect neither CE strength nor level. At pre test IG 1 had the lowest CE strength, so one could argue that

this group had the largest potential for CE strength increase (Winfrey and Weeks, 1993), which they had. The ES from pre to post test in IG 1 was .73. Although this large change was not significant it shows a tendency. As it is viable in figure 4.6 all groups had a increase of CE strength. This might suggest that an unknown factor can have influenced the teams CE strength.

Moving on to CE level, all groups started out quite equal. Also towards CE level IG 1 showed to be the group with the largest ES in regards to the development from pre to post test. Although the development of CE level was not significant one could interoperate a P value of .08 as a tendency. Despite of these large ES within IG 1, only one significant change was found between the groups. This was between IG 1's and the CG's CE level. The CG decreased their CE level by a small ES and ns. IG 2's CE level was the same at post as it was at pre test.

Hypothesis 3, 4 and 7

Again the results in IG 2 did not support the hypothesis of the researcher. An explanation to the development of CE in IG 2 could be that the PSR video did not exhibit the team's development from pre to post test. Schunk and Hanson (1989) reasons that if one does not perceive ones progress, one could start to believe that one is not capable of improving. Schunk and Hanson's (1989) statement relates to SE, thus at an individual level. However, there is no obvious reason for this reasoning to be applicable to a group level as CE. Therefore one could speculate that the PSR video did not relate to the groups experienced skill development from training and matches during the intervention period. Hence the PSR video did not enhance their CE. On the other hand, if this was the case, one could assume that the same results were found in IG 1 as the two groups videos where edited from the same matches and the groups were randomly divided. As the results in IG 1 are quite opposite to IG 2's results, this explanation does not seem to be valid.

There is also the possibility that IG 1 saw their team perform better than IG 2 in their videos since the videos were individual adapted. As soccer is a team sport it was necessary to exhibit the team mates behaviour on the specific individual's video in some situations, so that the individual's behaviour would make perfect sense. When constructing and editing the video only adaptive and constructive behaviour from the

team mates where exhibited. Thus, none of the research participants in this study got a video where they saw their team perform poorly. But one cannot exclude the possibility that IG 1 got a greater amount of *group modeling* than IG 2, since the videos was not standardised in terms of specific images or duration.

Due to the limited amount of raw video base available to this study, it is also possible that the intervention video did not capture the team performing at their maximum, which Dowrick (1999) advocates that one should strive for when creating a PSR video. As all members of both groups are members of the same team and the groups were randomly selected, one could assume that this would affect both groups in the same manner.

One could also speculate that the self-modeling video adjusted IG 2's CE beliefs towards actual skill. Much in the same way as SE believes has been affected in other studies (Starek & McCullagh; 1999 Winfrey & Weeks, 1993). As it was not taken any measurement of performance in this study such a statement can only remain a speculation. When one compares the results in IG 2 with the results in IG 1, such an explanation does not seem too valid since the two groups had almost identical interventions.

Another possible explanation, and the only independent variable that set the groups apart, is the effect of the music. As suggested by Bandura (1997) and Maddux (1995) and supported by research (Forgas, Bower & Moylan, 1990; Kavanagh & Bower, 1985; Salovey & Birnbaum, 1989) affective states can be a source of efficacy and music has shown to effect emotions (Bishop et al., 2007; Burns et al., 2002; Labbé et al., 2007). From this it is possible to advocate that enhanced CE in IG 1 was due to music solely. How significant the selection of the music was, one can only speculate. In another similar study the research participants did (Tempelin & Vernacchia, 1995) and did not (Winfrey and Weeks, 1993) get to select their own music results might suggest that self-selected music can contribute to emotional manipulation and enhanced efficacy beliefs. Due to the study design one cannot exclude the possibility that the musical procedure has interacted with the modeling procedure. From the social cognitive perspective the musical variable could also relate to Banduras (1985) four step observational learning process by effecting step one and two. In step one, the music might function as an attention aid, and in the second step the music could function as a trigger that initiates the observer to recreate the modelled behaviour cognitively.

According to Shearer et al., (2009, pp. 42):

Indeed, in accordance with the proposed antecedents of collective efficacy (Bandura, 1997), athletes' memorize and reflective imagery of reciprocal social interactions such as competitive team performances, post-game debriefs, or training, may also contribute significantly to their overall ratings of collective efficacy. It is important therefore, to consider not only action representations originating from external observation but also those from within the individual themselves. Internally-generated images have also been shown to activate similar neural structures to those used in perceptual and execution situations (see meta-analysis by Grezes & Decety, 2001). Consequently, both pre reflective observation (e.g., watching the on video) and reflective imagery (e.g., imagining successful plays) processes offer direct mechanisms to explain how athletes may form their perceptions and attitudes of others in their team.

Based on such reasoning, one could speculate that the music could have triggered memories from the video, and in that manner might have contributed to enhance CE in IG 1 (se section 6.1 for elaborated discussion on the effect of music on efficacy beliefs).

5.3 The relationship between Self- and collective efficacy

At pre test, IG 1 reported the highest SE strength and level and the lowest CE strength and the second lowest CE level. As to IG 2, they scored second highest in SE strength and level but the highest in CE strength. The CG scored lowest in SE strength and level but scored second highest in CE strength and the level.

To summarise, the group who scored the highest in SE scored the lowest in CE. And the two groups who scored the lowest in SE scored the highest in CE.

Why this is, and what this means for the team performance, one can only speculate.

By reasoning one can say that there is a concurrence between the groups efficacy judgements of themselves compared to the rest of the team.

To be more specific, IG 1 states that they have stronger beliefs in their own skills than they do towards the team's skill. Hence, IG 1 believed that they where more skillful soccer players than the rest of the team. Based on this one can also expect that this group saw themselves as significant players for the team's performance. IG 2 and the CG on the other hand, had a lower sense of SE strength and level than IG 1 but had a stronger CE strength and level (only the CG). Consequently IG 2 and the control group stated that

they had less belief in their own skills than they had in the team's skills. Actually IG 2 and the control group agreed with IG 1 in regards to that IG 1 was the most skillful group. These speculations are supported by the correlations from the pre test. Both IG 2 and the CG had a higher correlation between SE and CE strength than IG 1 did (see table 5.3 for exact values). But only the CG had a higher correlation between SE and CE level. By post test the correlation between SE and CE had changed within all groups. The largest changes were found in IG 1. The group had increased their correlation between SE and CE strength from very low to a close to moderate, although ns. Their correlation of level increased from a close to- to moderate, but also ns. IG 2 increased their correlation of level from a close to moderate to close to high. The correlation between SE and CE strength in IG 2 and strength and level in the CG was lower at post than at pre test, no correlations were significant at post test. This means that the concurrence between SE and CE had changed within all groups.

Hypothesis 4 and 5

In IG 1 the gap between their judgements between their skills (SE) and the teams skills (CE) had been narrowed, mainly caused by a large increase in CE strength and level where ES was between moderate and large. As to the other groups their judgements of their skills and the teams skills, was much more equal at pre than it was at post test.

Not many studies have set out to investigate the relationship between SE and CE. But the few there is (Feltz & Lirgg, 1998; Myers, Feltz & Short, 2004) has provided several interesting results. Feltz and Lirgg (1998) examined the relationship between SE and CE in six hockey teams at collegiate level. The researchers found that the CE was a better predictor of the team's performance than SE. Feltz and Lirgg also report that the teams past performance effected CE much greater then it effected SE. More specifically after a win the CE increased, and after a loss CE decreased but SE seemed to be much more stable and not depended on the teams performance. This can be explained by the fact that the individual's set a part is not responsible for the team's performance.

Johnston (1967) reasoned that it is easier for a team member to asses the teams performance accomplishments of the team as a whole than it is to asses one's own contributions to the team's performance, because team accomplishments are more apparent and less ambiguous than the individual's accomplishments in the team

context. Thus, the obvious team wins and losses may have a greater effect on players' efficacy judgements about their team than on efficacy judgements about themselves. (Feltz & Lirrg, 1998, pp. 563).

Feltz and Lirrg (1998) also correlated SE and CE among all teams, which is of great interest since performance was also registered. The top three ranked teams respective correlations between SE and CE was .78, .75 and .34. In comparison the bottom three ranked teams respective correlations where .69, .70 and .90. Based on these correlations one cannot say if a high or low correlation identifies team performance.

Myers, Payment and Feltz (2004) extended the research of Feltz and Lirrg (1998) into the context of collegiate football. Myers and associates confirmed the results of Feltz and Lirrg concerning that CE was a predictor of team performance and SE was not. Myers and colleagues also found a circular relationship between CE and team performance, which would be in concurrence with the framework of the social cognitive theory. The researchers also computed correlations between SE and CE. The correlations ranged from -.38 to a .94, the teams shared mean was at .58. Due to the presentation of the performance results it is difficult to draw any lines between the correlations between SE and CE and performance in this study.

As so few studies has investigated the relationship between SE and CE, it is difficult to determine the significance of the concurrence between SE and CE.

However, according to Bandura (1997) SE is an important predictor of the individual's performance, where a high SE facilitates performance and a low SE debilitates performance. In the same manner Bandura states that CE effect group or team performance. From this perspective one could expect, in the best possible scenario, that both SE and CE were as high as possible, consequently perfect concurrence. Such a perspective would probably supported by Pensgaard and Duda (2002) who reasons it is logical that a coherent relationship between SE and CE should be preferred within team sports, although the researchers do not further elaborate on this standpoint.

5.4 Towards an explanatory model of the interaction between the variables

The results from this study suggest that self-modeling combined with self-selected music can enhance SE and might enhance CE. The results also suggests that the concurrence between the two constructs might increase due to the intervention procedure applied on IG 1. The causal relationship between the independent and the depended variables are illustrated in figure 5.1 However, due to limited research in this specific area it is difficult to determine the exact relationship between the variables. When discussing the results of SE and CE in IG 1 and 2, several explanations where suggested on the basis of the theoretical framework and on earlier relevant research. Although it is not possible to exactly establish the cause and affect relationship between the variables, hypothetical interactive relationships where put forth. These relationships between the variables are illustrated in figure 5.2.

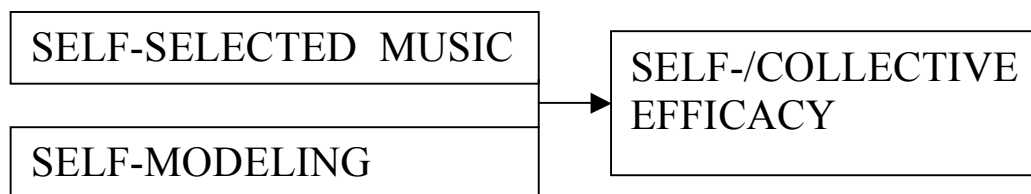


Figure 5.1: *The causal relationship between the variables based on the results.*

This hypothetical explanatory model (figure 5.2) suggests that self-modeling and self-selected music can affect self- and collective efficacy in several different manners, four, to be accurate. In the first manner self-modeling and self-selected music effect SE and CE dependently and share no dynamic process before inflicting SE and CE.

In the second manner the model shows that self-selected music can facilitate self-modeling in two ways; either combined or separately. In the first way the music can be an attention aid that focus the observers attention towards the self-modeling.

In the second way the music can trigger a cognitive retention of the modelled behaviour in the observer's cognition. The second way one can expect to occur during all situations whenever the individual is exposed to the music. One could even speculate that it can occur when the individual watches the film and in that manner strengthens the effect of the modelled behaviour.

The third manner excludes self-modeling as a variable and suggests that self-selected music effects SE and CE through a mediator, namely emotions.

Finally, figure 5.2 implies that a combination of the three manners could interact and together cause the effect.

Self-selected music could for instance both facilitate self-modeling but also directly, mediated by emotions, effect SE and CE.

Although this is a highly speculative model it could be a step further in the process of investigating the relationship between self-modeling, self-selected music and efficacy beliefs.

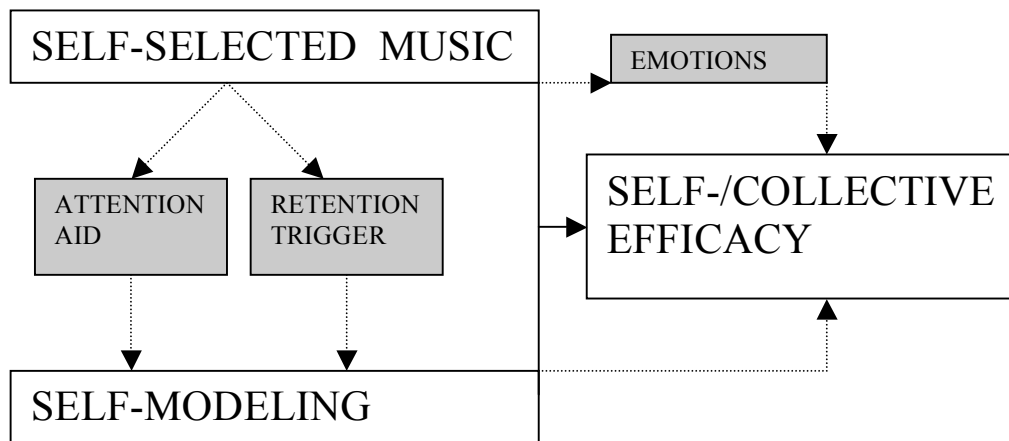


Figure 5.2: *The interactive relationship between the variables based on the theoretical framework.*

5.5 Methods and instruments

As this study has been conducted and the data has been computed several reflections around the methodology and instruments used in this study has come to mind. Especially thoughts regarding factors that might have been done different to strengthen the results and the external validity. For instance the selection of research team was not randomized so the results cannot be generalized to the rest of the population. The current study has several interesting results in regards to both the development within and between the groups from pre to post test, although many of them are ns, which is mainly caused by the small n in the study.

The current study suffered an experimental mortality by 18 percent due to players being absent from either pre or post test. This was largely caused by change of clubs or injuries. The causes to experimental mortality in this study could actually to some degree have been prohibited and diminished, and by doing so the study might have produced more significant results. For instance the researchers could have screened the players whereabouts better in regards to significant dates and arranged for them to do the testing elsewhere. The researchers could also have kept better contact with the team staff to be better updated on the injury status.

As to the instrumentation used in the study it revealed a high cronbach alpha it is obvious that the research participants was able to relate to the test.

However, the measure has a weakness since the inventory that relates to SE lacks a dimension the CE inventory has. As soccer is a sport of high interdependence (Feltz, Sort & Sullivan, 2007) the need for communication is obvious, either it is verbal or non verbal. This dimension is silent in all items in regard to CE, but there is none items in the SE part that accounts for communication skills. This unfortunately came to the researchers attention post intervention. Accordingly this weakness should be considered when reading the correlation results. Despite this weakness the researchers are convinced that the correlation results still gives an valid expression of the relationship between SE and CE and how this relationship could be effected by self-modeling and self-selected music.

As earlier noted, the relationship between SE and actual level of skill has shown to be affected by self-modeling (Winfrey & Weeks, 1993: Starek & McCullagh, 1999), where results have indicated that the concurrence has increased. Since this study had no measure of performance it is not possible to strengthen or weaken the results from earlier studies and elaborate on this relationship. The researcher actually tried to extract a measurement of performance from video of games pre and post intervention but due to poor video quality and amateur footage it was not possible to retain a reliable performance result in this study. Although as it already has been mentioned the researchers was mainly interested in the psychological response and not performance peer see.

Finally, as the data was analyzed, it came obvious that this study had one major methodological shortcoming. Since IG 2 did not show any significant results, and the

design did not include a group who listened to music and saw no film, it is not possible to determine if it was the self-modeling, the self-selected music or the combination of the two procedures that caused the effect.

The possibility to divide the team into four groups was discussed among the researchers but it was decided that the group sizes would be too small if one were set on produce any significant results.

5.6 Implications for future research

As the body of research on self-modeling in the physical domain continues to grow several directions for future research has been addressed. But as this study has introduced a new combination of variables it might have a number of implications for future modeling and efficacy research. It also addresses several earlier directions prompted by researchers.

This study does not provide further information about the relationship between SE and CE due to its lack of performance measurement. This topic has received little attention from researchers and needs to be investigated. What we know today is that CE is a better predictor performance than SE (Feltz & Lirgg, 1998; Myers, Feltz & Short, 2004). Although, as recognized by Feltz and Lirgg (1998), to further understand the SE and CE relationship related to performance it is necessary to both assess team and individual performance.

As to self-modeling, the sporting context first and foremost needs a study with an experimental design that has much larger sample size than we have seen published. This issue was also addressed by Law and Ste-Aarie (2005).

With the results of IG 2 in mind, and other self-modeling studies (Law & Ste-Aarie 2005, Winfrey & Weeks, 1993), it would be interesting to determine the concurrence between SE and actual skill and its significance to performance on the basis of Starek and McCullagh's (1999) speculation that "Perhaps, then, it is the accuracy of self-efficacy beliefs as it relates to actual behaviour that increases performance, and not the presence of increased self-efficacy alone".

Dowrick (1999) suggests that one should strive for capturing the individual's maximum performance when creating PSR videos. So in self-modeling studies, it might not be sufficient enough to use images from the past season or immediate past. Maybe researchers need to go much further back, which of course could be of some methodological difficulty.

Both Winfrey and Weeks (1993) and Law and Ste-Aarie (2005) has suggested on the basis of their results and other self-modeling studies (Ram & McCullagh, 2003; Starek & McCullagh, 1999), that self-modeling is a procedure that might easier produce positive SE results in the novice population than in the expert.

However, there is a methodological aspect of the self-modeling procedure that Winfrey and Weeks (1993) and Law and Ste-Aarie (2005) have not elaborated. In studies conducted with novice research participants the researcher have a much easier job capturing the individual's *best performance so far*. Because the researchers then will have a much greater percent of the participants wanted behaviour video documented than a researcher dealing with experienced participants do. Hence, the results could be depended on the researchers opportunity or ability to capture best possible behaviour rather than the research participant's level of expertise. To the speculations prompted by Winfrey and Weeks (1993) and Law and Ste-Aarie (2005) this study can relate. The SE response showed by IG 1 contradicts their speculation as all of the participants where at an expert level and several of them attend youth national teams. In this study the researchers really strived towards exhibiting the individual in the best possible way.

Law and Ste-Aarie (2005) further suggest that the skill classification could be of significance for the relationship between self-modeling and performance enhancement. Continues skills self-modeling studies (Dowrick & Dove, 1980; Starek & McCullagh, 1999) have shown to facilitate performance. While discrete skills self-modeling studies have shown no effect on performance (Law & Ste-Aarie, 2005; Ram & McCullagh, 2003; Winfrey & Weeks, 1993). In this study the modelled behaviour was soccer, which is a continues skill, which might be of some support to such a speculation. Although since no performance measurement was applied this is highly speculative.

The results from this study has produced even more questions then answers, as it seems that SE, and perhaps CE, can be affected by self-modeling combined with self-selected music. The videos the participants used where especially created to exhibit the

individual's performance and not particularly the teams. However based on the ES's it seems like CE even more than SE was affected, although the CE results was ns in the within group analysis. So future research should compare self-modeling at the individual and group level. In such a study it would be interesting to register both team and individual performance.

Finally, as this study was not able to establish the relationship between self-modeling, self-selected music and SE/CE, there is a need for more research in this area, preferably with several intervention procedures where self-selected music being one of them.

6.0 Conclusion

As the results has been presented and discussed, the time has come to make some final conclusions. The results in this study have both provided support and contradictions to the hypothesis (see section 2.4) put forth by the researchers. Especially towards the hypothesis related to IG 1 the results have been consistent and positive, although not always significant. Towards the hypothesis related to IG 2 the results have not been as expected, they have actually been quite the opposite.

Hypothesis 1, 2 and 5

The results from this study suggest that musical positive self-review (MPSR) can increase self-efficacy (SE) *strength*. However, SE *level* does not seem to be effected. The results also show tendencies that MPSR might increase both CE strength and level, although this cannot be established due to not significant results. Based on the correlations from pre and post test, it is safe to say that both the correlation between SE and CE strength and level increased. Whether this was caused by MPSR can not be determined, since none of the correlations were significant.

Hypothesis 3,4 and 6

The results in IG 2 have been inconclusive. The group did not produce any significant results in regards to development from pre to post test or to the other groups. The hypothesis related to this group was weakened from the results in this study. The results suggest that positive self-review (PSR) does not enhance SE or CE, nor the correlations between the two efficacy constructs.

Hypothesis 7

Like the researchers hypothesized, it seems that MPSR is a more potent efficacy source to both self- and collective efficacy than PSR. It is also interesting that both the correlation between SE and CE level and strength increased in IG 1, while strength increased and level decreased in IG 2, and both dimensions decreased in the control group.

Since the team selection was not randomized the results from this study are only valid within the research team.

As a final comment, the findings in this study strongly suggest that self-selected music should be applied when self-modeling procedures are conducted.

REFERENCES:

- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A. (1965). Vicarious processes: A case of no-trial learning. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (pp. 1-55). New York: Academic Press.
- Bandura, A. (1969). *Principles of behavior modification*. New York: Holt, Rinehart and Winston.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioural change. *Psychological Review*, 84, 191-215.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Bandura, A. & Walters, R.H. (1963). *Social Learning and Personality Development*. New York: Holt, Rinehart & Winston.
- Barker, J. B., & Jones M. V. (2006). Using Hypnosis, Technique Refinement, and Self-Modeling to Enhance Self-Efficacy: A Case Study in Cricket. *The Sport Psychologist*, 20, 94-110.
- Bergo, A., Johansen, P. A., Larsen, Ø., & Morisbak, A. (2003). *Ferdighetsutvikling I football- handlingsvalg og handling*. Oslo: Akilles.
- Beswick, B. (2001). *Focused for soccer: Develop a winning mental approach*. Champaign, Ill : Human Kinetics.
- Bishop, D.T., Karageorghis, C. I., & Loizou, G. (2007). A grounded Theory of Young Tennis Player's Use of Music to Manipulate Emotional State. *Journal of Sport and Exercise Psychology*, 29, 584-607.
- Bollen, K.A. (1989). *Structural equations with latent variables*. New York: Wiley.
- Boyce, B. A., & Bingham, S. M. (1997). The effects of self-efficacy and goal-setting on bowling performance. *Journal of Teaching in Physical Education*, 16, 312-323.
- Bray, S. R. (2004). Collective efficacy, group goals, and group performance of a muscular endurance task. *Small group research*, 35, 230-238.
- Bunt, L., & Pavlicevic, M. (2001). Music and emotion: perspectives from music therapy. In P Juslin & J.A. Aloboda (Eds.), *Music and emotion: Theory and research* (pp. 181-201). Oxford, UK: Oxford University Press.

- Burns, J.L., Labbe', E., Arke, B., Capeless, K., Cooksey, B., Steadman, A., & Gonzales, C. (2002). The effects of different types of music on perceived and physiological measures of stress. *Journal of Music Therapy*, 28, 104-116.
- Campbell, D.T., & Stanley, J.C. (1963). *Experimental and quasi-experimental designs for research*. Chicago: Rand McNally.
- Carling, C., Williams M. A., & Rielly, T. (2005). *Handbook of Soccer Match Analysis. A systematic approach to improving performance*. London: Routledge.
- Cook, T.D., & Campbell, D.T. (1979). *Quasi-Experimentation: Design & Analysis Issues for Field Settings*. Boston: Houghton Mifflin Company.
- Corbin, C.B. (1967). The effects of covert rehearsal on the development of a complex motor skill. *Journal of General Psychology*, 76, 143-150.
- Dowrick, W.P. (1983). Self-modeling. In P. W. Dowrick & S. J. Biggs (Eds.), *Using video: Psychological and social applications* (pp. 105-124). Chichester, UK: Wiley.
- Dowrick, W.P., & Dove, C. (1980). The use of self-modeling to improve the swimming performance of spina bifida children. *Journal of Applied Behaviour Analysis*, 13, 51-56.
- Dowrick, W.P. (1991). *Practical guide to using video in the behavioural sciences*. New York; Wiley.
- Dowrick, W.P. (1999). A review of self modeling and related interventions. *Applied & Preventive Psychology*, 8, 23-39.
- Escarti, A., & Guzman, J. F. (1999). Effects of feedback on self-efficacy, performance, and choice on an athletic task. *Journal of applied Sport Psychology*, 11, 83-96.
- Feltz, D. L., & Chase, M. A. (1998). The measurement of self-efficacy and confidence in sport. In J. L. Duda (Ed.), *Advancements in sport and exercise psychology measurement* (pp. 63-78). Morgantown, Wv: Fitness Information technology.
- Feltz, D.L., Landers, D. M., & Reader, U. (1979). Enhancing self-efficacy in high avoidance motor tasks: A comparison of modeling techniques. *Journal of Sport Psychology*, 1, 112-122.
- Feltz, D. L., & Lirgg, C. D. (1998). Perceived player and team efficacy in hockey. *Journal of Applied Psychology*, 83, 557-564.

- Feltz, D.L., Short, S.E., & Sullivan. (2007). *Self-Efficacy in Sport: Research and strategies for working with athletes, teams, and coaches*. Champaign, IL: Human Kinetics.
- Finke, R.A. (1989). *Principles of mental imagery*. Cambridge, MA: MIT Press.
- Forgas, J. P., Bower, G. H., & Moylan, S. J. (1990) Praise or blame? Affective influences on attributions for achievement. *Journal of Personality and Social Psychology*, 59, 809-819.
- Gabrielsson, A. (2001). Emotions in strong experiences with music. In P Juslin & J.A. Aloboda (Eds.), *Music and emotion: Theory and research* (pp. 431-449). Oxford, UK: Oxford University Press.
- George, T. R., Felts, D. L., & Chase, M. A. (1992). Effects of model similarity on self-efficacy and muscular endurance: A second look. *Journal of Sport and Exercise Psychology*, 14, 237-248.
- Gould, D., & Weiss, M. R. (1981). The effects of model similarity and model talk on self-efficacy and muscular endurance. *Journal of Sport Psychology*, 3, 17- 29.
- Greenlees, I. A., Graydon, J. K., & Maynard, I. A. (1999). The impact of collective efficacy beliefs on effort and persistence in a group task. *Journal of Sport Sciences*, 18, 451-459.
- Greenlees, I. A., Graydon, J. K., & Maynard, I. A. (2000). The impact of individual efficacy beliefs on group goal commitment effort and persistence in a group task. *Journal of Sport Sciences*, 17, 151-158.
- Haberl, P., & Zaichkowsky, L. (2003). The US womens' Olympic gold medal ice hockey team: Optimal use of sport psychology for developing confidence. In R. Lidor & K. P. Henschen (Eds.), *The psychology of team sports* (pp. 217- 231). Morgantown, WV: Fitness Information Technology.
- Hanin, Y.L. (2000). Individual zones of optimal functioning (IZOF) model. In Y.L. Hanin (Ed). *Emotions in sport* (pp. 65-89). Champaign, Ill: Human Kinetics.
- Hanin, Y. L. (2007). Emotions in sport Current Issues and Perspectives. In G. Tenenbaum, R.C. Eklund (Eds). *Handbook of Sport Psychology (Third Edition) (31-58)*. Hoboken, N.J. : Wiley
- Halvorsen, K. (2003). *Å forske på samfunnet: en innføring i samfunnsvitenskapelig metode*. Cappelen Akademiske Forlag.

- Hodges, L., & Carron, A. (1992). Collective efficacy and group performance. *International Journal of Sport Psychology, 23*, 48-59.
- Holmes, P.S., & Collins, D.J. (2001). The PETTLEP Approach to Motor Imagery: A Functional Equivalence Model for Sport Psychologists. *Journal of Applied Sport Psychology, 13*, 60-83.
- Hughes, C. (1990). *The winning formula: soccer skills and tactics*. London : The football association.
- Jacobsen, D. I. (2005). *Hvordan gjennomføre undersøkelser? Innføring I samfunnvitenskapelig metode (2nd ed)*. Kristiansand: Høyskoleforlaget.
- Jordet, G. (2009a). When Superstars Flop: Public Status and Choking Under Pressure in International Soccer Penalty Shootouts. *Journal of Applied Sport Psychology, 21*, 215-130.
- Jordet, G. (2009b). Why do English players fail in soccer penalty shootouts? A study of team status, self-regulation, and choking under pressure. *Journal of Sport Sciences, 27*, 97-106
- Kavanagh, D., J & Bower, G., H. (1985). Mood and Self-Efficacy: Impact of Joy Sadness on Perceived Capabilities. *Cognitive Therapy and Research, 9*, 507-525.
- Knobloch, S., & Zillman, D. (2002). Mood management via the digital jukebox. *Journal of Communication, June*, 351-366.
- Kruger, N. Jr., & Dickson, P. R. (1994). How believing in ourselves increases risk taking: Perceived self-efficacy and opportunity recognition. *Decision Sciences, 25*, 385-400.
- Labbe', E., Schmidt, N., Babin, J., Pharr, M. (2007). Coping with Stress: The effectiveness of different types of music. *Applied Psychophysiology Biofeedback, 32*, 163-168.
- Law, B., & Ste-Marie, D. M. (2005). Effects of self-modeling on figure skating jump performance and psychological variables. *European journal of Sport Science, 5:3*, 143-152.
- Lazarus, R. S. (1999). *Stress and emotion: A new Syntheses*. London: Free Association Books.

- Lazarus, R. S. (2000a). Cognitive-Motivational-Relational Theory of Emotion. In Y.L. Hanin (Ed). *Emotions in sport* (pp. 39-64). Champaign, Ill: Human Kinetics.
- Lazarus, R. S. (2000b). How Emotions Influence Performance in Competitive Sports. *The sport psychologist, 14*, 229-252.
- Lichacz, F. M., & Partington J. T (1996). Collective efficacy and true group performance. *International Journal of Sport Psychology, 27*, 146- 158.
- Lirgg, C.D., & Feltz, D. L. (1991). Teacher versus peer models revisited: Effects on motor performance and self-efficacy. *Research quarterly for Exercise and sport, 62*, 217-224.
- Looney, M. A., Feltz, C. S., & VanVleet, C. N. (1994). The reporting and analysis of research findings for within subjects designs: Methodological issues for meta analysis. *Research Quarterly for Exercise and Sport, 65*, 363-366.
- Luxbacher, J. A. (1996). *Soccer: steps to success (2nd ed)*. Champaign, Ill. : Human Kinetics.
- Maddux, J. E. (1995). Self-Efficacy Theory: An introduction. In J.E. Maddux (Ed). *Self-efficacy, Adaption, and Adjustment. Theory, Research, and Application* (pp. 3-33). New York: Plenum Press.
- Magyar, T. M., Feltz, D. L., & Simpson, I. P. (2004). Individual and crew level determinants of collective efficacy in rowing. *Journal of Sport and Exercise Psychology, 26*, 136-153.
- Martin, J. J., & Gill. D. L. (1991). The relationship among competitive orientations, sport-confidence, self-efficacy, anxiety, and performance. *Journal of Sport and Exercise Psychology, 13*, 149-159.
- McAuley, E. (1985a). Modeling and self-efficacy: A test of Bandura's model. *Journal of Sport Psychology, 7*, 283-295.
- McAuley, E. (1985b). State anxiety: Antecedent or result of sport performance? *Journal of Sport Behavior, 8*, 71-77.
- McCullagh, P., & Weiss, R. M (2001) Modeling Considerations for Motor Skill Performance and Psychological Responses. In. R. N. Singer, H. A. Hausenblas and C. M. Janelle (Eds). *Handbook of sport psychology*(pp. 205-238). New York: Wiley.

- Mento, A. J., Steel, R. P., & Karren, R. J. (1987). A meta-analytic study of the effects of goal setting on task performance: 1966-1984. *Organizational Behaviour and Human Decision Processes*, 39, 52-83.
- Meyer, W. U. (1987). Perceived ability and achievement-related behaviour. In F Halisch & J. Kuhl (Eds.), *Motivation, intention and volition* (pp. 73-86). Berlin, Germany: Springer-Vorlag.
- Miller, N. E., & Dollard, J. (1941). *Social learning and imitation*. New Haven, CT: Yale University Press.
- Moritz, S. E., Felts, D. L., Fahrback, K. R., & Mack, D. E. (2000). The relation of self-efficacy measures to sport performance: A meta-analytic review. *Research Quarterly for Exercise and Sport*, 71, 280-294.
- Myers, N. D., & Feltz, D., L. (2007). From Self-Efficacy to Collective Efficacy in Sport: Transitional Methodological Issues. In G, Tenenbaum and R, C, Eklund (Eds). *Handbook of Sport Psychology (3rd ed)* (pp. 799-819). New Jersey: John Wiley & Sons, Inc.
- Myers, N. D., Feltz, D. L., & Short, S. E. (2004). Collective efficacy and team performance: A longitudinal study of collegiate football teams. *Group Dynamics: Theory, Research and Practice*, 8, 126-138.
- Myers, N. D., Payment, C. A., & Feltz, D. L. (2004). Reciprocal relationships between collective efficacy and team performance in women's ice hockey. *Group Dynamics: Theory, Research and Practice*, 8, 182-195.
- Pajares, F. (2002). *Overview of social cognitive theory and of self-efficacy*. Retrieved 24.04.2009, from <http://www.emory.edu/EDUCATION/mfp/eff.html>
- Pensgaard, A. M., & Duda, J. L. (2002). "if we work hard, we can do it". A tale from an Olympic (gould) medallist. *Journal of Applied Sport Psychology*, 14, 219-236.
- Ram, N., & McCullagh, P. (2003). Self-Modeling: Influence on Psychological Responses and Physical Performance. *The Sport Psychologist*, 17, 220-241.
- Reilly, T. (1993). Science and football: an introduction. In T. Reilly, J. Clarys & A. Stibbe (Eds.) *Science and football II: proceedings of the Second World Congress of Science and Football, Eindhoven, Netherlands 22nd-25th May 1991* (pp.3-11). London : E & FN Spon.

- Ronglan, L. T. (2007). Building and Communicating Collective Efficacy: A seson-Long In-Depth Study of an Elite Sport Team. *The Sport Psychologist*, 21, 78-93.
- Rosenhal, R. (1966). Sport art and particularly: The best equivocation. *Journal of the Philosophy of sport*, 13, 49-63.
- Saarikallio, S., & Erkkilä, J. (2007). The role of music in adolescent's mood regulation. *Psychology of music*, 35, 88-109.
- Salovey, P., & Birnbaum, D. (1989). Influence of mood on health-relevant cognitions. *Journal of Personality and Social Psychology*, 57, 539-551.
- Shearer, D. A., Holmes, P., & Mellalieu, S. D. (2009). Collective efficacy in sport: the future from a social neuroscience perspective. *International Review of Sport and Exercise Psychology*, 2, 38 – 53.
- Scherer, K.R., & Zentner, M. R. (2001). Emotional effects of music: Production rules. In P. Juslin & J.A Sloboda (Eds.), *Music and emotion: theory and research* (pp. 361-392). Oxford, UK: Oxford University Press.
- Schunk, D. H., & Hanson, A. R. (1989). Self-modeling and children's cognitive skill learning. *Journal of Educational Psychology*, 8, 155-163.
- Skog, O.J. (2004). *Å forklare sosiale fenomener. En regresjonsbasert tilnærming*. Gyldenddal Norsk Forlag.
- Starek, J., & McCullagh, P. (1999). The Effect of Self-modeling on the Performance of Beginning Swimmers. *The Sport Psychologist*, 13, 269-287.
- Templin, D. P., & Vernacchia, R. A. (1995). The effect of Highlight Music Videotapes Upon the Game Performance of Intercollegiate Basketball Players. *The Sport Psychologist*, 9, 41-50
- Thomas, J.R., & Nelson, J.K. (2001). *Research methods in physical activity*. Champaign, IL: Human Kinetics.
- Vargas-Tonsing, T. M., & Bartholomew, J. B. (2006). An exploratory study of the effects of pree-game speeches on team-efficacy beliefs. *Journal of Applied Sport Psychology*, 36, 918-933.
- Vincent, W.J. (1999). *Statistics in Kinesiology (2nd ed)*. Champaign, IL: Human Kinetics.
- Watson, C. B., Chemers, M. M., & Preiser, N. (2001). Collective efficacy: A multilevel analysis. *Personality and Social Psychology Bulletin*, 27, 1056- 1068.

- Weinberg, R. (1985). Relationship between self-efficacy and cognitive strategies in enhancing endurance performance. *International Journal of Sport Psychology*, 17, 280-292.
- Weinberg, R., Gould, D., & Jackson, A. (1979). Expectations and performance: An empirical test of Bandura's self-efficacy theory. *Journal of Sport Psychology*, 1, 320-331.
- Weinberg, R., Gould, D., Yukelson, D., & Jackson, A. (1981). The effects of pre-existing and manipulated self-efficacy on a competitive muscular endurance task. *Journal of Sport Psychology*, 3, 345-354.
- Weinberg, R., Yukelson, D., & Jackson, A. (1980). Effect of public and private efficacy expectations on competitive performance. *Journal of Sport Psychology*, 2, 340-349.
- Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review*, 92, 548-573.
- Winfrey, M.L., & Weeks, D, L. (1993) Effects of self-modeling on self-efficacy and balance beam performance. *Perceptual and motor skills*, 17, 907-913.
- Zaccaro, S. J., Blair, V., Peterson, C., & Zaznis, M. (1995). Collective efficacy. In J.E. Maddux (Ed). *Self-efficacy, Adaption, and Adjustment. Theory, Research, and Application*. (pp.308-330). New York: Plenum Press.

Appendix A

Scheme 2: circle the number that symbolizes your confidence in your joint soccer skill in regard to play at the different levels.

0 = the level of the skill is so low that you are absolute certain you can't play at this level.

10 = the level of the skill is so high that you are absolute certain you can play at this level.

	Complete Uncertainty						moderate certainty					complete certainty
Interkrets (your age group)	0	1	2	3	4	5	6	7	8	9	10	
2. Divisjon	0	1	2	3	4	5	6	7	8	9	10	
1. Divisjon	0	1	2	3	4	5	6	7	8	9	10	
Eliteserien	0	1	2	3	4	5	6	7	8	9	10	
The Norwegian national team	0	1	2	3	4	5	6	7	8	9	10	

Scheme 3: circle the number that symbolizes your confidence in the team's skills in comparison to the teams potential highest level in the skills with the same players.

0 = the level of the skill has never been so low and can't get any lower.

10 = the level of the skill has never been so high and can't get any higher.

	weak faith						moderate faith						strong faith
COLLECTIVE SKILLS:													
The teams skill to attack a defence in balance	0	1	2	3	4	5	6	7	8	9	10		
The teams skill to defend it self when in balance	0	1	2	3	4	5	6	7	8	9	10		
The teams skill to take advantage of breakdowns	0	1	2	3	4	5	6	7	8	9	10		
The teams skill to readjust from attacking to defending in case of ball loss	0	1	2	3	4	5	6	7	8	9	10		
The teams skill to score at free, corner and penalty kicks	0	1	2	3	4	5	6	7	8	9	10		
The teams skill to defend it self on free, corner and penalty kicks	0	1	2	3	4	5	6	7	8	9	10		
The teams total offensive skills	0	1	2	3	4	5	6	7	8	9	10		
The teams total defence skills	0	1	2	3	4	5	6	7	8	9	10		

Scheme 4: circle the number that symbolizes your confidence in the team's joint soccer skill in regard to play at the suggested levels.

0 = the level of the skill is so low that you are absolute certain the team can't play at this level.

10 = the level of the skill is so high that you are absolute certain the team can play at this level.

	0	1	2	3	4	5	6	7	8	9	10
Interkrets (your age group)	0	1	2	3	4	5	6	7	8	9	10
2. Divisjon	0	1	2	3	4	5	6	7	8	9	10
1. Divisjon	0	1	2	3	4	5	6	7	8	9	10
Eliteserien	0	1	2	3	4	5	6	7	8	9	10
The Norwegian National team	0	1	2	3	4	5	6	7	8	9	10

Appendix B

Instructions: Write the name of the three songs and the groups you want on your film in prioritized order.

Name: _____

Song 1: _____

Group 1: _____

Song 2: _____

Group 2: _____

Song 3 : _____

Group 3: _____

Appendix C

Information letter to participant club in the project "*the effect of self-modeling and self-selected music*"

Self-modeling involves seeing oneself on video exclusively executing perfect skill. In this project we want to investigate the effect different audiovisual aids might have on performance. More precisely we want to investigate the effect of a short video –called a motivational video– containing self-modeling and self-selected music. This study is a part of Erik Hofseth's master thesis at the Norwegian School of Sport Sciences.

The design of the study involves randomly select the research participant into three groups, one control (CG) and two interventions groups (IG1 and IG2). The CG will train and behave as normal while IG1 and IG2 will get their own personified motivational video, which they will watch before every training and game in a four-week period. When the intervention period is ended the research participants in the CG will be offered a personified motivational video. The research participants in this project (all three groups) will be asked to fill out a survey at four occasions. When the project is ended and the data analyzed (spring of 2009) the club will be invited to attend meeting where the results of the project will be presented, we will also send a written report of the project. The clubs involvement in the project will be treated confidential. Only project supervisor (Anne Marte Pensgaard) and project worker (Erik Hofseth) will know who's involved with the project. Single subjects will not be identified in the master theses or other publications. The clubs involvement is completely voluntarily, which means that the team without any notion can quit the project. If the team where to quit the project, the club can demand that the information we have gathered and saved will be handed out and deleted. By estimated project ending, 15.05.2009, all data will be anonymised. The project is sent to and approved by both Personvernombudet for forskning and Regional komité for medisinsk forskningsetikk Sør-Norge

If you have any questions about the project you can contact Erik Hofseth.

Best regards:

Anne Marte Pensgaard
1. amanuensis
Norges Idrettshøgskole

Erik Hofseth
Masterstudent
Norges Idrettshøgskole

Contact: Erik Hofseth, tlf: 95921778, mail: Erik.Reigstad.Hofseth@student.nih.no

Appendix D

Information letter to the research participant in the project *"the effect of self-modeling and self-selected music"*

Self-modeling involves seeing oneself on video exclusively executing perfect skill. In this project we want to investigate the effect different audiovisual aids might have on performance. More precisely we want to investigate the effect of a short video –called a motivational video– containing self-modeling and self-selected music. This will we do by randomly select the research participant into three groups, one control (CG) and two interventions groups (IG1 and IG2). The CG will train and behave as normal while IG1 and IG2 will get their own personified motivational video, which they will watch before every training and game in a four-week period. When the intervention period is ended the research participants in the CG will be offered a personified motivational video. As a research participant in this project (all three groups) we ask you to fill out a survey at four occasions. When the project is ended and the data analyzed (spring of 2009) you will be invited to attend meeting where the results of the project will be presented, you will also be send a written report of the project. Your involvement in the project will be treated confidential. Only project supervisor (Anne Marte Pensgaard) and project worker (Erik Hofseth) will know who's involved with the project. Single subjects will not be identified in the master theses or other publications. Your involvement is completely voluntarily, which means that you can without any notion quit the project. If you where to quit the project, you can demand that the information we have gathered and saved about you will be handed out and deleted. If you where to quit the project, this will not have any consequences for the relationship between you and your club. By estimated project ending, 15.05.2009, all data will be anonymised. The project is sent to and approved by both Personvernombudet for forskning and Regional komité for medisinsk forskningsetikk Sør-Norge

If you have any questions about the project you can contact Erik Hofseth.

Best regards:

Anne Marte Pensgaard

1. amanuensis

Norges Idrettshøgskole

Erik Hofseth

Masterstudent

Norges Idrettshøgskole

Contact: Erik Hofseth, tlf: 95921778, mail: Erik.Reigstad.Hofseth@student.nih.no

Appendix E

Written consent:

I confirm that I have read: Information letter to research participant in the project "*the effect of self-modeling on motivation, performance and self-efficacy*", and by signing this paper I want to and consent to participate in this project as a research participant.

Place _____ Date: ____/____-2008 _____