

Coach Created Motivational Climate and Self-Efficacy in the Coach-Athlete Relationship: The
Role of Relational Efficacy Beliefs

by

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The motivational climate athletes perceive is crucial for many psychological aspects such as motivation, effort and enjoyment. The motivational climate also influences self-efficacy in competitive athletes. Since the motivational climate is a perception an athlete has of the environment the way it influences sources of self-efficacy are expressed through social factors. The motivational climate influences self-efficacy through classic and social efficacy sources which are expressed through relational efficacy beliefs. These beliefs are relation inferred self-efficacy and other-efficacy. **PURPOSE:** The purpose of this study was to examine how the coach created motivational climate predicts self-efficacy and that connection is mediated by RISE. **METHODS:** Participants (n = 57 athletes, 65% male, M = 32.44 ±10.74 years; n = 18 coaches, 83% male, M = 34 ± 7.44) competing in different sports completed different online questionnaires for coaches and their athletes. Each coach had several athletes who answered in relation to their coach. ANOVA and a t-test were performed to test for differences in the measures for gender and type of sport. **RESULTS:** Perceived coach created mastery climate was

a significant predictor of self-efficacy ($B = .41, p < .01$). RISE was a significant mediator of the connection between mastery climate and self-efficacy ($B = .23, CI [.09 - .48]$). Outcome climate did not significantly predict self-efficacy. Other-efficacy did not significantly moderate the connection between RISE and self-efficacy ($t = .29, p = .77$). The difference between coach and athlete's perceived motivational climate was negatively correlated with other-efficacy and RISE ($r = -.37, p < .05; r = -.30, p < .05$) **CONCLUSION:** Self-efficacy was significantly predicted by mastery climate. The prediction of self-efficacy was mediated by RISE which was a significant mediator compared to the mastery climate independently. Outcome climate did not predict self-efficacy significantly. Other-efficacy did not moderate the effect RISE had on self-efficacy significantly. The difference between coaches and their athletes in perception of the motivational climate had a significant negative correlation with RISE and other-efficacy.

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Introduction

In competitive sports, the relationship between an athlete and his or her coach is crucial as they spend a significant amount of time together. The coach is also a source of guidance and influence on aspects in and outside of the sports environment. Influencing personal motivational aspects of the athlete is one prominent impact coaches have on their athletes (Mageau & Valerand, 2003). Through interactions and goal setting, the coaches communicate what they value as an achievement for their athlete. That is, the messages the coach conveys will influence the athlete's motivations and perceptions of competence. This communication is expressed through the perceived motivational climate. The motivational aspects of competition can subsequently change the athlete's behavior, confidence, and sports experience (Duda, 2001). A previously under-researched topic is how motivational aspects are associated with competence. We examined how certain aspects of the coach-athlete relationship, specifically coach-created motivational climate will predict self-efficacy.

Not all athletes focus on the same goals and have different ways they perceive their performance. It may seem that winning is always the goal and should dictate actions. Yet focusing on personal improvement goals may have different outcomes compared to normative standards for defining success that yield better results. An athlete's focus could be on external events such as winning or losing, the achievements of others and the outcomes of their effort, all of which are beyond their control. On the contrary, athletes can also concentrate on effort, commitment and personal progress, which they can control. Several aspects could influence this thought pattern: both personal traits and social influences (Nicholls, 1989). One of the theories addressing this topic is achievement goal theory (Nicholls, 1984). Achievement goal theory

describes the type of motivation an athlete may possess, known as a goal orientation (Dweck, 1986; Nicholls 1984, 1989). Goal orientations are one way to assess and measure motivation in individuals. Athletes can either be motivated by achieving mastery goals or outcome goals. Mastery-oriented athletes focus on self-improvement, effort, and internal aspects under their control (Dweck, 1999; Nicholls 1984, 1989). These athletes judge their perceptions of success and define their future goals based on these achievements. Outcome-oriented athletes focus on demonstrating superiority to others, winning, and external factors. These outcome achievements are their source of perceived competence. These differences in achievement goals are influenced by personal dispositions and environmental aspects.

An essential environmental aspect impacting goal orientations is the *motivational climate*. The environment the athlete trains in is associated with goals and defines the value different achievements have. The term for this is called the *perceived motivational climate*. The athlete comes in contact with these climate perceptions in the environment (Ames, 1992). A coach can communicate different achievement goals to their athletes, which in turn represents the motivational climate. Mastery climate has been associated with enjoyment, positive affect (Boixados, Cruz, Torregrosa & valiente, 2004; Vazou, Ntoumanis & Duda, 2006) and higher perceived competence (Boixados, et al., 2004; Reinboth, Duda and Ntoumanis, 2004). An outcome climate, however, is related to performance-related worry (Pensgaard & Roberts, 2002), perceiving the coach as less supportive and more punishment oriented (Balaguer, Crispo. Duda, 1996; Smith et al. 2005). The climate is a demonstration of the relationship and communication between the athlete and the coach and is one expression of the way they communicate.

This research will examine the relationship between motivational climate and self-efficacy. Self-efficacy is the belief one has in being able to execute a specific task successfully. Higher self-efficacy is a predictor of positive cognitions (Kand, Marks, Zaccaro & Blair, 1996; McAuley, Duncan & Mcelroy 1989), affective responses, (Mcauley, Talbot and Martinez, 1999; Treasure, Monson & Lox, 1996), behaviors (Beauchamp, Bray & Albinson, 2002; Milne, Hall & Forwell, 2004), elevated effort (Hutchinson, Sherman, Martinovic & Tenenbaum, 2008) and optimal performance (Feltz, Chow, & Hepler, 2008). Based on the social cognitive theory (Bandura, 1986), people influence and are influenced by their environment and the interpersonal interactions they have with others. While there are several variables that influence self-efficacy, two of the more prominent sources are past experiences and verbal persuasion from others. The first, past mastery performance, is derived from the athletes personal experience and is based on how they perceive mastery. (would performance be a better word than mastery?) That, for example, could be influenced by social comparison (i.e., outcome-orientation) or self-reference (i.e., mastery-orientation). The second source of self-efficacy, verbal persuasion, is derived from other people. For example, coaches verbal feedback and what are valuable achievements in their opinion. A coach can either value outcome achievements or mastery achievements. The coach can have more control over these two sources through influencing the mastery experiences the athlete has, and the verbal persuasion provided to the athlete. Both sources can be expressed through the motivational climate created by the coach. The connection between motivational climate and self-efficacy, however, has not been widely researched. The climate and self-efficacy are not directly connected, and there should be a link connecting self-efficacy to the social facet of motivational climate. Therefore, self-efficacy requires exploration through a social

model to explore the connection between the motivational climate and self-efficacy. previous researchers have examined self-efficacy through relational efficacy beliefs.

The impact of social aspects on self-efficacy has been explored through the tripartite model of self-efficacy. Based on the tripartite model (Lent & Lopez, 2002), self-efficacy, other-efficacy, and relation inferred self-efficacy (RISE) interact and influence one another in dyadic relationships. The relational efficacy beliefs (i.e., other-efficacy and RISE) impact self-efficacy through relationships with others. RISE is a demonstration of one person's perception of what someone else thinks of their capability (Lent & Lopez, 2002). An example of RISE would be the athlete's perception of the coach's confidence in the athlete's ability to run at a certain expected pace in a track meet. To connect this perception of confidence to motivational climate a coach could also express confidence, by stating the athlete should place ahead of a certain competitor. RISE, therefore, may be how the athlete interprets the expression of confidence the coach has in him, and it influences self-efficacy. Since the coach is an essential source of feedback for an athlete this could impact the athlete's efficacy. Another variable within this model is other-efficacy, which represents the beliefs one person in the dyad holds regarding the other. The level of impact the coach's climate on athlete self-efficacy may be related to other-efficacy, what confidence the athlete has in the coach. The influence that RISE will have on athlete self-efficacy could be related to the athlete's perception of other-efficacy, and moderated by its level. This model addresses the social aspects of self-efficacy, it is an expression of the athletes perception, similar to the motivational climate, and could be a way of expressing the climate.

In summary, the cultivation of a mastery climate by a coach has been shown to lead to higher enjoyment, effort, positive affect, and perceptions of ability in athletes. The relationship

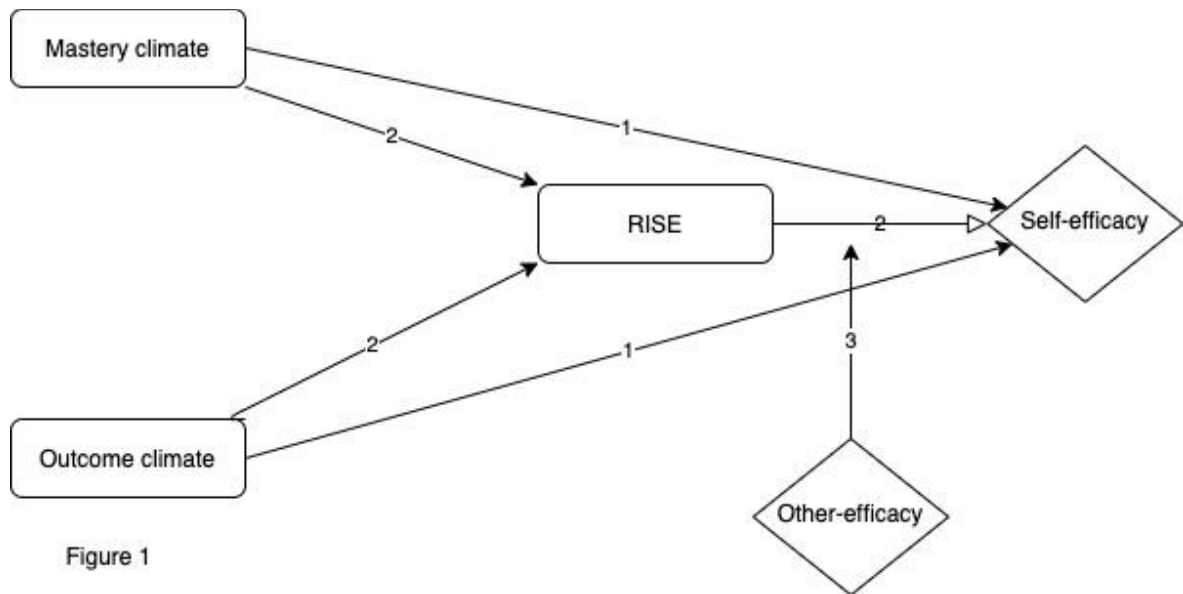
between a mastery climate and higher self-efficacy is such that the two aspects contribute to higher enjoyment, effort, and positive relationships. Since RISE measures what athletes believe the coach thinks of their ability, a mastery climate could lead to higher RISE beliefs that then subsequently impact athlete self-efficacy. This model, which explains how others may influence the individual's self-efficacy, may be the link connecting between the motivational climate and self-efficacy.

Purpose

The purpose of this study was to assess the association of coach-created motivational climate and athlete self-efficacy through Relation-inferred self-efficacy (RISE). To demonstrate that a mastery climate will lead to higher self-efficacy, while an outcome climate will lead to lower self-efficacy. Additionally, to demonstrate that other-efficacy will moderate the effect RISE will have on athlete self-efficacy.

Hypothesis

The hypotheses are depicted in Figure 1. The first hypothesis is Mastery-oriented motivational climate predict higher self-efficacy in athletes, while outcome-oriented motivational climate will lead to lower self-efficacy (Paths labeled 1). The second hypothesis is relation inferred self-efficacy will mediate the effect motivational climate has on self-efficacy (Paths labeled 2). Finally, the third hypothesis is relationship between RISE and self-efficacy will be moderated by other-efficacy. Lower other-efficacy will predict RISE to have a smaller effect on the athlete's self-efficacy, while high other efficacy will predict a greater effect (Path labeled 3).



Significance

Previous studies have found indications that a mastery climate associate with o higher perceived competence, self-rating of performance, higher enjoyment, and better perceptions of coach support and feedback (i.e., indirect indices of self-efficacy). Investigating these aspects through RISE could lead to a better understanding of how to nurture self-efficacy in athletes. Understanding how other-efficacy influences the effect RISE will have on the athlete could improve our understanding of the relationship between motivational climate and self-efficacy. In addition, indicating that self-efficacy could be influenced by coaching behaviors, relational perceptions between the coach-athlete dyad can lead to improvements in coaching methods.

Literature review

Introduction

The following chapter will explore the literature in achievement goal theory and self-efficacy. Within achievement goal theory, the social aspect of motivational climate will be examined in sport and physical activity environments. This research will review how the motivational climate impacts effort, emotions, and cognitions in individuals. In self-efficacy, the sources and outcomes will be detailed and specifically the social influencers based on the tripartite model (relation inferred self-efficacy and other-efficacy). The goal of this chapter will be to review how the two primary constructs of achievement goal theory and self-efficacy lead to similar results and may interact, specifically through the lens of the coach-athlete relationship. The specific aim is to examine how the motivational climate may influence self-efficacy. What is the potential mediator the two constructs may be connected through and what influences the strength of their connection.

Coach-athlete relationship

According to Jowett (2005), the coach-athlete relationship is defined as “a situation in which a coach and an athlete’s cognitions, feelings, and behaviors are mutually and causally interrelated” (p. 5). The relationship changes over time, based on internal and external factors including but not limited to emotions, performance, communication, and trust. Both persons attempt to achieve something out of the relationship, athletic and professional excellence, with personal growth (Jowett, 2005). As the participants in the current study will be competitive adult

athletes, the relationship between them and their coaches is an important one within the competitive field.

The nature of the relationship is influenced by how the dyad defines success. One aspect the dyad can focus on is normative performance success, such as succeeding in a competition. The other aspect the dyad can focus on is defining success based on personal growth and development. The different aspects will influence the type of communication, the goal-setting process, and beliefs. This research will address two crucial issues of the coach-athlete relationship, one is how the coach may affect the athlete's self-efficacy, through his or her communication of achievement goals. The second issue is how much of an influence the coach will have on the athlete's self-efficacy through the lens of RISE. These aspects of communication and relationship, through motivational climate and RISE may have a significant influence on self-efficacy. Another variable examined within the relationship is other-efficacy, a measure of the confidence a person has in someone else's ability. In this case the confidence the athlete has in the coach. This research studies relational aspects in coach-athlete relationships, and how things coaches say and do influence their athletes. The first theoretical construct is the motivational climate, a social expression of achievement goal theory.

Achievement goal theory

Motivation and goals are an essential part of an athlete's experience and progress. Both of these constructs could differentiate in quality. Motivation is not simply a scale that an athlete is either high or low on, the nature and qualities of motivation are perhaps more important. Motivation could also dictate the future aims of the athlete, and how he or she may set goals (Duda, 2001). Motivation is based on some personality traits, and environmental aspects that

further develop these perceptions. The driving force behind achievement is important for psychological and physical aspects of sport. One theory of motivation is Achievement Goal Theory (Nicholls, 1989). This theory describes the type of motivation a person may have, the sources of success and competence, and influencers on future goals. Rooted in education, and extended to the field of sport, the theory divides goals into two major orientations (Nicholls, 1984). A *mastery goal orientation* is one in which goals reflect perceived competence in terms of absolute evaluative standards or simply through task mastery. An *outcome goal orientation* is concerned with goals reflecting competence perception relative to the performance of others. These motivations will dictate the athletes personal goals and how they may come to define their success, and source of competence. These different orientations impact the sources of an athlete's perceptions of competence, and that impacts the nature motivation and future goals (Duda, 2001). The basic premise of goal orientations is that a more mastery goal orientation is favorable to an outcome orientation (Duda & Reinboth, 2002).

A person's goal orientation dictates the standards by which self-competence is viewed and therefore dictate future goals to achieve success. A person can have an outcome goal orientation or a mastery goal orientation. The two orientations are not opposites and could co-exist. A person can be high in one and low in the other or have similar levels of both (Chi & Duda, 1995, Duda & Whitehead, 1998). The different goal orientations have been shown to influence behavioral, cognitive and affective patterns that have an impact on short and long term performance. It was shown that an outcome orientation is associated with increased anxiety and boredom (Duda, 2001; Roberts & Kavussanu, 1997). Outcome orientation has been shown to lead to the belief that ability is fixed, and effort does not affect success (Dweck, 1999). This could make athletes question their ability and lead to less commitment towards working on

improvement. The belief that effort leads to success and ability is malleable is specifically important in the sport context. The notion that athletes have certain control over their success and progress will lead to a better quality motivation for practice and effort (Duda, 2005). A mastery orientation has been linked to the beliefs that effort dictates success, adaptive learning strategies, enjoyment, satisfaction and intrinsic motivation (Duda, 2001, 2006; Roberts, Treasure, & Kavussanu, 1997). An individual's goal orientation is based on personal traits, early reinforcements, and experiences. Another influencer is the social environment, and this aspect is expressed through the perceived motivational climate created by the coach.

Motivational climate

Within achievement goal theory, the term that relates to the coach-athlete relationship is the *coach-created motivational climate*. It has been used to demonstrate the effects of environmental factors that lead individuals to perceive competence in different ways and pursue different goals. One way a coach can define competence is through the perception of self-improvement and mastery of skills. A second perspective entails the perception of the athlete's ability compared to the ability of other athletes. Coaches who communicate a mastery orientation pursue goals centered on striving to improve and master skills. On the other hand, those individuals who choose to communicate an outcome climate define achievement goals focused on doing better than others (Nicholls, 1989; Ames, 1992a). The type of goal orientation is developed in addition to or in combination with personal traits and education. That is, the environment influences athlete goal orientation (i.e., the motivational climate). Motivational climates in the physical domain that emphasize effort and personal improvement have been called mastery climates, and climates emphasizing normative comparison and doing better than

others have been referred to as outcome climates (Duda & Whitehead, 1998; Harwood, Spray, & Keegan, 2008). Drawing from the classroom-based work of Ames (1992a), research in sport and physical education has been particularly concerned with identifying the effects of perceived mastery and outcome climates. It is important to understand the consequences of the situational goals important people in the athlete's life verbalize. The motivational climate has been mostly researched through parents, coaches, and peers. The participants in the current study are adult competitive athletes, and the coach is a prominent figure in their athletic endeavor. For the current study, the coach-created motivational climate is examined because the messages the coach conveys influence the perceived motivational climate.

The goal orientation of an athlete is capable of changing, through relational aspects between the coach and the athlete (Duda & Balaguer, 2007). One means by which the specific behaviors of sports coaches can be understood in terms of emphasizing the particular goals is through the TARGET framework (Ames, 1992a, 1992b; Epstein, 1989). The acronym TARGET refers to Task (design of activities), Authority (location of decision-making), Recognition (manner of distributing rewards such as praise), Grouping (criteria for selecting working groups), Evaluation (standards of performance considered important), and Time (pace of learning). A mastery climate is more likely to be perceived when tasks are challenging, participants are provided with choices and opportunities to exercise leadership, recognition is provided privately to individuals, participants work in mixed ability groupings, positive evaluation for personal improvement is emphasized, and variability in the pace of learning is accommodated. An outcome climate is more likely to be perceived by athletes when coaches organize repetitive and uniform tasks, control all aspects of decision-making, provide praise publicly, arrange groupings reflective of rank order of ability, praise, and reward only the more able in the class or team.

Because the TARGET framework provides guidance as to specific environmental structures that emphasize different achievement goals, it has provided a useful model for researchers interested in manipulating the motivational climate in sports. In a study using TARGET as an intervention Cecchini, Mendez, Fernandez, Cecchini and Martin (2014) performed a 12-week TARGET based intervention in football ($n = 150$) and basketball ($n = 133$) athletes ranging from 14-18 years of age ($M = 13.54$, $SD=1.31$). The participants were divided into two groups, an experimental ($n = 143$, 45 females, 98 males) and a control ($n = 140$, 45 females and 95 males). The coaches in the experimental group were trained in TARGET areas, and the athletes were measured for their perceived motivational climate, psychological mediators (autonomy, competence, and relatedness) motivation and persistence and effort measures. Prior to the intervention, there were no significant differences between the groups in any of the measured variables. The results indicated significant improvements in the experimental group in social factors (cooperative learning $M = 3.47 - 4.59$, improvement $M = 3.61 - 4.50$ and decision $M = 2.63 - 4.31$) in basic psychological need (social relations $M = 3.92 - 4.55$, competence $M = 3.44 - 4.12$ and autonomy $M = 2.91 - 4.15$) self-determined motivation ($M=5.58 - 7.4$) and consequences (persistence $M = 3.78 - 4.22$, effort $M = 3.87 - 4.36$ and boredom $M = 1.74 - 1.47$). In addition to measuring these constructs at the end of the intervention, the researchers tested the participants 6 months after the conclusion of the program, and the positive findings were maintained. This research indicates the effect that a mastery motivational climate can have on different constructs of motivation, affect and effort in athletes and that this positive change can be observed long-term.

Mastery climate has been linked to many positive aspects of positive sport experience, and motivation (Gallegos, Lopez, Suarez, Abraldes, Alesi & Bianco, 2017). Curran, Hill, Hall,

and Jowett (2015) have demonstrated this in a group of 260 youth recreational soccer players. The researchers measured the coach created motivational climate and athlete engagement measures. The mastery-climate had a stronger positive association with confidence, dedication, enthusiasm, and vigor ($r = .47, .54, .58, .58$, respectively, $p < .05$) compared to an outcome climate ($r = -.03, -.09, -.14, -.16$, respectively, $p < .05$). Given that a mastery climate was associated with greater positive domains of sports environment, the researchers have suggested that a mastery-oriented climate increases the likelihood of positive sports experiences. Additionally, the motivational climate has been shown to impact coping skills and handling adversity in sports. A mastery climate has been linked to better adaptive coping strategies, while an outcome climate was linked to greater anxiety, higher doubts of competence and self-worth (Duda & Balaguer, 1999; Reinboth & Duda, 2004). The motivational climate, therefore, is a source of competence for the athlete, and the coach may influence it. A mastery climate induces notions of self-worth, higher competence, enjoyment, and positive relationships.

Another important aspect of the mastery climate is the notion of control, and how athletes are able to draw successful experiences from their own effort and mastery experiences. Mastery experiences are an important part of the belief an athlete may have in himself. With greater belief comes more enjoyment, more adaptive patterns of behavior, and better performance (Gallegos et al., 2017). When the athlete draws self-belief based on their effort and achievements within their control, they can have greater control over it. A mastery climate can potentially lead to perceptions of confidence based on mastery oriented goals. As indicated above, a mastery climate is one which promotes adaptive competitive behavior and positive affect. Even further, a mastery climate is one in which the athlete can always have consistent sources of competence, since it is self-referenced and based on effort and growth. Therefore, athletes have past

experiences based on self-reference as sources for their perception of competence is their sport. The leading theory addressing a person's belief in their ability to execute in specific areas, is self-efficacy, as discussed in the subsequent section.

Self-efficacy

In his seminal work (Bandura, 1986), Bandura stated that “social cognitive theory adopts an agentic perspective in which individuals are producers of experiences and shapers of events” (Bandura, 2000, p. 75). In the world of sports, athletes behave in a certain way within their environment. This environment can consist of coaches or competitors, and these interactions influence the athlete. This reciprocal relationship is dynamic, and self-efficacy is one of the crucial frameworks within this theory. Self-efficacy addresses how people may judge their own capabilities and expectations within the environment. Interactions and experiences will influence self-efficacy and, therefore, will influence how the person will behave in that environment. Efficacy beliefs will dictate goals and aspirations, perseverance, and level of effort one may exert under the environmental demands (Bandura, 2000). Bandura further adds, Efficacious athletes will not fear challenging goals and persevere through difficulty. Athletes low in self-efficacy will avoid difficult goals, expend less effort, and are more likely to give up. Self-efficacy is the belief one has in being able to execute a specific task to obtain a certain outcome (Bandura, 1997). It is not related to the skills a person has, but rather the cognitive assessments they possess regarding their skills in a particular task. It is the self-perception a person holds in executing a specific task. Self-efficacy has been shown to influence the person's approach (i.e., the effort they expend on the activity, their persistence, and ability to handle failure and adversity). This way, higher self-

efficacy leads to greater pursuit of mastery and aspirations towards more challenging goals (Bandura, 1997).

Bandura described several sources of self-efficacy in his original theorizing. Self-efficacy is the product of a process that relies on cognitive processing of diverse sources of efficacy information (Bandura, 1990). Bandura (1977, 1986) categorized these sources as past mastery experiences, vicarious experiences, verbal persuasion, and physiological states. Mastery experiences occur when a person performs a task. Success in the performance leads to higher self-efficacy, while failure can lead to lower self-efficacy. Vicarious experiences are experienced through watching a model performing the task, and their level of competence and outcome can impact the observer's self-efficacy. Verbal persuasion is when a trusted person, in association with the task, expresses belief or doubt in the person. Lastly, physiological state is the interpretation of physiological changes like heart rate and breathing. A person can see these changes as either preparedness for success, or anxiety of failure.

Out of the four main sources of self-efficacy, the source that is considered the most influential is past mastery experiences, which relates directly to ability. If an athlete has experienced previous success, through cognitive processes, they will have increased self-efficacy (Bandura, 1997). These experiences of mastery are assessed through self-appraisal and are related to what an athlete may consider as success or failure. These perceptions will be influenced by the goal orientation an athlete may have. The goals an athlete strives towards can be more mastery or outcome oriented. As stated before, these goals are both the aims of the athlete, and dictate perception of competence. Therefore, a source for success could either be mastery-oriented, or outcome-oriented. Mastery-based past experiences would be stable, self

dependent, and can continually be strived towards. Outcome based experiences are dependent on external success, and are not necessarily consistent and available, as mastery. Knowing that experiences of competence are a major source of self-efficacy, the type of experiences can differ qualitatively.

Another important source of self-efficacy is verbal persuasion, especially when this social source of efficacy comes from influential people in a person's life, such as coaches. This source is expressed through feedback, verbal and nonverbal cues, and expectations from others. This is a relevant source for this particular research study because we are examining the effect of motivational communications through climate. A model that will be described later addresses the perceptions athletes have on how much their coach has confidence in their ability. These perceptions contribute to self-efficacy through a social agent. The verbal and nonverbal expression of coaches, therefore, act as a valuable source of self-efficacy. Wise and Trunell (2001) examined self-efficacy sources and their influence on a bench press test. A total of 48 healthy female participants with varying experience in the task that had not performed it in 18 months were recruited. The participants were divided into different manipulation groups based on sources of efficacy: performance accomplishment condition, vicarious condition, and verbal persuasion condition. The independent variable was self-efficacy on a bench-pressing task. The results indicated that the groups who performed the task showed higher self-efficacy than the group who simply watched the task being performed ($M = 44.17$ vs. $M = 36.23$; $SD = 10.54$ vs. $SD = 16.84$). Secondly, participants who received a verbal persuasion after completing the task showed a significant increase in self-efficacy ($M = 44.55$ to $M = 55.49$; $SD = 8.85$, $SD = 12.84$) compared to the control group. The study indicated that following performance, a coach should express belief in the performer to increase efficacy (Wise & Trunell, 2001).

Self-efficacy is an important aspect of an athlete's cognition due to its effect on motivational factors, emotional cognitions, and effort. Additionally, self-efficacy has shown a moderate correlation ($r = 0.38, p < 0.01$) to performance based on Moritz, Feltz, and Fahrback meta-analysis of 45 published studies. In a study conducted by Hutchinson et al. (2008), manipulated self-efficacy impacted levels of effort on a physical task of hand gripping. The research included 72 university students (33 males and 39 females; M age = 19.18 years, $SD = .74$) recruited from undergraduate physical education classes at a southeastern university in the United States. The participants were moderately active. They were divided into three experimental groups; a high self-efficacy group, a low self-efficacy group, and a control group. Self-efficacy manipulation was performed with false performance feedback. The group manipulated for high self-efficacy demonstrated higher exertion tolerance ($M = 173.29$ s, $SD = 47.19$) compared to the low self-efficacy manipulation ($M = 133.75$ s, $SD = 48.87$; $ES = 0.83$) and the control group ($M = 133.23$ s, $SD = 58.89$; $ES = 0.75$). Additionally, the high self-efficacy group demonstrated a significant effect on affect compared to the low self-efficacy group ($ES = 1.37$) and control group ($ES = 1.25$). The examination of determination did not reveal a significant effect, yet over time the high self-efficacy group showed an increase, while the low self-efficacy group decreased in determination. Within individual sports, a study performed with wrestlers by Treasure and Monson (1996) found that higher self-efficacy was negatively correlated with both cognitive and somatic anxiety ($-.61, -.62$, respectively $p < .01$) and negative affect ($-.55, p < .01$) while positively correlated with positive affect ($.62, p < .01$). Finally, higher self-efficacy was correlated with higher performance using both a win-loss record ($r = .40$) and points scored ($r = .55$). An athlete should aspire towards higher self-efficacy to perform well, enjoy and succeed in his or her sport. Self-efficacy influences cognitions, affect and performance

positively. As described before, athletes can base their self-efficacy on a number of sources. Within the coach-athlete relationship, there are two important constructs (i.e., relational efficacy) that interact with self-efficacy, described subsequently, and together they form a model built of three reciprocal parts.

Taken together, a mastery climate has a positive influence on self-efficacy because the social sources described in the self-efficacy theory (i.e., verbal persuasion and mastery performance perceptions) are embedded in the coach created climate. Self-efficacy is rooted in two important aspects of the motivational climate: past mastery experiences, which depend on what the athlete perceives as success, and verbal persuasion, which is inline with what the coach values and sets as future goals. The way a mastery climate could influence self-efficacy is through environmental sources of self-efficacy. Previous research has shown that a mastery climate influences self-efficacy in physical education (Barkoukis, Koidou & Tsorbatzoudis, 2010) and collective efficacy in sport (Heuze, Sarrazin & Thomas, 2006). Therefore, it can be expected that coach-created motivational climate influences athlete self-efficacy. The majority of the research involving the effect of the motivational climate on self-efficacy was done within education, physical education classes, or young children. In adult competitive athletes, the influencing factor on goal orientation and self-efficacy is likely the coach. The coach is a source of motivation, professional knowledge, and a source of feedback. Therefore, examining this meaningful relationship will be an exploration of potentially important social influences on athletes. The mediating mechanism of how motivational climate may influence self-efficacy could be through what is termed relational efficacy beliefs, as described in the subsequent section.

Tripartite model of efficacy

The interactions between a coach and his/her athlete influence various aspects of the athlete's perceptions and behaviors. Expanding on Bandura's theorizing, Lent and Lopez (2002) suggested a tripartite approach to self-efficacy, which includes other important people as influencers on efficacy beliefs. This theoretical model states that perceptions related to others influence self-efficacy, through interpersonal interactions (e.g., the coach-athlete relationship). The two additional constructs are *relation inferred self-efficacy (RISE)* and *other-efficacy*. Along with self-efficacy beliefs, the three efficacy beliefs impact one another. Relational efficacy beliefs predict self-efficacy within the relationship between coach and athlete, there are certain beliefs and perceptions the individual holds regarding the other person. Those beliefs and perceptions, expressed both verbally and nonverbally, influence the relationship, and specifically, self-efficacy. RISE represents the estimations of an athlete regarding the coach's confidence in the athlete's ability. Therefore, when an athlete assumes the coach has confidence in them, that will lead to an increase in self-efficacy. Similar to the source of verbal persuasion, RISE is an external source of self-efficacy. RISE is the perception athletes have regarding the coaches confidence in their ability. When coaches state they have confidence in the athlete that contributes to self-efficacy specifically in environments which external feedback such as competitions is not frequent (Saville et al., 2014). The other construct within relational efficacy is other-efficacy. Other-efficacy relates to the belief a person has in another's capability in a specific task. Defined by Lent and Lopez (2002) as an individual's beliefs about his or her significant other's ability to perform particular behaviors. In the coach-athlete relationship, other-efficacy is an measure of the athletes confidence in the coach's ability, how capable they

think the coach is. When an athlete thinks the coach is highly capable that will contribute to the athlete's self-efficacy, based on the model proposed by Lent & Lopez.

RISE is a concept that involves interpretation of another person's behavior, the feedback they provide, nonverbal cues, and the goals they communicate (Lent & Lopez, 2002). These beliefs, in turn, influence self-efficacy. Behaviors that demonstrate a belief in the athlete's ability will increase self-efficacy, while behaviors that demonstrate disbelief may lower it. For example, a coach that sets challenging goals for an athlete is an expression of belief in the athlete's ability to perform this task. Previous research has indicated that a mastery-oriented climate, which encourages effort, was correlated with higher self-efficacy (Saville, Bray, Martin, Cariney, Marinoff and Petit, 2014). These expressions of confidence act as a source of RISE in youth recreational athletes. This is in accordance with the theory of this research project, that expressions of confidence in improvement and effort, will yield higher self-efficacy, through RISE. In interviews conducted by Jackson, Knapp and Beauchamp (2009), international level athletes stated that the goals the coach set for them were perceived as an expression of the coach's belief in them. In recent research, Jackson, Myers, Taylor and Beauchamp (2012) and Jackson, Whipp, Chua Dimock and Hagger (2013) demonstrated that greater RISE leads to more positive psychological and behavioral outcomes. Among other outcomes, higher relational efficacy perceptions increased effort and enjoyment while indirectly increasing achievement. Lent and Lopez (2002) theorised that this may influence the relationship, and specifically in sport could contribute to motivation to train, compete, and satisfaction from the partner.

Other than influencing the relationship quality and its success, the confidence the coach expresses influences another source of self-efficacy: mastery experiences. Previous mastery

experiences are what the athlete perceives as expressions of competence. This could potentially be competence derived from outcome-oriented, or from mastery-oriented achievements. How the athlete views achievements can be based on either mastery achievements, or outcome achievements. Expressing value for mastery-oriented achievements would be a self-referenced, always available source of self-efficacy, it is not dependent on competitions or other people. Lent and Lopez have demonstrated that within learning environments where learners lack knowledge or experience, RISE may play a more considerable role. Similarly, in the field of individual sports, outcome-based feedback may be rare. Competitions are scarce, and an athlete could make significant progress without expressing it in competitions. In comparison, team sports usually have a more condensed schedule of competition which indicates outcome achievements more often. Therefore, focusing on mastery-oriented achievements is more relevant for the individual athlete's control compared to team athletes. These mastery experiences are under the control of the athlete and are related to effort. For example, the coach can focus on improving the technique of the athlete, rather than focusing on a future competition. Improving this internal ability unrelated to others can be achieved daily and is within the athlete's control. If the athlete can draw from these mastery experiences, that could also improve control over levels of self-efficacy. Second, the process of future goal setting is related to the climate created by a coach. A mastery climate will encourage the athlete to set process-oriented goals. Achieving these goals is within the athlete's control and can become future sources of self-efficacy, since these achievements also act as sources of competence. The second crucial construct within the relationship is related to the motivational climate. A mastery climate has been shown to include more positive cognitions and affects, less anxiety and higher enjoyment, therefore, a more positive and constructive relationship.

When the relationship is perceived as supportive, RISE and other-efficacy beliefs are stronger and therefore, could influence self-efficacy to a greater degree (Jackson et al., 2013). The mastery climate can influence the individual RISE beliefs positively and, in turn, influence athlete self-efficacy. When the athlete perceives the coach as supportive and expresses confidence in the athlete's ability to achieve a certain task or skill, that is potentially a better expression of RISE. On the other hand, an outcome climate is related to a more aversive relationship, which could lead to lower RISE perceptions in the athlete. In a study by Saville, Bray, Martin, Cariney, Marinoff and Petit (2014), verbal expressions of RISE were shown to impact self-efficacy in youth participating in recreational sports. Using a semi-structured interview to assess verbal and non-verbal statements by coaches, the participants reported an increase in self-efficacy based on these sources. Further, the study indicated that a mastery-oriented environment was endorsed to support self-efficacy. This facilitates the idea that RISE may be a source of self-efficacy, and the climate could potentially contribute to this perception. The second construct within relational efficacy sources is other-efficacy, as discussed subsequently.

Other-efficacy is related to the beliefs one holds regarding another person's abilities. The perception athletes have of their coach's ability to coach them well, based on Lent and Lopez, a positive perception will increase self-efficacy. The athlete could base the belief on several aspects, positive experiences with the coach, the interaction with other people, what other people think of the coach, and comparison to other coaches (Jackson et al., 2009). Perceptions of other-efficacy are related to improvement in commitment and satisfaction in the coach-athlete relationship (Jackson & Beauchamp, 2010). Closing sentence – how does this inform/relate to your study?

Other-efficacy is the perception an athlete has of the coach's ability. Other-efficacy was hypothesized to be associated with self-efficacy (Lent & Lopez, 2002). As a consequence, other-efficacy is instrumental to self-efficacy within the coach-athlete relationship. As mentioned before, other-efficacy influences self-efficacy and RISE. Jackson, Myers, Taylor and Beauchamp (2012) conducted research including 516 Australian undergraduates participating in physical activity classes. They measured the three types of efficacy beliefs (i.e., RISE, other-efficacy, and self-efficacy) and how they are connected to effort and enjoyment. Other-efficacy and RISE were shown to account for 69% of the variance in the students' self-efficacy. This shows what a large influence relational efficacy could have on a person's self-efficacy. However previous research has shown that the direct effect between other-efficacy and self-efficacy, is lower than RISE and self-efficacy (Jackson, 2012). The same results indicated other-efficacy is highly correlated with RISE. Since RISE represents a meta-perception of the athlete, regarding the coach it is possible that the level of confidence the athlete has in the coach will moderate the effect RISE has. RISE may be the variable influencing self-efficacy, while other efficacy relates to the the significance of this influence on the athlete's self-efficacy.

Summary

In summary, a mastery climate and self-efficacy lead to similar positive results in athletes. Both constructs lead to positive affect and cognitions, and higher effort and enjoyment. Self-efficacy has been shown to lead to better performance, higher effort, and enjoyment. If a mastery climate could lead to higher self-efficacy it will potentially be through sources of efficacy and the social aspect of efficacy, the tripartite model. The motivational climate should predict the athletes self-efficacy via its influence on past experiences and verbal persuasion.

Further, RISE will be the connecting link between how the motivational climate may influence self-efficacy. We hypothesize that a mastery climate will lead to higher self-efficacy, while an outcome climate will lead to lower self-efficacy. The mediating variable between the social aspects of the motivational climate, to the personal aspect of self-efficacy, may be explained through RISE (Lent and Lopez, 2002). Finally other-efficacy will moderate the strength of the connection between RISE and self-efficacy.

Methods

Participants

Competitive adult athletes participating in individual sports and their coaches participated in the study. Data was collected from athletes and coaches who train in groups yet compete individually, such as a weightlifting team that includes several athletes who share the same coach and train together. The goal was to collect data from 30 different coaches to account for the nonindependence of the analysis measuring the same coach being paired with multiple athletes. For example, a coach who has five athletes will be considered five different dyads. The sample was collected from a myriad of sports fields including CrossFit, cycling, running, weightlifting and triathlon. These sports were included due to the fact they answer the inclusion criteria. The inclusion criteria was that the relationship between the dyad needs to be over one year since the relationship between the two is what the research examined. The athletes were adults actively competing defined by their having competed during the last year and are preparing for a future event.

Procedures

University Institutional Review Board (IRB) approval from East Carolina University was obtained for the study. The participants were contacted personally and via email sent to the coaches of the groups, and after expressing willingness to participate, the questionnaires were sent to the athletes and coaches through online Qualtrics forms. Explanation of the research was delivered, and participants expressed consent through approving their participation online before the questionnaire. The athletes were given questionnaires assessing demographics, perceived

coach created motivational climate, self-efficacy, other-efficacy, and relation inferred self-efficacy. The coaches were given questionnaires assessing demographics and their perceived motivational climate. All the measures and questionnaires are provided in the appendices (Appendix A is the athlete questionnaire and Appendix B is the coach questionnaire). Each coach was assigned a number (last four digits of phone number) to account for the coach-athlete pairing, and athletes used that number to associate with their respective coach. Before answering the questionnaire, each participant put his or her coach's phone number as the ID. This number was the last four digits of the coach's phone number. This identification was used to match each athlete to the specific coach and converted to a simple ID number.

Measures

Athlete Questionnaire packet

Demographics: age, gender, length of relationship in months, and sport. After data collection began and the pandemic did not end, the following variables were added: Amount of direct contact normally and amount of direct contact currently (these items were answered by 40 athletes).

Perceived coach motivational climate was examined by using a modified version of the Perceived Motivational Climate in Sport Questionnaire (Newton, Duda, Yin, 2000). Items addressing team issues exclusively were removed to 12 items focusing on improvement and effort for mastery climate and outperforming others and results for outcome climate. Each motivational climate included 6 items. This was done based on previous research examining individual athletes approach towards performance enhancing drugs (Allen, Taylor, Dimeo, Dixon & Robinson, 2015). All items on the questionnaire were evaluated on a 5-point Likert

Scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) or *not applicable*. The questionnaire was adapted specifically for this research based on the work done in previous research. An example item for mastery “On this team the coach wants us to try new skill.” An example item for outcome “On this team the coach makes it clear who he or she thinks are the best athletes.” The items required change to be relevant to competitive individual athletes. For example items referring to “game” situations which are not relevant for these athletes. Reliability coefficients for the scale were $\alpha = .82$ for mastery and $\alpha = .76$ for outcome in previous research. Athletes answered the questionnaire based on their coach. All the items addressed individual athletes as part of a group training together.

Self-Efficacy Efficacy beliefs based on Bandura’s (1997) recommendations and the tripartite model were measured. A questionnaire measuring the athlete’s self-efficacy in different elements within the sport was used. The athlete self-efficacy questionnaire was based on the physical education class self-efficacy questionnaire (Jackson et al., 2013) adapted for this research. The scale is based on a 5-point Likert scale ranging from 1 (not confident) through 5 (very confident) and was shown to be valid and reliable. An example item is, “How confident are you in this moment in time to try your hardest in every game?” The questionnaire include 10 items. The reliability measure in previous research for this questionnaire was .82.

Relation inferred self-efficacy (RISE) RISE items were adapted from the self-efficacy questionnaire used in the current study so that the athletes answer the questions in relation to how confident their coach is in them This is how RISE was previously measured (Jackson,

2009). The self-efficacy questionnaire was rephrased to address the perceptions of the athlete, regarding the coach. Higher scores indicate higher perception of confidence expression by the athlete. The scale used a 5-point Likert scale. An example item is "How confident do you think YOUR COACH IS in your ability at this moment in time to try your hardest in every competition." This was rephrased based on the self-efficacy scale and will also include 12 items. The reliability of RISE being used this way was acceptable at $\alpha = .84$ (Jackson, 2009).

Other-Efficacy We used a modified version of the coaching efficacy scale (CES) based on previous research on coaching efficacy (Myers, Wolfe & Feltz, 2005) to measure other-efficacy. The scale which was used included 9 items of coaching efficacy. In previous research (Jackson, Gucciardi and Dimmock, 2011), the original CES was adapted for individual sports and used on adult athletes. The changes that were made for this study were removal of character building items and focusing on technical and motivational abilities. The non-relevant items, addressing team aspects were rephrased. An example item for motivating efficacy is "Maintain confidence in you?". For Games/event strategy an example item was "Understand competitive strategies?". Finally for technical efficacy "Teach the skills of your sport?". The participants answered the scale on a 5 point likert scale, and the questions addressed personal aspects relevant to individual competitors from the four different subscales. The scale addressed the perceptions of the athletes regarding their coach by using the stem "How confident are you in your coach to:" The scale was shown to be reliable ($\alpha = .86$).

Coach Questionnaire packet

Demographics: age, gender, experience based on years of coaching, and sport.

Coach-created motivational climate the coaches answered their personal perception of the motivational climate they initiate. This was the same questionnaire the athletes answered, in relation to how the coaches perceive their behavior.

Level of contact Added after the research began were two questions about amount of direct contact with the coach, during normal times and currently during the COVID – 19 pandemic.

Statistical analysis

For the statistical analysis, we used a statistical software (IBM SPSS v. 26). To test the first hypothesis, a regression analysis between perceived motivational climate and self-efficacy was performed. Testing the relationship between a mastery motivational climate to higher self-efficacy. Secondly the relationship between an outcome motivational climate and lower self-efficacy.

To test the second hypothesis we first examined the needed conditions to test for a mediation effect using regressions. We examined if the predictor variable (motivational climate) significantly predicted the outcome variable (self-efficacy), the predictor variable significantly predicted the mediator (RISE), and the mediator significantly predicted the outcome variable. After meeting these conditions a Sobel test was performed to test for a significant mediation effect. In order to measure the mediation effect PROCESS macro (*Introduction to Mediation, Moderation, and Conditional Process Analysis, Hayes, 2012*) was used in SPSS.

To test the third hypothesis that other-efficacy will moderate the effect RISE has on self-efficacy, we used a moderation analysis to test for an interaction effect between low and high

other efficacy, and the effect of RISE on self-efficacy. For this analysis the PROCESS macro will also be used with a model measuring moderation.

Results

Participants

During the data collection process, 167 emails were sent to coaches, asking to participate in the study. There were 62 athletes who agreed to complete the online survey (Qualtrics). Of these, 57 responses were used for analysis (i.e., 5 responses were not completed beyond the consent, and therefore removed). The sample consisted of 37 males (65%) and 20 females (35%). Athletes competed in 5 different sports including Weightlifting ($n = 20$), triathlon ($n = 11$), CrossFit ($n = 17$), cycling ($n = 7$) and running ($n = 2$). Forty eight participants filled out their age, $M = 32.44$, $SD = 10.74$. Fifty participants filled out their years of experience, $M = 5.12$, $SD = 10.74$. The sample distribution is detailed in table 1.

Table 1. Overall distribution of the coaches and athletes, sport and gender

Group	Athletes	Coaches
	N	n
Gender		
Male	37	15
Female	20	3
Sport		
Weightlifting	20	5
Triathlon	11	2
CrossFit	17	10
Cycling	7	1
Running	2	1

Note. WL = weightlifting; TRI = triathlon; CF = crossfit; CYC = cycling; RUN = running.

One of the modifications to the survey was a question regarding the amount of contact with the coach during regular times, and at the time of the study (i.e., COVID-19). Some of the athletes did not answer this question, because it was added after they completed the survey. Forty five participants reported seeing their coach regularly, $M = 12.86$, $SD = 8.77$ in hours. Forty athletes reported seeing their coach currently $M = 10.9$, $SD = 9.1$. An important aspect is the fact that athletes answered the survey during different times, from the beginning of April to the end of August, meaning different phases of the pandemic. This could mean that different limitations, regulations and health issues could interfere heavily with the ability and willingness to see the coach. Across the 5 months of data collection most of the participants were under different stages of the pandemic and therefore under different limitations.

There were 18 coaches who completed the coach survey. Out of the participating coaches 3 were females and 15 were males. Out of the participating coaches the average age was $M = 34$, $SD = 7.44$ and experience coaching $M = 10.11$, $SD = 4.5$ in years. Descriptive statistics of the participants are detailed in Table 2.

Table 2

Mean and standard deviations of athlete and coach demographics

Variable	N	Mean	Standard deviation
Athletes			
Years of competing	50	5.12	3.9
Contact	45	12.86	8.77
Contact (COVID-19)	40	10.9	9.1
Age(Athletes)	48	32.44	10.74
Coach			
Experience	18	10.11	4.54
Age(Coaches)	18	34	7.44

The descriptive statistics and correlation coefficients for each measure are presented in Table 2. The internal consistency was acceptable for 4 measures (mastery climate, $\alpha = .76$; self-efficacy, $\alpha = .89$; other-efficacy, $\alpha = .87$; RISE, $\alpha = .90$), except for outcome climate which was .65 and used for the analysis. Out of the motivational climate questions 24 responses out of 684 were answered by participants as “unapplicable” which amounts to 3.5% out of the items not included in the analysis. Seven athletes out of the 57 who filled out the questionnaire marked some of the climate questions as “unapplicable” because they did not train with other athletes at the time, as mentioned above. The means were based on their valid responses and the items which were unapplicable were not part of the analysis.

Mastery motivational climate was high ($M = 4.16, SD = 0.28$) while outcome climate was lower ($M = 2.20, SD = .56$). The variables measuring self-efficacy ($M = 4.07, SD = .61$), relation inferred self-efficacy ($M = 4.13, SD = .62$) and other-efficacy ($M = 4.21, SD = .53$) were high as indicated in table 3. This means that overall the levels of efficacy were high among the participants.

Table 3

Mean, standard deviations and correlations between the variables measured

Measure	M	SD	1	2	3	4	5
(1) OC	2.18	.57	-				
(2) MC	4.15	.53	.14	-			
(3) OE	4.21	.53	-.19	.41**	-		
(4) SE	4.07	.61	.11	.36**	.50**	-	
(5) RISE	4.13	.62	-.06	.34**	.52**	.66**	-

Note. OC = outcome climate; MC = mastery climate; OE = other efficacy; SE = self-efficacy; RISE = relation inferred self-efficacy; Mean, standard deviation and Correlation coefficients between the measured variables. ** $p < .05$.

Data analysis

A one-way ANOVA and t-test were performed to test for sport and gender differences in the data. Each test was run to test for significant differences in the following measures: Mastery climate, outcome climate, other-efficacy, self-efficacy, RISE. No significant statistical difference was seen in the data for sport ($F = .27 - 2.26, p > .07 - .90$) and for type of gender ($t = -1.81 - 1.42, p > .07 - .71$). therefore, it was deemed appropriate to examine all the cases together for the regression analyses.

All variables were normally distributed except for two. Self-efficacy and other-efficacy were negatively skewed, the range of skewness (-.94; -.98) and kurtosis (1.5; 2.0) were within the acceptable range based on the suggestion by Kline (1998, 2005). Data with a skew above an absolute value of 3 and kurtosis above an absolute value of 8 are considered problematic. Visual inspection of the scatterplots of the regressions indicated homoscedasticity was reached. Assumptions of linearity were met by inspecting the p-p plots of the sample. Collinearity was acceptable as indicated by the VIF values, smaller than 10 and larger than 1. There was no transformation done, and the data is reported as it was collected. After all the required assumption tests were completed, the analysis as planned was conducted. This included linear regression and PROCESS macro (Hayes, 2012) to test for mediation effects and moderation. To test the hypothesis regression analysis was performed to test for H1. To test for H2, first the required steps to test for mediation were performed and met the necessary conditions. To test for H3 a moderation model was used.

Hypothesis 1. Predicting Self-Efficacy using the motivational climate.

The first hypothesis, that a mastery climate will have a positive effect on self-efficacy and an outcome climate will have a negative association with self-efficacy, was tested using a linear regression. Coach-created motivational climates were the predictors and self-efficacy was the outcome variable. Regression coefficients results for mastery climate and self-efficacy are presented in table 4. Consistent with the moderate correlation ($r = .36, p > .05$) between mastery climate and self-efficacy, mastery climate significantly predicted self-efficacy, $B = .41, p < .001$. This indicates that there is a positive moderate relationship between coach-created mastery motivational climate and athlete self-efficacy. In accordance with the nonsignificant small, positive correlation ($r = .11, p < .05$) between outcome climate and self-efficacy, outcome climate did not significantly predict self-efficacy, $B = .11, p = .42$. Because no significant effect between outcome climate and self-efficacy is supported, the second hypothesis can not be supported. The mediation is based on this first hypothesis being supported. As a consequence, mediation effects for outcome climate was not tested.

Hypothesis 2. Predicting self-efficacy using the motivational climate, through RISE as a mediator.

To test for the second hypothesis, that RISE mediates the relationship between mastery coach-created motivational climate and self-efficacy, we first completed the four steps according to Barron and Kenny (1986) to establish if the needed conditions exist to meet mediation. The results of the assumptions can be seen in figure 1.

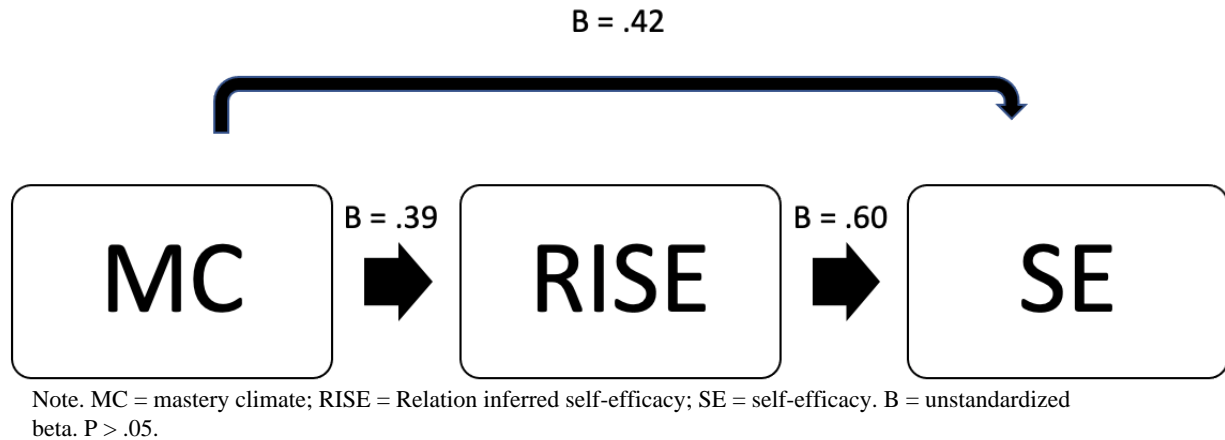
Step 1. The first step determines whether mastery climate predicts the outcome of self-efficacy. In step 1 of the mediation model, mastery climate predicting self-efficacy, not including the mediator, the results were significant, $B = .42$, $t(56) = 2.87$, $p < .01$. As indicated in the previous section, mastery climate did have a moderate positive relationship with self-efficacy.

Step 2. The second step tests whether mastery climate predicts the potential mediator, relation inferred self-efficacy. Step 2 showed that the regression of mastery climate on the mediator RISE was also significant, $B = .39$, $t(56) = 2.70$, $p < .01$. This established a relationship between the predictor and the mediator. Regression coefficients for mastery and RISE are also presented in table 4.

Step 3. The third step determines whether the mediator, RISE, predicts Self-Efficacy, while controlling for mastery climate. Step 3 of the mediation process showed that the mediator, RISE, controlling for mastery climate was significant $B = .60$, $t(55) = 5.59$, $p < .01$. the first 3 steps are described in figure 2.

Step 4. The fourth step determines if the impact of mastery climate on Self-Efficacy will decrease with RISE as a mediator. Step 4 of the analyses revealed that, controlling for RISE, mastery climate was no longer a significant predictor of Self-Efficacy, $B = .16$, $t(55) = .15$, $p = .15$. Compared to the beta in step 1, the relationship between mastery climate and Self-Efficacy is smaller with RISE as a mediator. The beta for RISE in this regression was significant, $B = .6$, $t(55) = 5.6$, $p > .01$.

Figure 2. Preliminary mediation assumptions



Based on the 4 step approach, there was a potential for RISE to significantly mediate the relationship between motivational climate and self-efficacy. To determine if there was significant mediation effect, a Sobel test was conducted based on the results of the 4 steps, and revealed a significant effect, $t = 2.50$, $SE = 0.10$, $p < .01$. After completing these steps, a mediation model using PROCESS macro (Hayes, 2012) was employed to test for direct effects and indirect effects.

Model summary.

The mediation model revealed a significant mediation effect between mastery and self-efficacy, with RISE as a mediator. Total effect: $B = .41$ $p < .01$, Indirect effects: there was a significant indirect effect of Mastery climate on self-efficacy through RISE, $B = .23$, CI 95% [.09 - .48], Direct effect: mastery on self-efficacy: $B = .18$, $p = .10$. Bootstrapping was used to estimate the confidence intervals for the indirect effect of RISE on SE. 1000 bootstrap samples were used in the mediation model. Since outcome climate did not adhere to first step of testing for mediation as described in hypothesis 1, there are no significant results to report. The results of the mediation model analysis are detailed in table 5.

Table 4

Regressions of associations between motivational climate, SE and RISE

Variable	<i>B</i>	<i>t</i>	<i>p</i>
Mas → SE	.42	2.90	< .01
Mas → RISE	.39	2.70	< .01
RISE → SE	.65	6.4	< .01
Mastery + RISE → SE (Step 4)			
Mas	.18	1.5	.15
RISE	.60	5.60	<.01

Note. Mastery = mastery climate; SE = self-efficacy; RISE = relation inferred self-efficacy; The first part shows the results of individual predictions, the second part is a regression of Mastery and RISE predicting SE.

Table 5. Mediation analysis effects between the mastery climate and self-efficacy through RISE.

Effects	<i>B</i>	<i>SE</i>	<i>P</i>	95% CI
Direct effect	.18	.12	.15	
Indirect effects	.23	.10		CI [.09 - .48]
Total effect	.41	.14	< .01	

Note. A mediation model using Macro process, Direct effect = Mastery climate predicting SE; Indirect effect = Mastery climate predicting SE, through RISE; Total effect = how RISE and a mastery climate predict SE.

Hypothesis 3. The moderation effect of other-efficacy on RISE and self-efficacy.

To test the third hypothesis, for the moderating effect of other-efficacy on the relationship between RISE and self-efficacy we recoded other-efficacy to a binary categorical variable. The sample was divided into two groups of 29 high efficacy and 28 low efficacy, based on the other-

efficacy mean ($M = 4.21$). Twenty eight participants were qualified as reporting high other-
 efficacy (range 4.25 – 5.00) while twenty nine reported low OE (range 2.38 – 4.20). As reported
 in Table 6, there are descriptive differences between the high and low other-efficacy groups,
 based on the variables of interest. A t-test revealed a significant difference between the two
 groups in self-efficacy $t(55) = 3.38, p < .001$ and RISE $t(55) = 2.49, p < .05$. This could indicate
 that other-efficacy impacts the connection between RISE and self-efficacy in a meaningful way.

Table 6. Other efficacy groups means

Variable	Low OE		High OE	
	Mean	SD	Mean	SD
SE	3.81	.66	4.31	.44
RISE	3.92	.65	4.32	.52

Note. Low OE = coaches that were rated below the mean on OE; High OE = coaches rated above the mean.

To explore the potential differences in self-efficacy and RISE, between the two groups, a
 correlation was performed to establish the strength of the connection between RISE and self-
 efficacy based on the two different other-efficacy groups. The correlation revealed that the
 relationship between RISE and self-efficacy was moderate for the athletes reporting low other-
 efficacy ($r = .54, p < .01$) and strong for athletes reporting high other-efficacy ($r = .72, p < .01$).

To further examine the connection between RISE and self-efficacy a regression with self-
 efficacy as the dependent and RISE as the independent variable for both other-efficacy groups

was performed and indicated that in both groups RISE significantly predicted self-efficacy. The regression revealed the following results for the low other-efficacy group $B = .54$, $t(28) = 3.31$, $p < .01$ and for the high other-efficacy group $B = .61$, $t(28) = 5.38$, $p < .01$. To test the strength of the relationship between the two variables through the moderation of other-efficacy, moderation analysis test was performed. The moderation test revealed a nonsignificant interaction between self-efficacy and RISE ($t = .29$, $p = .77$) for the two different other-efficacy groups. As the correlation analysis indicates the relationship between RISE and self-efficacy is stronger when other-efficacy is high. The difference between the correlations is not statistically significant based on the moderation analysis.

Exploratory analyses

To further look into the coach-athlete relationship, congruence (compatibility) between what the athlete reports about the coach, and what the coach reports of himself was compared. This was done in order to explore how congruence may relate to self-efficacy. Previous research (Chelladurai & Riemer, 1998) found that congruence between athletes and coaches can lead to better performance and satisfaction. That can indicate that congruence may also be related to self-efficacy.

To test for congruence between coaches and athletes, in terms of the motivational climate and efficacy scales, we used the coaches who had 3 athletes or more from the participants (7 coaches, 44 athletes). To measure the difference between coach and athlete, the mastery climate perception of each athlete was subtracted from the coach mastery perception. The differences between coaches and athletes ranged from $-.87$ to 1.67 ($M = .025$, $SD = .53$). The difference score was then correlated with other-efficacy and revealed a significant negative correlation ($r =$

$-.37, p < .05$). This indicates that when the coaches perceived their mastery climate as higher than the athlete's perception, other-efficacy (athlete's confidence in the coach's ability) was lower. A similar smaller effect was seen for RISE ($r = -.30, p < .05$), which indicates that the difference is also related to athletes perceptions of coach confidence in their ability. The effect for self-efficacy was not significant ($r = -.27, p > .05$) yet indicated a similar trend. In summary, congruence between the athlete and coach in terms of motivational climate is significantly associated with efficacy beliefs.

Discussion

General overview

The main purpose of the study was to assess the relationship between coach created motivational climate on athlete self-efficacy. The hypothesis was that a mastery climate will predict higher self-efficacy while an outcome climate will predict lower self-efficacy. The results indicated that a mastery climate predicted higher self-efficacy, while outcome climate was not a significant predictor of self-efficacy. The second purpose of the study was to examine the relationship between motivational climate and self-efficacy through relation inferred self-efficacy. To study the relationship between self-efficacy and motivational climate, relation inferred self-efficacy was hypothesized to be a mediator between motivational climate and self-efficacy. Since RISE is a meta-perception of the coach by the athlete, it was hypothesized as a potential mediator between coach-created motivational climate and athlete self-efficacy. The findings revealed a significant mediation effect for RISE between mastery climate and self-efficacy, but not for outcome climate. Finally, to further examine the relationship between RISE and self-efficacy, the third purpose of the study was to examine other-efficacy as a potential moderator of the strength between RISE and self-efficacy. Since RISE acts as a source of self-efficacy, the goal was to examine if the level of confidence the athlete has in the coach, will moderate the impact the coach will have on the athlete. The moderation analysis did not reveal a significant Other-Efficacy as a significant moderator of the effect of RISE on Self-Efficacy. These results will be discussed in depth, along with theoretical and applied implications.

Theoretical implications

The first hypothesis, addressing the relationship between motivational climate and Self-Efficacy, indicated that a mastery climate was a positive predictor of self-efficacy. This was the first assumption, and the fundamental premise of the study. The analysis revealed a positive correlation between mastery climate and self-efficacy. In previous research, higher self-efficacy and a mastery climate have been shown to lead to similar positive outcomes in athletes such as enjoyment and motivation (Treasure et al., 1996, Vazou et al., 2006). The findings from the current study indicated that a mastery climate may also predict higher self-efficacy. The outcome motivational climate did not significantly predict self-efficacy. There may be some possible reasons for this finding. First, the outcome climate scale did not reach the common acceptable level of internal reliability ($\alpha > .70$) which could have influenced its ability to reach significance. In this specific research, many of the questions addressing outcome climate were related to other training partners (i.e. “The coach tells us who are the best athletes on the team.”), and most athletes were training alone without any environmental influencers, if they were training at all given COVID-19. During the analysis stage, certain items were removed to test how reliability may change, yet no notable difference to the reliability was observed. Another aspect of the outcome climate, which could cause it to not have an influence on other measures, is how prominent it is in the environment. The overall results indicated that the coaches were implementing a mastery motivational climate, as the athletes rated the coaches high on the mastery climate scale. It is possible that when a mastery climate is perceived by the athlete, the effect outcome-oriented behaviors have diminishes. The mean for outcome climate was low on the scale ($M = 2.15$) and the influence it had on RISE and self-efficacy was not significant. The results did reveal that a mastery climate predicted higher Self-Efficacy in athletes, as hypothesized. The main theoretical premise of this assumption is how an athlete interprets his

experiences of success. As described in previous research of self-efficacy (Bandura, 1990) the past experiences of success are the most important sources of self-efficacy. The past experiences are based on perception of what is success and competence, either mastery or outcome. A mastery climate encourages goals based on self-referenced progress and improving skills. As explored before, this climate has been shown to lead to better adaptability and lower anxiety. The basis of this climate is control over achievements, since they are not related to other athletes, or external events. If an athlete is inclined to perceive his personal mastery as an achievement, that will work as a source of self-efficacy which is associated with internal factors. The mastery climate potentially predicts self-efficacy through the perception of confidence the athlete experiences from the coach.

The second hypothesis examined the relationship between motivational climate and self-efficacy through a mediation model. This was the model used to connect between the environmental perception of motivational climate to Self-Efficacy. The potential mediator was relation inferred self-efficacy (Lent & Lopez, 2002). RISE is a meta perception, it addresses how the athlete perceives his coach's confidence in him. This perception in turn, influences Self-Efficacy, as indicated by the tripartite model (Lent & Lopez, 2002). Both the motivational climate and RISE are perceptions of the athlete regarding the coach. Therefore effect motivational climate will have on Self-Efficacy was viewed through its influence on RISE first. To test the mediation model three assumptions were met first, the independent variable predicted levels of the mediator, the mediator predicted the dependent variable and was a better predictor when controlling for the independent variable. The results indicated that RISE was a significant mediator between the motivational climate and Self-Efficacy.

The results of the current study indicate that RISE has a significant relationship with Self-Efficacy as observed in previous research (Jackson, 2015). The addition of mastery climate indicates that a perceived mastery climate leads to higher RISE. This is expressed in the athlete's perception of his coach's confidence in him. In lay terms, a coach mastery climate is interpreted by the athlete as a sign of confidence in the athlete's ability. Previous research has shown that when a coach encourages more mastery oriented goals, the athlete interprets it as a vote of confidence, through RISE (Saville et al., 2014). This expression of confidence then translates into higher self-efficacy for the athlete. The ways this mechanism of confidence could theoretically work may be influenced by the control over sources of mastery. Having more control over the sources of self-efficacy, in the way a mastery climate allows, is a predictor of higher self-efficacy. This effect is therefore related to the fact the athletes have self-referenced goals, meaning ones they have more control over. If the coach endorses more mastery-oriented goals as valuable, the athlete can potentially achieve them through effort and draw on these achievements for his self-efficacy. Mastery climate could theoretically lead to a self-referenced source of efficacy, which is less volatile, due to its independence from external, outcome oriented events. A mastery climate focuses on the process, the improvement of skills. If the coach expresses a mastery climate the athlete can draw on his mastery achievements. Previous research indicated that the main source of Self-Efficacy is mastery experiences (Bandura, 1990). The ability to have internal control over these experiences through focus on mastery goals and achievements could be the mechanism by which climate influences Self-Efficacy. Since goal orientation is both an expression of goals and a source of perceived competence (Duda, 2001), there is a reciprocal relationship between future goals, and perceptions of competence. Understanding this dynamic is crucial to understanding how the climate influences the notion of

competence and future goals. This is important especially for understanding how self-efficacy is influenced by competence.

RISE is an athlete's perception of how the coach communicates confidence, typically from evaluations of performance from the coach. The results of the current study indicate that this perception of confidence expression is predicted by the climate. Motivational climate as an environmental aspect, is one way that the coach expresses confidence in his athlete. Expressing confidence connected to mastery goals could be a positive attribute of the relationship between RISE and Self-Efficacy (Saville et al., 2014). That indicates that RISE based on effort and improvement, has a more positive influence on self-efficacy. A mastery climate is associated with a more positive view of the coach and other positive aspects of sports experience (Curran, 2015). These results indicate that another positive aspect of a mastery climate is its potential influence on RISE and therefore self-efficacy. A coach expressing confidence in his athlete's ability, through mastery oriented statements will lead to higher RISE based on our findings. The results indicated that another positive outcome of a mastery climate is it is associated with higher self-efficacy. The connection between motivational climate and self-efficacy is an under-researched idea. The connection was shown previously in youth recreational athletes (Saville, 2014) using RISE. This research studied the relationship between the mastery climate and self-efficacy, while applying the tripartite model, on adult competitive athletes. Based on these results, the mastery climate does predict self-efficacy, and RISE is a mediator between the two variables.

RISE is increased by a mastery climate, by expressing confidence in the athlete's ability as it relates to mastery achievements. In comparison an outcome climate will focus on relative

performance, which athletes interpret as a source for past experiences, which are outside of their control. An outcome climate could also potentially be an expression of RISE that the athlete perceives as decreased confidence in the athlete's ability, and success is dependent on outcomes, and therefore competitive success is a source of self-efficacy. The second hypothesis revealed a potential connection between the mastery climate and self-efficacy through the perception of expressed confidence. This mechanism is based on the sources of self-efficacy and how they can influence the athlete. How can social aspects influence cognitive perceptions of athletes.

The third hypothesis was not related directly to the motivational climate and explored the relationship between the tripartite model variables (Lent & Lopez, 2002). The purpose was to examine if other-efficacy moderated the strength of the relationship between RISE and self-efficacy. In previous research other-efficacy was shown to promote self-efficacy (Jackson, 2011), in the context of this research, other-efficacy was analyzed as a potential moderator. Previous research (Jackson et al., 2012) has shown Other-Efficacy to be a significant predictor of Self-Efficacy (Jackson, 2011). We hypothesized that Other-Efficacy will moderate the relationship between Self-Efficacy and RISE, and not simply promote Self-Efficacy. Lower Other-Efficacy will predict the influence of RISE on self-efficacy. Lower confidence in the coach will lead to him having a less meaningful influence of the athlete. As previous research (Jackson, 2012) indicated, the influence of other-efficacy on self-efficacy is low relative to RISE, and at the same time, the correlation between other-efficacy and RISE is strong. Our assumption was that other-efficacy may influence the relationship between RISE and self-efficacy more than the direct effect on self-efficacy. Therefore, the hypothesis was that the relationship between Other-Efficacy, RISE and Self-Efficacy will be one in which the

confidence the coach expresses (RISE) will have a smaller effect on Self-Efficacy, when other-
efficacy is low.

The hypothesis was tested using a moderation effect analysis. First, the sample was divided to one group of lower other-*efficacy* and one group of high other-*efficacy*. A correlation between RISE and self-*efficacy* was done to indicate the strength of the relationship between the two variables, under the two different groups. The correlation revealed that the connection between RISE and self-*efficacy* was stronger in the high other-*efficacy* group. This outcome, which indicates the connection between self-*efficacy* and RISE is different between the groups, indicated there may be a moderation effect. Testing for significant differences between the two group in RISE and self-*efficacy* did indicate the groups varied in mean scores. The regression analysis, however, using a moderation model did not reveal a significant difference in the prediction of the relationship strength, based on the two groups of other-*efficacy*. It is possible that shared variance of RISE and other-*efficacy* on self-*efficacy* was high and did not allow for other-*efficacy* to have enough independent prediction of self-*efficacy*. As previously seen in research (Jackson, 2011), other-*efficacy* may be a source of relational *efficacy*, as the the tripartite model previously stated. Overall, the participants reported high other-*efficacy* for the coaches ($M = 4.21$), and therefore they had confidence in their ability. It is possible that because athletes reported overall high scores of other-*efficacy*, the low other-*efficacy* group was not low enough to have a significant effect on the strength of the connection between RISE and self-*efficacy*. As previous research (Jackson, 2011) indicated other-*efficacy* contributes to *efficacy* beliefs in a direct way.

Applications

The motivational climate can be controlled, implemented, and changed (Cecchini et al., 2014). Previous research (Curran et al., 2014) indicated that mastery climate increases positive affect, motivation and adaptability. Although these are positive outcomes they are not necessarily directly related to performance. Self-efficacy has been widely shown to be a positive predictor of performance in athletes. Based on our findings a mastery climate does predict self-efficacy and should be implemented by coaches who want to improve performance. This connection is not necessarily intuitive, since subjective performance is by default an outcome climate goal. Coaches should be aware that nurturing a mastery climate will not just increase affect but performance as well. Coaches should, therefore, develop a mastery climate when coaching their athletes to potentially increase self-efficacy. There are two things coaches should take into consideration. Setting mastery oriented goals, and value mastery achievements to act as a source of self-efficacy for their athletes. Secondly, express confidence in their athletes in way which emphasizes mastery achievements. This notion should be applied in everyday coaching, especially in individual athletes, who lean on more self-referenced achievements due to less frequent competitions.

Furthering the research on how social aspects such as relational efficacy influence Self-Efficacy. Coaches need to be aware that their statements which may not be related directly to performance and objective measures may influence confidence in their athletes. When goals are set for an athlete, and coaches indicates what they value as achievement. In turn, this can potentially impact self-efficacy through past experiences. Coaches need to be aware that a mastery climate will not only influence positive affect as seen in previous research (Curran,

2015). Our findings indicate, mastery climate leads to higher Self-Efficacy, a significant predictor of performance (Moritz et. Al, 2000). This may not be an intuitive connection for coaches. Motivational climate addresses goal setting on a surface level, and in turn influence future perceptions of competence of the athlete. These perceptions of competence then act as a source of Self-Efficacy. If coaches desire to raise an athlete's Self-Efficacy, they should encourage a mastery climate and express confidence in the athlete, through mastery-oriented statements. Coaches should know that their goal setting for athletes influence what athletes are trying to achieve, and their source of perceived competence from achieving those goals (Nicholls, 1989). The process of goal setting is crucial in the sport environment (Kyllo & Landers, 1995) and is widely used by coaches. Therefore, awareness of goal orientation is an aspect coaches should be aware of and take into consideration. These applications are relatively simple to apply, and coaches can take them into consideration immediately, and elicit positive changes in their athletes self-efficacy.

Limitations

The study did have several limitations, and these were mainly related to the data collection occurring while COVID-19 was peaking. The intention was to collect data from competitions and training facilities, mainly in universities, including the one this project was under. In April students were sent home across the country, and no training or competing was occurring. Students were supposed to be a large proportion of the sample, and due to the situation, they were not able to participate. This lasted for the entire data collection period and did not allow for field data collection, which was also supposed to be performed. The coaches who had the largest amount of athletes were ones who were approached in person by the researchers, not

online, and provided 21 athletes for the sample. The smaller sample size limited the ability to use a statistical analysis for the relationship between each coach and athlete as an independent unit. One of the original ideas of this research was to test congruence between athlete and coach perceptions. Since each dyad would have been analyzed independently, to control for interdependence, 30 coaches were needed to reach statistical power.

Further, most coaches did not have direct contact with their athletes. Since the research examined relationships between coaches and athletes during normal times, it is possible that this lack of direct connection influenced some of the results, unrelated to the variables which were measured. The pandemic is potentially a confounding variable that causes the results to be influenced by unrelated factors. For example, isolation, and increased anxiety, especially socially since people were encouraged to not see others. Finally, other psychological factors may have influenced the mental states of coaches and athlete. High levels of anxiety and stress, unknown competitive future, all could have impacted the way participants responded and felt towards themselves and others. This unusual time, may have caused some changes, unique for those circumstances that potentially decreased the external validity of the results. Both the environmental aspects were different and the athletes ability to train was limited. Self-efficacy could potentially have been influenced by factors such as inability to train and compete, which limits self-efficacy sources. An overall, exceptional feeling of uncertainty, both in life and especially in relation to sport, competitions and training might have had significant effect on the study variables, and, therefore, the results of the study.

The use of questions addressing others in the outcome climate questionnaire may have contributed to its lack of reliability. A significant part of the questions regarding training partners

perhaps were not fitting to measure the outcome climate in individual athletes. The results indicate that it did not reach the desired reliability, and did not indicate any significant effect. As stated in the introduction, the original goal was to collect data from groups who train together under the same coach. The outcome climate questions were mainly about the coach's treatment of the different team members, and competitive goals. These items likely were not the most valid for this particular research project. The time data was collected, while the athletes were training alone, or not at all, impacted the validity of the questionnaire due to the questions addressing issues the athletes were not experiencing at the time, or were experiencing much less of. Since the questions addressed the environment, they were simply not as valid as they were originally meant to be.

Strengths

This research was based on strong theoretical models, including social cognitive theory (Bandura, 2001), motivational climate (Ames, 1996) and the tripartite model (Lent & Lopez, 2002). The current research builds on the science, and bases its hypothesis on strong theoretical foundations. The contribution to the literature is the addition of the connection through a mediator which overlaps with self-efficacy and the motivational climate, relation inferred self-efficacy, that had not been investigated previously. This research applied sophisticated statistical methods to examine the relationships between the theories. The connection between the motivational climate and Self-Efficacy through RISE required advanced statistical methods which were rigorously performed in order to test the hypothesis.

Another strength is this research is based on experience in the field. The author has many years of competitive coaching, and the hypotheses were based on discussion and practical

experience. The ideation process came from the field and then researched based on scientific theories. This research has indicated that what was seen in coach-athlete relationship in individual sports is now also seen in scientific research. These findings could be applied by practitioners and coaches immediately, and could be explained in intuitive ways. The theories have a strong framework which practice could be based on, and improve coaching and performance in a clear, concise and effective way. Overall, the study was strongly embedded in a science-to-practice perspective.

Future research

As this research indicated, there is a connection between motivational climate and self-efficacy. Future research is needed to test whether there is a cause and effect between the variables, as this study suggests. One way to examine this will be through an experimental study. A mastery climate is related to statements and behavior, and as indicated in the literature review it can be manipulated (Cecchini et al., 2014). Therefore it could be manipulated, and tested for a cause and effect relationship on self-efficacy. The current research indicates that athlete's perceptions, RISE, may be the link that connects expressions of mastery climate and to higher self-efficacy. The two variables that require further research are the motivational climate and RISE, controlling for both and testing the effect they have on self-efficacy.

A study which involves education of coaches for a more mastery motivational climate could better understand the potential relationship between motivational climate and Self-Efficacy. In order to test this, the researchers should measure the baseline scores for all the variables, mastery climate, RISE, other-efficacy and Self-Efficacy, conduct an intervention using the TARGET framework and measure the changes in each variable post-intervention. Similar to the research

describe earlier by Cecchini et al.(2014) the TARGET framework could be used to change the motivational climate towards that of mastery. This framework defines the way coaches should train athletes in order to increase the mastery climate. The focus of this way of coaching is on setting mastery goals, autonomy, recognition, grouping, evaluation and time. It is an educational method shown to increase the coach-created mastery climate. Based on our assumptions and findings, motivational climate influences Self-Efficacy through RISE. The nature of the relationship between motivational climate and self-efficacy requires more research. The goal of future research would be to indicate how self-efficacy could be increased through the motivational climate. Based on these findings, RISE is a mediating variable, and therefore should be considered in future research. In order to test the mediation model, future research could perhaps test the influence of the motivational climate with and without expressions of confidence, to test if RISE is in fact a mediator between the motivational climate and self-efficacy.

This research examined the social aspect of goal orientation, motivational climate, yet the personal tendencies of the athlete may play a significant role. Motivational climate is an environmental aspect, while goal orientation is a personal trait. It is possible that goal orientation influences the perception of motivational climate, and Self-Efficacy as well. Future research should take personal goal orientation into consideration and test its relationship with self-efficacy. The significance of RISE alone should also be further researched. Our assumption was that RISE is the mediator and the results indicated that, but that is just one environmental aspect. Athletes also experience motivational climate and RISE based on training partners. Measuring the overall motivational climate, and expressions of RISE for all the social agents in the athlete's environment is required to indicate which is the significant predictor. Since this research studied

the relationship between motivational climate and self-efficacy, the addition of other elements of the motivational climate need to be taken into account.

Since the mediator, RISE, was shown to have a significant effect on self-efficacy, further research should investigate this social mechanism of Self-Efficacy. This research found that the motivational climate is a significant predictor of Self-Efficacy, yet there could be other variables that impact Self-Efficacy through RISE. Other leadership aspects, such as leadership style, personal athlete goal orientation, and other factors of the motivational climate. These variables are worth further investigation to improve the understanding of how motivational climate and self-efficacy relate. RISE is indicated to be a significant mediator, yet further research is needed.

Finally, the third hypothesis was related to other efficacy, and did not reveal significant results. The assumption that other-efficacy will moderate the relationship between RISE and self-efficacy was based on the idea that other-efficacy may influence the perception the athlete has on what the coach says, RISE. Other-efficacy may be more relevant to how influential the coach will be since it is a measure of confidence in the coach's ability. Therefore other-efficacy will moderate the influence RISE will have on the athlete's self-efficacy. Based on these results, other-efficacy functions as a source of self-efficacy as originally suggested by Lent and Lopez (2002).

The exploratory analysis was added to include the coaches in the data analysis, since the test of each dyad as an independent unit was not possible due to the small sample as mentioned above. Based on the findings, this incongruence between coach and athletes perception of the motivational climate could lead to lower other-efficacy with athletes. The analysis was correlational, so no cause and effect could be concluded, yet this is an aspect worth researching.

In previous research on sport leadership (Chelladurai, 1990) the congruence between athlete preferred and perceived leader behaviors has been shown to lead to better performance and satisfaction (Chelladurai & Riemer, 1998). Our findings indicate that the incongruence between athlete perception of coach behavior, and the coach's personal perceptions of the same behavior, may lead to lower other-efficacy and RISE for the athlete. The same effect was not seen for self-efficacy, yet the trend was similar. This incongruence of motivational climate perceptions is worth further investigation with a larger sample. Another variable that should be taken into consideration is personal goal orientation. The incongruence between the athlete's goal orientation and the motivational climate, will progress the research of coach leadership and congruence between coaches and athletes, and its effect on performance.

Conclusion

The main idea of this research is that coaches influence their athletes with things they do and say, specifically in relation to motivational climate and self-efficacy. It is not just their professional level, experience, or leadership that impact the athlete. Effort and self-referenced improvement should be encouraged by coaches to increase self-efficacy. Since self-efficacy uses past experiences as a source, successful experiences based on mastery, are a consistent and controllable source. Verbal persuasion is another source of self-efficacy, and should include mastery oriented statements. Verbal persuasion could be divided into mastery and outcome oriented persuasion. The finding of this research indicate that mastery verbal persuasion is favorable. Coaches can always express confidence regarding improvement and effort, while outcome oriented statements are external and dependent. These finding also indicated that the perceptions the athlete has of coach confidence are predicted by the motivational climate. These

perceptions of perceived confidence contribute to increased self-efficacy and therefore are favorable. Goals which encourage mastery are likely associated with an increased RISE and therefore lead to increased self-efficacy.

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Appendix A – Exempt Certification

Notification of Exempt Certification

From: Biomedical IRB
To: [Noam Hadadi](#)
CC: [Christine Habeeb](#)
Date: 4/24/2020
Re: [UMCIRB 20-000714](#)

The effects of coach created motivational climate on self-efficacy

I am pleased to inform you that your research submission has been certified as exempt on 4/23/2020. This study is eligible for Exempt Certification under category # 2a.

It is your responsibility to ensure that this research is conducted in the manner reported in your application and/or protocol, as well as being consistent with the ethical principles of the Belmont Report and your profession.

This research study does not require any additional interaction with the UMCIRB unless there are proposed changes to this study. Any change, prior to implementing that change, must be submitted to the UMCIRB for review and approval. The UMCIRB will determine if the change impacts the eligibility of the research for exempt status. If more substantive review is required, you will be notified within five business days.

Appendix B – Athlete Questionnaire

ID number (Last four digits of coach phone number)

Gender

Male (1)

Female (2)

Age

How many years have you been competing in your sport?

How many times a month do you see your coach during regular times (Unrelated to COVID-19)

How many times a month do you see your coach currently

What sport do you compete in?

Rate your coach on the following statements:

	strongly disagree (1)	disagree (2)	neutral (3)	agree (4)	strongly agree (5)	NOT APPLICABLE (6)
The most important thing for my coach is winning (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The coach makes athletes feel good when they improve a skill (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The coach spends less time with the athletes that aren't as good (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The coach encourages me to try new skills (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The coach tells us who are the best athletes on the team (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The coach tells athletes on the team to help each other (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The coach tells us that trying our best is the most important thing (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The coach pays most attention to the best athletes (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The coach says that athletes should help each other improve their skills (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The coach punishes athletes for mistakes (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The coach says we are all important to the teams success (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The coach tells us to try and be better than our training partners (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How confident are you in your coach's ability to:

	Not confident (1)	Somewhat confident (2)	Neutral (3)	Confident (4)	Very confident (5)
Maintain your confidence (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mentally prepare you for game/event strategy (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Understand competitive strategy (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Build your self-esteem (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adapt to different game/event situations (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Motivate you (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Build your self-confidence (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Develop your abilities (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teach you the skills of your sport (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How confident are you in your ability at this moment in time to:

	Not confident (1)	Somewhat confident (2)	Neutral (3)	Confident (4)	Very confident (5)
Try your hardest in every game/event (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Try your hardest in every practice (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be physically fit enough to always perform well in your sport (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be enthusiastic in your sport, even when the skill is hard or unfamiliar to you (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learn all the skills you are taught, even the most difficult ones (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Carryout your coach's instructions at all times (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Perform all the skills you are taught in your sport (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Attempt all the skills required in your sport, even the hard or unfamiliar ones (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Practice and improve your sport skills (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Perform well whenever you compete (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How confident do you think YOUR COACH is in your ability at this moment in time to:

	Not confident (1)	Somewhat confident (2)	Neutral (3)	Confident (4)	Very confident (5)
Try your hardest in every game/event (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Try your hardest in every practice (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be physically fit enough to always perform well in your sport (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be enthusiastic in your sport, even when the skill is hard or unfamiliar to you (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learn all the skills you are taught, even the most difficult ones (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Carryout your coach's instructions at all times (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Perform all the skills you are taught in your sport (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Attempt all the skills required in your sport, even the hard or unfamiliar ones (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Practice and improve your sport skills (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Perform well whenever you compete (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix C – Coach Questionnaire

ID number (Last four digits of coach phone number)

Gender

Male (1)

Female (2)

Age

Years of experience coaching

Rate yourself on the following statements, as a coach

	strongly disagree (1)	disagree (2)	neutral (3)	agree (4)	strongly agree (5)
The most important thing for me is winning (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I make athletes feel good when they improve a skill (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I spend less time with the athletes that aren't as good (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I encourage my athletes to try new skills (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tell my athletes who are the best on the team (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tell athletes on the team to help each other (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tell my athletes that trying their best is the most important thing (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I pay most attention to the best athletes (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tell my athletes they should help each other improve their skills (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I punish athletes for mistakes (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tell my athletes they are all important to the teams success (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tell my athletes to try and be better than their teammates (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>